Final Alternatives Comparison Report

University Bridge North Approach Planning Study

Seattle, Washington

December 1, 2023

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Executive Summary

Planning Study Purpose

As culminating in detail in the rest of the report, the objectives for this planning study project are to develop and evaluate rehabilitation and replacement alternatives for the concrete spans known as the University Bridge North Approach – Concrete. In addition to the planning study performed for the University Bridge North Approach - Concrete, the team also worked on an additional task to identify the repairs and methods required to restore the University Bridge steel and bascule structures to a “good” condition rating or higher. The extents of this additional task include all University Bridge structures located south of the southern limit of the University Bridge North Approach Planning Study. The primary goals of this task are to perform preliminary designs and cost estimates, and to supplement the results to the University Bridge North Approach Planning Study. See Figure ES-1 for the planning study area map.

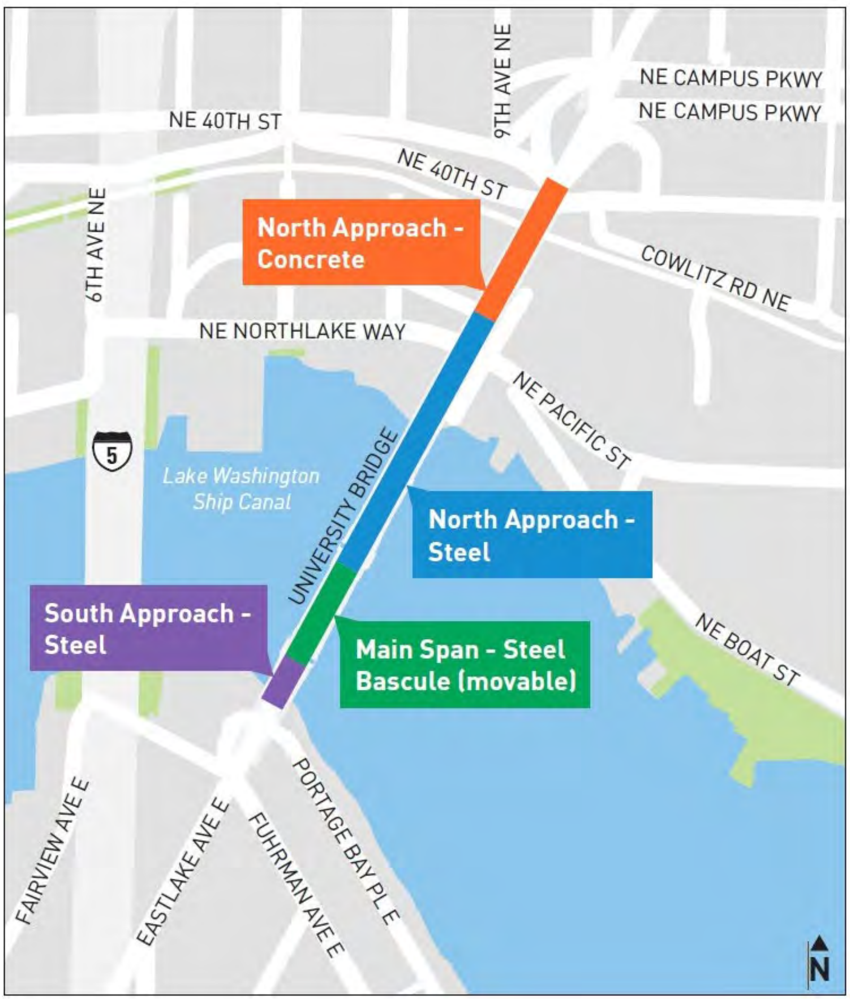
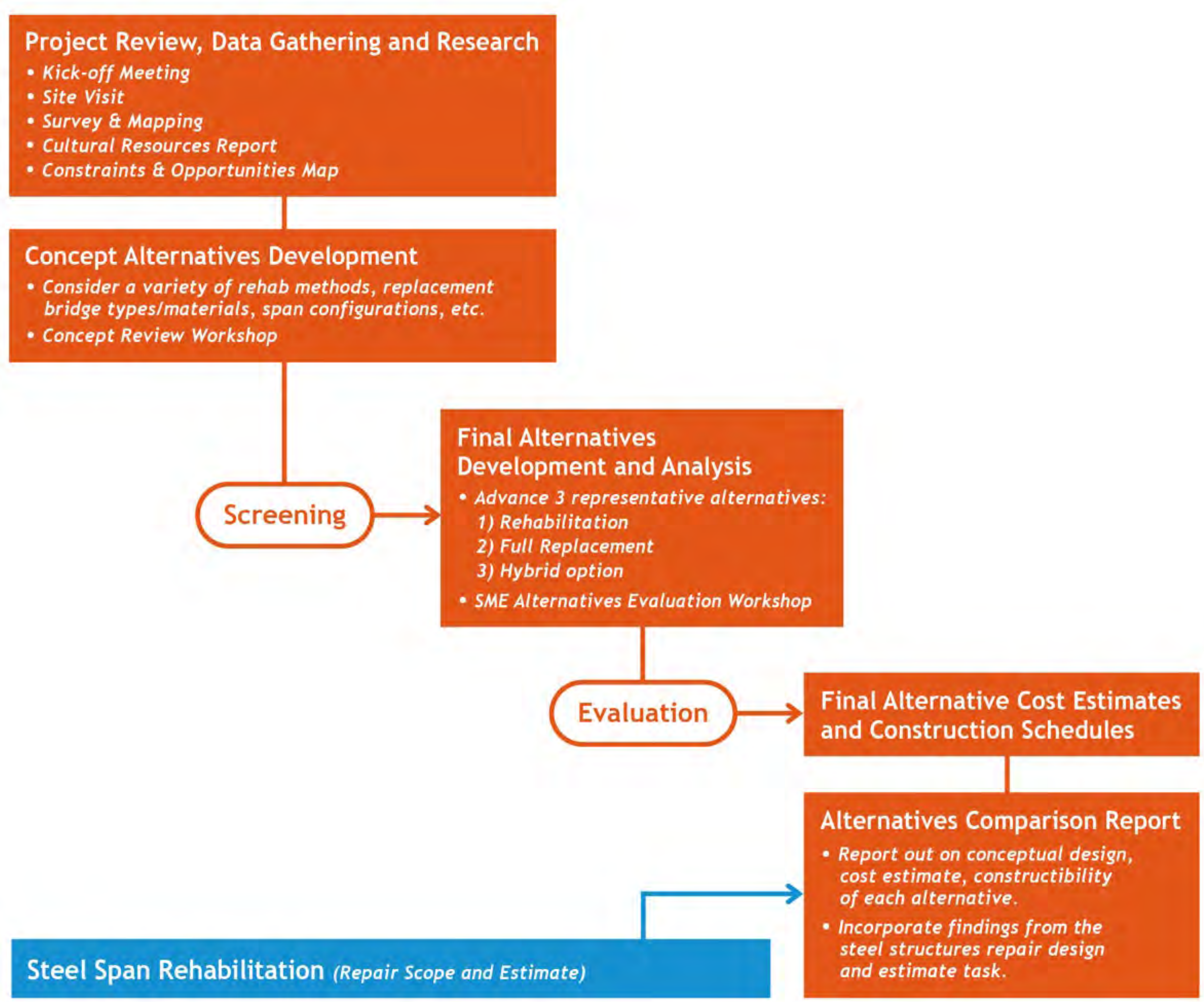


Figure ES-1. Planning Study Area Map

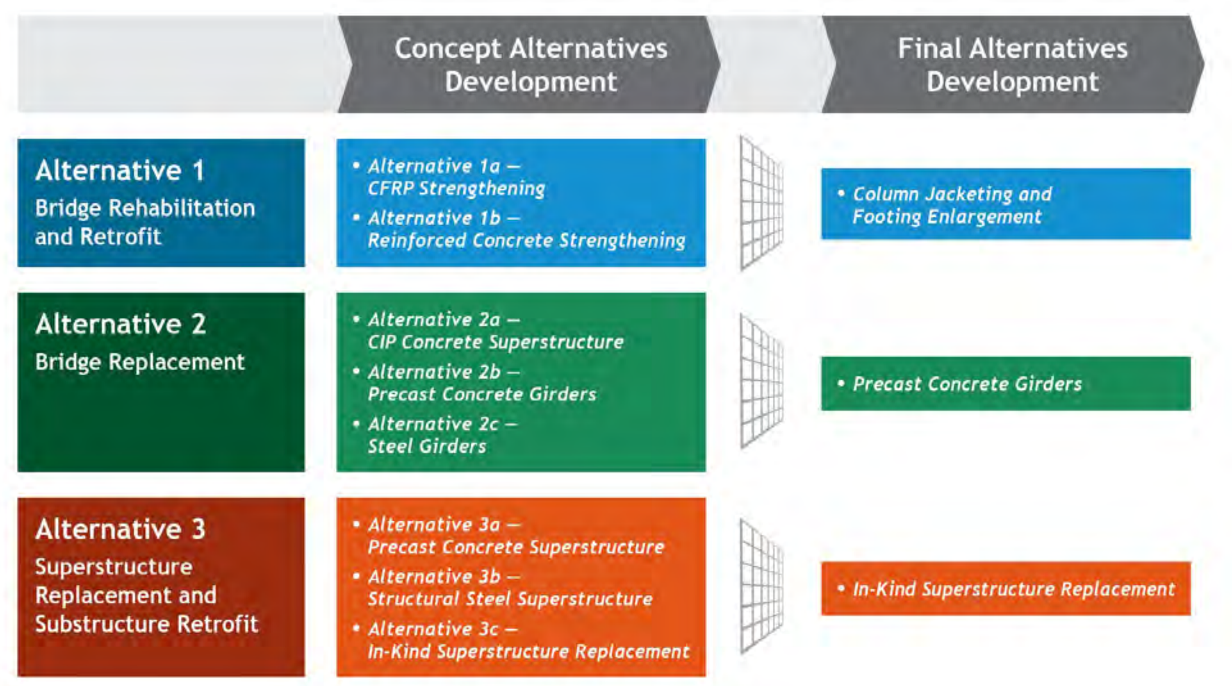
Planning Study Process

Based on the objectives above, the project team developed the planning study scope and executes along the project duration, which can be summarized and illustrated as follows.



Concept and Final Alternatives Development

The concept alternatives development is for the team to screen and identify feasibility of concept alternatives and sub-options that result in three final alternatives to move forward for more detailed analysis. The team performed a high-level feasibility review to define the alternatives that were carried forward into more detailed analyses as described in next task (final alternatives development). Level of design for each concept alternative in this task is less than 5% concept level. At the end of this task, the team facilitated a conceptual design review and refinement workshop with subject matter experts (SMEs), where the team presented the concept alternatives and discussed feedback. Based on the results of this workshop and other comments from SDOT, the team made revisions to improve each of the concept alternatives and combined different parts of concept alternatives together to continue with the three final alternatives. See Attachment K for more details of the Concept Alternatives Development Memo and Evaluation.



The final alternatives development is for the team to further develop, analyze and evaluate the three final alternatives developed in previous task (concept alternatives development), including a bridge rehabilitation and retrofit alternative, a replacement alternative, and a superstructure replacement and substructure retrofit alternative. The level of design for each final alternative in this task is approximately 5%. Concurrently, the team advanced both structural and non-structural design of the final alternatives to a level suitable for more detailed evaluation and cost estimating. After developing the final alternatives, the team prepared and participated in a final alternatives evaluation workshop with SMEs, where the team presented the final alternatives developed under this task and solicited feedback and opinions on pros and cons for the alternatives. Ultimately, the team combined the results from the workshop with the team's evaluations to form this report.

Construction Cost Summary

Table below summarizes the estimated construction cost in 2023 dollars of the Alternatives 1, 2 and 3 of the University Bridge North Approach – Concrete, as well as the estimated construction cost in 2023 dollars for the repairs of the rest of the University Bridge, which includes the North Approach – Steel, the Main Span – Steel Bascule, and the South Approach – Steel. The total construction cost in 2023 dollars of the entire University Bridge for each alternative is also listed at the bottom of the table. The costs include a 30 percent contingency and 10.25 percent tax on permanent and consumable materials. Cost for construction administration and inspection is not included.

	Alternative 1	Alternative 2	Alternative 3
North Concrete Rehab/Replacement	$19.4M	$49.0M	$42.1M
South Steel Repairs	$10.4M	$10.4M	$10.4M
TOTAL	**$29.8M**	**$59.4M**	**$52.5M**

Alternative Evaluation

A comprehensive evaluation matrix is created using multiple criteria to evaluate the three final alternatives as shown more in details in Attachment L-1. The asset owner perspective weighting is based on subject matter expert workshops, whereas the public perspective weighting is based on online survey responses. Simplified versions of the alternative evaluation matrices are illustrated in the tables below for a direct comparison among three final alternatives for different scenarios including,

- Benefit Score:
  The table below summarizes the total unweighted or raw scores as well as the weighted scores of each alternative using the SME (asset owner perspective) and survey (public perspective) weighting scenarios. Higher score means better benefit.
- Construction Cost:
  The table below summarizes the total construction cost in 2023 dollars ($M) and life expectancy (years) of each alternative. The annual cost factor ($M/years), which is the ratio of total construction cost ($M)/life expectancy (years), is also calculated for each alternative.
- Benefit Score/Construction Cost:
  The benefit score/construction cost ratios are calculated and summarized in the table below for the unweighted and weighted scores for each alternative.
- Benefit Score/Annual Cost Factor:
  Similarly, the benefit score/annual cost factor ratios are calculated and summarized in the table below for the unweighted and weighted scores for each alternative.

Benefit Score		**Alt 1**	**Alt 2**	**Alt 3**
B1	Unweighted - Raw Scores	63	47	46
B2	Weighted - Asset Owner Perspective	90	79	68
B3	Weighted - Public Perspective	107	64	71

Construction Cost		**Alt 1**	**Alt 2**	**Alt 3**
C1	Total Construction Cost ($M)	$19.4	$49.0	$42.1
	Life Expectancy (years)	*25*	*75*	*50*
C2	Annual Cost Factor ($M/years)	$0.78	$0.65	$0.84

Benefit Score/Construction Cost		**Alt 1**	**Alt 2**	**Alt 3**
B1/C1	Unweighted: Raw Score	3.2	1.0	1.1
B2/C1	Weighted: Asset Owner Perspective	4.6	1.6	1.6
B3/C1	Weighted: Public Perspective	5.5	1.3	1.7

Benefit Score/Annual Cost Factor		Alt 1	Alt 2	Alt 3
B1/C2	Raw Scores (Unweighted)	80.8	72.3	54.8
B2/C2	Asset Owner Perspective (Weighted)	115.4	121.5	81.0
B3/C2	Public Perspective (Weighted)	137.2	98.5	84.5

Planning Study Findings Summary

As mentioned earlier, the purpose of the earlier stages of this study is to screen and identify feasibility of concept alternatives and sub-options. See Attachment K for more details of the Concept Alternatives Development Memo and Evaluation. As a result, the team identified three final alternatives to perform detailed analysis including, Alternative 1 – Bridge Rehabilitation and Retrofit with column jacketing and footing enlargement, Alternative 2 – Bridge Replacement with precast prestressed concrete girders, and Alternative 3 – Superstructure Replacement and Substructure Retrofit with in-kind reinforced concrete superstructure.

After identifying three final alternatives, the team continued developing and evaluating alternatives. In addition to the team's evaluations using feedback from SMEs, the public survey was also conducted for this project and the survey input was incorporated to the planning study by considering a sensitivity of the alternatives evaluation as described in more detail in Section 4.0 of this report.

By comparing these results, it shows that Alternative 1 – Bridge Rehabilitation and Retrofit has the highest benefit score and the highest benefit to total construction cost ratio in all scenarios. This is a result of some major differentiators, since Alternative 1 (Repair) induces the least impact on constructability such as maintenance of traffic (MOT), schedule and material cost volatility, as well as the impact on utilities and overhead contact system for electrified public buses on the University Bridge. Also, Alternative 1 (Repair) induces the least impact to the historic preservation of the University Bridge. When considering the life expectancy of the capital investment, Alternative 1 – Bridge Rehabilitation and Retrofit and Alternative 2 – Bridge Replacement have the similar and higher benefit per annual cost factor ratios under the asset owner perspective weighting scenario than Alternative 3 - Superstructure Replacement and Substructure Retrofit. However, when considering the public perspective or survey weighting scenario, Alternative 1 has the best comparison results among the three alternatives. Alternative 3 - Superstructure Replacement and Substructure Retrofit has the lowest benefit per annual cost factor ratio in all scenarios. By considering the input from both asset owner perspective (SME) and public perspective (survey) in calculating the criteria weighting scenario's factors used to evaluate final alternatives, it helps the planning study being more inclusive. It is important to note that other non-engineering factors such as owner policy and financial funding toward future capital investments are not considered in this alternatives comparison.

1.0 Introduction

1.1 Background

The University Bridge is a double-leaf bascule bridge in Seattle, Washington, that carries Eastlake Avenue traffic over Portage Bay between Eastlake to the south and the University District to the north. The concrete spans of the north approach to the University Bridge are on the north side of the Lake Washington Ship Canal, approximately between the north side of NE Pacific Street and end at the north side of NE 40th Street, and carry Eastlake Avenue NE over NE 40th Street and the Burke-Gilman trail. These concrete spans are approaching 100 years old and although they appear to be in fair condition, this portion of the bridge is showing signs of deteriorating concrete and is deemed functionally obsolete. Eastlake Avenue NE is a principal arterial, a minor freight street, and a priority transit corridor for the City of Seattle. The Seattle Department of Transportation (SDOT) would like to conduct a planning study to evaluate alternatives for replacement and rehabilitation of these northern concrete spans. This will help to provide a basis for SDOT to plan for future funding and eventually move forward with design and construction of one of the alternatives evaluated.

1.2 Alternative Objectives

The purpose of this study is to continue developing three final alternatives from the previous concept alternatives development. The developed final alternatives fit into three categories: Rehabilitation and retrofit alternatives, replacement alternatives, and a combination consisting of superstructure replacement and substructure rehabilitation and retrofit. The final alternatives development phase will perform a high-level feasibility review to evaluate the alternatives to inform SDOT on the range of issues and opportunities of the long-term options for the north approach concrete span section of the bridge.

Rehabilitation and retrofit alternatives are intended to bring the bridge up to current design standards for live load traffic demands and seismic resilience. Replacement alternatives will meet current design standards for structural demands for traffic loads and seismic resilience. Likewise, the hybrid alternatives will also meet the current design standards for traffic loads and seismic resilience.

1.3 Alternative Screening

The aforementioned concept alternatives development phase looked at a variety of subalternatives for each of the three categories. The subalternatives were screened using an evaluation matrix and in coordination with the SDOT Team, with the selected options carried forward for further development and discussion in this report. While some reference may be made to options no longer considered, they will not be discussed in detail herein. For more details of the previous concept alternatives development and evaluation, refer to the Draft Concept Alternatives Development Summary Memorandum and Draft Concept Alternatives – Evaluation Matrix.

2.0 Alternatives Development and Description

The University Bridge north approach concrete spans segment consists of nine spans of arched reinforced concrete deck girders on multicolumn concrete bents. Constructed around 1932, this segment is approximately 321 feet in length, carrying Eastlake Avenue NE over the Burke-Gilman Trail and NE 40th Street. The south end of this segment shares Pier 10 with the north approach steel spans, Bents 11 through 14 are square to the bridge centerline, Bents 15 through 18 are progressively skewed, and the north abutment is skewed approximately 26.5 degrees, ahead right, and parallel to NE 40th Street.

The roadway section is comprised of four 11-foot traffic lanes, two 5-foot bike lanes, with 2-foot soft buffers between traffic and bike lanes, and two 6-foot sidewalks. Vehicular and transit traffic is carried including an overhead catenary line system for electrified transit busses.

2.1 Alternative 1 – Bridge Rehabilitation and Retrofit

The University Bridge north approach concrete spans segment received a seismic retrofit upgrade around 1995. This retrofit utilized a “superbent,” a large and stiff substructure unit used to anchor the bridge, placed between and tied to the closely spaced Bents 14 and 15, near the middle of the bridge segment. Pier 10 at the south end was stiffened with concrete-filled steel casing jackets on the columns, crossbeam enlargement, and diaphragm walls between girder supports for transverse restraint. The north abutment wall was strengthened, and transverse girder restraints added.

The original seismic retrofit was a displacement-based design with limits of 3.5 inches and 1.5 inches of movement, longitudinally and transversely, respectively.

Based on the details of the retrofit, it is expected that the superbent will draw a majority of the seismic forces and reduce the overall displacements of the bridge. With the two ends restrained transversely, and somewhat longitudinally as well, the displacements and forces at the intermediate bents are expected to be relatively low. The seismic demands resulting from changes to the criteria have increased since 1995 by approximately 44 percent, so the existing retrofit measures are not expected to meet the current criteria. The seismic retrofit strategy is to evaluate retrofit alternatives that would facilitate the existing structure meeting the new criteria.

The rehabilitation alternatives also need to address bringing the superstructure live load capacity up to current Load and Resistance Factor Design (LRFD) criteria. The bridge was instrumented to collect live load responses and modeled to analyze load capacities in 2003. In 2020, the analysis was updated for current conditions and to include emergency vehicle load ratings using load factor rating methodology. The current load rating is controlled by negative flexure of interior girders over Bent 15 and shear in interior girders. Positive flexure is not shown to have deficiencies in the current load rating but strengthening may still be needed for the HL-93 load. The superstructure strengthening repairs will be designed to bring the bridge up to the current code standards for live load.

2.1.1 Seismic Retrofit Strategy

The general seismic retrofit strategy is to provide a ductile substructure with elastic superstructure. To be consistent with the prior retrofit, the intent is to maintain the superbent as the dominant substructure unit while shedding some of the increased load demand to the other bents. To accomplish this, the intermediate bents need to be stiffened to draw enough load from the superbent to allow it to perform within current criteria. The intermediate bents would be strengthened to accommodate the increased loads. The ends of the bridge, at Pier 10 and the north abutment wall, provide lateral restraint to the system.

2.1.2 Seismic Retrofit Measures

Column Jacketing

Intermediate bent columns would be stiffened and strengthened by jacketing the column, as was done at Pier 10 in the 1995 seismic retrofit. Steel jackets are recommended due their low profile and ease of construction. Round steel jackets would be placed around the columns and the annular space filled with concrete and additional reinforcement if needed. Jacketed sections would extend to the top of column capitals to contain breakout of the dowels connecting girders to columns. For Bents 11–13, with tapered pedestals, jackets would extend down to maintain at least 1 inch of clearance to the pedestal corners. For Bents 16–18 the jackets would extend to 2 inches clear of the new top of footings. Five-foot-diameter steel jackets appear to provide a relatively uniform stiffness across the intermediate bents in both the longitudinal and transverse directions. Bents 17 and 18 have pocket rocker bearings so the columns are not fixed at the top.

Use of concrete jackets has been suggested as a means of maintaining the existing texture and look of the columns. While this approach is feasible it would be more costly and time consuming as it is a more complicated system to design and construct. Steel jackets are recommended due to their more conventional use and the jackets can blend in quite well as is demonstrated by the Pier 10 retrofit.

Footing Strengthening

The existing footings are founded on good material with a high bearing capacity; however, they are relatively small and subject to overturning. Existing footings lack top reinforcement and therefore lack capacity to carry tension in the top of the footing due to overturning. Given these existing conditions and the need for capacity-protected footings, the existing footings would be enlarged and strengthened. Bent 16 includes timber piles, which lack the ability to resist uplift. The footing enlargement at Bent 16 would include a row of micropiles on each side to increase overturning capacity and to resist uplift forces.

Diaphragm Strengthening

The existing concrete diaphragms at the bents do not provide adequate lateral restraint of the girder connections at top of columns. An enlarged concrete diaphragm would be tied into the existing diaphragm and girders to stiffen and strengthen the superstructure for transferring the forces into the columns. The diaphragms would provide a gap at the top of steel casing similar to at the top of footings.

Pier 10 Diaphragm Strengthening

Pier 10 has short (7-foot) columns supporting the concrete girders from the pier crossbeam. These columns have pocket rocker bearings similar to Bents 17 and 18. A concrete diaphragm wall was added to either side of the two interior columns for transverse restraint for the prior retrofit design. With the anticipated higher demand loads, additional restraint is expected for the exterior columns. The diaphragm wall would also provide additional longitudinal capacity for the column sections. The superstructure is isolated from the diaphragm wall and relatively unrestrained for longitudinal movement.

North Abutment Footing Strengthening

The north abutment is a counterforted cantilever wall with deadman-anchored tiebacks. The prior retrofit added a 1-foot section to the face of the wall with shear blocks between the girders for transverse shear resistance and additional seat length. Design for overturning of the wall was not apparent in the prior retrofit calculations. With the existing counterforts, tieback anchorage, and added wall section, the strength of the wall is expected to be adequate. However, overturning resistance is anticipated to be inadequate. A footing enlargement section with micropiles on the toe side of the footing would provide additional overturning resistance.

2.1.3 Superstructure Rehabilitation Measures

Superstructure strengthening would be accomplished using carbon fiber reinforced polymer (CFRP) strengthening techniques. One or more laminate strips on the bottom of girders would address the positive flexure demands. Negative flexure over piers would be addressed with near-surface mounted CFRP bars. Shear strengthening of girders would be a combination of side face laminate strips and U-shaped strips wrapping the sides and bottom of girders. Wet layup systems are assumed for girders though preformed laminate strips could be used for positive flexure reinforcement.

As part of work the existing asphalt wearing surface and waterproof membrane will be removed and replaced in full.

See Attachment A. Alternative 1 – Bridge Rehabilitation and Retrofit Exhibits for details.

2.2 Alternative 2 – Bridge Replacement

2.2.1 Bridge Type

The North Approach Replacement Bridge will be a concrete column supported beam bridge similar to the existing bridge, thus preserving some of the aesthetic features of the existing structure. The precast concrete I-girder bridge replacement alternative is the preferred option selected for more detailed evaluation.

The existing bridge is approximately 75'-0" wide (58'-0" curb to curb), 321'-0" long with 1'-6" wide railing/parapet on each side. It consists of four 11′-0″ vehicular traffic lanes, one 5'-0" wide bike lane with 2'-0" painted buffer, and one 6'-0" sidewalk on each side. The existing concrete approach spans between Pier 10, Bents 11 to 18 and the North Abutment.

An expansion joint separates the north approach steel spans from the concrete spans at Pier 10. The bridge replacement will have the same total width and lane configuration and would be bounded by Pier 10 to the south and North Abutment, without preserving existing structures in between.

2.2.2 Span Arrangements

In considering span arrangements, we evaluated the span efficiency, impact of additional load demand on Pier 10 and north abutment, the potential challenges of transportation and erection of prefabricated girders, and the conflict with the 108-inch-diameter trunk sewer line in the vicinity of existing Bent 16. Other constraints include maintaining the Burke-Gilman Trail and NE 40th Street alignments, protecting the 76kV SCL ductbank running under the sidewalk of the frontage road east of the bridge, and a 12'-3" roadway clearance at the North Abutment.

A 4-span configuration of 60'-0", 100'-0", 100'-0", 61'-0" provides the optimal spatial arrangement. The sewer line is avoided so that the trunk line will not be subjected to surcharge loading. However, shoring for structural excavation is anticipated in constructing neighboring new footings. A recent survey indicates an existing clearance of 11.48 feet at the bottom of the 8'-8" deep hunched concrete girders. Roadway clearance of proposed superstructure depth is more than 12′-3".

2.2.3 Superstructure

The superstructure consisting of 7½-inch slab, eight precast I-Girders, WF58G (58-inch-deep girders), straddling the bridge centerline. The proposed 4-span arrangement (60'-0", 100'-0", 100'-0", 61'-0") meets all the constraints, is symmetrical and has a good span ratio. This configuration also provides better visibility along the Trail.

See Attachment B. Alternative 2 – Bridge Replacement Exhibits for details.

2.2.4 Tie–in/Connection at Pier 10 and North Abutment

Pier 10 Connection

The existing north approach steel bridge beam seat (corbel) at Pier 10 is 12 inches wide and includes a 2½-inch-wide expansion joint. Seismic retrofit and upgrade performed in the mid-1990s includes stiffening of the concrete columns, enlargement of the crossbeam, and addition of diaphragm walls between the girders, upper bents, and crossbeam. Since the retrofit, seismic demand criteria have increased and, in addition, increased vertical and lateral loads resulting from longer span configuration of the replacement bridge therefore additional upgrade is anticipated.

The 1'-6" thick pier stiffener wall constructed in the 1990s will be sandwiched with new side walls down to the encased cap beam, which was also constructed in 1990s. The wider wall will be constructed to provide sufficient bearing width for both approach spans as well as increase the lateral stiffness of Pier 10. The new wider wall will be extended to support the exterior precast I-girders. Blockouts will be provided to accommodate the truss rocker bearing supports.

Pier 10 will support some transverse and no longitudinal seismic loads. In the 1990s retrofit the columns were steel jacketed, below the strengthened cross beam, with ½-inch wall steel casing and 5/8-inch wall steel casing for the upper and lower sections respectively. No strengthening of the footings was done during the retrofit. We estimate no strengthening of the columns is required but footing enlargement will be required to support the increase in demand.

North Abutment Connection

Seismic retrofit and upgrade performed in the mid-1990s includes adding concrete liner/fascia wall, corbel under girders, and transverse girder restraints. The wall will experience added eccentric loading in addition to increased seismic and vertical demand since the last retrofit and hence retrofit or enlargement of the existing strip footing will be required.

In addition, the 1'-0" thick concrete fascia wall and corbels will be demolished to accommodate new bridge deck construction. The replacement wall will be tied to the footing enlargement and wide enough to accommodate the new bridge deck framing.

The North Abutment will not support any longitudinal load but may resist some transverse seismic loads. The wall would be tied back to resist residual longitudinal tension and resist longitudinal compression loads in bearing. The existing tieback rods will be welded to bearing plates, the tails cut off and would supplement new tieback anchors.

The northeast section of the bridge consists of cantilever framing, supporting the ramp to NE 40th and a stairway. The bridge section and stairway will be replaced with CIP concrete beam and column framing system. The stairway tread, riser and railing will meet ADA requirements.

2.2.5 Substructure Type and Location

The existing concrete bridge consists of four columns at Bents 11 to 18. Pier 10 is a two-column bent, where the columns are not in line with those of Bents 11 to 18.

A four-column bent option is recommended and consists of the two exterior columns in line with those in Pier 10, and the two interior columns straddling the bridge centerline. Our evaluation indicates that two columns in each half of the bridge will be the most compatible option for demolishing one half and maintaining traffic on the other half of the bridge.

Foundation

The existing north approach concrete bridge is supported on concrete spread footings and on very competent soil at each bent, except for existing Bent 16 which is adjacent to the sewer main and is founded on timber piles.

The geotechnical report by Clarity Engineering LLC provides a nominal soil bearing capacity of about 50 kips per square foot (ksf) for shallow foundations. Based on this high bearing capacity, the new Bent 11 and Bent 13 may be founded on concrete spread (strip) footings. The new Bent 12 will be supported on drilled concrete shafts because of its proximity to the 108-inch trunk line. Casing oscillator/rotator drilling method will be used to reduce the risk of construction vibrations and potential damage to the sewer. We have proposed drilled concrete shaft foundation for all three bents due to cost efficiency and because only one half of the shafts can be constructed in each construction stage.

2.2.6 Construction Staging

Maintenance of Traffic During Construction

It is anticipated that the bridge would be built in halves. In the first phase, the remaining section of the existing bridge will provide a 6’-0” sidewalk that will accommodate pedestrians including dismounted cyclists, two traffic lanes (26'-0" travelway) and 3'-0" for temporary traffic barrier and lip. The second phase will shift traffic onto the new half of the bridge and will provide the same sidewalk and lane widths as in the first phase.

Temporary Shoring/Construction Support

The existing concrete bridge consists of two exterior edge beams and four interior beams, straddling the bridge centerline. Demolition will result in a cantilever condition for the second interior slab span for supporting wheel loads. Therefore, it is anticipated the tip of the cantilever would be temporarily supported during construction unless the top reinforcing bars can support the imposed barrier and wheel loads.

Potential Issues to Evaluate

A review of the lateral capacity of the bents when half of the bents, especially the superbent, are demolished will be required. This may necessitate providing temporary shoring as a part of the lateral bracing system.

2.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

The hybrid alternative would utilize the existing substructure and foundations, retrofitted for seismic and live loads similar to Alternative 1, while replacing the superstructure (girders and deck). Framing and connections at the existing superbent would need to accommodate the new superstructure while preserving the function of the superbent. Similarly, framing and connections at Pier 10 and the north abutment would need to be modified to accommodate the new superstructure.

The spans from Bent 15 to the north abutment vary in length across the width of the bridge due to the varying skew of the bents. The sidewalks curve outward from the roadway width at the north end, most notably in the northeast corner where cantilevered support brackets frame into the face of the abutment wall. NE 40th Street runs between Bent 18 and the north abutment wall and has a posted minimum vertical clearance of 12'-3".

2.3.1 Alternative 3 – In-kind Superstructure Replacement

An in-kind superstructure replacement would minimize changes to the character and aesthetic of the bridge. Parabolic girders would be sized and reinforced as needed to meet the design loads. These girders would be cast-in-place, as the original bridge was. Staged construction would remove and replace half of the superstructure in each stage. The half-bridge section would be a two-girder cross-section with relatively large cantilevers on each side. To ensure stability of these half-sections, temporary shoring would be used to brace the cantilever sections until a deck closure pour is made between the two halves of the bridge. This alternative would not require bent cap crossbeams as the girders would frame into the columns as they currently do. Some amount of reconstruction of the upper column sections would be required.

3.0 Discipline Specific Discussions of Alternatives

3.1 Roadway Improvements

The existing bridge and the configuration of its surface transportation uses is noncompliant with many of SDOT's and the Federal Highway Administration's (FHWA's) standards. It is expected that the nonconformance is allowed to continue for retrofit or rehabilitation alternatives, because the full superstructure is not being replaced. However, maintaining non-standard roadway conditions is not ideal from a compliance perspective. Replacement of the bridge deck would trigger compliance with current standards and potential for widening the bridge from its current configuration. Improvements to barriers, railings, and stairways would need to be evaluated as part of the replacement activity, to bring them up to standard. Any improvements to the substructure that impact existing streets, sidewalks, stairways, and curb ramps that are not part of the bridge, but the active transportation footprint surrounding the area underneath the bridge, may require upgrades to new standards if impacted during the staging and construction activities for the bridge work. These features would impact project costs and may change the footprint of facilities surrounding the bridge. This could require easements or acquisitions if the facility extension pushes outside of SDOT right-of-way.

Alternatives for rehabilitation and retrofit that have lesser need to excavate around existing substructure elements will be more favorable to the roadway engineering considerations on the project. When evaluating Roadway Improvements, this section focuses on the ability to upgrade to current standards with each of the alternatives and the ease in which elements could be upgraded due to the nature of an alternative.

3.1.1 Alternative 1 – Bridge Rehabilitation and Retrofit

Alternatives that rehabilitate or retrofit the facility provide less opportunity to upgrade existing conditions to current standards. There will be no revisions to the overall bridge width and most nonconforming elements of the structure for bicycle, pedestrian, and vehicle use will remain in their current configuration due to the limitations of the existing facility.

Retrofit construction that impacts barriers, railings, or pedestrian pathways may still require facility upgrades, and doing those upgrades within the limitations of the existing structure will either make upgrades more complicated or not possible at all and require deviations. In particular, the railing along the existing stairway at the northeast corner of the project has noncompliant railings that would likely need to be replaced even in the retrofit alternative. With a retrofit, the new railing system would need to be attached to the existing structure and stairs and rely on the limitations of that existing system instead of designing the railing and stairs as one single element that accommodate the railing.

Another complicated example is the current tall curb between the bicycle lanes and the sidewalk. The curb as currently configured provides a tripping hazard between the two facilities. But upgrading the curb to a full barrier or raising the pedestrian path to be a typical sidewalk would result in width impacts to the bicycle lane and further substandard height of the outer barrier adjacent to the pedestrian pathway.

When it comes to the impacts of this alternative, the work to modify and improve facilities on the existing bridge is much harder to accomplish than it would be on a new superstructure. On a new superstructure, the improvements would be designed integral to the rest of the system and have little issue with being able to accommodate the improvements.

3.1.2 Alternative 2 – Bridge Replacement

The replacement of the north approach may require a reevaluation of the entire bridge roadway design elements for conformance with current standards. There is risk to the project with this alternative if the design relies on deviation approval from SDOT (and FHWA, if federal funding is anticipated) for maintaining existing nonconforming standards.

The replacement of the north approach bridge would impact a significant number of stairways at the northern end of the bridge. Current pedestrian pathways and ramps are currently noncompliant and would need to be replaced.

Below the bridge, where the substructure would be replaced, there is a mix of compliant and noncompliant pedestrian facilities. These would need to be replaced and most of the locations would extend limits of work to achieve Americans with Disabilities Act (ADA) compliant pedestrian pathways or addition of new landings and pedestrian railing systems to achieve compliance. For the northeastern stairway, that facility has compliant stairs, but noncompliant railings and landings at the top and bottom of the structure. To accommodate a similar, ADA-compliant facility, the fenced area at the bottom of the stairway would be modified.

For the alternatives changing the number or spacing of piers/columns, there is a ripple effect to modifications for the roadway (Northlake Way/Pacific Street) depending on span lengths and ideal placement of the new substructure components.

For the transition point between the existing bridge sections to remain and the replaced bridge section, a discussion regarding the transition will be required to determine how the upgraded facilities would transition to the existing bridge that will remain to the south. The design would need to accommodate sidewalk elevation transitions or barrier/curb transitions to match into the existing conditions at the southern end of the replaced bridge and outer barrier.

The upgrades to the roadway for Eastlake Avenue, if required to be revised to accommodate new standards due to replacement of the bridge, can be more easily accomplished with a new superstructure facility. This would allow build out of new barriers, curbs, and other safety features for the non-motorized facilities without the concern of how to modify or install those facilities with the limitations of the existing structure. The new structure design would be designed to accommodate these new barrier, railing, and curb elements.

3.1.3 Alternative 3 - Superstructure Replacement and Substructure Retrofit

This alternative has essentially the same Eastlake Avenue opportunities for improvements to bring elements up to current standards as the full replacement but will not trigger upgrades to facilities below the bridge since the retrofit of existing substructure elements may not impact surrounding streets and sidewalks. It is likely to have minimal impact to the existing transportation uses below the bridge itself. The replacement of the superstructure will necessitate replacement of the stairways and pedestrian facilities from the Bridge to and from NE 40th Street. The pedestrian facilities on the bridge will be more easily upgraded with a new superstructure allowing the superstructure to be designed to accommodate the barriers and railings required for compliance with current standards.

3.2 Maintenance of Traffic

3.2.1 Alternative 1 - Bridge Rehabilitation and Retrofit

For Eastlake Avenue, the work would be accomplished under live traffic with intermittent lane closures. It is likely that the bridge rehabilitation would occur in halves, so the use of overnight lane closures would reduce the overall impact to traffic. The impacts to the electrified transit that uses this bridge would require coordination with off-wire operations; see Section 3.3 Overhead Contact System for more information. The completion of rehabilitation improvements would likely require closure of the sidewalk on the side being rehabilitated, so pedestrians and bicyclists would be accommodated on the opposite of the bridge.

For NE 40th Street and the Burke-Gilman Trail, the work would be accomplished under live traffic with intermittent lane closures and full closures. Long-term lane closures along NE 40th Street will be required for foundation repair and reconstruction. The bicycle lanes and the south sidewalk will need to be closed for up to three months while the foundation work is performed on Bent 18. Bicycle and pedestrian traffic could use the Burke-Gilman Trail as a detour. The vehicular lane will need to be closed for the same duration while the foundation work is performed on the north abutment. Vehicular traffic could be shifted into the existing bicycle lanes while maintaining the bicycle and pedestrian detour along the Burke-Gilman Trail or vehicular traffic could use a NE Campus Parkway detour. These lane closures along NE 40th Street will be sequential, not simultaneous. Also, work that requires lane or full closures of NE 40th Street and the Burke-Gilman Trail must be sequential, not simultaneous.

See Attachment F. MOT Exhibits for maintenance of traffic (MOT) details.

3.2.2 Alternative 2 – Bridge Replacement

For Eastlake Avenue, this alternative would be accomplished under live traffic by constructing the new bridge in halves. During Phase 1, one lane of traffic in each direction would use half of the existing structure while half of the proposed structure gets built. The existing 6-foot sidewalk would accommodate pedestrians and dismounted cyclists. Phase 2 would provide the same number of traffic lanes (one lane of traffic in each direction) and a 6-foot sidewalk on the new structure while the other half of the proposed structure gets built. Given the limited capacity of two lanes instead of four, a regional detour would be set up to limit the amount of vehicular traffic that will attempt to use the two-lane section of open bridge. Pedestrians would not be rerouted because they would be accommodated on the remaining existing sidewalk during Phase 1 and on the proposed sidewalk during Phase 2. The space available during each phase includes two vehicular lanes and one sidewalk, without room for maintaining the separated bicycle lane; bicycle traffic on University Bridge would be required to dismount and use the sidewalk or use an alternative route.

The overhead contact system (OCS) for the electrified bus routes will need to be taken out of service and the electrified bus route will need to transition to another technology during construction. More details regarding the OCS impacts are included in Section 3.3 Overhead Contact System.

For NE 40th Street and the Burke-Gilman Trail, this work would be accomplished under live traffic with intermittent full closures. Full closures along NE 40th Street will be required for bridge demolition, girder erection, deck pours, falsework on the bridge, and any other work deemed to potentially cause hazards to vehicular traffic, bicyclists and pedestrians along NE 40th Street beneath the bridge. Vehicular traffic would use NE Campus Parkway as a detour and bicycle and pedestrian traffic could use the Burke-Gilman Trail as a detour. Full closures of the Burke-Gilman Trail will also be required for bridge demolition, girder erection, deck pours, falsework on the bridge, and any other work deemed to potentially cause hazards to bicyclists and pedestrians along the trail. Bicycle and pedestrian traffic could use NE 40th Street as a detour. These full closures along NE 40th Street and the Burke-Gilman Trail will be sequential, not simultaneous.

See Attachment F. MOT Exhibits for MOT details.

3.2.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

Traffic would be accommodated for this alternative in the same manner as it will be accommodated with Alternative 2 for Eastlake Avenue and Alternative 1 for NE 40th Street and the Burke-Gilman Trail. See Attachment F. MOT Exhibits for MOT details.

3.3 Overhead Contact System

3.3.1 Alternative 1 – Rehabilitation OCS Impacts

Based on the provided description and exhibits it appears that the retrofit CFRP work is being applied to the substructure in areas that will not require any changes to the existing OCS. However, if any work is done that alters the dimensions of the girders that the OCS feeder conduits are attached to, the conduit and feeder cable would need to be removed and then replaced which would impact the OCS revenue service. This potential relocate of the feeders affects the feeder conduits running along the west side of the bridge. Removing and replacing the feeder conduit and cable would require input from King County Metro (KCM) on alternate feeding configurations for the duration of the work, as well as for shutdown timeframes to complete the conduit and feeder removal and replacement.

The construction methodology will also require review to identify any activities that would put equipment or personnel in the vicinity of the OCS on the superstructure or the feeder conduits. These activities will need to be reviewed for risks including damage to the OCS, damage to the feeder conduits or cables and potential electrical hazards.

To maintain electrical continuity of the contact wire, feeder style cables are installed in a utility tunnel under the canal. The cables tie into the contact wire at north and south ends of the bridge. Disconnecting the feeder cables at the bridge will isolate all of the overhead conductors north of the bridge from the rest of the system. If the existing feeder cables require removal, a temporary connection between the ends of the bridge must be designed and installed before removing any existing cable. Without an alternate connection, the overhead contact system north of the canal will require complete de-energization for the duration of work when the cables are disconnected.

See Attachment G. OCS Exhibits for OCS details.

3.3.2 Alternative 2 and 3 – Replacement/Retrofit OCS Impacts

The replacement of the bridge will require a complete removal of the OCS within the construction area while the side of the bridge with OCS is being replaced. This includes providing locations to terminate the existing wires on either side of the construction zone (temporary during construction) and then removing all OCS wires, poles, feeders, conduits and other associated assemblies and hardware. Once construction has been completed, the OCS can be replaced in a similar configuration to the original. However, this will need to be reviewed and likely redesigned based on the new deck type, attachment locations and other factors.

Because the bridge is being replaced in halves, it may be possible to leave the OCS in place during construction on the side not being worked on (i.e., remove one side of the OCS at a time, leaving the other one in service). To accomplish this, temporary support structures would need to be put in place at the demarcation point in the center to support the span wire when the poles are removed from the side under construction. In this arrangement, only one contact wire (one direction) would be in service at a time. This is due to the configuration of the OCS using cross span supports that hold both sets of wires. This option would require the same analysis of construction methodology and risk as stated in Alternative 1 due to the likely proximity of equipment to the OCS wires.

The removal of wire on the bridge will require the same temporary connection between the ends of the bridge as is detailed above for Alternative 1. See Attachment G. OCS Exhibits for OCS details.

3.4 Bridge Engineering

3.4.1 Alternative 1 – Bridge Rehabilitation and Retrofit

This study does not incorporate rigorous seismic modeling or analysis of forces and displacements that are typical of seismic retrofit design processes due to the limitations of an approximate 5 percent level of design. Therefore, the seismic evaluations are limited to an evaluation of relative stiffnesses and a simplistic base shear distribution.

Two options were initially considered for seismically retrofitting the existing columns: CFRP wrap, and infill walls. The consideration of CFRP strengthening did little to draw added demands from the existing superbent, Pier 10, or the north abutment. The addition of infill walls at the intermediate bents resulted in additional stiffness in the transverse direction that considerably reduced the superbent contribution. The approach was changed to steel jacketed columns due to a better distribution across the structure while providing a reasonable reduction to the superbent participation in each direction. The additional stiffness and strength of the steel jackets negate the need for the existing column struts, and their removal accommodates the steel jackets without introducing stress concentrations at the struts. The resultant relative stiffness of the superbent of approximately 60 percent aligns well with the retrofit strategy. See Table 1 for relative stiffness comparisons.

Table 1. Percentage of Force Distribution Based on Relative Stiffness

Bent	Existing Condition		Jacketed Columns		Infill Walls		Infill at Bts 11-13 Only	
	Longitud.	Transv.	Longitud.	Transv.	Longitud.	Transv.	Longitud.	Transv.
10	0%	14%	0%	13%	0%	0%	0%	1%
11	1%	0%	5%	1%	1%	9%	1%	24%
12	1%	0%	7%	2%	1%	12%	2%	30%
13	1%	0%	9%	2%	2%	16%	2%	40%
Super	94%	65%	63%	59%	86%	2%	92%	4%
16	0%	0%	4%	1%	1%	7%	0%	0%
17	0%	0%	2%	1%	2%	14%	0%	0%
18	0%	0%	7%	1%	5%	39%	0%	0%
N Abut	3%	21%	2%	19%	3%	0%	3%	1%

The increased force distribution at intermediate bents, along with the criteria of capacity protection for footings, leads to the proposed footing enlargement and strengthening. These footing modifications also provide the ability to rectify the detailing deficiencies in the existing footings. While foundation retrofits add considerable time and cost, the provisions should provide for a reasonably conservative assessment of what the rehabilitation and retrofit alternative would take. Excavations for foundation work would likely involve shoring for at least some of the bents and may require temporary closure of the Burke-Gilman Trail and NE 40th Street.

A 108-inch diameter trunk sewer line runs parallel to and just south of Bent 16. Shoring and micropile construction would need to be designed to avoid impacts to this large utility.

A buried 26KV system runs parallel to the existing bridge along the east side, just outside the drip line of the bridge. The duct bank includes 6 – 5inch conduits that serve the entire University of Washington campus. The duct bank also parallels NE 40th St, with 4-5inch conduits, along the North abutment. Relocation of this buried utility would be difficult and expensive so protecting in place would be the priority.

The superstructure strengthening uses bonded CFRP strips for flexure and shear applied to the girders. This work is performed from below the deck, so traffic on Eastlake Avenue

NE is not impacted, but NE 40th Street and the Burke-Gilman Trail may be impacted. The negative moment strengthening at Bents 14 and 15, and potentially other bents if needed, uses near-surface mounted CFRP bars. This work would be done within lane closures and could be done at night when traffic volumes are lower. These bars are installed in shallow groove cuts in the concrete cover allowing them to be installed above existing deck reinforcement. The asphalt overlay in the affected zone would need to be removed and replaced. For interim traffic impacts and overall performance, we recommend replacing all of the AC overlay on the concrete spans.

This alternative is expected to have the highest level of effort for inspection due to the age and conditions of the superstructure. With continued aging the inspection frequency may need to be increased. Similarly, it would have the highest cost for ongoing maintenance due to the age and conditions of the superstructure. The steel jacketed columns would not be expected to incur additional effort for inspection nor much maintenance effort.

3.4.2 Alternative 2 – Bridge Replacement

Drawings of the Bridge Replacement Alternative is presented in Attachment B. Alternative 2 – Bridge Replacement Exhibits. The drawings include demolition plan, replacement bridge foundation plan, deck plan, profile, Northeast bridge and stair framing plans and details, and related sections.

The replacement bridge will be 75'-0" wide and 4-spans comprising of 7½" slab, and 8-WF58G precast I-girders supported on crossbeams, three 4-column bents – 6'-0" square at Bents 11 and 12; 4'-0"+/- rhombus at Bent 13 for stiffness reduction at this shorter and skewed bent, and oscillatory drilled shaft foundations. Bents 11, 12, and 13 will resist the majority of the transverse (34%, 35% and 27% respectively) and all longitudinal seismic loads. The North Abutment will resist no transverse seismic load but will resist some residual longitudinal seismic loads and limit the longitudinal displacement of the bridge. Pier 10 will not resist longitudinal seismic loads but will resist some transverse seismic loads (4%) since it is desirable to minimize the transverse seismic load demand. Similarly, the North Abutment wall is a skewed and stiff element; it attracts more transverse loads and introduces a significant torsion because the center of rigidity is moved to the north.

It is anticipated that the parapet/railing will match the CIP form of the existing. However, the existing height of 3'-8" does not meet the height of 4'-6" required for bike use. If a 4'-6" railing height is required, then a transition would be required in the segment connected to Pier 10.

The existing roadway curb is 9¾ inches wide by 1’-6” high. It is anticipated that a barrier would be designed to be crash worthy because, as presently framed, the railing would require an additional exterior girder on each side of the bridge and the crossbeam extended to reduce the overhang. The barrier would be transitioned to match the curb of the steel approach span.

This alternative is expected to have the lowest level of effort for bridge inspections due to the reduced substructure units and the use of precast concrete girders. With new superstructure and substructure elements, maintenance costs would be the lowest.

3.4.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

The width of the existing roadway section makes it possible to maintain two lanes of traffic and one sidewalk during each phase, but there is minimal room between the two halves for construction clearances or for a closure pour in the deck. A third stage would likely be needed to facilitate a closure pour in the deck along the centerline of the bridge deck.

The in-kind superstructure replacement would provide the greatest opportunity to match the existing architecture of the bridge. Cast-in-place construction would be relatively slow, increasing the time of staged construction impacts. Considerable temporary shoring would be needed due to the limited redundancy of a two-girder half-structure. The use of higher strength materials typical in today's construction has the potential to reduce the overall size and mass of the superstructure, which could reduce the seismic demands. However, this gain may be partially offset by the increased live load demands.

Connection of the new superstructure to the existing superbent is an important aspect of the bridge performance. The existing superbent cap has profiled posttensioning tendons through it. SDOT does not prefer to dowel into posttensioned members so alternative connection schemes would need to be evaluated through the design phase to make sure the bridge segments are adequately tied into the superbent.

The existing staircase and deck flare on the east side of the bridge between Bent 18 and the north abutment are supported by the exterior girder (Girder E) and the abutment and adjacent retaining wall. It is assumed that these elements will be replaced with the rest of the superstructure, as they are composed of the same materials and are in a similarly deteriorated condition. It is possible that the staircase and flare east of Girder E could be preserved, though this would complicate demolition, require temporary shoring systems, and would likely not have any significant impact on the construction cost of this alternative.

This alternative would have a relatively low inspection effort since the superstructure would be new construction. Likewise, the maintenance costs would be relatively low due to new superstructure elements and the steel jacketed columns.

3.5 Geotechnical Engineering

Ground Motions:

Ground motions from the previous seismic retrofit study (1995) were based on a Probabilistic Seismic Hazard Analysis (PSHA) by the US Geological Survey (USGS) for a 475-year return period. A peak ground acceleration (PGA) of 0.30g and an AASHTO Type II soil profile with a site coefficient (S) of 1.2 were recommended for use in the retrofit.

Current ground motions estimates were based on the 2018 USGS National Seismic Hazard Model (NSHM) with ASCE 7-16 site coefficients. PGAs from these ground motions are approximately 0.15g to 0.20g for a 100-year return period and 0.50g to 0.55g for a 1,000-year return period. Acceleration response spectra have been provided for this alternatives analysis. See Attachment D. Geotechnical Recommendations

Rehab Options – No changes to the substructure indicated. However, an increase in superstructure forces is described above which will increase the demand on the foundations. Additional lateral support for the North Abutment will likely be required to resist the increased seismic demand in lateral earth pressures.

Replacement Options:
Foundations – Most foundations can be shallow foundations with high bearing capacities. These bearing capacities require the bottom of shallow foundations to be located within the very dense glacial soils beneath existing fill. Existing bottom of foundation elevations can be used as a guide for additional shallow foundations. Deep foundations such as cast-in-place, drilled shafts will be required near the current Bent 16 given the deep 108-inch sewer trunk line to carry loads below the sewer line. Shafts would need to be located at least three shaft diameters away from the sewer line and derive vertical bearing resistance below the sewer line to reduce vertical surcharging of the sewer line. Given the mobilization of drilled shaft equipment, it may be advantageous to support all new bents on drilled shafts as to avoid deep excavations and shoring systems.

Abutment Support – The north abutment will likely require additional ground anchors such as tiebacks to resist the increased seismic demand and lateral earth pressures.

Excavations – If sufficient room is not available for open cut excavations to accommodate foundation depths, then temporary shoring such as cantilever soldier piles can be used.

Groundwater – Groundwater was generally encountered in the glacial advance outwash soils about 40 feet below ground surface. However local groundwater seepage may be encountered within the fill during excavations for footings possibly requiring groundwater control.

3.6 Utilities and Drainage

Osborn Consulting, Inc., (OCI) staff visually verified surface and above-grade existing utilities for the north approach project area during a site visit on November 15, 2022. Prior to the site visit, OCI reviewed existing utility data, survey information, and maps that were provided by the utility owners. See Attachment E. Utility Exhibits, for maps provided by the utility owners, highlighted utilities on the survey basemap, annotated site visit notes and relevant pictures, and as-built plans provided by SDOT. Table 2 lists the known utilities within the north approach project area.

Some utilities were observed during the site visit that may affect proposed repairs, but were unable to be identified with the information made available to OCI and include:

- Two miscellaneous pipes protruding through the bottom of the bridge deck.
- Overhead line or power line under the bridge along NE Northlake Way; additional information is needed to identify the utility owner for each of these.
- Power vaults on the northeastern corner of the project identified during the survey as seen on the basemap; owner or power source has not been identified.

Table 2. Existing Utility Data

Utility Provider	Data Provided By	Utilities in Project Vicinity?	Identify Which Alternative[1] Could Trigger a Utility Relocate	Data Provided
PSE Gas	PSE	Yes	2	Email from maprequest@pse.com on 11/18/2022: Gas image attached. No PSE electric.
PSE Electric	PSE	No	NA	Email from maprequest@pse.com on 11/18/2022: Gas image attached. No PSE electric.
Lumen/Century Link	Century Link	Yes	2	Email from Philp Martin at Lumen on 11/10/22: LUMEN Local/National has facilities within your proposed construction area. Please find the enclosed drawings indicating the location of the LUMEN facilities. Drawings attached.
Windstream	Windstream	No	NA	Email from Lisa Zingula on 11/08/22: Windstream facilities are not in conflict with the scope of this work.
King County Sewer Main	Seattle DSO and Survey	Yes	2	Maps provided via SDOT DSO website and survey.
Seattle Public Utilities – Sewer	Seattle DSO and Survey	Yes	2	Maps provided via SDOT DSO website and survey.
Seattle Public Utilities – Stormwater	Seattle DSO and Survey	Yes	2 and 3	Maps provided via SDOT DSO website, survey, as-built plans, and visual identification.
Seattle Department of Transportation Stormwater	Seattle DSO, as-builts and Survey	Yes	1, 2, and 3	Survey, as-built plans, and visual identification.
Seattle Public Utilities – Water	Seattle DSO, UtiliView, and Survey	No	2	Maps provided via SDOT DSO website and survey. SDOT provided a UtiliView map screenshot.
Overhead Contact System (Trolley System)	Survey	Yes	1, 2, and 3	Locations identified by survey and visual identification.
Overhead Lines – TBD	Visual and Site Visit	Yes	1, 2, and 3	Visual identification and some shown on survey basemap.
Under-bridge Lighting	Visual and Survey	Yes	1, 2, and 3	Locations identified by survey and visual identification.
Seattle City Light – Lighting	Visual and Survey	Yes	1, 2, and 3	Locations identified by survey, visual identification and an email from SCL on 7/14/2023.
Seattle City Light – Power Systems	SCL	Yes	1, 2, and 3	Information and map provided by SCL via SDOT on 8/30/2023.

Notes:

[1] Descriptions of the three proposed repair alternatives are described in Section 2.0 and are defined as: Alternative 1 – Bridge Rehabilitation and Retrofit, Alternative 2 – Bridge Replacement, and Alternative 3 – Superstructure Replacement and Substructure Retrofit

DSO – Development Services Office, NA – not applicable, PSE – Puget Sound Energy, SCL – Seattle City Light, SDOT – Seattle Department of Transportation

3.6.1 Known Utilities Potentially Affected by Proposed Alternative 1 – Bridge Rehabilitation and Retrofit Repairs

SDOT Stormwater – There are four stormwater inlets and four track inlets within the bridge deck that are connected to bridge drains; two between Bent 15 and 14 and two at Pier 10. The bridge drains may need to be replaced for the installation of the retrofit. The bridge drains are connected to the SPU drainage main that outfalls to Portage Bay. Attachment E. Utility Exhibits includes details of the survey, site photographs, and as-built plans.

Overhead Contact System – Trolley pull boxes and conduits were visually identified along the side of the superstructure and may need to be relocated for retrofit work to take place. This would need to be confirmed with the OCS lead.

Overhead Lines – Lines identified along NE Northlake Way near Bent 10 may need to be temporarily relocated for construction access. Attachment E. Utility Exhibits includes notes from the site visit.

Under-Bridge Lighting – Under-bridge lighting could be affected by the retrofit and may need to be relocated or replaced once the repairs are complete. Attachment E. Utility Exhibits includes details of the survey and site photographs.

SCL Lighting – The pedestrian lighting on the bridge and along the approach should be able to stay in place during the retrofit. During reviews, the items below were identified by SCL and may need to be addressed for any repair scenario. Note the same potentially impacted items below apply to all three alternatives.

- “This bridge had a rewiring project in 2010, after that, SDOT installed new pedestrian lights that were used as a pilot, I am not sure if an agreement exists for these pedestrian lights.”
- “I assume photometrics were reviewed in 2010 with the addition of the new ped lights, but SDOT Signals group may have an interest to review these again in case they see a need for larger lighting revisions to help ensure the roadway is meeting current lighting requirements.”
- “There is only one light pole (1315883) that has failed that we are aware of, it is located on the west side of Eastlake, just south of NE Campus Pkwy. It was knocked down and SCL is not able to use the foundation to install a new pole. This light will be something we request to be repaired no matter which alternative is chosen.”

SCL Power Systems – A buried 26KV system runs parallel to the existing bridge along the east side, just outside the drip line of the bridge. The duct bank includes six 5-inch conduits that serve the entire University of Washington campus. The duct bank also parallels NE 40th Street, with four 5-inch conduits, along the North abutment. Design should take into consideration the location of this duct bank for the footing and abutment strengthening/enlargement retrofits. Relocation of this duct bank would be difficult and expensive. Attachment E includes the map provided by the utility owner and the basemap survey.

3.6.2 Known Utilities Potentially Affected by Proposed Alternative 2 – Bridge Replacement Repairs

PSE Gas – Various sizes of gas lines ranging from 2-inch medium polyethylene (MPE) pipe intermediate pressure (IP) lines up to a 12-inch steel-welded (STW) pipe high pressure (HP) lines are within the project footprint. New foundations and construction access could potentially necessitate relocation of these lines. Attachment E. Utility Exhibits includes the map provided by the utility owner and the basemap survey.

Lumen/Century Link – Provided information identified an underground line, a long-haul underground line, and a local, copper aerial line. All lines may need to be relocated based on new foundation locations and construction access. Attachment E. Utility Exhibits includes the map provided by the utility owner and the basemap survey.

King County Sewer – A 108-inch sewer main runs east to west parallel with the Burke-Gilman Trail at Bent 16. The new bridge foundation will need to be located to avoid relocation of this line. Attachment E. Utility Exhibits includes the map provided by the utility owner and the basemap survey.

SPU Sewer – Various 10-inch to 18-inch sized lines are potentially located within the limits of the new bridge's foundation or construction access. Attachment E. Utility Exhibits includes the map provided by the utility owner and the basemap survey.

SPU Stormwater – Various storm lines sized from 15 inches up to 18 inches may potentially need to be relocated for bridge construction, foundation locations, roadway approach changes, and other construction-related activities. Attachment E. Utility Exhibits includes the map provided by the utility owner, the basemap survey, and as-built plans.

SDOT Stormwater – There are four stormwater inlets and four track inlets within the bridge deck that are connected to bridge drains; two between Bent 15 and 14 and two at Pier 10. These systems will need to be replaced with the new bridge. The bridge drains are connected to the SPU drainage main that outfalls to Portage Bay, water quality systems will be required for the replaced roadway portions prior to out falling to Portage Bay. Attachment E. Utility Exhibits includes the map provided by the utility owner, the basemap survey, site photos for bridge drains, and as-built plans.

SPU Water – The DSO map and basemap identify some water utility access maintenance holes in the project area. No information is provided as to what is inside those utility access maintenance holes. A snapshot of SDOT's UtiliView map shows a 12-inch cast iron waterline that runs north/south on Eastlake Pl NE and also runs perpendicular to the existing bridge near NE Pacific Street. This line may need to be relocated based on new foundation locations and construction access. Attachment E. Utility Exhibits includes the map provided by the utility owner and the basemap survey.

Overhead Contact System – Section 3.3 provides more information about the project's OCS. The entire system would need to be temporarily relocated and replaced with a new bridge structure.

Overhead Lines – Overhead lines were visually identified along NE Northlake Way during the site visit and would need to be temporarily relocated for new bridge construction. Additionally, a power line feeding the under-bridge lighting would need to be relocated and replaced with the new structure. Attachment E. Utility Exhibits includes notes from the site visit.

Under-Bridge Lighting – Under-bridge lighting will need to be replaced with the new bridge structure. Attachment E. Utility Exhibits includes the basemap survey and site photos of the under-bridge lighting.

SCL Lighting – The pedestrian lighting on the bridge and leading up to the bridge approach will need to be replaced with the new bridge construction. During reviews, the same potentially impacted items identified by SCL as listed on Alternative 1 also apply to Alternative 2.

SCL Power Systems – A buried 26KV system runs parallel to the existing bridge along the east side, just outside the drip line of the bridge. The duct bank includes 6 – 5” conduits that serve the entire University of Washington campus. The duct bank also parallels NE 40th St, with 4-5inch conduits, along the North abutment. Design should take into consideration the location of the foundations to allow this duct bank to be protected in place. Relocation of this duct bank would be difficult and expensive. Attachment E includes the map provided by the utility owner and the basemap survey.

3.6.3 Known Utilities Potentially Affected by Proposed Alternative 3 – Superstructure Replacement and Substructure Retrofit Repairs

SDOT Stormwater – Four stormwater inlets and four track inlets within the bridge deck connect into bridge drains; two between Bent 15 and 14 and two at Pier 10. These systems will need to be replaced with the new superstructure replacement. The bridge drains are connected to the SPU drainage main that outfalls to Portage Bay, water quality systems will be required for the replaced roadway portions prior to out falling to Portage Bay. Attachment E. Utility Exhibits includes the map provided by the utility owner, the basemap survey, and site photos for bridge drains.

Overhead Contact System – Trolley pull boxes and conduits were visually identified along the side of the superstructure and will need to be relocated temporarily and replaced with the new structure.

Overhead Lines – Section 3.3 provides more information about the project’s OCS. The entire system would need to be temporarily relocated and replaced with the new super structure. Site visit notes are provided in Attachment E. Utility Exhibits.

Under-Bridge Lighting – Overhead lighting mounted to poles on the top of the bridge and under-bridge lighting will need to be replaced with the new bridge structure. Attachment E. Utility Exhibits includes the basemap survey and site photos of the under-bridge lighting.

SCL Lighting – The pedestrian lighting on the bridge will need to be replaced with the superstructure replacement. Depending on traffic shifts for the super structure replacement, some of the lighting leading up to the approach may need to be replaced as well. During reviews, the same potentially impacted items identified by SCL as listed on Alternative 1 also apply to Alternative 3.

SCL Power Systems – A buried 26KV system runs parallel to the existing bridge along the east side, just outside the drip line of the bridge. The duct bank includes 6 – 5inch conduits that serve the entire University of Washington campus. The duct bank also parallels NE 40th St, with 4-5inch conduits, along the North abutment. Design should take into consideration the location of this duct bank for the footing and abutment strengthening/enlargement retrofits. Relocation of this duct bank would be difficult and expensive. Attachment E includes the map provided by the utility owner and the basemap survey.

3.7 Constructability and Construction Staging

3.7.1 Alternative 1 – Bridge Rehabilitation and Retrofit

Eastlake Avenue NE and NE 40th Street is a busy throughfare into and out of the University of Washington campus, so lane closures are at a minimum. For Alternative 1, most of the project access will be from below the Eastlake Avenue NE. Access to the project site will be from the Burke-Gilman Trail, which will be closed during construction or from NE Northlake Way. The negative moment section work at Bent 14 and Bent 15 requires Eastlake Avenue NE lane closures.

Nighttime lane closures of Eastlake Avenue NE or NE 40th Street will help the project duration. It is envisioned that manlifts will be used for most of the CFRP installation. At the Pier 10 diaphragm, wall scaffolding and manlift will be used for access.

The estimated project duration for Alternative 1 Bridge Rehabilitation and Retrofit is 14 months. See Attachment H. Construction Cost and Schedule Exhibits, for construction schedule details.

The estimated price in 2023 dollars for the current design of Alternative 1 Bridge Rehabilitation and Retrofit is $19.39 million. This includes a 30 percent contingency and 10.25 percent tax on permanent and consumable materials. Construction administration and inspection is not included. See Attachment H. Construction Cost and Schedule Exhibits for construction cost details.

3.7.2 Alternative 2 – Bridge Replacement

Eastlake Avenue NE and NE 40th Street are busy throughfares into and out of the University of Washington campus, so lane closures are at a minimum. Most of the project access for Alternative 2 – Bridge Replacement will be from below the Eastlake Avenue NE. Access to the work zone will be either from the Burke-Gilman Trail, which will be closed during construction, or from NE Northlake Way.

Full closure of NE Northlake Way, NE 40th Street, and the detoured Burke-Gilman Trail is required for existing bridge demolition. If the bridge demolition is restricted to weekend and daytime closures work, this will require multiple weekend full roadway closures.

After bridge demolition, the majority of the bridge replacement activities access is from NE Northlake Way. For the girder erection access from Eastlake Avenue NE is required.

Nighttime lane closure of Eastlake Avenue NE or NE 40th Street is suggested and will enable the contractor to be more efficient and potentially minimize the project duration.

Due to staged construction for Alternative 2, this will create a tight work zone that require coordination to stagger subcontractor's work. The full bridge replacement requires multiple activities all at once. Given the space restrictions, coordination of the work zones for these activities is required.

The estimated project duration for Alternative 2 – Bridge Replacement is 36 months. See Attachment H. Construction Cost and Schedule Exhibits for construction schedule details.

The estimated price in 2023 dollars for the current design of Alternative 2 – Bridge Replacement is $48.97 million. This includes a 30 percent contingency and 10.25 percent tax on permanent and consumable materials. Construction administration and inspection is not included. See Attachment H. Construction Cost and Schedule Exhibits for construction cost details.

3.7.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

Eastlake Avenue NE and NE 40th Street are busy throughfares into and out of the University of Washington campus, so lane closures are at a minimum. Access for most of the construction of Alternative 3 will be from Eastlake Avenue NE. Other access alternatives to the project site will be from the Burke-Gilman Trail, which will be closed during construction, or from NE Northlake Way.

Full roadway closure of NE Northlake Way, NE 40th Street, and the detoured Burke-Gilman Trail is required for existing bridge superstructure demolition. If the bridge demolition is restricted to weekend and daytime closures, this will require multiple weekend full roadway closures.

After bridge demolition, the permanent work will be accessing from NE Northlake Way.

Due to staging construction for Alternative 3 and all the existing columns in the way, this will create a tight work zone that require coordination to stagger subcontractor's work. Given the space restrictions, coordination of the work zones for these activities is required.

Nighttime lane closure of Eastlake Avenue NE or NE 40th Street is suggested and will enable the contractor to be more efficient and potentially minimize the project duration.

At the Pier 10 diaphragm, wall scaffolding and manlift will be used for access.

The estimated project duration for Alternative 3 – Superstructure Replacement and Substructure Retrofit is 31 months. See Attachment H. Construction Cost and Schedule Exhibits for construction schedule details.

The estimated price in 2023 dollars for the current design of Alternative 3 – Superstructure Replacement and Substructure Retrofit is $42.07 million. This includes a 30 percent contingency and 10.25 percent tax on permanent and consumable materials. Construction administration and inspection is not included. See Attachment H. Construction Cost and Schedule Exhibits for construction cost details.

3.8 Right-of-Way

This section describes the right-of-way impacts and funding compliance for the University Bridge north approach rehabilitation or replacement alternatives discussed above.

The Uniform Act is a federal law that establishes minimum standards for federally funded projects and programs that require the acquisition of real property or causes displacement of people from their homes, businesses, or farms. The current version of the Uniform Act and its implementing regulations (49 Code of Federal Regulations [CFR] Part 24) was revised as of December 27, 2004, and last amended in 2012.

3.8.1 Alternative 1 – Bridge Rehabilitation and Retrofit

Acquisition – The right-of-way analysis indicates ample space within existing right-of-way for project construction. The need for additional permanent or temporary property rights is not anticipated at this time.

Relocation – There are three separate driveway and gate access points to the storage areas beneath the bridge's north approach between NE Northlake Way and the Burke-Gilman Trail. There are multiple tenants and all appear to be associated with the University of Washington.

All of the personal property currently stored beneath the bridge structure will need to be relocated under the terms and conditions of the Uniform Act. If storage space is made available in the "after" condition, this may be a temporary move and there may be the need to move the personal property twice.

In addition to the personal property storage, the "Wall of Death" art installation will either need to be protected in place or disassembled, stored, and reassembled at project completion.

3.8.2 Alternative 2 – Bridge Replacement

Acquisition – The right-of-way analysis indicates ample space within existing right-of-way for project construction including the replacement of the stairway. There is a possible need for additional permanent easements and more than likely there will be needs for temporary construction easements for the construction phase of project due to the nature of this alternative. If the contractor is in need of additional space to assist in construction and/or staging, there is ample room available.

Relocation – There are three separate driveway and gate access points to the storage areas beneath the bridge's north approach between NE Northlake Way and the Burke-Gilman Trail. There are multiple tenants surrounding the project and all appear to be associated with the University of Washington.

All of the personal property currently stored beneath the bridge structure will need to be relocated under the terms and conditions of the Uniform Act. If storage space is made available in the "after" condition, this may be a temporary move and there may be the need to move the personal property twice back to the original space beneath the bridge upon construction completion.

In addition to the personal property storage, the “Wall of Death” art installation will either need to be protected in place or disassembled, stored and reassembled at project completion.

3.8.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

Acquisition – The right-of-way analysis indicates ample space within existing right-of-way for required project construction including the replacement of the stairway. The need for additional permanent property rights are not anticipated at this time. Given the tight work zone restrictions and staggering of construction the need for temporary construction easements (TCE) are likely.

Relocation – There are three separate driveway and gate access points to the storage areas beneath the bridge’s north approach between NE Northlake Way and the Burke-Gilman Trail. There are multiple tenants surrounding the project and all appear to be associated with the University of Washington.

All of the personal property currently stored beneath the bridge structure will need to be relocated under the terms and conditions of the Uniform Act. If storage space is made available in the “after” condition, then this may be a temporary move and there may be the need to move the personal property twice.

In addition to the personal property storage, the “Wall of Death” art installation will either need to be protected in place or disassembled, stored, and reassembled at project completion.

3.9 Environmental Planning

This section describes the permitting and NEPA compliance for the University Bridge North approach rehabilitation or replacements alternatives discussed above.

3.9.1 Funding

The permitting analysis assumes funding for the project would be provided in part through FHWA and Washington State Department of Transportation (WSDOT) Local Programs.

3.9.2 Methodology

Permitting requirements for the project were evaluated by reviewing appropriate sections of the City of Seattle, Washington State, and United States code. Two overarching environmental review statues that may apply to the project are the federal National Environmental Policy Action (NEPA) and the Washington State Environmental Policy Act (SEPA). Environmental review is not a permit in and of itself, but rather provides for environmental analysis of certain actions. The application of NEPA and SEPA to the project are provided below and Table 3 in section 3.9.5 identifies the applicability of various federal, state, and local permits.

3.9.3 NEPA Compliance

NEPA review would be required if the project included federal funding. The environmental review under NEPA can involve three different levels of analysis: a categorical exclusion (CE), an environmental assessment (EA), or an environmental impact statement (EIS).

A CE could be prepared to satisfy the requirements of NEPA in accordance with 23 CFR 771.117. The 2015 Categorical Exclusions (CE) Programmatic Agreement between WSDOT and FHWA allows WSDOT to approve all CE NEPA documents for FHWA-funded projects. 23 CFR 771.117 provides CEs under which FHWA projects may qualify and (c)(28) provides an exception for bridges:

Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings, if the actions meet the constraints in paragraph (e) of this section.

Paragraph (e) dictates that a project may not be processed as a CE if any of the following conditions are met:

(1) An acquisition of more than a minor amount of right-of-way or that would result in any residential or non-residential displacements;

(2) An action that needs a bridge permit from the U.S. Coast Guard, or an action that does not meet the terms and conditions of a U.S. Army Corps of Engineers nationwide or general permit under section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act of 1899;

(3) A finding of "adverse effect" to historic properties under the National Historic Preservation Act, the use of a resource protected under 23 U.S.C. 138 or 49 U.S.C. 303 (section 4(f)) except for actions resulting in de minimis impacts, or a finding of "may affect, likely to adversely affect" threatened or endangered species or critical habitat under the Endangered Species Act;

(4) Construction of temporary access or the closure of existing road, bridge, or ramps that would result in major traffic disruptions;

(5) Changes in access control;

(6) A floodplain encroachment other than functionally dependent uses (e.g., bridges, wetlands) or actions that facilitate open space use (e.g., recreational trails, bicycle and pedestrian paths); or construction activities in, across or adjacent to a river component designated or proposed for inclusion in the National System of Wild and Scenic Rivers.

Conditions 1, 2, 4, 5, and 6 are not likely to be triggered by the project; however, the project is likely to cause adverse effects on the University Bridge, which qualifies as a historic property (see Section 3.10.2).

As such, a NEPA EA would be needed for the project. An EA could result in a Finding of No Significant Impacts (FONSI) or determine that the environmental impacts of a project will be significant. An EIS would be required to be prepared if the project was found to have significant environmental impacts. A determination of the NEPA EA cannot be determined until the project progresses further.

3.9.4 SEPA Compliance

Similarly, SEPA provides three potential determinations. The project may be exempt from SEPA review from statutory exemptions in Revised Code of Washington (RCW) 43.21C or exemptions provided in Washington Administrative Code (WAC) 197-11-800 and Seattle Municipal Code (SMC) 25.05.800. If a project is not exempt, a threshold determination could be issued which comprises either a Determination of Nonsignificance, Mitigation Determination of Nonsignficance, or a Determination of Significance. An EIS would be required to be prepared if the project was found to have significant environmental impacts.

WAC 197-11-800 and SMC 25.05.800 provides a list of projects that are categorically exempt from SEPA review. There are two exemptions that relate to bridge projects: WAC 197-11-800(26) and SMC 25.05.800.BB relates to WSDOT Projects and WAC 197-11-800(27) and SMC 25.05.800.CC provides an exemption for structurally deficient city, town and county bridges. Structurally deficient is defined as:

> *The repair, reconstruction, restoration, retrofitting, or replacement of a structurally deficient city, town or county bridge shall be exempt as long as the action:*
>
> *(a) Occurs within the existing right of way and in a manner that substantially conforms to the preexisting design, function, and location as the original except to meet current engineering standards or environmental permit requirements; and*
>
> *(b) The action does not result in addition of automobile lanes, a change in capacity, or a change in functional use of the facility.*
>
> *"Structurally deficient" means a bridge that is classified as in poor condition under the state bridge condition rating system and is reported by the state to the national bridge inventory as having a deck, superstructure, or substructure rating of four or below. Structurally deficient bridges are characterized by deteriorated conditions of significant bridge elements and potentially reduced load-carrying capacity. Bridges deemed structurally deficient typically require significant maintenance and repair to remain in service and require major rehabilitation or replacement to address the underlying deficiency.*

According to a 2021 inspection report for on the University Bridge, the bridge's deck, superstructure, and substructure all have ratings of greater then 4, so the bridge is not structurally deficient. Evaluation for the structurally deficient exemption WAC 197-11-800(27) and SMC 25.05.800.CC would be subject to the findings of future inspections being consistent with the current ratings.

Another SEPA exemption that may apply is the repair, remodeling and maintenance activities exemption provided in WAC 197-11-800(3) and SMC 25.05.800.C. This exemption applies to the repair, remodeling, maintenance, or minor alteration of existing private or public structures, facilities or equipment, including utilities, recreation, and transportation facilities involving no material expansions or changes in use beyond that previously existing.

The SEPA impacts and threshold determination will be decided as the project develops further.

3.9.5 Federal, State and Local Permitting Requirements

The applicability of federal, state and local permits is described in Table 3.

Table 3. Federal, State and Local Permits

Permit	Lead Agency	Notes	Applicability		
			Alt. 1	Alt. 2	Alt. 3
Shoreline Substantial Development Permit (Seattle Municipal Code (SMC) Chapter 23.60A)	City of Seattle (SDCI)	Compliance with the Seattle's Shoreline Master Program is required for projects within shoreline jurisdiction which extends 200 feet from the ordinary high water mark of a shoreline (such as the ship canal). The project appears to be more than 200 feet from the shoreline. Provided no work extends into shoreline jurisdiction, shoreline permitting will not be required.	Not required.	Not required.	Not required.
Certificate of Approval (SMC 25.05.675)	City of Seattle (SHPP)	If the site is designated as a Seattle Landmark, the Project needs a Certificate of Approval for alterations from the Historic Preservation Program. If the project is not currently designated but appears to meet the criteria for designation, it may be referred to the Landmarks Preservation Board during the permitting process.	Required	Required	Required
Land Use/Master Use Permit – Environmentally Critical Areas (ECA) (SMC Chapter 25.09)	City of Seattle (SDCI/SDOT)	Project is intersecting with a mapped area of steep slope on the Seattle Department of Construction and Inspections GIS web map, which falls under the definition of an ECA as described in SMC 25.09.	Potentially exempt under SMC 25.09.045(3)(c) or SMC 25.09.045(I).	Required.	Potentially exempt under SMC 25.09.045(3)(c) or SMC 25.09.045(I).
Street Improvement Permit (SIP) (SMC Chapter 15.04)	City of Seattle (SDOT)	Pursuant to SMC 15.04.010.A the requirements of obtaining a permit and complying with permit procedures do not apply to street maintenance work performed by the City's Department of Transportation or street improvement work authorized by ordinance and administered by the Director of Transportation.	Not required (assuming project authorized by ordinance).	Not required (assuming project authorized by ordinance).	Not required (assuming project authorized by ordinance).

Permit	Lead Agency	Notes	Applicability		
			Alt. 1	Alt. 2	Alt. 3
Tree Removal Permit (SMC Chapter 25.11)	City of Seattle (SDCI)	Tree protection and removal requirements vary depending on a number of factors including zoning, size of trees, and presence of environmentally critical areas. If a tree is exceptional, in an environmentally critical area (ECA), on undeveloped land, or if more than three trees are removed in a one year, SDCI requires a permit.	Required for removal of trees on private property.	Required for removal of trees on private property.	Required for removal of trees on private property.
Urban Forestry Permit (Street Tree Permit) (SMC Chapter 15.43)	City of Seattle (SDOT)	SDOT issues Urban Forestry Permits for the following in the public right-of-way: • Plant a tree • Prune a tree • Remove/replace a tree	Separate Permit not required if approved as with a SIP. SDOT not subject to SIP if project approved by ordinance, but street trees should be addressed.	Separate Permit not required if approved as with a SIP. SDOT not subject to SIP if project approved by ordinance, but street trees should be addressed.	Separate Permit not required if approved as with a SIP. SDOT not subject to SIP if project approved by ordinance, but street trees should be addressed.
Utility Major Permit (SUUMP) (SMC Chapter 15.32)	City of Seattle (SDOT)	SUUMPs cover more complex utility projects or work that covers a larger than a one-block radius geographic area.	Required.	Required.	Required.
NPDES Construction Stormwater General Permit (RCW 90.48)	Washington State Department of Ecology	Required for soil disturbing activities on sites that: • disturb one acre or more • are smaller than one acre that are part of a larger common plan of development that will ultimately disturb one acre or more and discharge stormwater to surface waters • are of any size discharging stormwater to state waters (Waters of the State) that is determined to be a significant contributor of pollutants • are of any size that can be reasonably expected to cause a violation of any water quality standard Overall project area appears close to one acre, however ground disturbing activities are less than one acre then a NPDES Construction	Not Required.	Required.	Not required.

Permit	Lead Agency	Notes	Applicability		
			Alt. 1	Alt. 2	Alt. 3
		Stormwater General Permit would not be required.			
SEPA Checklist (RCW 43.21)	Washington State Department of Ecology (City of Seattle Lead Agency)	SEPA environmental review is required for any state or local agency decision that meets the definition of an "action." WAC 197-11-800 and SMC 25.05.800 provides a list of projects that are categorically exempt from SEPA review. There are two exemptions that relate to bridge projects: WAC 197-11-800(26) and SMC 25.05.800.BB relates to WSDOT Projects and WAC 197-11-800(27) and SMC 25.05.800.CC provides an exemption for structurally deficient city, town and county bridges. Additionally, WAC 197-11-800(3) and SMC 25.05.800.C provide exemptions for repair, remodeling and maintenance activities that may be applicable.	Potentially exempt from SEPA review under WAC 197-11-800(26).	Required unless the University Bridge is determined to be structurally deficient.	Potentially exempt from SEPA review under WAC 197-11-800(26).
Hydraulic Project Approval (RCW 77.55)	Washington Department of Fish and Wildlife	Activities in, under, or above Waters of the State, including those that use, divert, obstruct, or change the natural flow or bed of any Water of the State, including some wetlands, are required to obtain a Hydraulic Project Approval (HPA). Project will not be in or over state waters and doesn't require use, diversion, obstruction, or change for the natural flow of any salt or freshwater of the state.	Not required.	Not required.	Not required
National Historic Preservation Act (NHPA) Section 106	Washington Department of Historic Preservation (DAHP)	The NHPA requires any agency issuing a federal permit or license, providing federal funds or otherwise providing assistance or approval, to comply with Section 106. Section 106 requires evaluation a proposed project if it appears that the proposed project may cause any change, beneficial or adverse, to historic properties listed in or eligible for inclusion in the National or State Registers of Historic Places (NRHP).	Required only if federally funded.	Required only if federally funded	Required only if federally funded

Permit	Lead Agency	Notes	Applicability		
			Alt. 1	Alt. 2	Alt. 3
U.S. Department of Transportation Act Section 4(f)	Federal Highways Administration	Section 4(f) provides consideration of park and recreation lands and historic sites for federally funded transportation projects. Given presence of Burke Gilman Trail and the historic University Bridge Section 4(f) consideration required if federally funded.	Required only if federally funded	Required only if federally funded	Required only if federally funded
Clean Water Act (CWA) Section 404 Permit (33 USC §1251 et seq.)	US Army Corps of Engineers	A Section 404 permit is required for projects that will discharge any dredge or fill material into Waters of the United States (WOTUS), The three alternatives will not result in and dredge or fill material of a WOTUS.	Not required.	Not required.	Not required.
CWA Section 401 Water Quality Certification (33 USC § 1251 et seq.)	Washington State Department of Ecology	All activities requiring a CWA Section 404 permit (discussed above) must also be certified as meeting State Water Quality Regulations, pursuant to Section 401 of the CWA. The authority to issue Section 401 certifications has been delegated to Ecology. Project will not result in discharge into waters or non-isolated wetlands or excavation in water or non-isolated wetlands (including dredge or fill material).	Not required.	Not required.	Not required.
Section 10 of the Rivers and Harbors Act Permit	US Army Corps of Engineers (USACE)	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through USACE, for the construction of any structure in or over any navigable water of the United States. Project does not include work in, over or above Navigable WOTUS.	Not required.	Not required.	Not required.
National Environmental Policy Act (NEPA) (42 USC § 55)	Federal Highways Administration and Washington Department of Transportation	As the administer of the funds, FHWA is required to prepare appropriate NEPA documentation. It is too early in the process to determine if this review would be an Environmental Assessment or if the project would fall under categorical exclusion 23 CFR 771.117(c)(28).	Required only if federally funded	Required only if federally funded.	Required only if federally funded.

NPDES = National Pollutant Discharge Elimination System, SHPP = Seattle Historic Preservation Program, SDCI = Seattle Department of Construction and Inspections

3.10 Cultural Resources

If the Project requires a federal permit, such as from the U.S. Army Corps of Engineers for work within the navigable waterway, or acquires federal funding, such as monies from the FHWA, the Project would be subject to Section 106 of the National Historic Preservation Act (NHPA). Under Section 106, the lead federal agency must consult with the State Historic Preservation Officer (SHPO), affected Indian tribes, representatives of local governments, federal permit/funding applicant(s), other individuals and organizations with a demonstrated interest in the project, and the public. Section 106 requires the lead federal agency to define the project's area of potential effects (APE) in consultation with SHPO, which comprises the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 CFR §800.16[d]).

Historic properties are any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) (36 CFR 800.16[1]). As provided in 36 CFR 800.16(y), a federal undertaking is defined as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval." The University Bridge was listed in the NRHP in 1982 and is significant as an example of one of the earliest double-leaf trunnion bascule bridge in Seattle. As a whole, the property retains its character-defining features including its double-leaf design, steel frame arches, and bascule piers. As such, it merits continued listing in the NRHP.

The APE has not yet been defined for the Project. However, the cultural resources study area encompasses the concrete spans of the north approach on the north side of the Lake Washington Ship Canal, approximately between the north side of NE Pacific Street, to the north side of NE 40th Street and carry Eastlake Avenue NE over NE 40th Street and the Burke-Gilman Trail (Figure 1). A desktop review and reconnaissance-level field survey were performed within the study area.

If the Project receives state funds, it will be subject to Executive Order (EO) 21-02 unless it is undergoing Section 106 review. EO 21-02 requires state agencies to consult with DAHP and affected Indian tribes on the potential effects of projects on cultural resources proposed in state-funded construction or acquisition projects that are not under Section 106 review. EO 21-02 requires that state agencies receiving state funds initiate consultation during the project planning process and complete such consultation before the expenditure of state funding. EO 21-02 also stipulates that agencies take all reasonable action to "avoid, minimize or mitigate adverse effects" to cultural resources during Project planning, and that DAHP and Indian tribal governments will be involved while planning mitigation strategies.

Figure 1. Cultural resources study area shown on aerial image.

3.10.1 Archaeological Resources in the Study Area

The cultural resources study area is within an area considered very high risk for containing archaeological materials according to the DAHP's predictive model available on the Washington Information System for Architectural and Archaeological Records Data (WISAARD) online database. This is due to the extensive use of the Lake Union and Lake Washington waterways and shorelines by indigenous peoples prior to non-native settlement of the area and later historic industries and communities that developed throughout the region. However, there are no previously recorded cultural resources within the cultural resources study area. The closest resource is one precontact lithic isolate approximately 500 feet away, located in previously disturbed sediments. The cultural resources study area is within an area that has been extensively disturbed by previous developments, including historic and modern roads and railways, commercial and residential buildings, industrial structures, utilities, and the construction of the University Bridge. Intact archaeological resources are subsequently unlikely to be present within the cultural resources study area.

3.10.2 Historic Built Environment Resources in the Study Area

The cultural resources study area is limited to the north approach of the bridge. However, the entirety of the bridge must be considered as a single historic property in accordance with Section 106. The bridge's north approach was heavily altered in 1932–33; however, the north approach largely retains integrity to that period with minimal additional alteration since it was rededicated. A recent historic property inventory (HPI) form suggests that the bridge was listed in the NRHP based solely on its engineering characteristics original to 1919 and lists the character-defining features as the bridge's original double-leaf design, bascule piers, and steel-frame leaf arches (Ryder 2022[1]). That analysis did not consider the 1932–33 north approach to be character-defining; however, HDR recommends that due to age, integrity, and stylized art deco detailing, the north approach should also be considered a character-defining feature to the University Bridge as it adds to the property's integrity of setting, feeling, and association.

Character-defining features of the north approach include its overall form, its concrete piers and ribbing, balustrade and paneled gates, abutment, and associated stairways; however, the non-historic pipe railing is not recommended as character-defining. It retains moderate integrity of design, materials, and workmanship in spite of the replacement of its mesh decking and some of its lighting as its remaining character-defining features appear to be intact. Integrity of setting has been slightly compromised as a result of the adjacent urban renewal efforts and realignment of the northbound interchange; however, the area surrounding the approach retains the urban character present during the periods of construction and alteration (1916–19 and 1932–33, respectively), the directions of travel remain the same, and the bascule portion of the bridge remains intact. The north approach retains integrity of feeling and association as it is clearly representative of a 1930s bridge approach and the bulk of its character-defining features remain intact.

The associated features of the bridge that would be retained in accordance with the Secretary of the Interior (SOI) Standards for the Rehabilitation of Historic Properties would include the following: steel deck trusses; ca. 1932–33 concrete piers and ribbing; balustrade; gates; stairways; and additional decorative elements found on the underside of the bridge. The removal or alteration of these features without in-kind replacement and care taken to minimize the loss of historic material could result in diminished integrity of design, materials, and workmanship of the north approach. Such diminishment could ultimately result in diminished integrity of design, materials, workmanship, setting, feeling, and association of the bridge as a whole, which would be considered an adverse effect on the NRHP-listed eligible property. A finding of adverse effect under Section 106 or Section 4(f) (Condition 3 listed above in Section 3.9.3 [NEPA Compliance]) would prevent processing the NEPA review as a CE.

3.10.3 Alternative 1: Bridge Rehabilitation and Retrofit

The rehabilitation alternative would result in the alteration or removal of several of the character-defining features of the bridge's substructure, including alteration of the profile and appearance of the bridge piers by the jacketing of columns and the removal of stylized horizontal struts between the piers. This alternative would also result in the removal of the concrete balustrade beyond the north abutment.

However, the rehabilitation alternative will result in the least amount of destruction to the bridge superstructure. It appears that in this alternative, the bridge superstructure will

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[1] Ryder, Alexander. 2022. University Bridge – Seattle: Historic Property Inventory (HPI) Form. On file, Department of Archaeology and Historic Preservation, Olympia, Washington.

remain intact, including the steel deck trusses, concrete balustrade, and curb details. Historic stairways would also be retained in this alternative. While this alternative does result in the retention of the superstructure, it is likely to have an overall adverse effect on the bridge's integrity of setting, feeling, and materials.

3.10.4 Alternative 2: Bridge Replacement

The replacement alternative will result in the demolition of the entire north approach of the bridge. This alternative is likely to result in an adverse effect on the bridge's overall integrity of design, setting, feeling, and materials.

3.10.5 Alternative 3: Superstructure Replacement and Substructure Retrofit

The hybrid alternative will result in the alteration or removal of many of the bridge's character-defining features including the entirety of the superstructure, much of the substructure including the stylized columns/piers due to the steel jacketing, and the addition of non-historic piers as substructure. Removal of original materials is likely to result in an adverse effect on the bridge's overall integrity of design, setting, feeling, and materials. However, replacement of those materials in-kind is a way to mitigate the adverse effect.

4.0 Alternatives Evaluation

Three alternatives are evaluated by the following considerations.

4.1 Alternatives Evaluation Matrix

An evaluation matrix is created using multiple criteria to evaluate the three alternatives as shown in Attachment L-1. The asset owner perspective weighting is based on subject matter expert workshops, whereas the public perspective weighting is based on online survey responses. A simplified version of the Alternatives Evaluation Matrix with asset owner and public perspective weighting scenarios are included below for example. Each criterion is evaluated by giving a benefit score to compare the three alternatives using a 5-point scale with 1 = poor or worst and 5 = excellent or best score. The total benefit scores are totaled for each alternative with and without consideration of applying the weighting scenario to the benefit scores for alternatives comparison. The construction costs in 2023 dollars for each alternative are also considered in the matrix by dividing the total unweighted and weighted benefit scores of each alternative by the associated construction costs. The results are the unweighted and weighted benefit per cost ratio for alternatives comparison. Life expectancies for each alternative are also considered in two levels in the evaluation matrix. First, by directly dividing the construction costs of each alternative by the associated life expectancy to get a cost per life expectancy ratio or an annual cost factor ($M/year) for each alternative. Second, by further dividing the weighted benefit scores by the annual cost factor to get a comparative weighted benefit per annual cost factor for each alternative.

Benefit Score		**Alt 1**	**Alt 2**	**Alt 3**
B1	Unweighted - Raw Scores	63	47	46
B2	Weighted - Asset Owner Perspective	90	79	68
B3	Weighted - Public Perspective	107	64	71

Construction Cost		**Alt 1**	**Alt 2**	**Alt 3**
C1	Total Construction Cost ($M)	$19.4	$49.0	$42.1
	Life Expectancy (years)	*25*	*75*	*50*
C2	Annual Cost Factor ($M/years)	$0.78	$0.65	$0.84

Benefit Score/Construction Cost		**Alt 1**	**Alt 2**	**Alt 3**
B1/C1	Unweighted: Raw Score	3.2	1.0	1.1
B2/C1	Weighted: Asset Owner Perspective	4.6	1.6	1.6
B3/C1	Weighted: Public Perspective	5.5	1.3	1.7

Benefit Score/Annual Cost Factor		**Alt 1**	**Alt 2**	**Alt 3**
B1/C2	Raw Scores (Unweighted)	80.8	72.3	54.8
B2/C2	Asset Owner Perspective (Weighted)	115.4	121.5	81.0
B3/C2	Public Perspective (Weighted)	137.2	98.5	84.5

4.2 Criteria Weighting Scenarios

The weighting scenarios are considered by calculating the factor for each criterion by comparing the criterion against each other as shown in Attachment L-2 – Criteria Weighting Scenarios. To simplify the calculation, the criteria are grouped into seven categories from A thru G for life-cycle cost and maintenance; constructability; structure impacts; roadway, utilities, OCS impacts; environmental impacts; right-of-way impacts; and bridge characters/aesthetics. By choosing which criterion is more important when comparing the criteria category against each other, the weighting scenario's factor can be calculated by using the number of counts that that criterion wins against other criteria dividing by the total number of counts. Essentially, the calculated weighting scenario's factors represent how important the criterion is (comparing with the rest of the criteria) and the total weighting scenario's factors sum up to be 100 percent.

During the review workshop, the team gathers input from the asset owners or subject matter experts (SME) on comparing the criteria for calculating the weighting scenario's factors, and based on this asset owner perspective, the team develops a set of criteria weighting scenario's factors as shown in Attachment L-2. However, since the nature of these weighting scenario's factors is subjective to opinions and perspectives of evaluator, the team also develops another set of criteria weighting scenario's factors as shown in Attachment L-2 by using the results of the public survey conducted by SDOT specifically for the project. See Attachment M for a summary input from public survey. It is our intent to be inclusive in our planning study by considering the input from both SMEs and public survey to calculate the criteria weighting scenario's factors used in evaluation and comparison of the alternatives.

4.3 Criteria Key Points

The key points for the given benefit scores are summarized in Attachment L-3 - Alternatives Comparison Matrix Key Points, to provide reasoning of the comparison. Below is a brief discussion on a description of evaluation criteria, as well as major differentiators, trade-offs, and risks when evaluating the final three alternatives against each other on these criteria.

Long-term Performance – considerations for how well an alternative would perform over time given age and material factors. New construction elements will rate higher than existing elements.

Inspection – considerations for the frequency and level of effort for routine bridge inspections. New construction would have lower level of inspection effort, depending on materials used, for an initial period. Older elements may require more frequent inspections and more care in inspecting.

Maintenance – considerations for the level of effort for anticipated maintenance needs. New construction would have only minor maintenance needs for a period. Older elements would likely require more frequent and costly maintenance activities.

MOT – considerations for the impacts on maintenance-of-traffic during construction. Need for and duration of full and partial closures, detours, etc. evaluated. New construction of the whole bridge (Alternative 2) and of the bridge superstructure (Alternative 3) would significantly have more impacts on MOT compared with an Alternative 1 that maintains the existing bridge superstructure.

Schedule Impacts – considerations for schedule impacts due to complexity of design, fabrication, construction and use of long lead time items. Simpler design and construction aspects, which lead to a shorter construction duration, rate higher.

Constructibility – considerations for the complexity of construction, need for falsework, and ability to mitigate the construction challenges. Simpler and lesser construction impacts rate higher.

Material Cost Volatility – considerations for cost volatility of material types used. This reflects the risk associated with potential changes in cost of materials. Structural steel or complicated fabrication elements rate lower.

Superstructure Constraints – considerations for limitations to applicability of superstructure types or components, such as clearance limitations. Impacts to clearance envelopes, temporarily or permanently, rate lower. Replacing the bridge superstructure with the in-kind cast-in-place reinforced concrete haunched girders for Alternative 3 requires more complicated construction method, therefore scores the lowest.

Substructure Impacts – considerations for how the alternative impacts the size and complexity of supporting substructure and foundations. Preservation aspects rate higher; new construction and larger elements rate lower.

Design Complexity – considerations for the complexity of design, analysis, details, and levels of review. Simpler design and construction aspects rate higher.

Roadway Improvements – considerations for the improvements to roadway cross-sections and functions. Ability to improve bike and pedestrian facilities rate higher.

Utilities Impacts – considerations for impacts on existing or proposed utilities. Less impact rates higher.

OCS System Impacts – considerations for impacts to the existing and proposed OCS system usage. Less impact rates higher.

Environmental Impacts – considerations for impacts to various environmental items such as permitting and mitigation of affected items. Less impact and less permit complexity rate higher.

Right-of-Way Impacts – considerations for the need to purchase additional right-of-way or temporary and permanent easements. Lower needs rate higher.

Aesthetics – considerations for aesthetic features and opportunities of structure types. Less impact to current aesthetic features, or improvements, rate higher.

Bridge Character Defining Features – considerations for the impacts to existing character defining features such as arched girders and diaphragms, balustrade railings, decorative column features, and other art deco stylistic details. Less impact to current features rates higher.

4.4 Alternatives Evaluation Summary

In summary, the alternatives evaluation matrix is designed to calculate several key comparison results including unweighted and weighted benefit score, unweighted and weighted benefit score per cost, cost per life expectancy (or annual cost factor), and ultimately weighted benefit per annual cost factor for each alternative.

By comparing these results, it shows that Alternative 1 – Bridge Rehabilitation and Retrofit has the highest benefit score and the highest benefit to total construction cost ratio in all scenarios. This is a result of some major differentiators, since Alternative 1 (Repair) induces the least impact on constructibility such as maintenance of traffic (MOT), schedule and material cost volatility, as well as the impact on utilities and overhead contact system for electrified public buses on the University Bridge. Also, Alternative 1 (Repair) induces the least impact to the historic preservation of the University Bridge. When considering the life expectancy of the capital investment, Alternative 1 – Bridge Rehabilitation and Retrofit and Alternative 2 – Bridge Replacement have the similar and higher benefit per annual cost factor ratios under the asset owner perspective or SME weighting scenario than Alternative 3 - Superstructure Replacement and Substructure Retrofit. However, when considering the public perspective or survey weighting scenario, Alternative 1 has the best comparison results among the three alternatives. Alternative 3 - Superstructure Replacement and Substructure Retrofit has the lowest benefit per annual cost factor ratio in all scenarios. By considering the input from both asset owner perspective (SME) and public perspective (survey) in calculating the criteria weighting scenarios used to evaluate final alternatives, it helps the planning study being more inclusive. It is important to note that other non-engineering factors such as owner policy and financial funding toward future capital investments are not considered in this alternatives comparison.

Attachments:

A. Alternative 1 – Bridge Rehabilitation and Retrofit Exhibits

B. Alternative 2 – Bridge Replacement Exhibits

C. Alternative 3 – Superstructure Replacement and Substructure Retrofit Exhibits

D. Final Geotechnical Recommendations

E. Utility Exhibits

F. MOT Exhibits

G. OCS Exhibits

H. Construction Cost and Schedule Exhibits

I. Cultural Resources Exhibits

J. Constraints and Opportunities Map

K. Concept Alternatives Development Exhibits

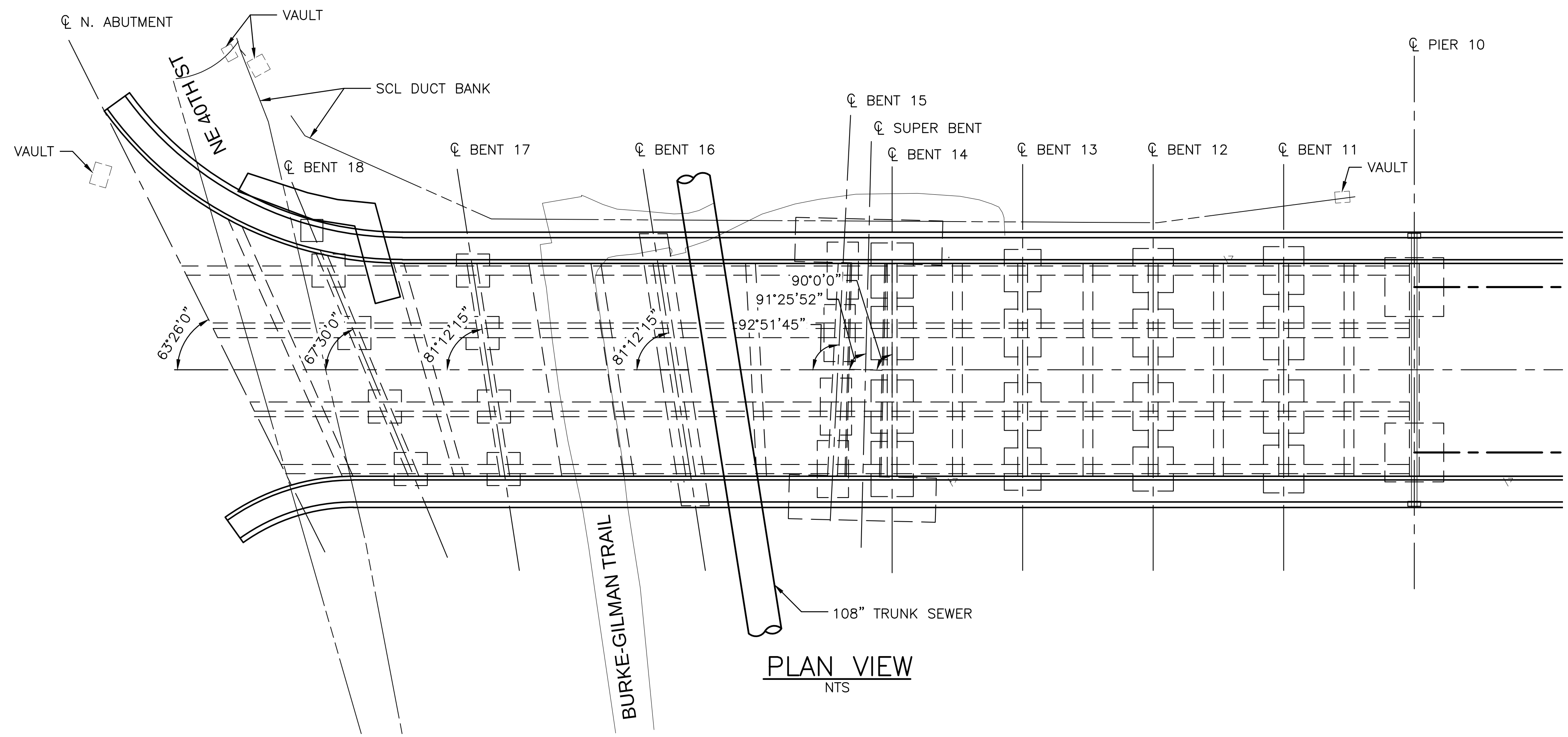
L. Alternatives Evaluation Exhibits

M. Public Survey

N. Final Technical Repair Memorandum

Attachment A

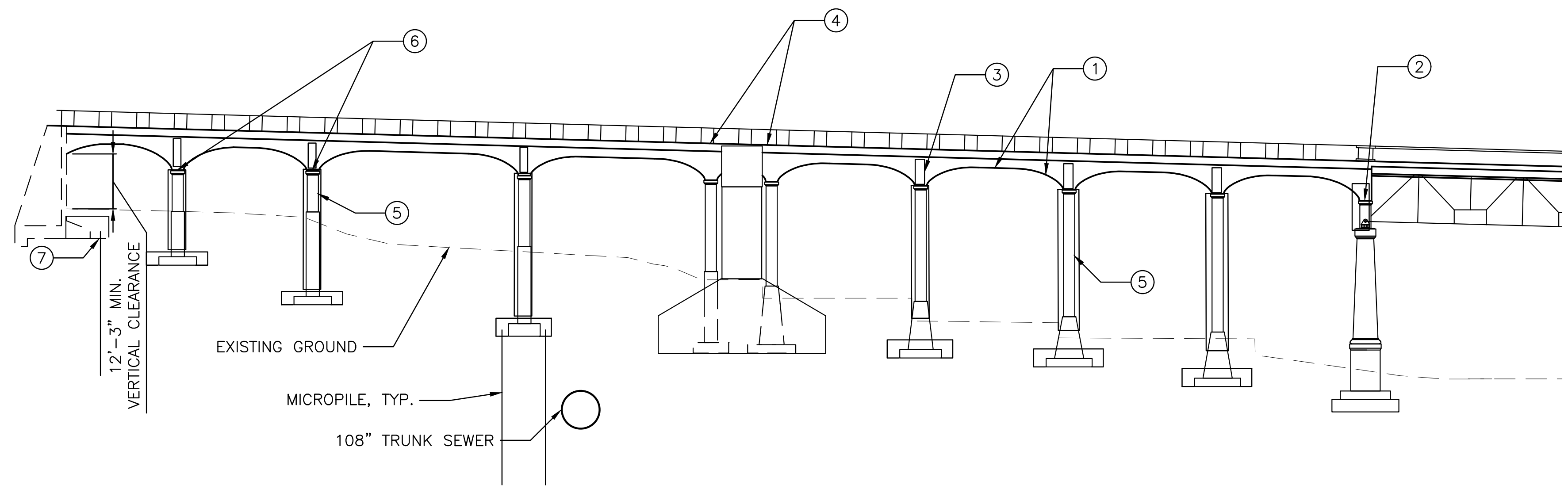
Alt. 1 – Bridge Rehabilitation and Retrofit Exhibits



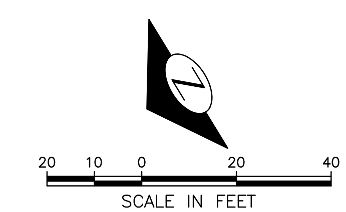
PLAN VIEW
NTS

PROPOSED REHABILITATION WORK

1. CFRP STRENGTHENING FOR SHEAR AND FLEXURE ON GIRDERS, TYPICAL ALL SPANS.
2. PIER 10 DIAPHRAGM ENLARGEMENT AND STRENGTHENING.
3. CONCRETE DIAPHRAGM ENLARGEMENT, TYPICAL AT INTERMEDIATE BENTS.
4. NEAR SURFACE MOUNTED CFRP BARS FOR NEGATIVE FLEXURE OVER BENTS.
5. 5-FT DIAMETER STEEL JACKETING OF COLUMNS AND FOOTING STRENGTHENING, TYPICAL AT INTERMEDIATE BENTS.
6. SEAT BOLSTER AT ROCKER BEARINGS.
7. N. ABUTMENT FOOTING STRENGTHEING WITH MICROPILES.



ELEVATION VIEW
NTS



SDCI #######, SDOT #######

ALT 1— LAYOUT

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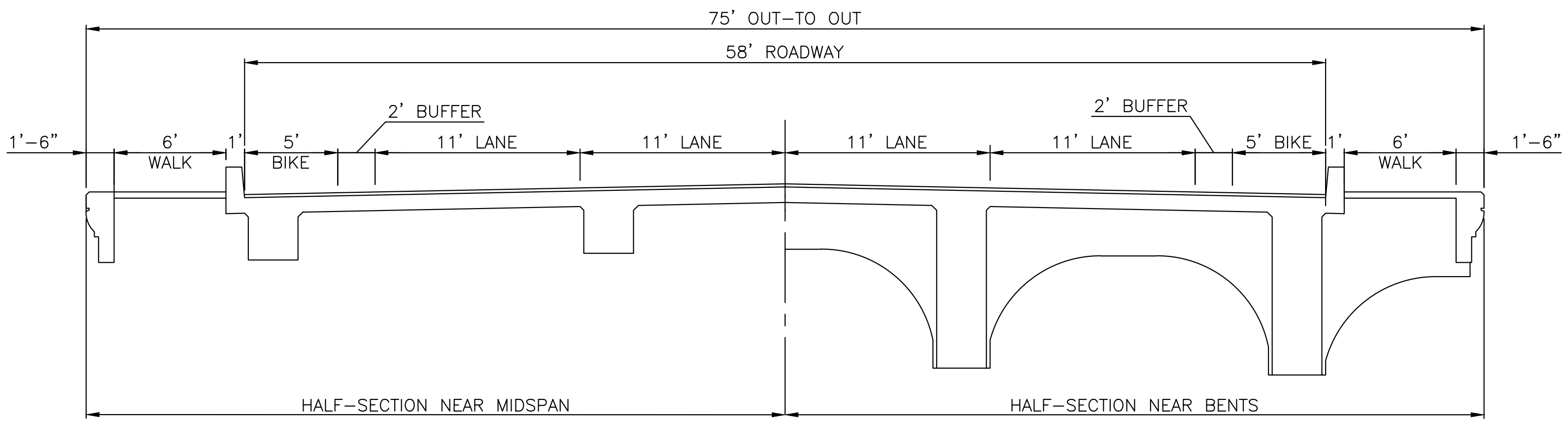
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #
SHEET 1 OF 7



TYPICAL SECTION
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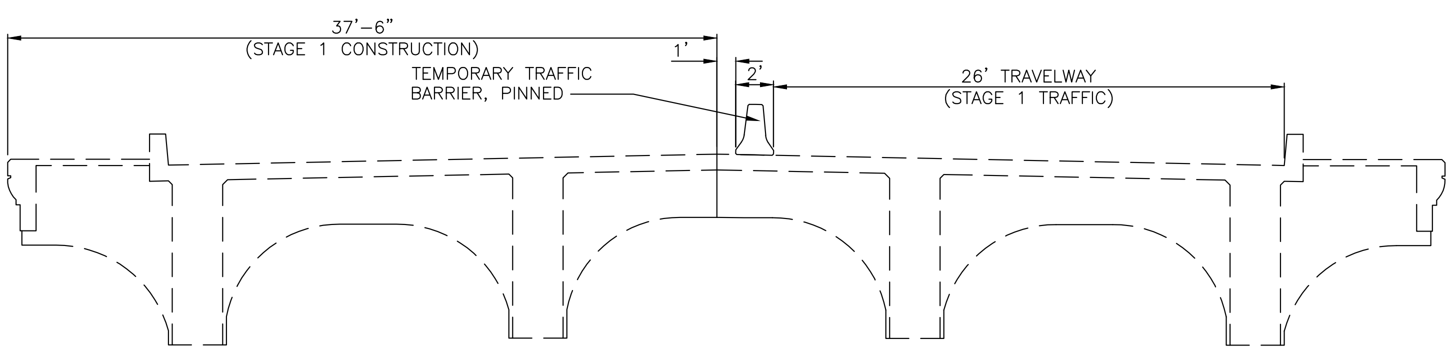

TYPICAL 2 STAGE CONSTRUCTION SECTION
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ALT 1 – CROSS BRIDGE SECTIONS

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S-201B
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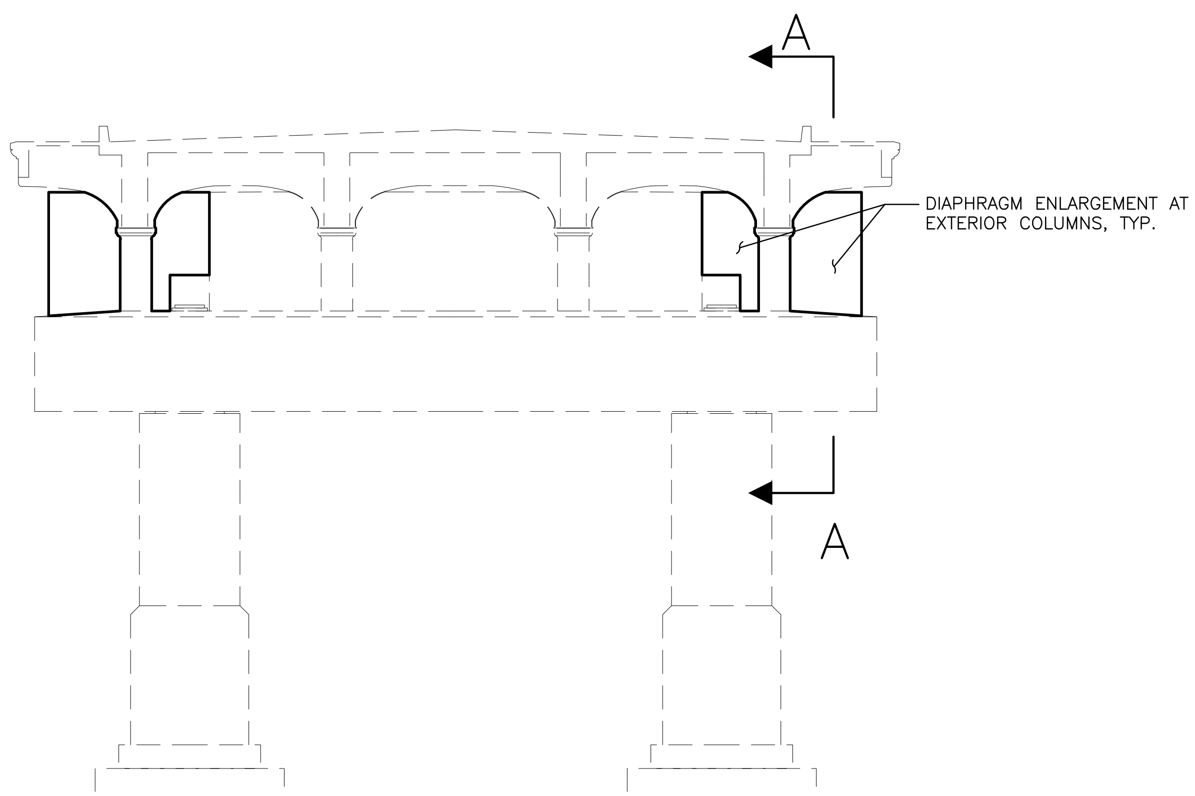
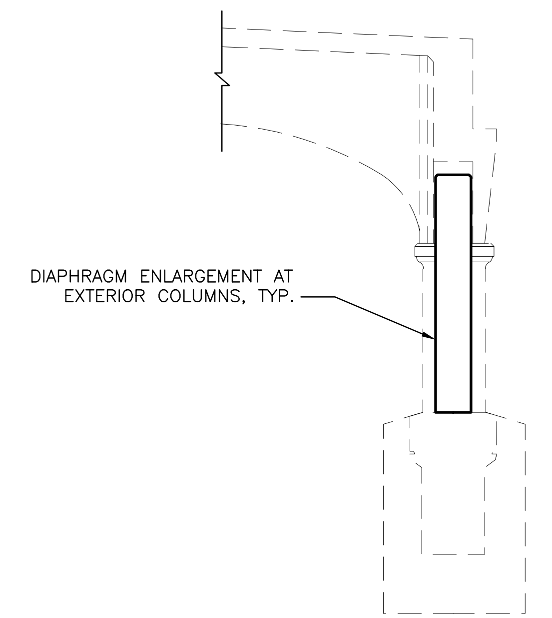


MODIFIED PIER 10 — ELEVATION LOOKING SOUTH



SECTION A—A

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ALT — 1 PIER 10 MODIFCATIONS

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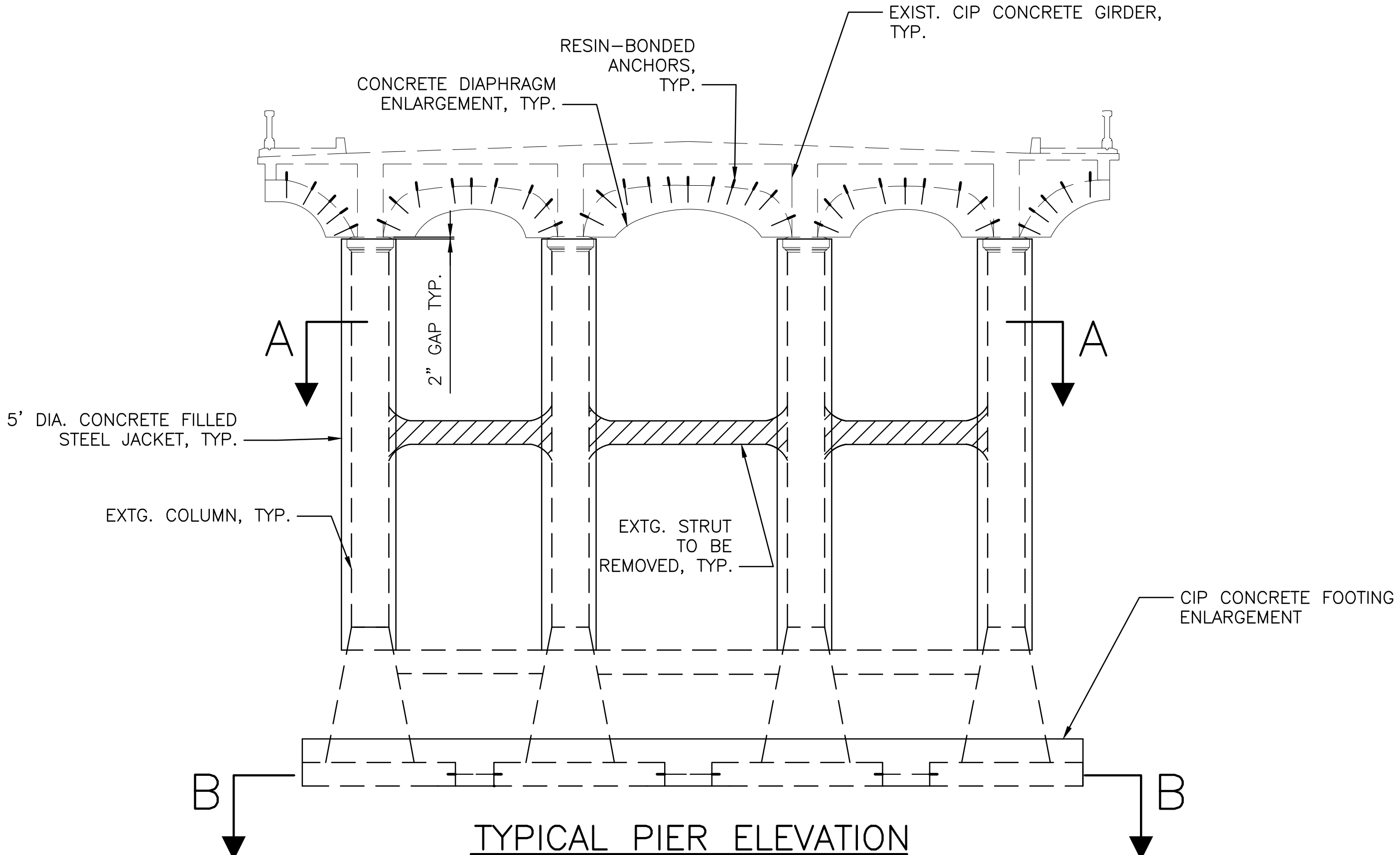
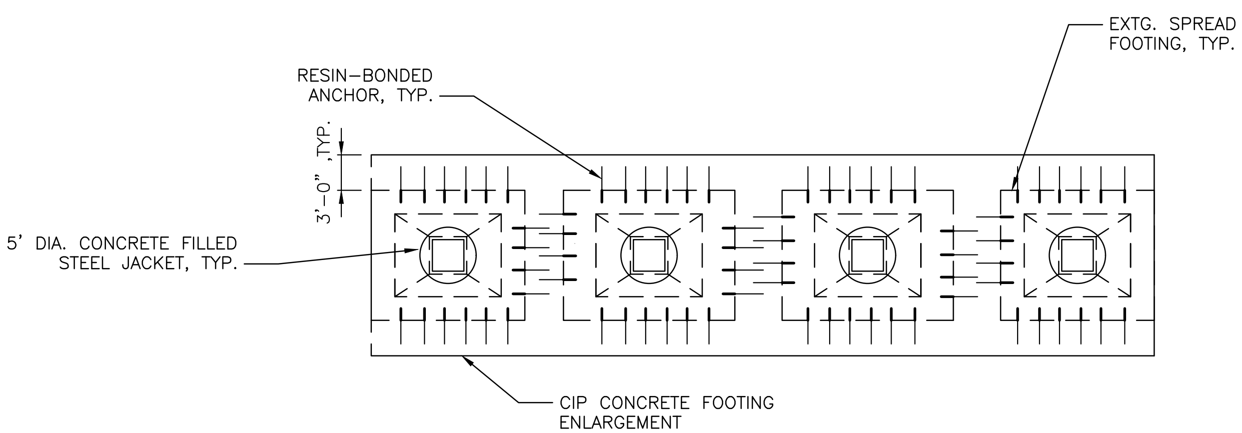


TYPICAL PIER ELEVATION

(BENT 11 SHOWN, BENTS 12 AND 13 SIMILAR)



SECTION A–A

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ALT 1 – BENT 11 – 13 DETAILS

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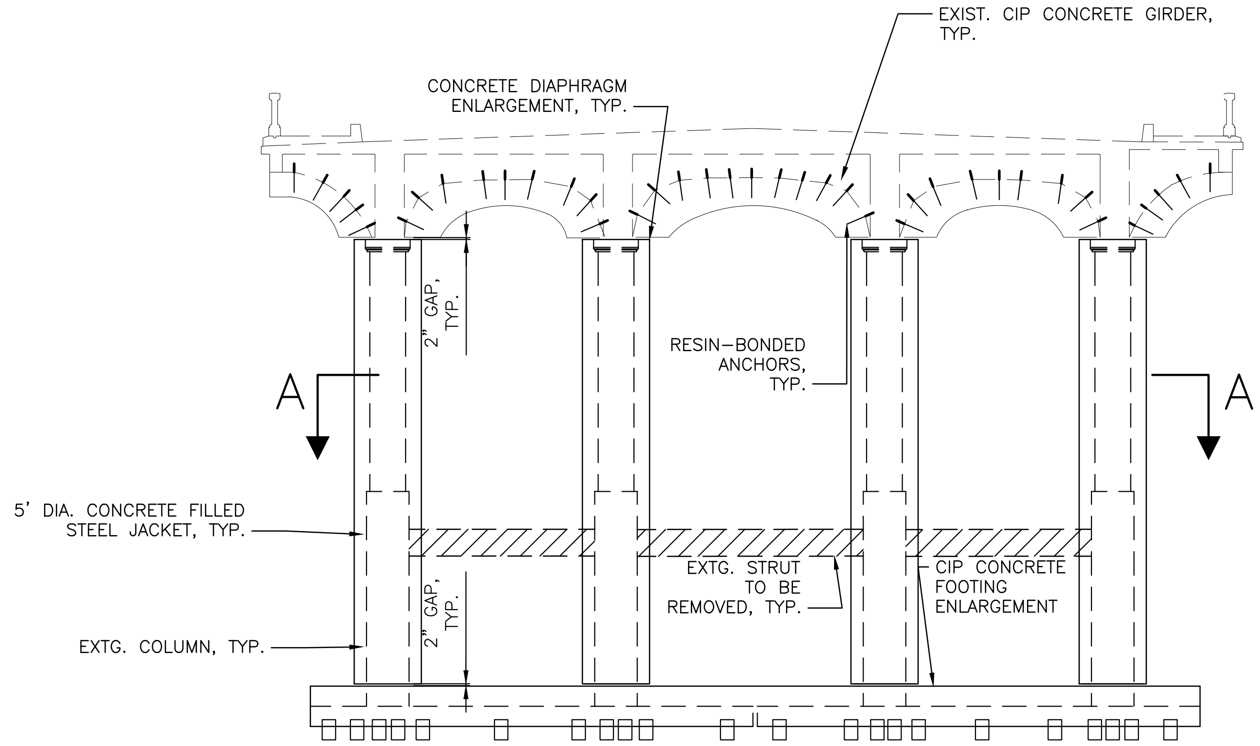

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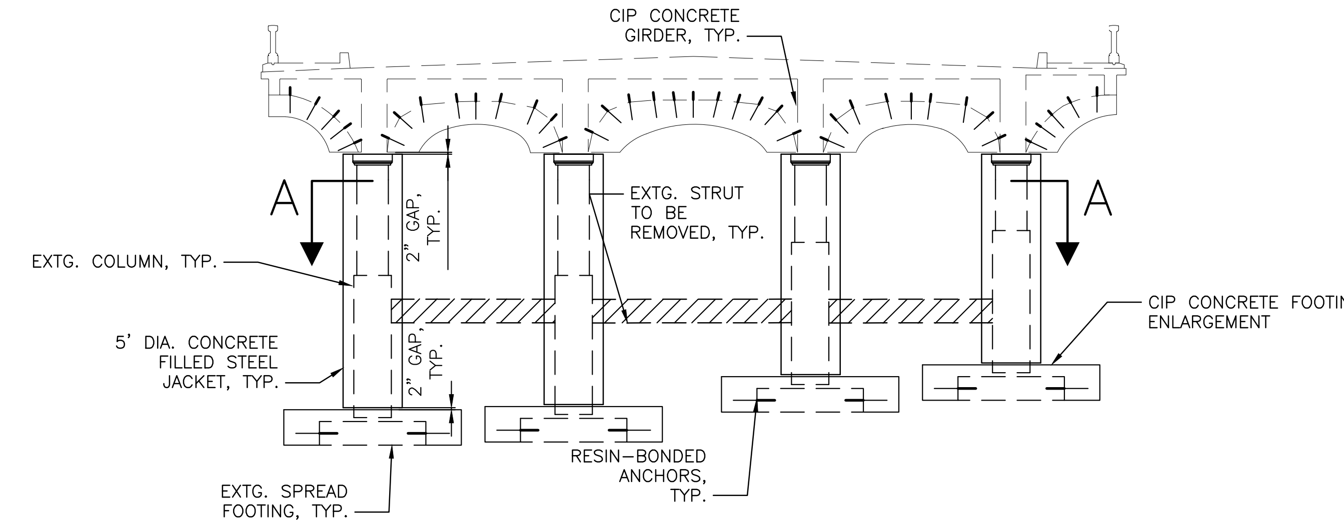

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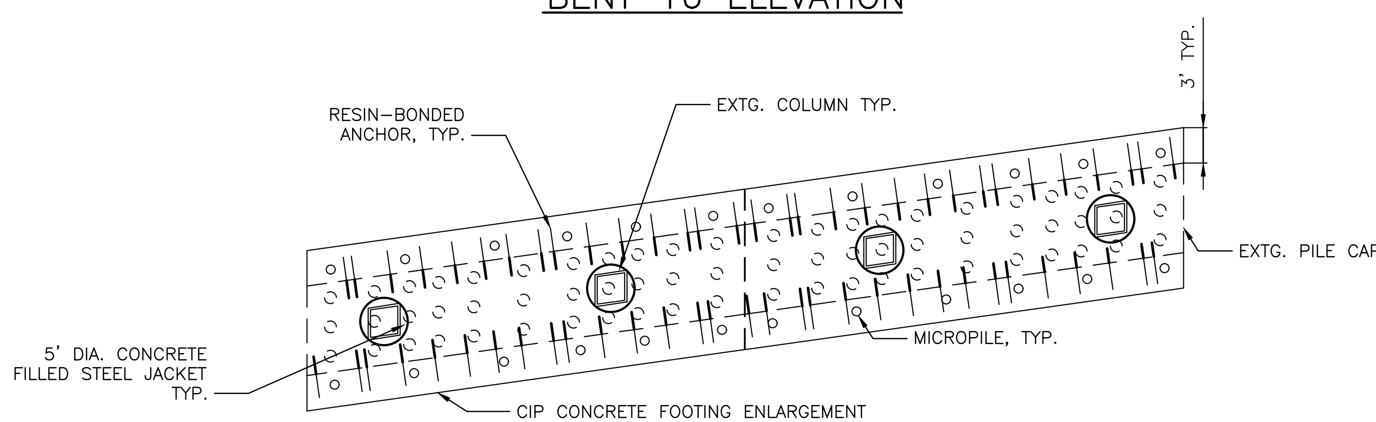

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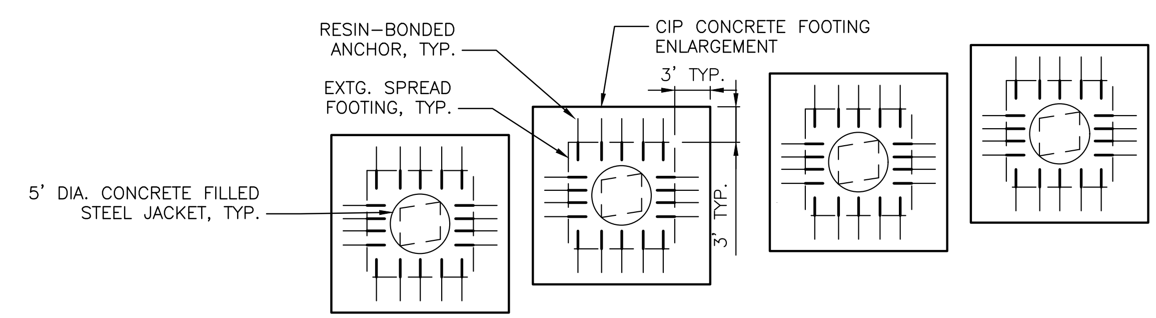

SECTION A–A

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ALT 1 – BENT 16 – 17 DETAILS

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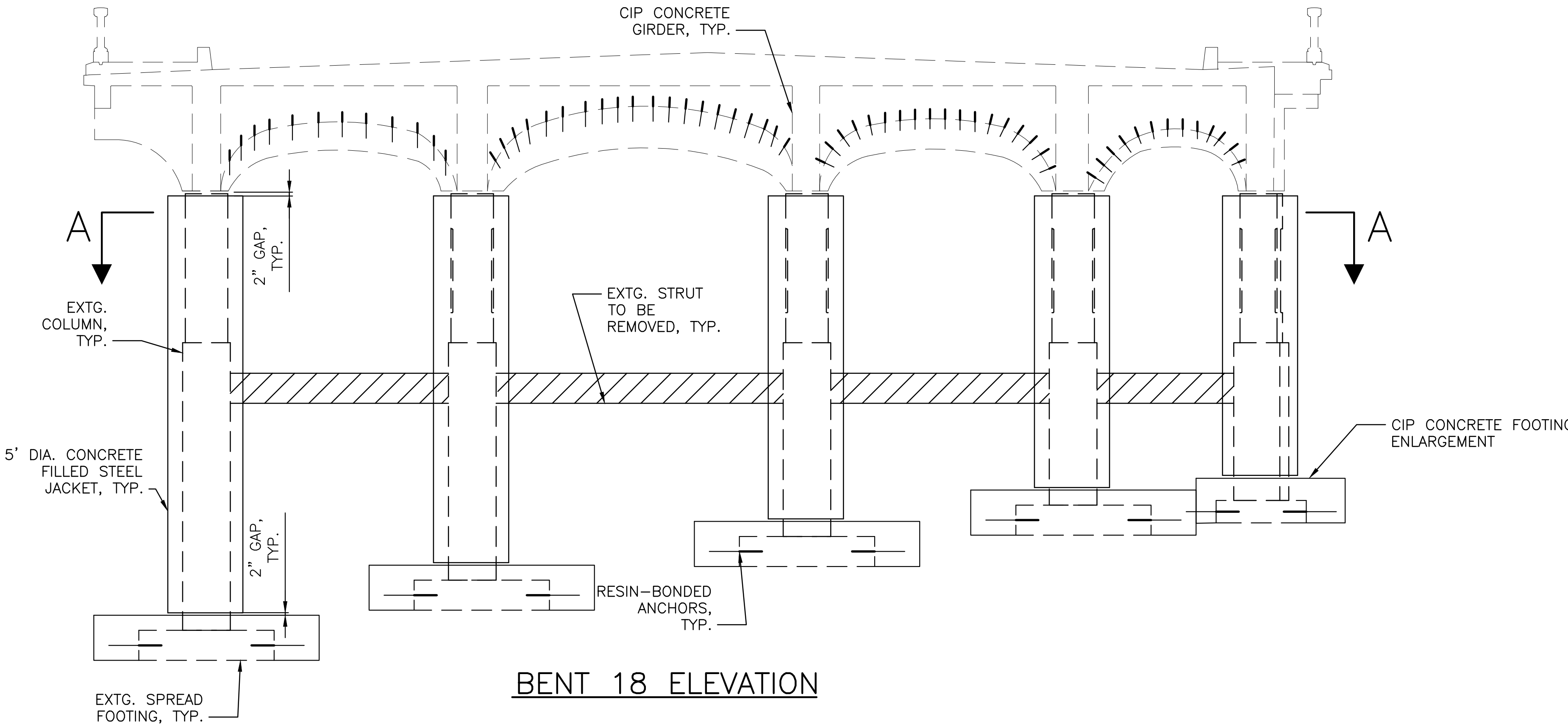

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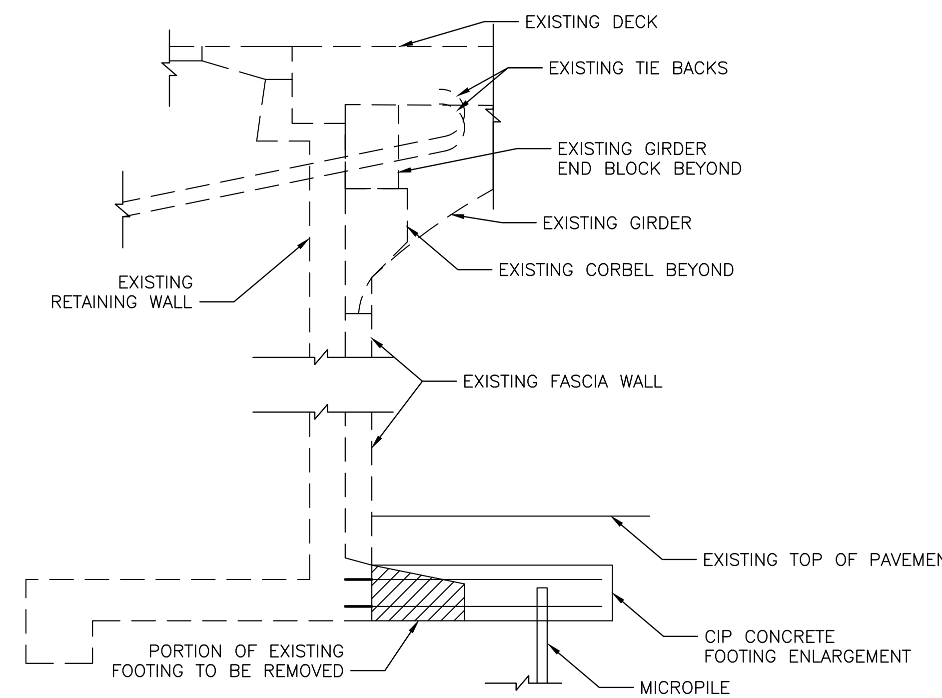

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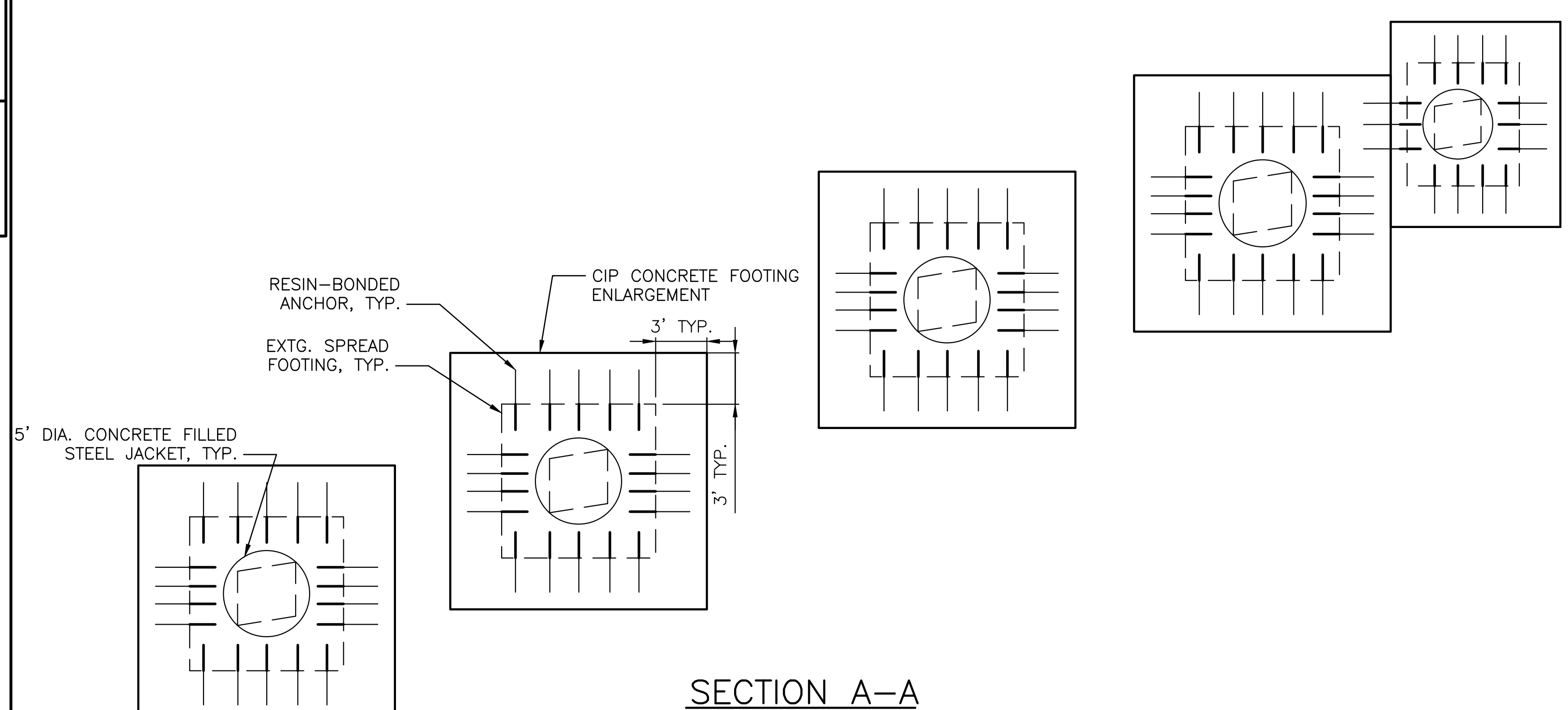

SECTION A–A

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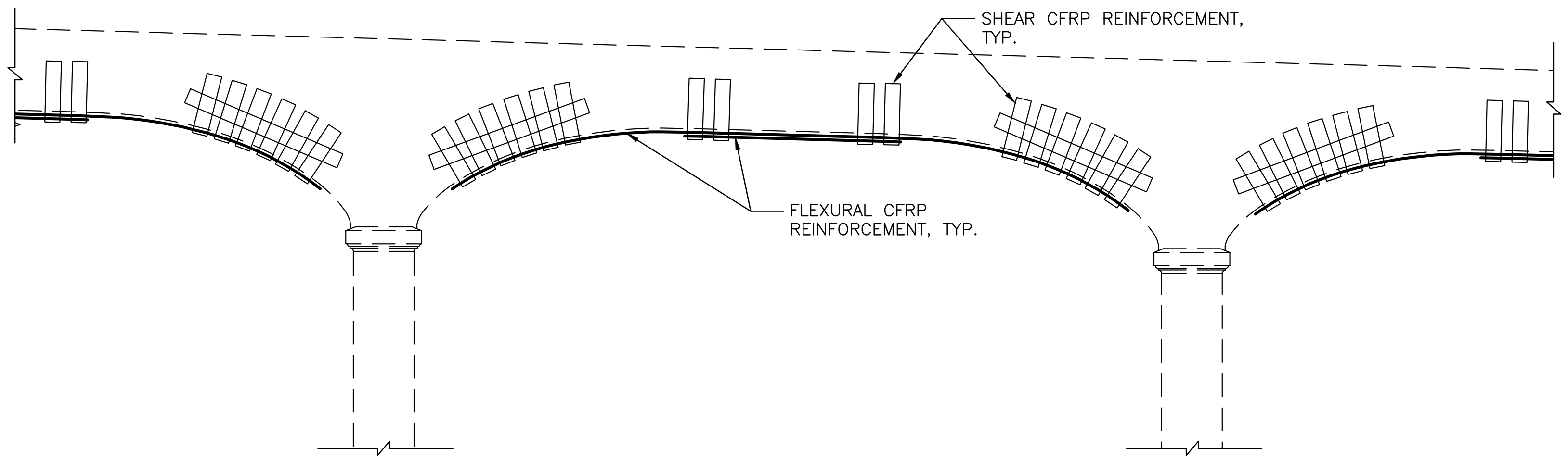
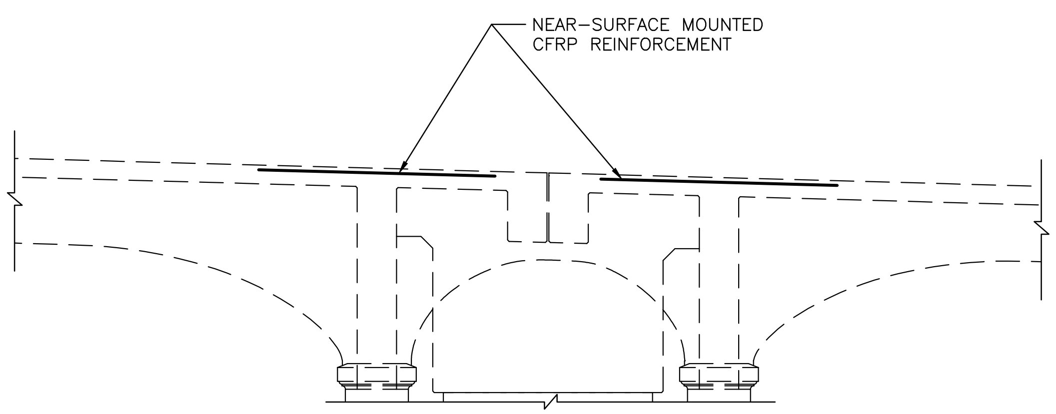


GIRDER ELEVATION – CFRP STRENGTHENING



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ALT – 1 SUPERSTRUCTURE DETAILS

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SHEET 7 OF 7

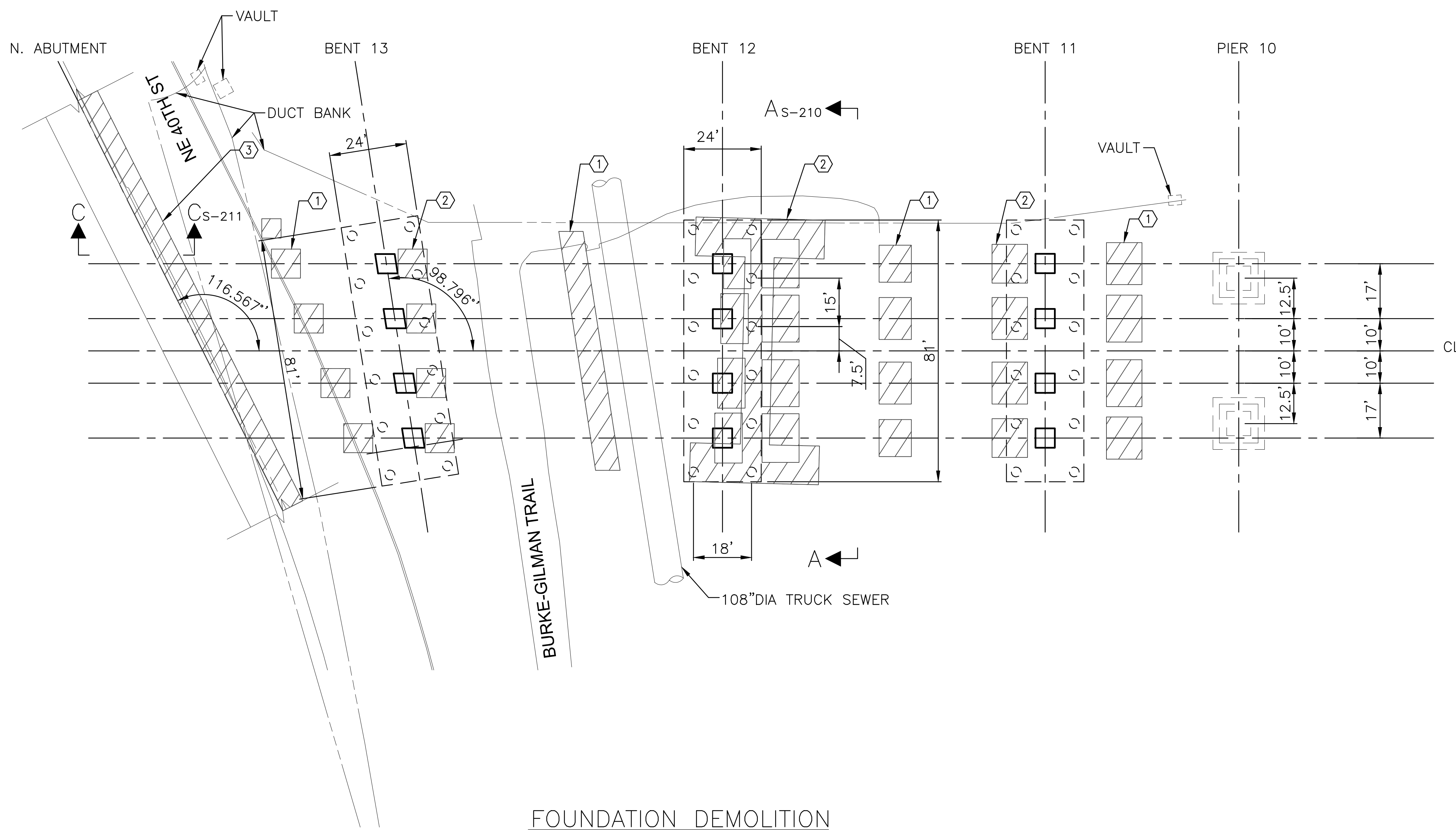
Attachment B

Alt. 2 – Bridge Replacement Exhibits

B-1

NOTES:

1. REMOVE EXISTING SUBSTRUCTURE UP TO 4'-0" BELOW EXISTING GRADE.
2. REMOVE EXISTING SUBSTRUCTURE PARTIALLY OR ENTIRELY TO ALLOW FOR NEW SUBSTRUCTURE OR CONSTRUCTION.
3. REMOVE 12" LINER WALL AND TOE OF FOOTING.



FOUNDATION DEMOLITION PLAN

SCALE: 1:20

SDCI #######, SDOT #######

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Oct-11-23 5:23pm

VAULT SERIAL NO.	DATE	MARK	NATURE REVISIONS	MADE	CHK'D	REV'D

FOUNDATION DEMOLITION PLAN

BRIGHT ENGINEERING, INC
Consulting Structural & Civil Engineering
1809 7th Avenue, Suite 1100 Seattle WA 98101
206-625-3777 Fax 206-625-1851

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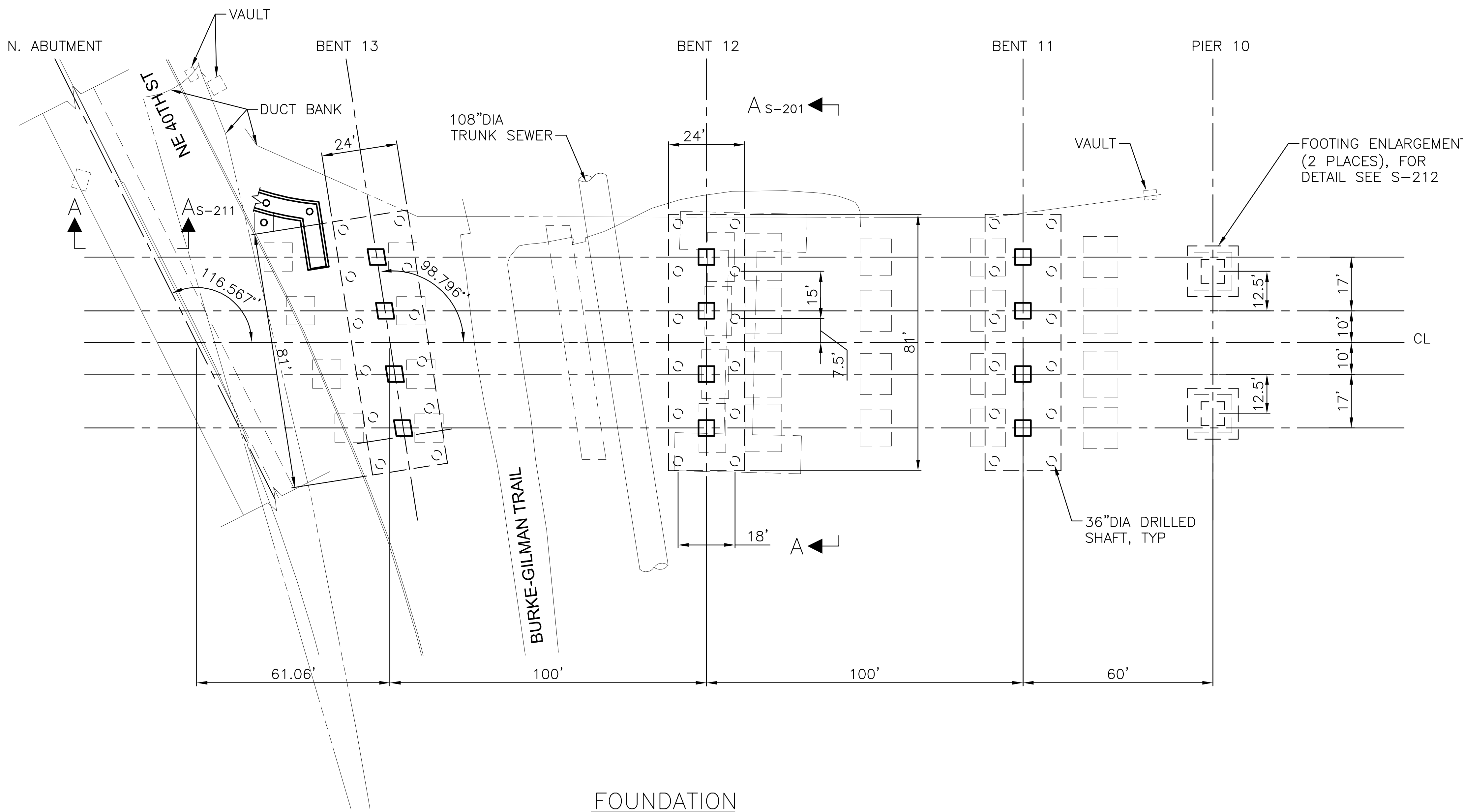
VPI #
SD-001
SHEET 1 OF 7



FOUNDATION

PLAN

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FOUNDATION PLAN

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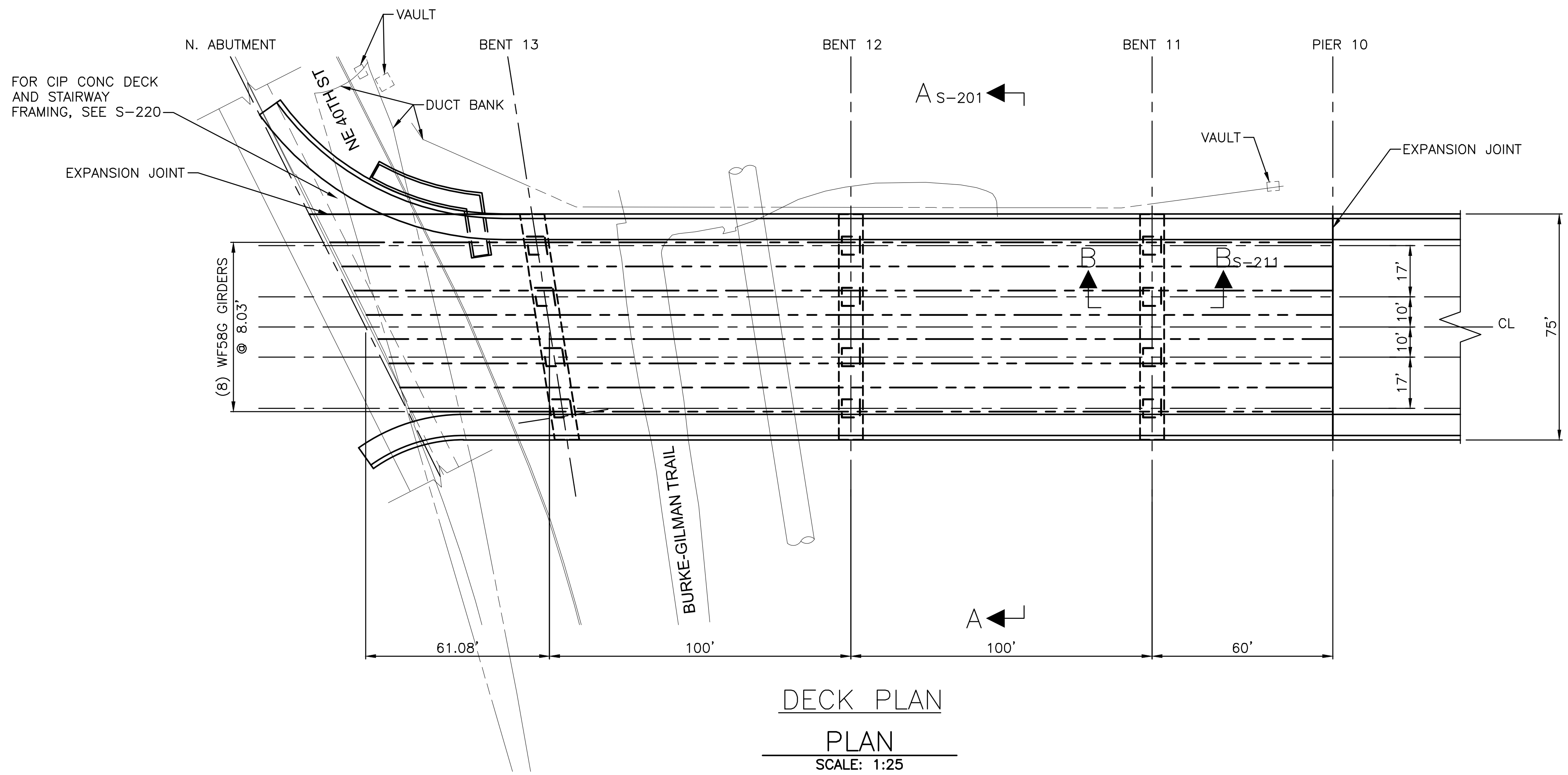
S-100
SHEET 2 OF 7

B-3



DECK PLAN

PLAN

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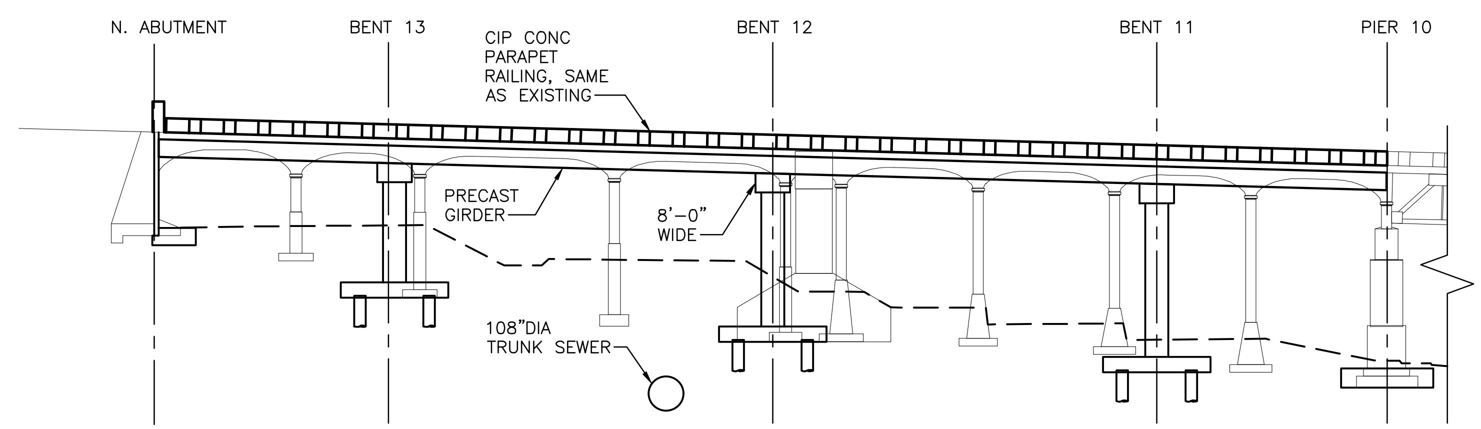

DECK PLAN

PLAN

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REVISIONS

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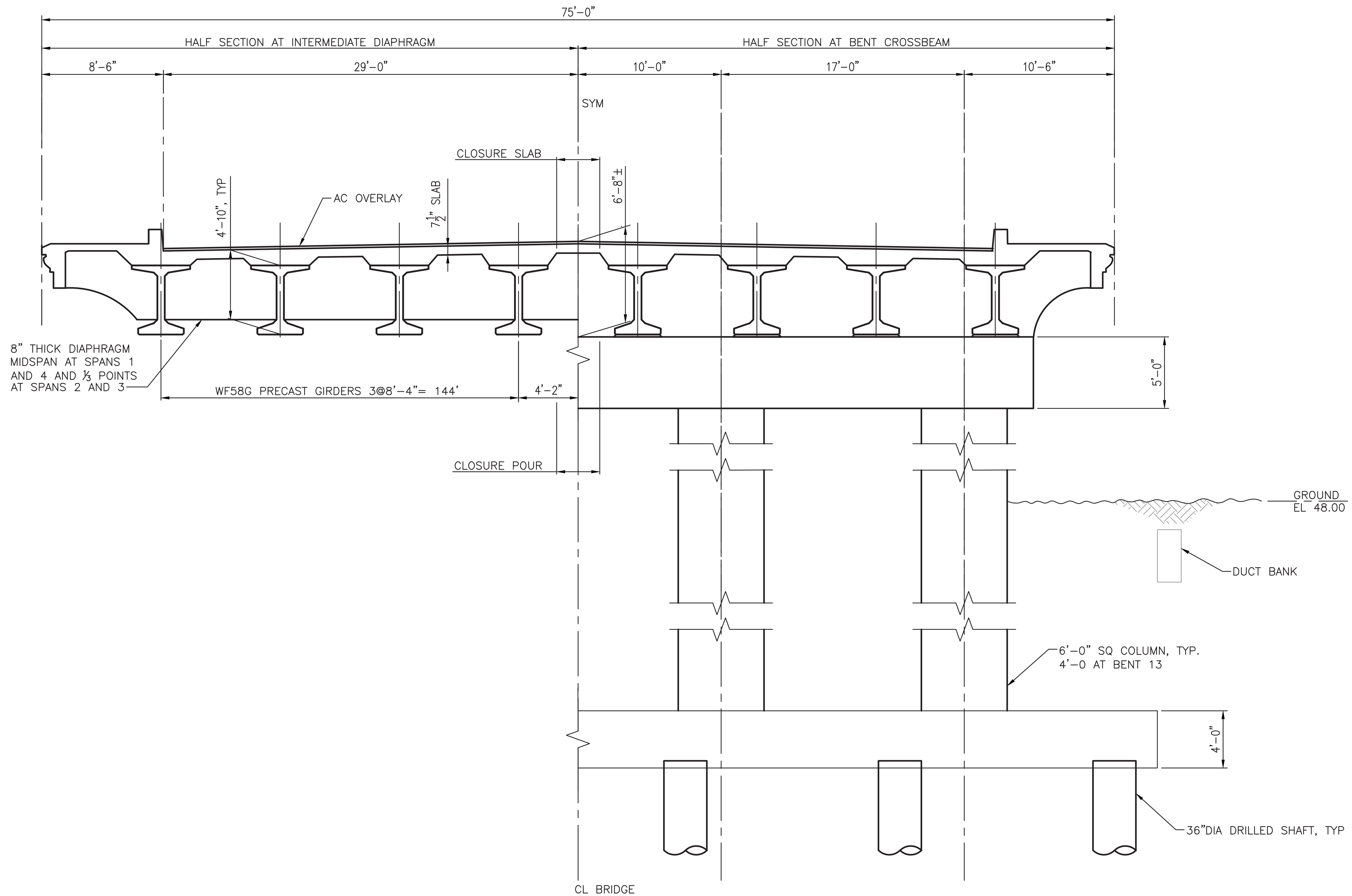

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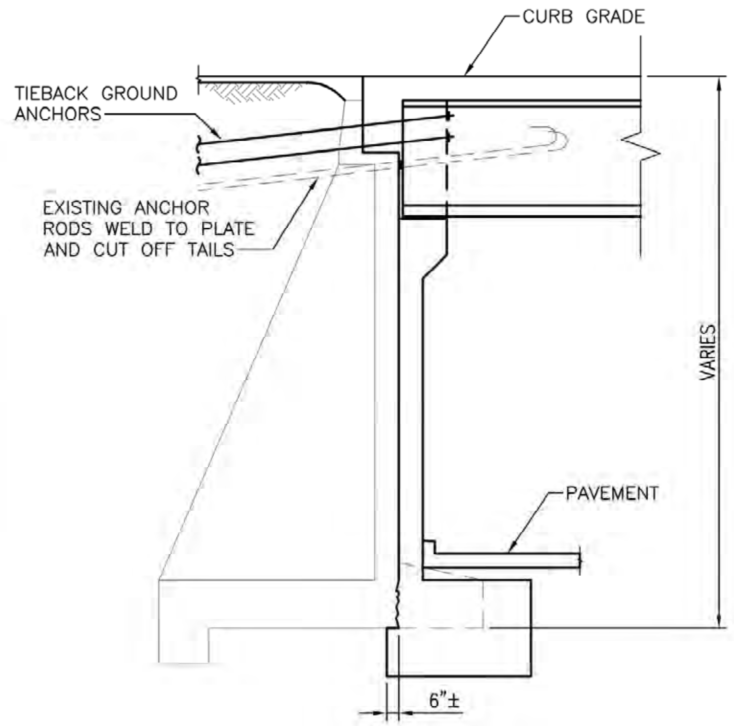
SCALE:

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

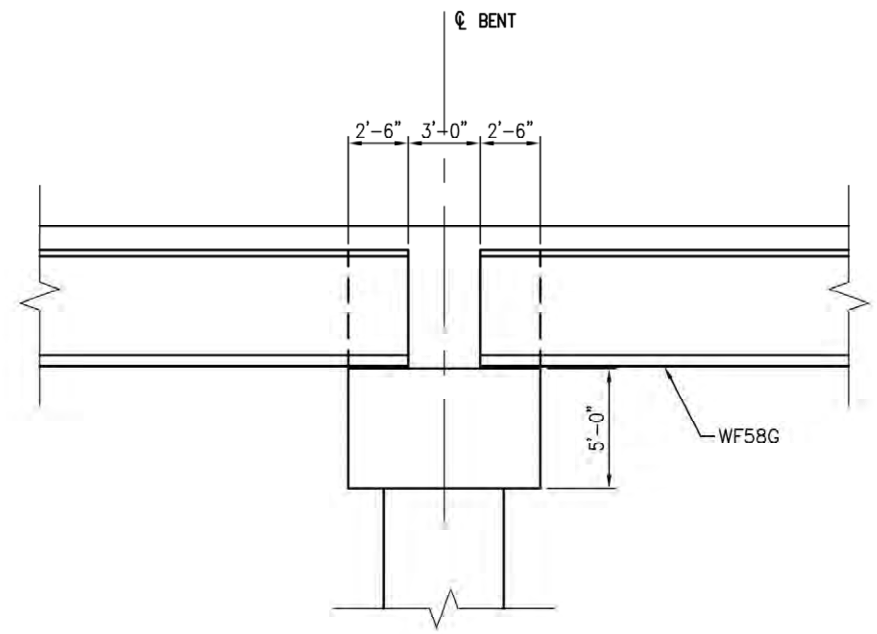
JOB PC CO
VPI #
S-210
SHEET 4 OF 7



NORTH ABUTMENT

SECTION A S-100

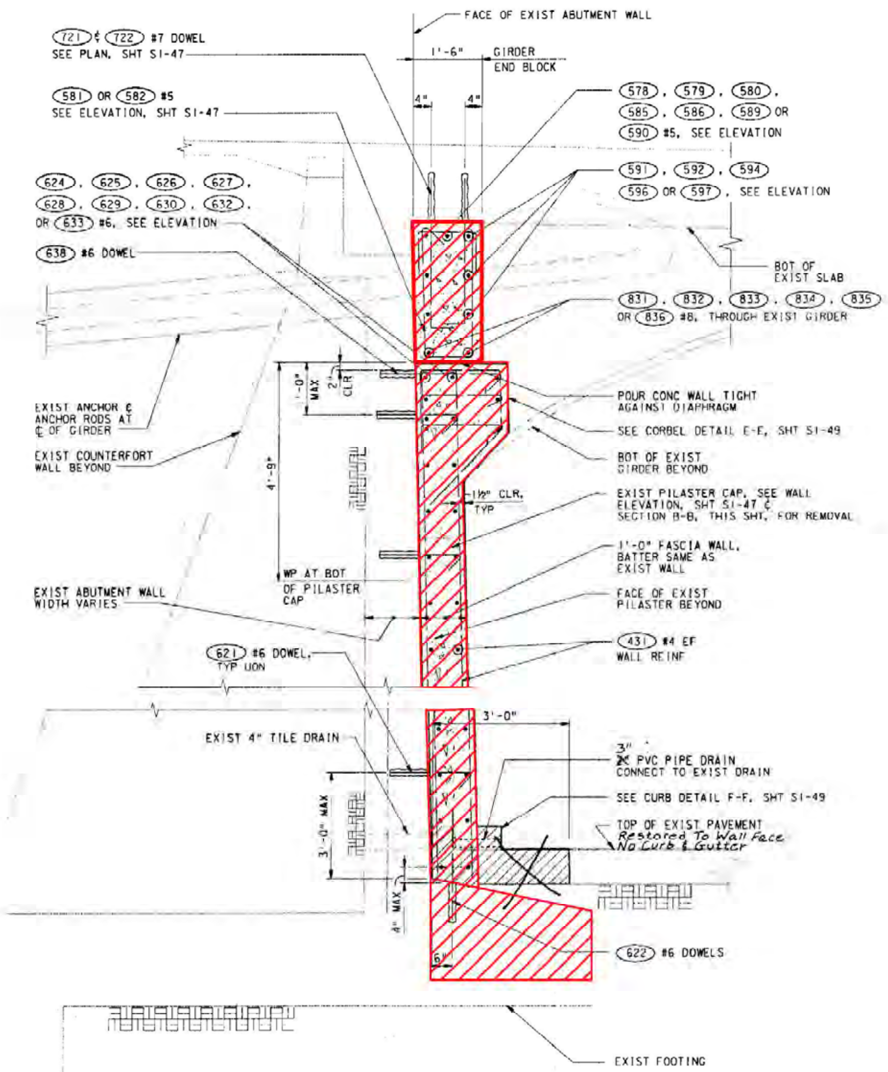
SCALE: 1/4"=1'-0"



BENTS 11, 12, AND 13

SECTION B S-101

SCALE: 1/4"=1'-0"



DEMOLITION – NORTH ABUTMENT FACIA WALL

SECTION C SD-001

SCALE: NTS

SDCI ######, SDOT ######

VAULT SERIAL NO.	DATE	MARK	NATURE REVISIONS	MADE	CHK'D	REV'D

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Aug-15-23 2:24pm

BRIGHT ENGINEERING, INC
Consulting Structural & Civil Engineering
1809 7th Avenue, Suite 1100 Seattle WA 98101
206-625-3777 Fax 206-625-1851

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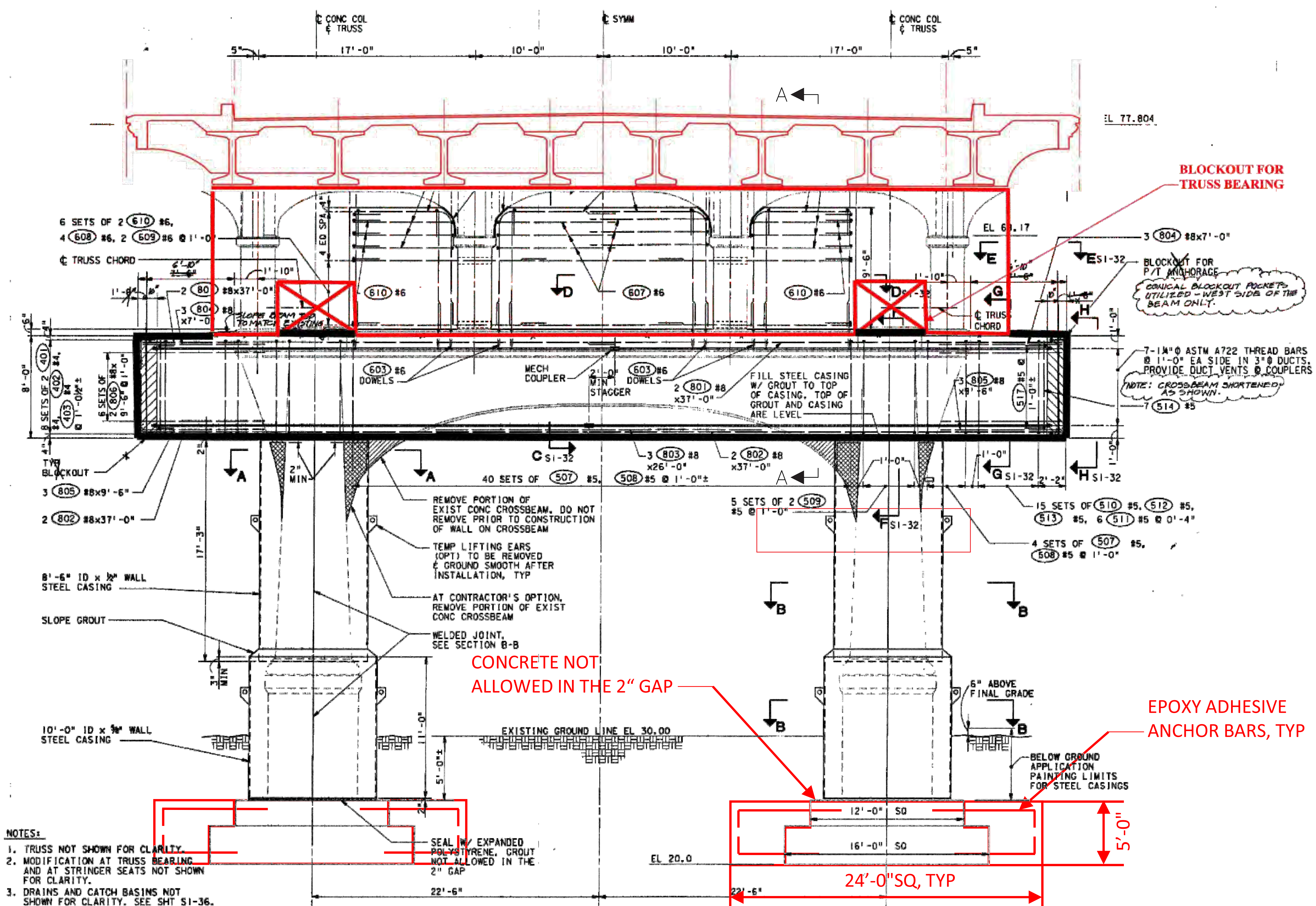
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #

S-211

SHEET 5 OF 7

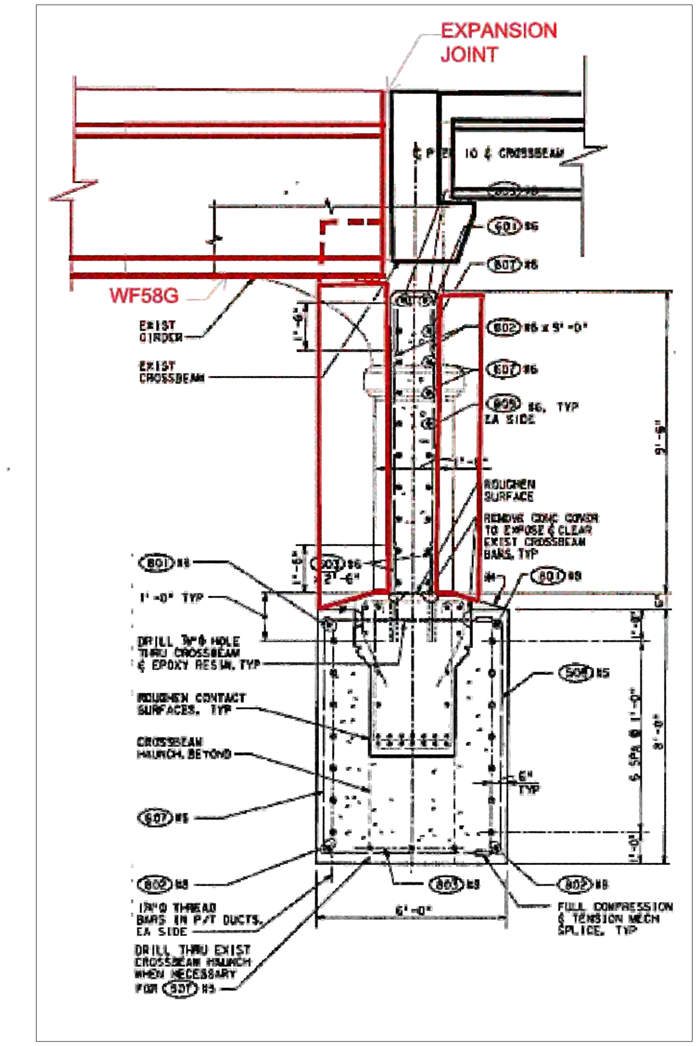


NOTES:

1. TRUSS NOT SHOWN FOR CLARITY.
2. MODIFICATION AT TRUSS BEARING AND AT STRINGER SEATS NOT SHOWN FOR CLARITY.
3. DRAINS AND CATCH BASINS NOT SHOWN FOR CLARITY. SEE SHT S1-36.
4. FOR CONSTRUCTION SEQUENCE, SEE SHT S1-32. NO VARIATION FROM THE CONSTRUCTION SEQUENCE IS ALLOWED UNLESS APPROVED BY THE ENGINEER.

PIER 10 — ELEVATION LOOKING SOUTH

NTS



SECTION A—A

NTS

"AS BUILT" PER PLAN EXCEPT AS NOTED

University Bridge - North Approach
Pier 10 - Elevation

NSA0528
S1-31

SECTIONS

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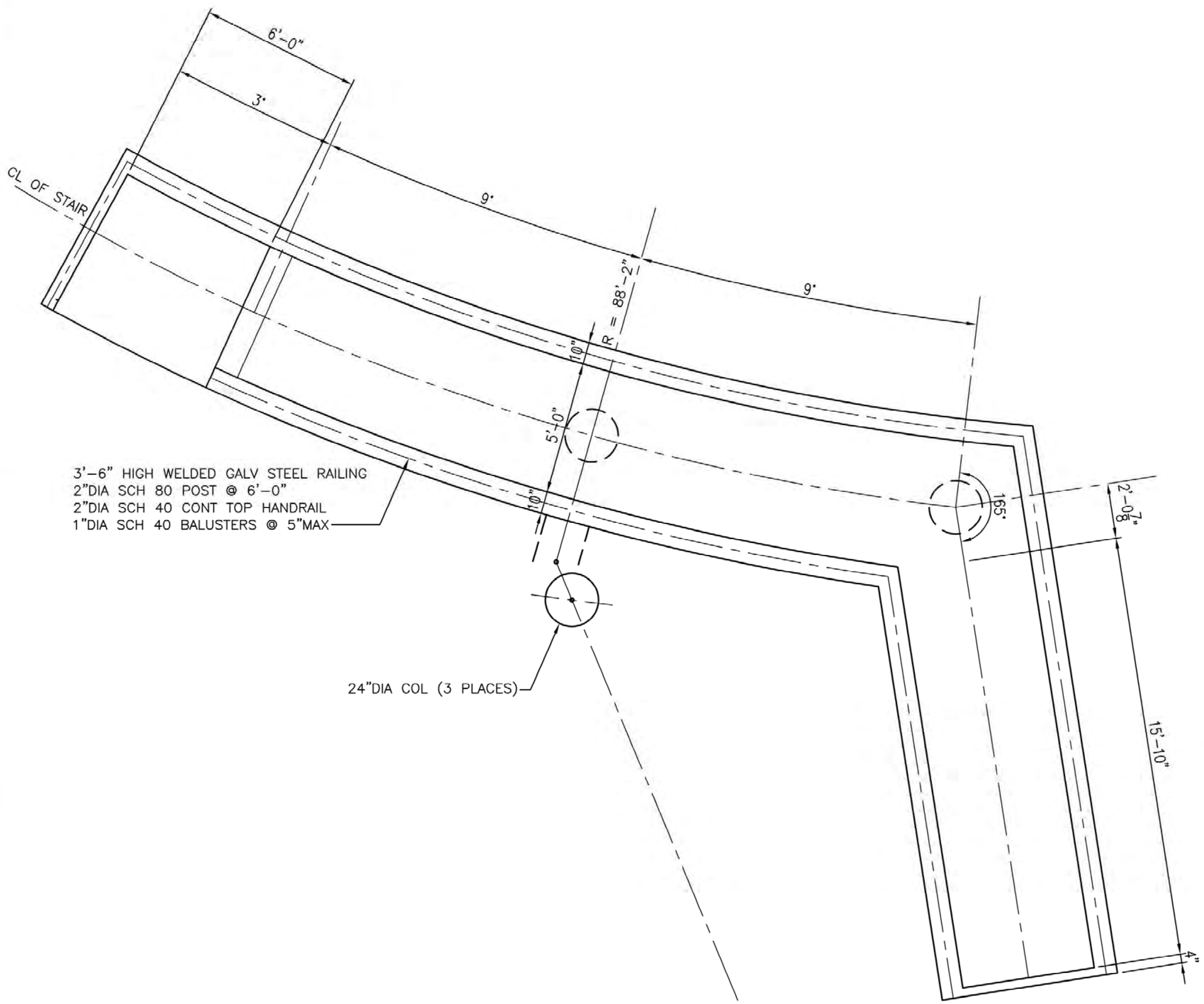
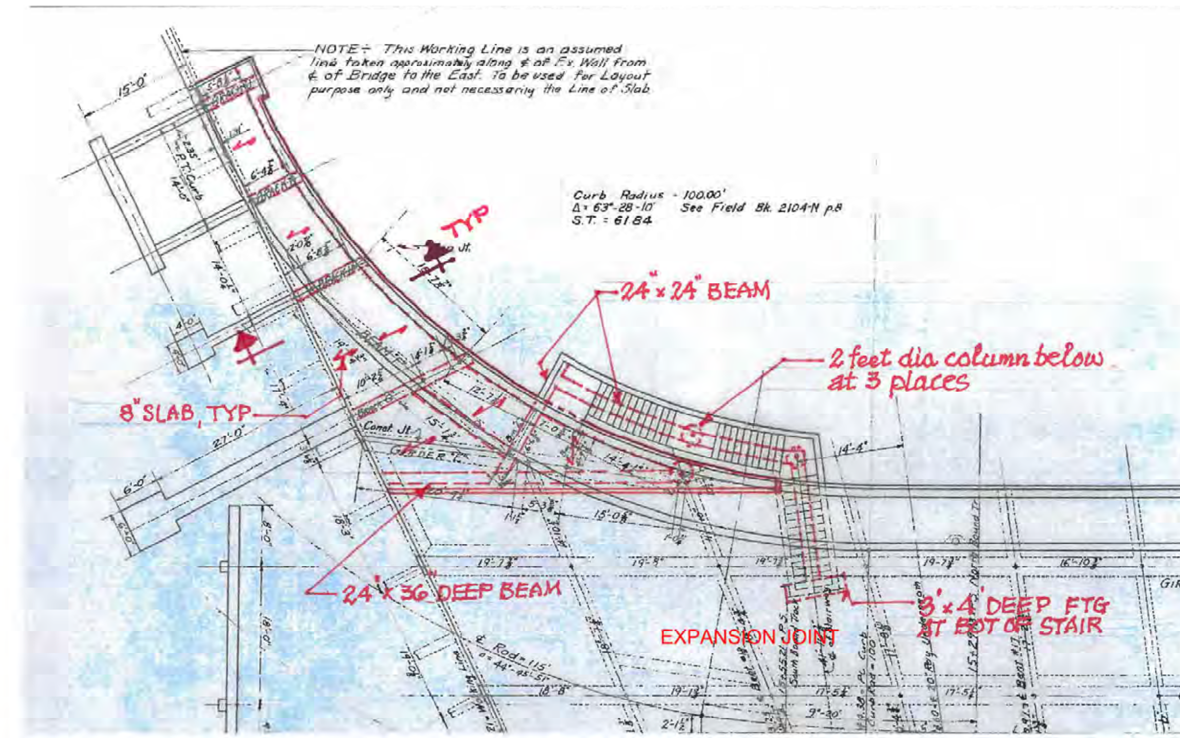


STAIRS

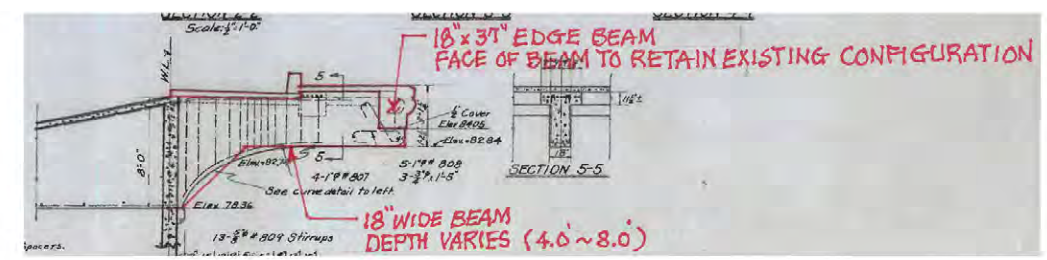
PLAN

3/8" = 1'-0"



DETAIL 1

SCALE: NTS



DETAIL 2

SCALE: NTS

SDCI ######, SDOT ######

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STAIR PLAN AND DETAILS

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UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

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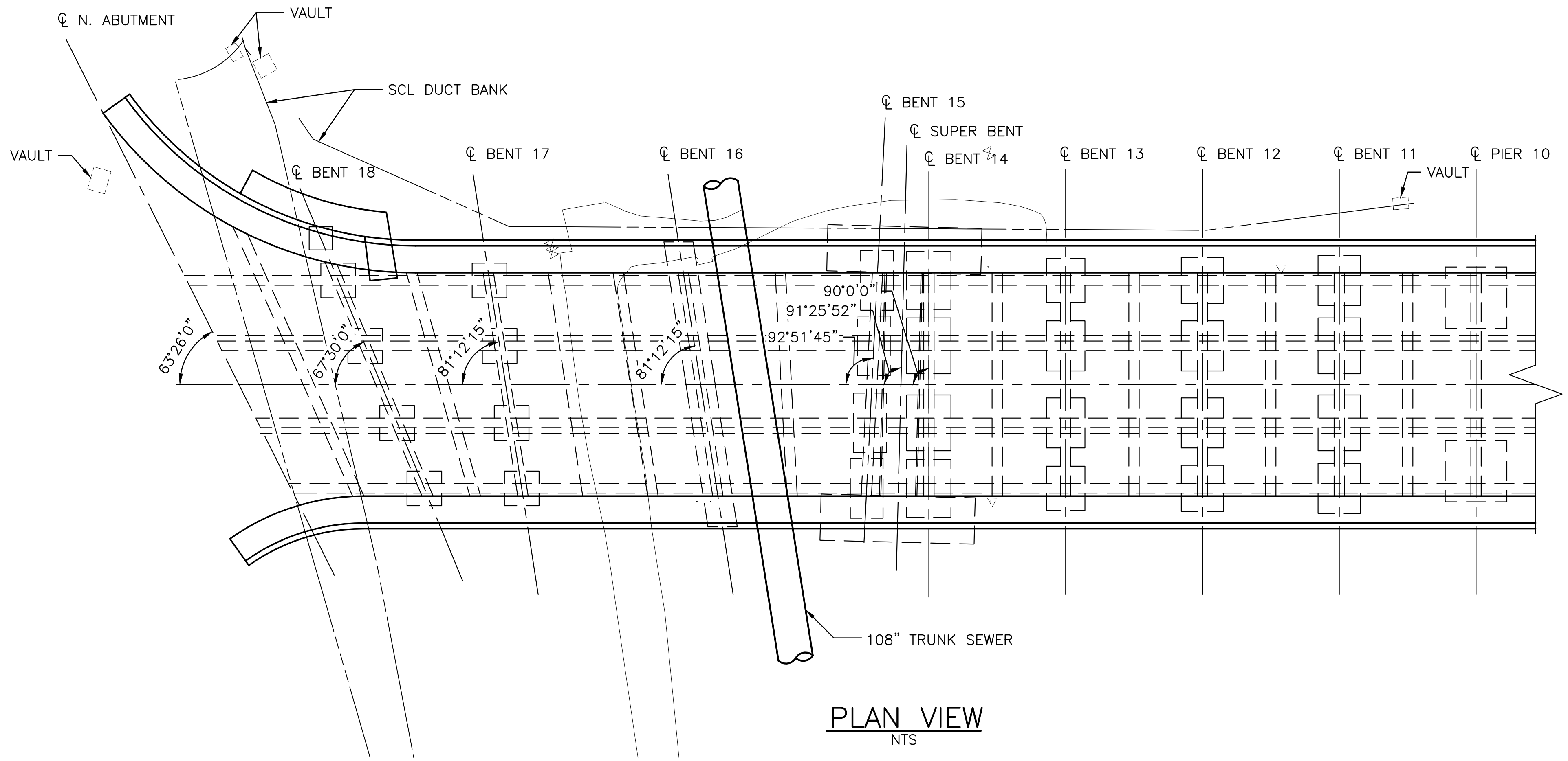
CO
VPI #

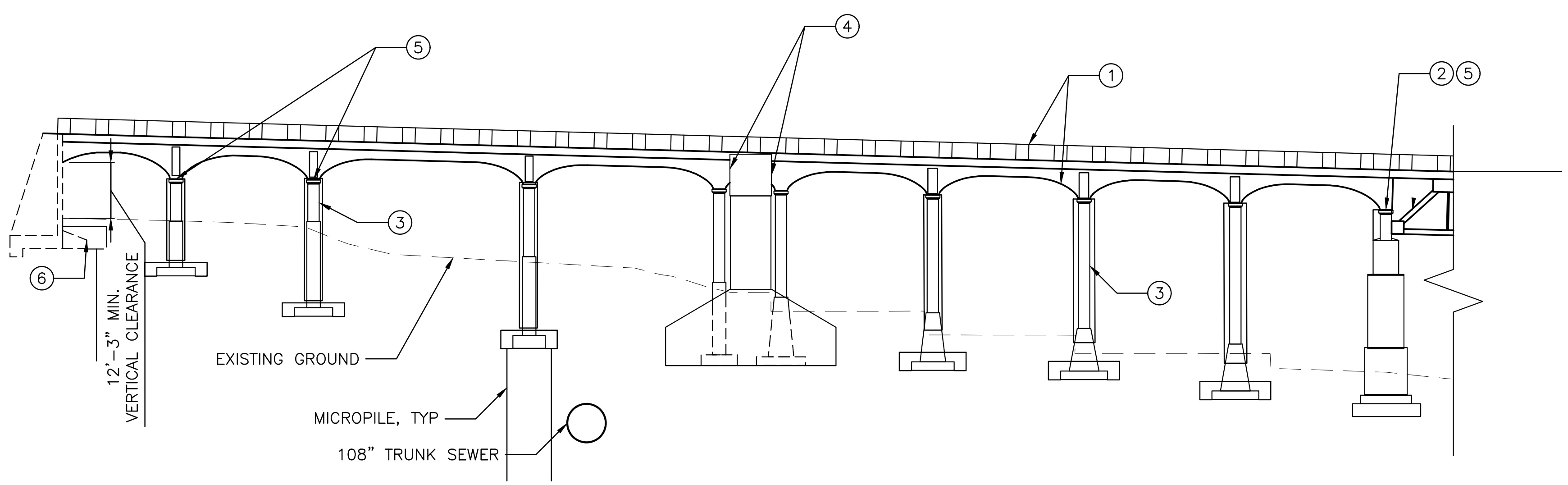
S-220

Attachment C

Alt. 3 – Superstructure Replacement and Substructure Retrofit Exhibits



PLAN VIEW
NTS



ELEVATION VIEW
NTS

PROPOSED REHABILITATION WORK

1. REMOVE AND RECONSTRUCT SUPERSTRUCTURE.
2. PIER 10 DIAPHRAGM ENLARGEMENT AND STRENGTHENING.
3. 5-FT. DIAMETER STEEL JACKETING OF COLUMNS AND FOOTING STRENGTHENING, TYPICAL AT INTERMEDIATE BENTS.
4. SUPERBENT CONNECTION OF NEW SUPERSTRUCTURE.
5. BEARING REPLACEMENT.
6. N. ABUTMENT FOOTING STRENGTHENING WITH MICROPILES

20 10 0 20 40
SCALE IN FEET

SDCI #######, SDOT #######

VAULT SERIAL NO. | DATE | MARK | NATURE REVISIONS | MADE | CHK'D | REV'D

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Sep-26-23 4:37am

ALT 3 – LAYOUT

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UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

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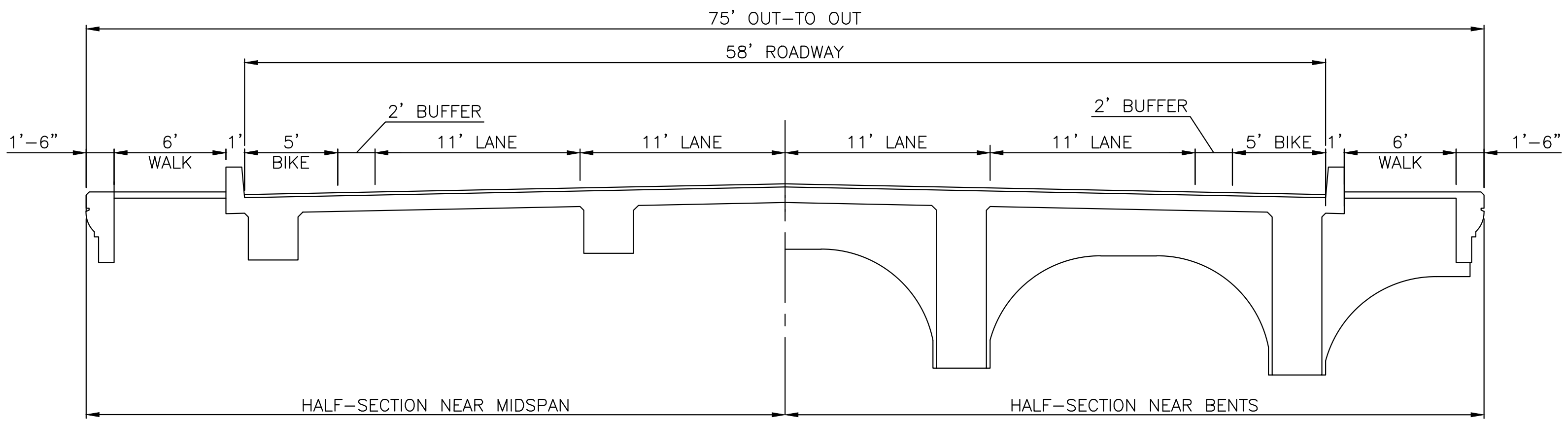
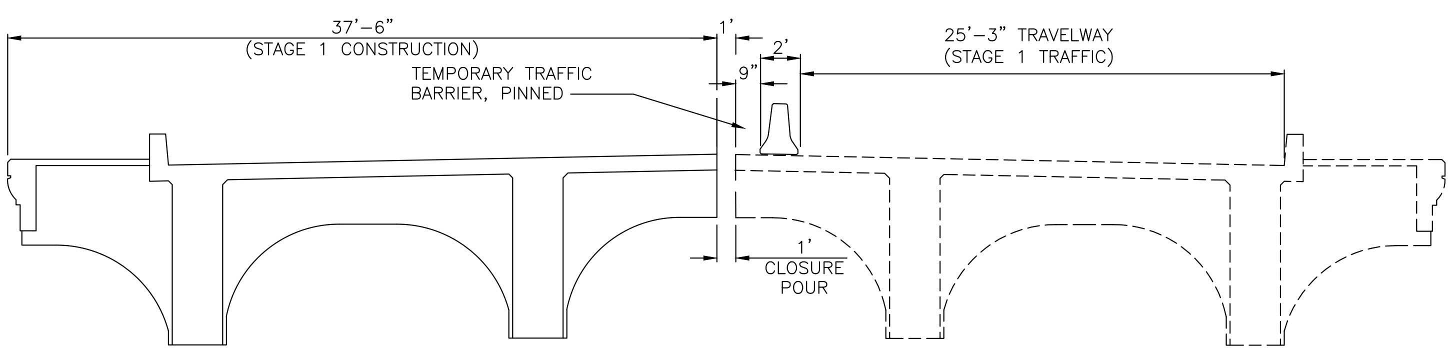
VPI #
S-102
SHEET 1 OF 8



TYPICAL SECTION
NTS



TYPICAL 2 STAGE CONSTRUCTION SECTION
NTS

VAULT SERIAL NO.	DATE	MARK	NATURE	MADE	CHK'D	REV'D
			REVISIONS			

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ALT 3 – BRIDGE CROSS–SECTIONS

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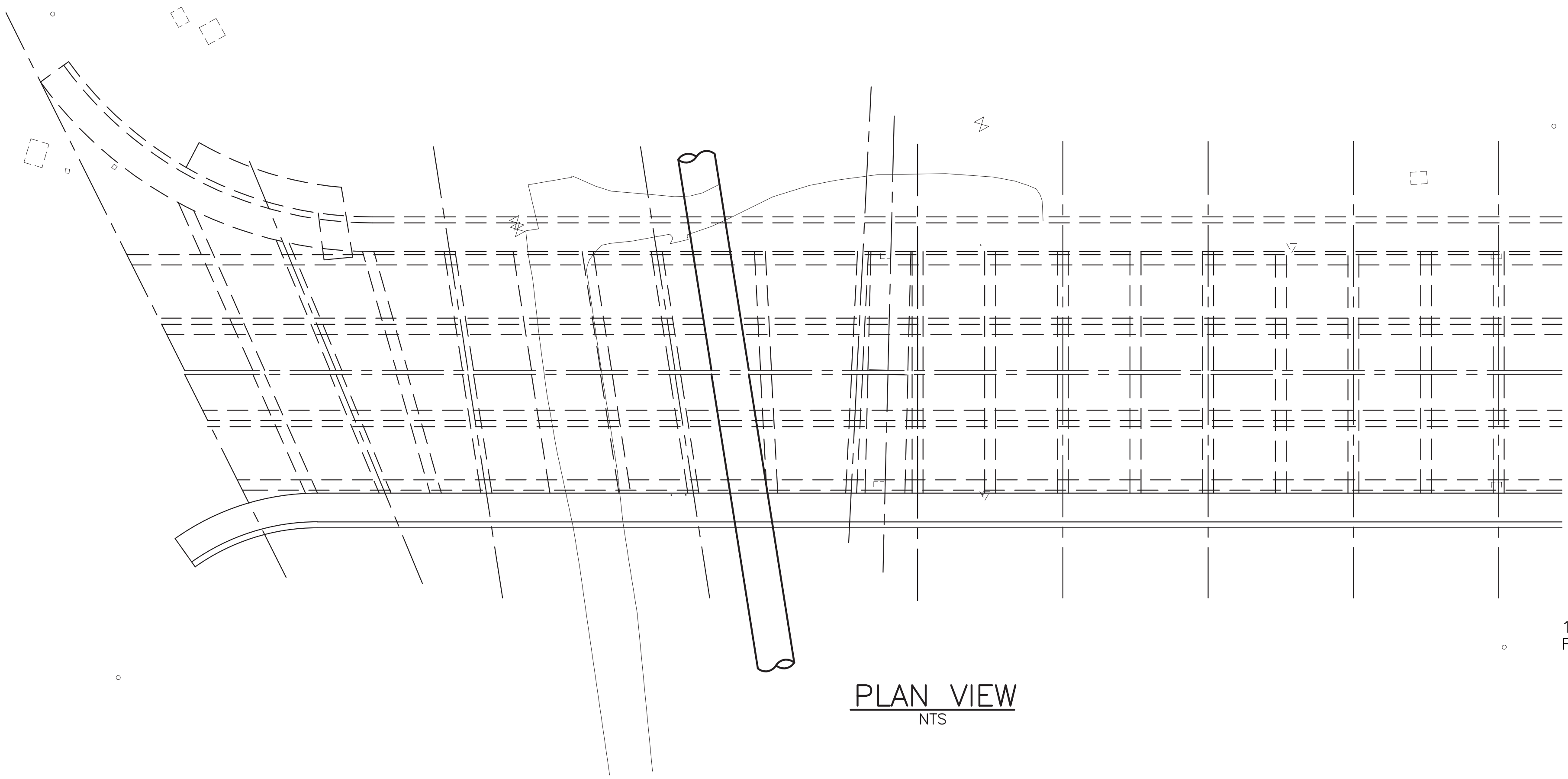
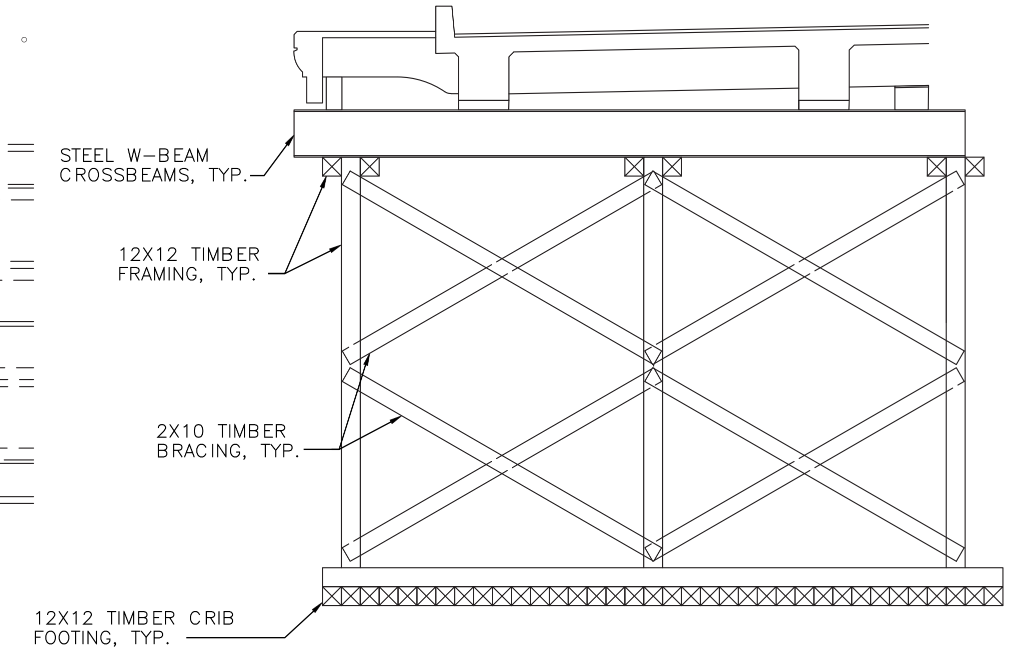
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

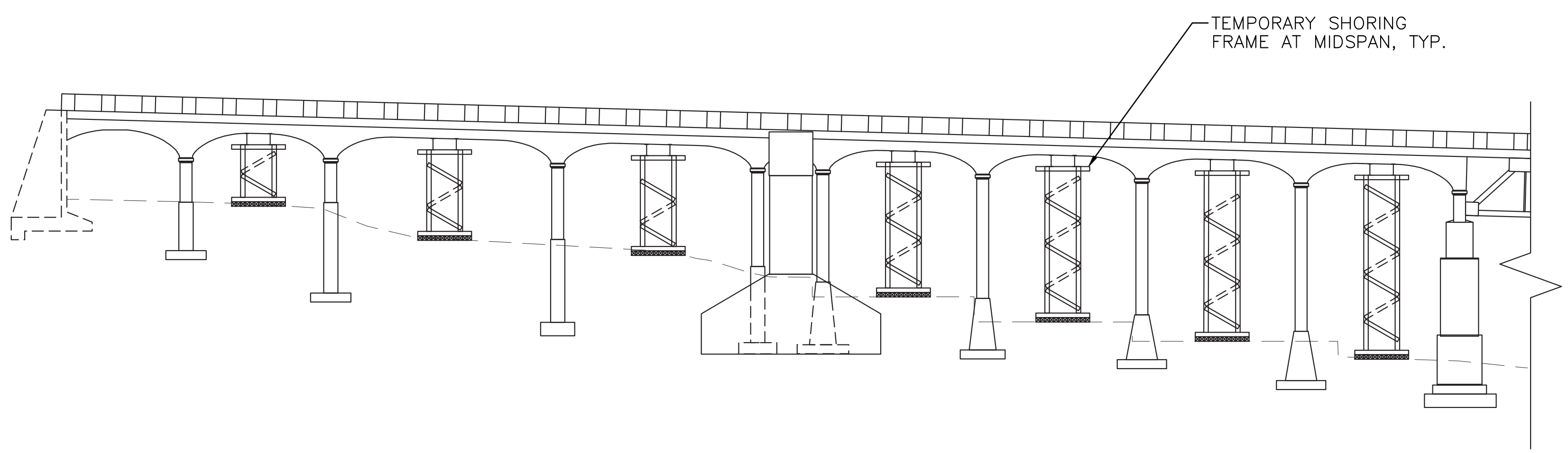
JOB PC
CO
VPI #
S-201B
SHEET 2 OF 8



PLAN VIEW
NTS



HALF-SECTION
NTS
(PROPOSED SHOWN, EXISTING SIMILAR)



ELEVATION VIEW
NTS

TEMPORARY SHORING NOTES FOR STAGED CONSTRUCTION:

1. TEMPORARY SHORING SHOWN IS CONCEPT ONLY. STAGING ANALYSIS NEEDED TO VERIFY CONCEPT ADEQUACY.
2. BOTH EXISTING AND PROPOSED SECTIONS NEED TEMPORARY SHORING OF 2-GIRDER SYSTEM WHILE SUPPORTING LIVE LOADS.
3. SHORING TOWERS PLACED AT MIDSPAN FOR LATERAL STABILITY AND DECK CANTILEVER SUPPORT.

SDCI ########, SDOT ########

ALT 3 – CONSTRUCTION STAGING

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			REVISIONS			

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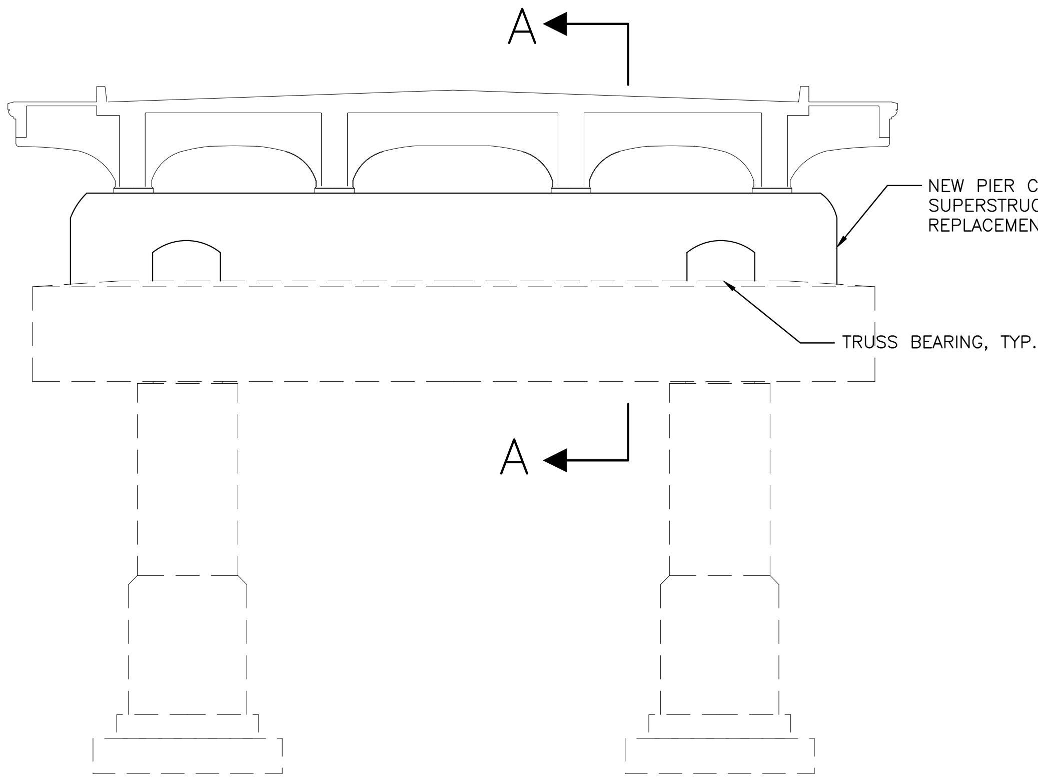
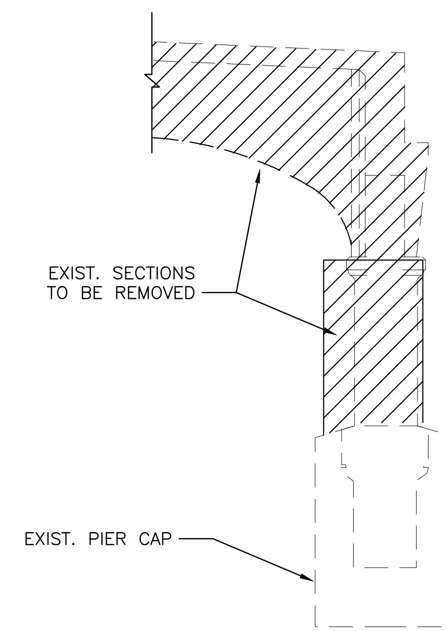
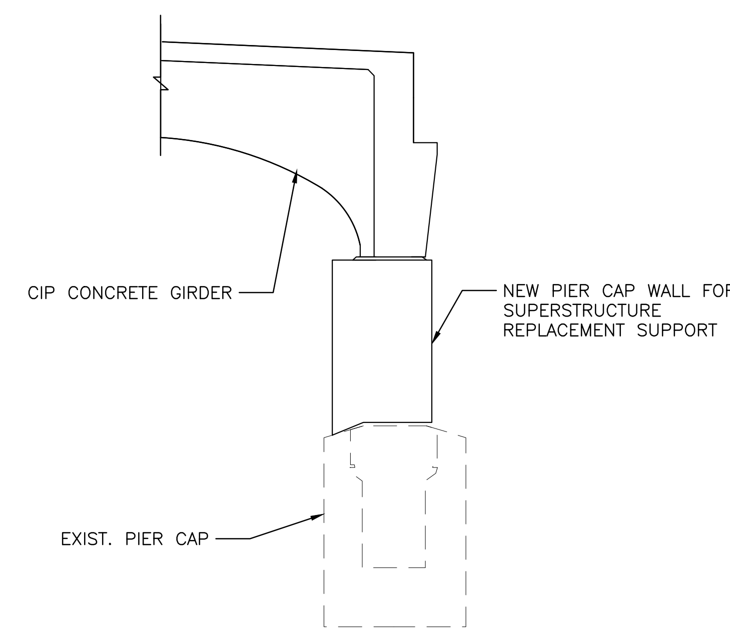


MODIFIED PIER 10 – ELEVATION LOOKING SOUTH



SECTION A–A



SECTION A–A

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ALT 3 PIER 10 MODIFICATIONS

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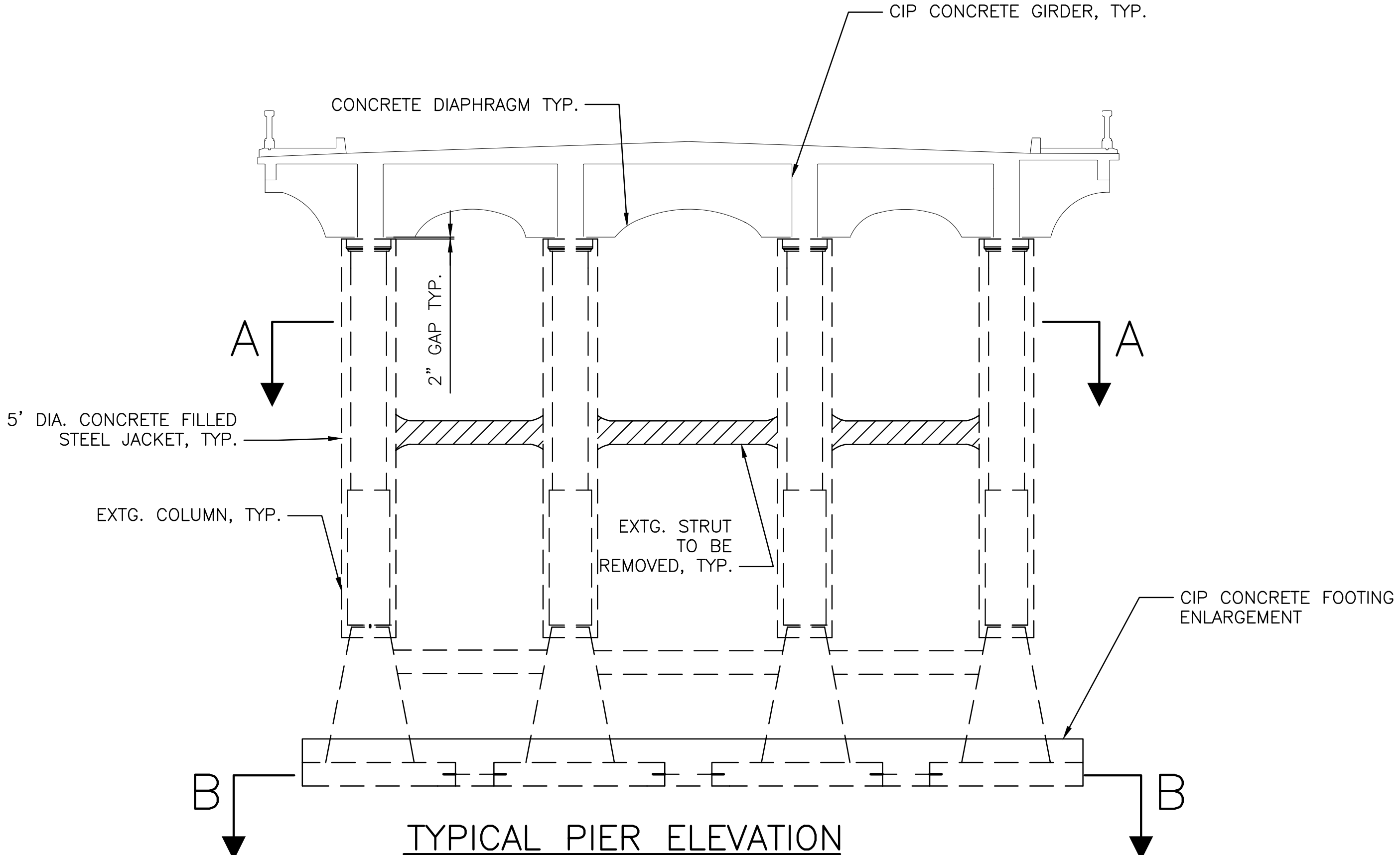
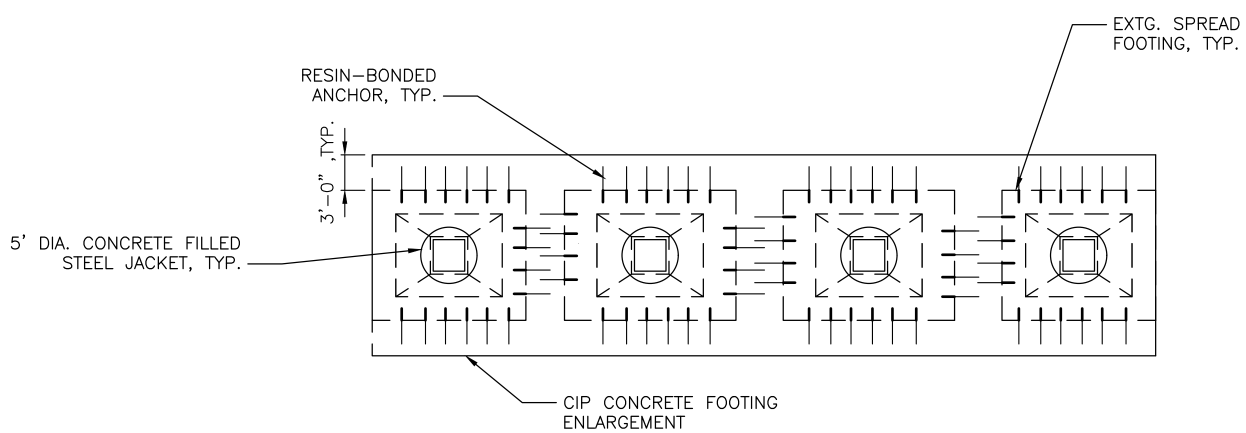


TYPICAL PIER ELEVATION
(BENT 11 SHOWN, BENTS 12 AND 13 SIMILAR)



SECTION A-A

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ALT 3 – BENT 11-13 DETAILS

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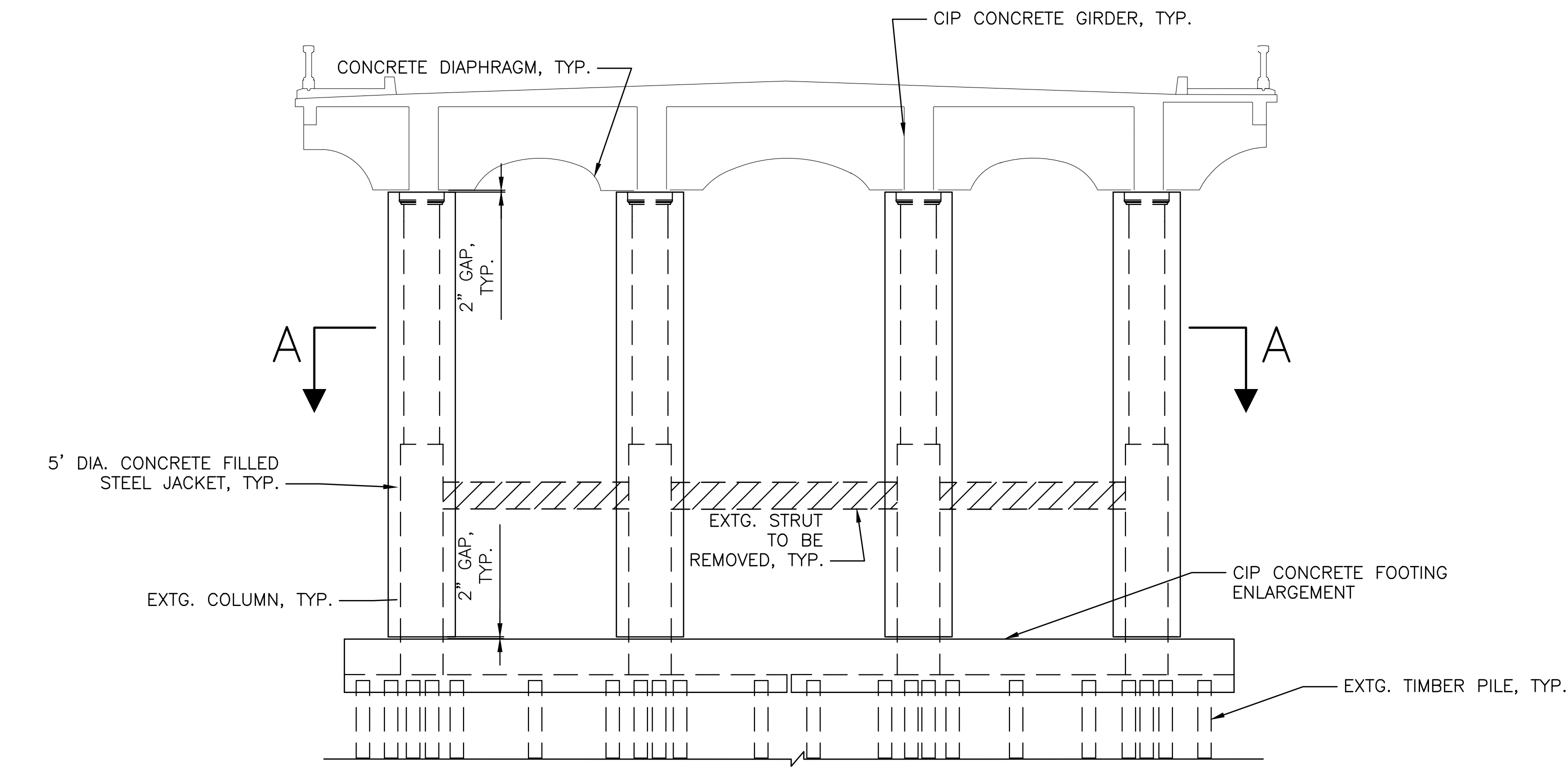
VPI #
SHEET 5 OF 8



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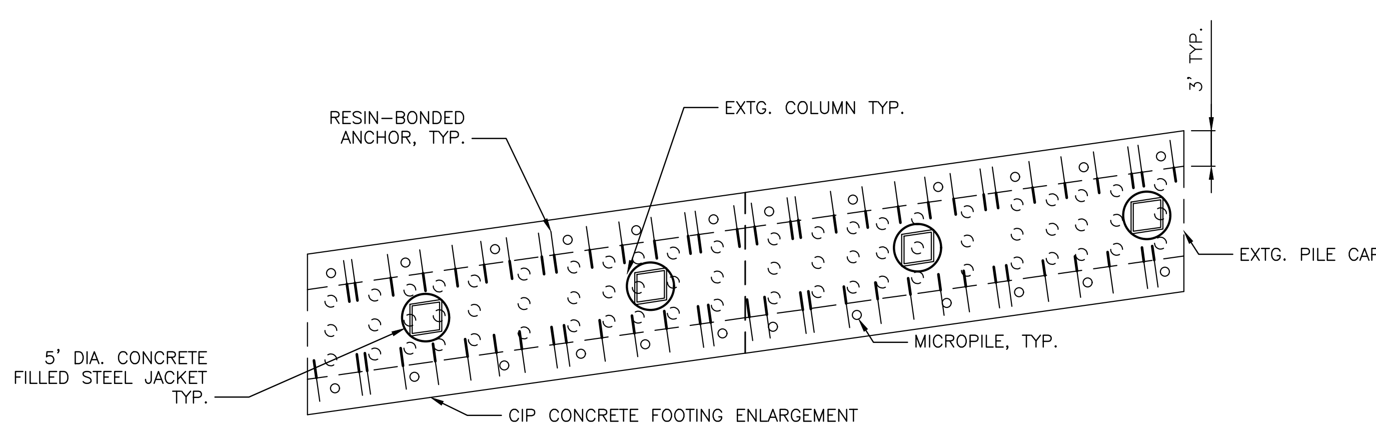
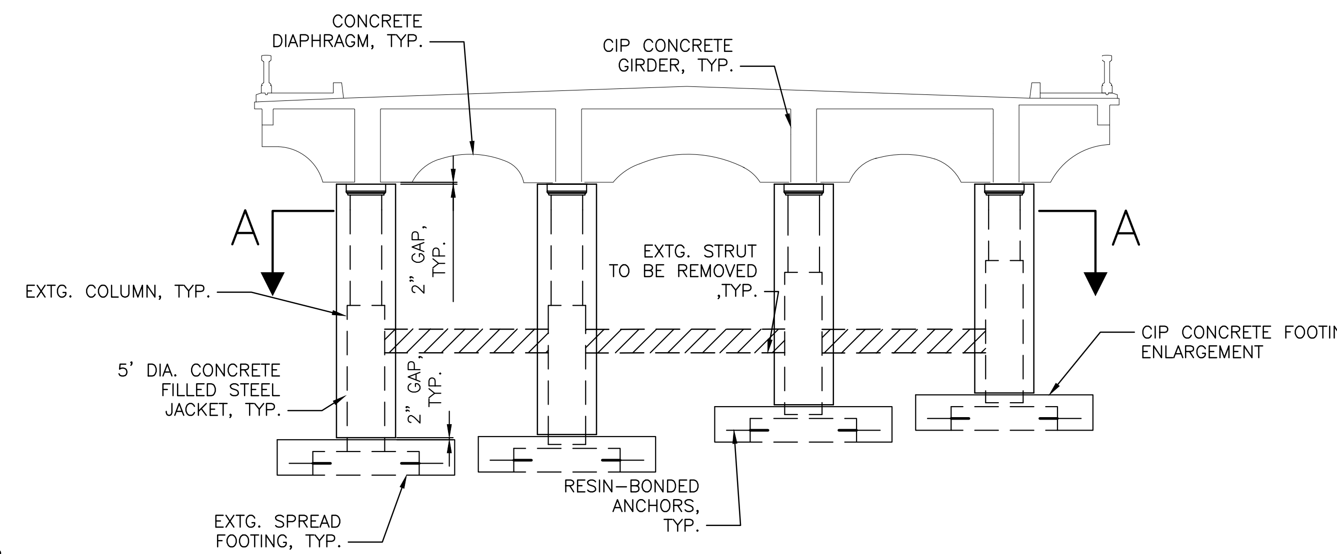


SECTION A–A



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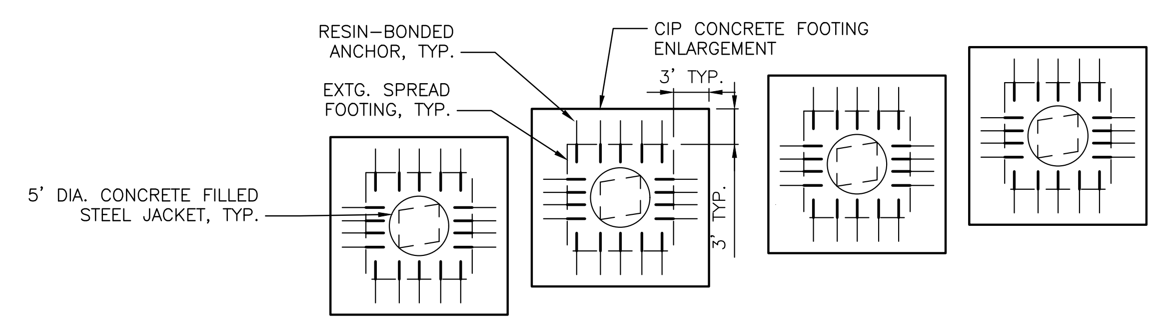

SECTION A–A

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ALT 3 – BENT 16 – 17 DETAILS

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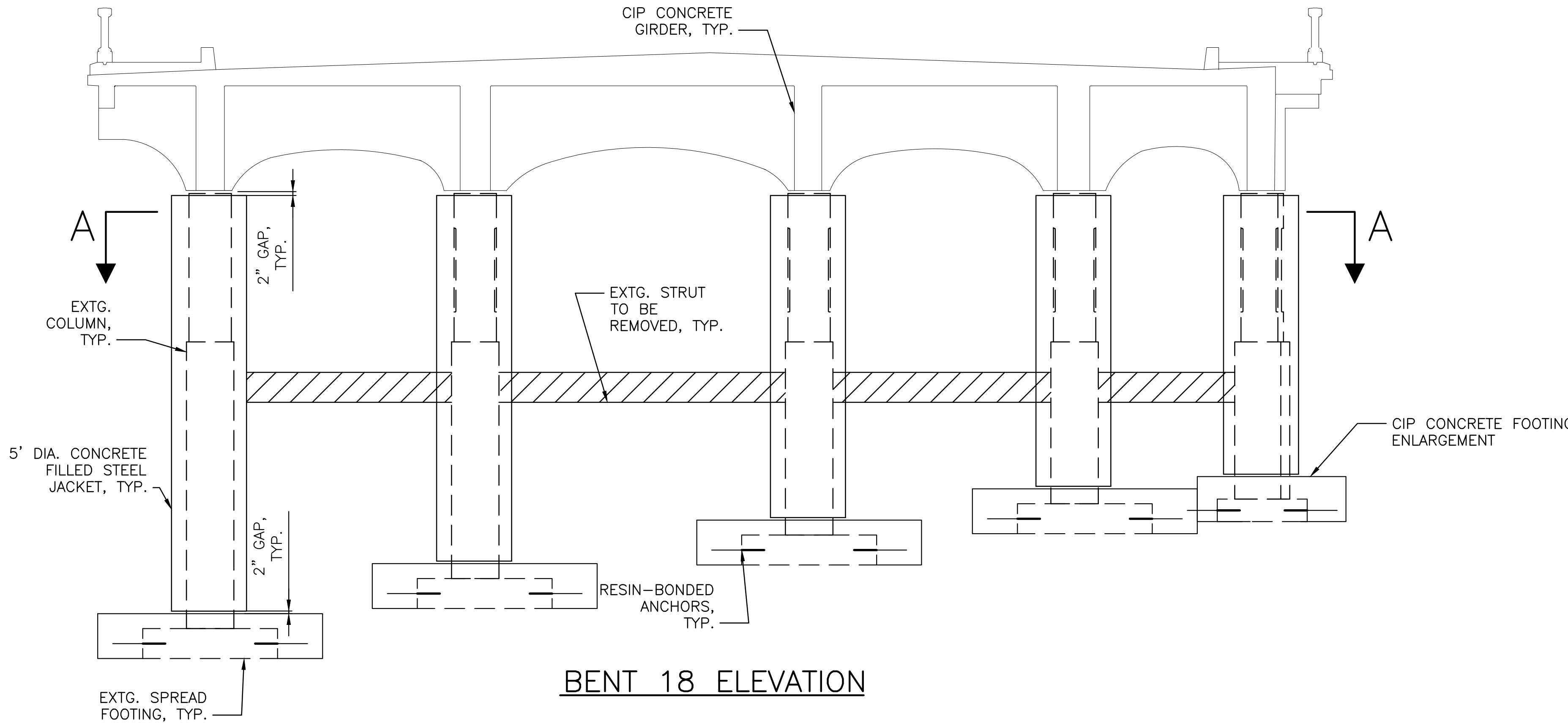

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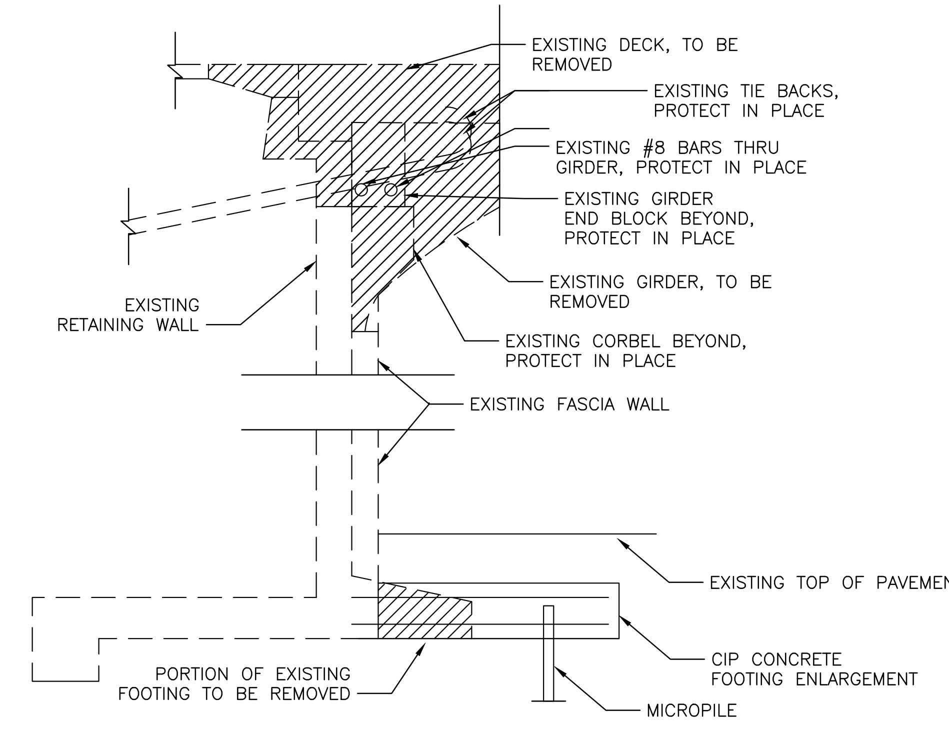
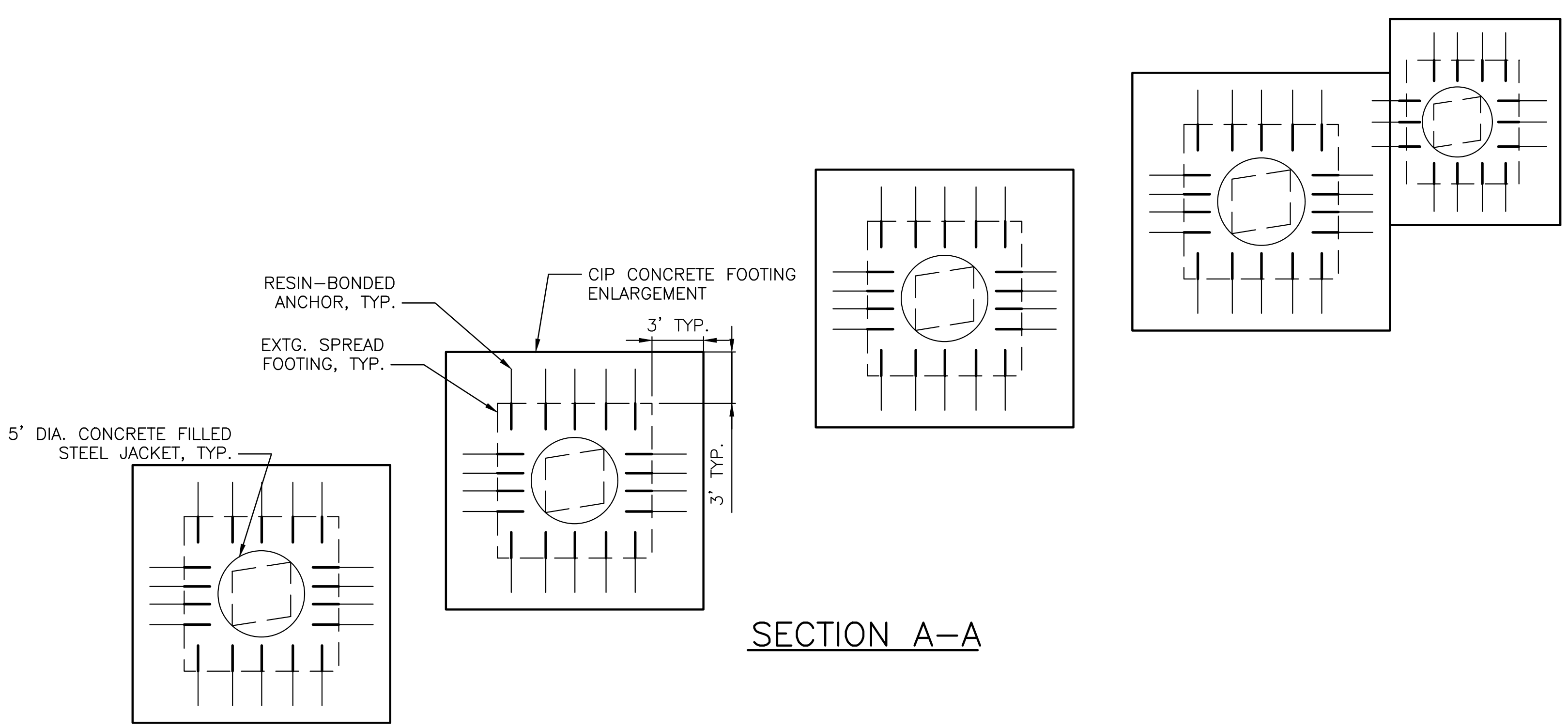


N. ABUTMENT SECTION



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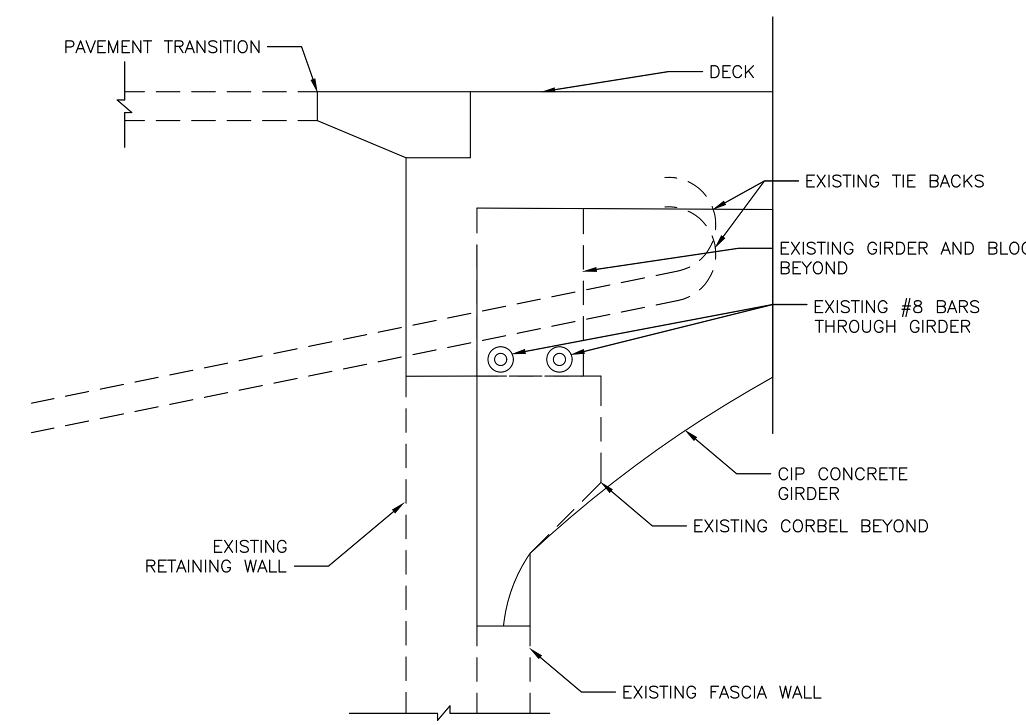

GIRDER REPLACEMENT DETAIL

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ALT 3 – BENT 18 & N. ABUTMENT DETAILS

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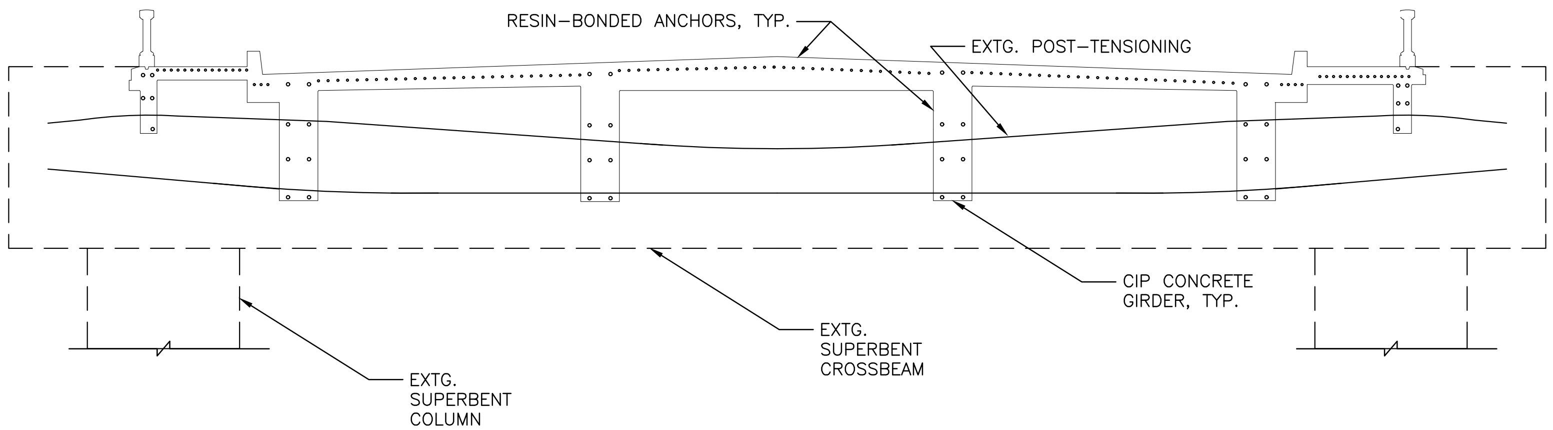
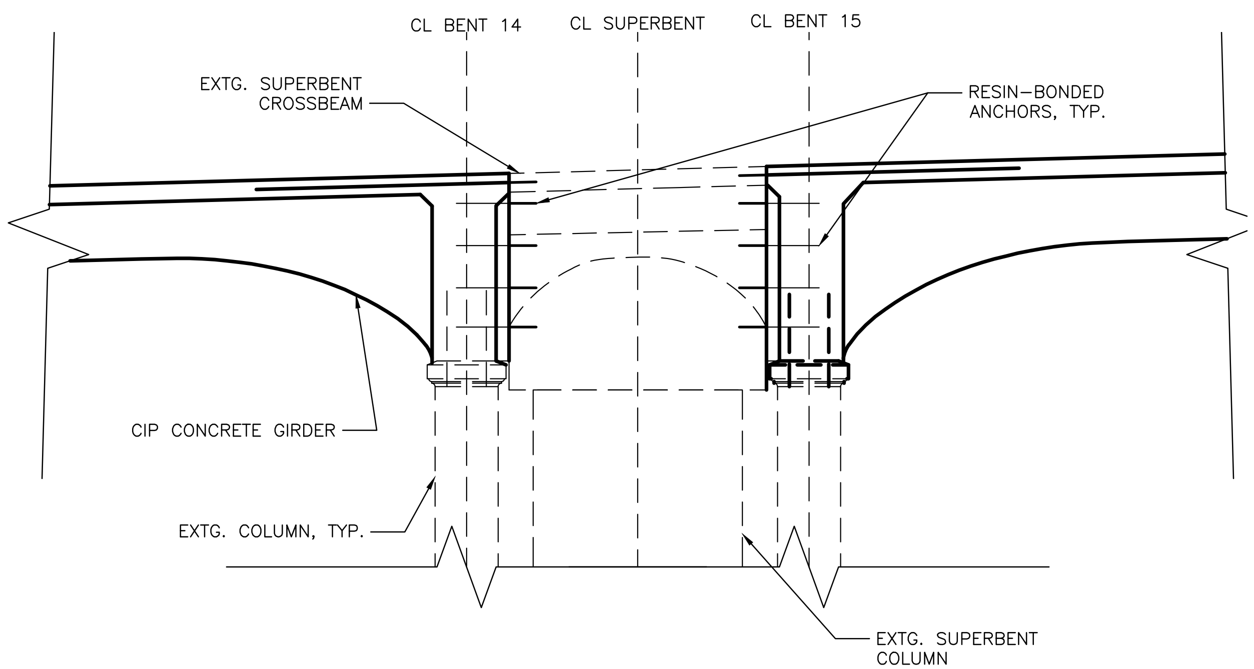
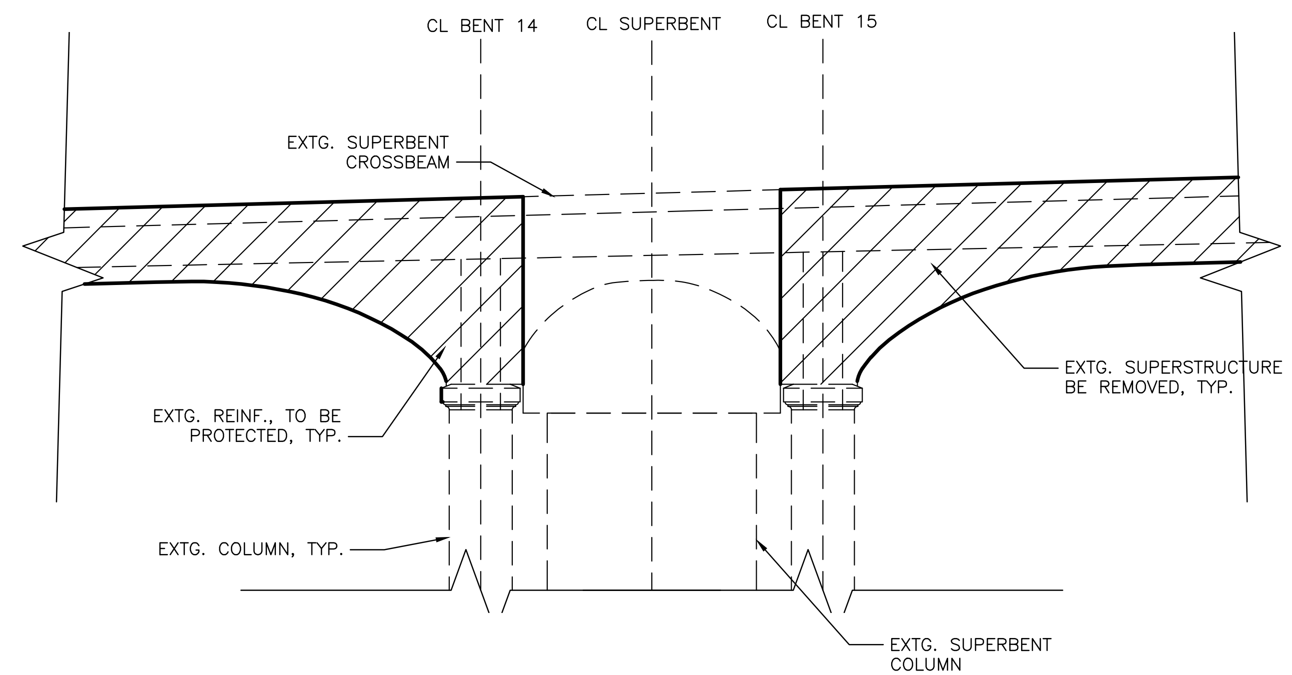
VPI #
SHEET 7 OF 8



SUPERBENT ELEVATION



SECTION A–A



SECTION A–A

SDCI ########, SDOT ########

ALT – 3 SUPERSTRUCTURE DETAILS

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LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
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	SDOT PROJ. MGR.
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ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0–02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #

SHEET 8 OF 8

Attachment D

Final Geotechnical Recommendations

Geotechnical Recommendations

University Bridge North Approach Planning Study

Seattle, WA

October 13, 2023

Clarity Engineering LLC

Prepared for:

HDR, Inc

Bellevue, WA

Prepared by:

Clarity Engineering LLC

Vashon, WA

GEOTECHNICAL RECOMMENDATIONS
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY
SEATTLE, WA

OCTOBER 13, 2023

Prepared for:

HDR, Inc

Bellevue, WA

Attention: Ken Jumpawong, PE

Prepared by:

Clarity Engineering, LLC

Vashon, WA

Matthew Gibson, PhD, PE

Principal

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GEOTECHNICAL RECOMMENDATIONS
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY
SEATTLE, WA

1 INTRODUCTION

This report presents geotechnical recommendations for the University Bridge North Approach Planning Study located in Seattle, Washington (see Figure 1, Site Vicinity Map). The concrete spans of the north approach are showing signs of deteriorating concrete and is deemed functionally obsolete. In addition, seismic design forces have increased since the last seismic retrofit study was performed in the late 1990's. This planning study is to evaluate alternatives for replacement and/or rehabilitation of the north approach spans to address these concerns.

1.1 Scope of Services

The authorized scope of services is based on our subconsultant agreement with HDR executed on November 16, 2022. Our scope of services included:

- Performing a site visit.
- Reviewing information related to the existing foundation system provided to us and available geotechnical and geologic data from borings and other testing in the vicinity of the bridge.
- Generating seismic design ground motion parameters.
- Evaluating geologic hazards.
- Developing recommended geotechnical soil properties and foundation parameters for seismic analyses.
- Evaluating existing abutment walls.
- Providing preliminary recommendations for additional lateral resistance to the bridge such as soil anchors or vertical support elements.
- Preparing this geotechnical report.

1.2 Basis of Report

Our conclusions and recommendations are based on:

- Our understanding of the project and information provided by HDR and SDOT. We assume this information is representative and accurate.
- Bridge design being performed in accordance with the SDOT Bridge Seismic Retrofit Philosophy, Policies, and Criteria, Rev 1, FHWA Seismic Retrofitting Manual for Highway Structures, WSDOT Bridge Design Manual, AASHTO LRFD Seismic Bridge Design and Bridge Design Specifications, and the WSDOT Geotechnical Design Manual.
- Input from the project team on assumed replacement or rehabilitation concepts and construction methods.

1.3 Use of this Report

This report was prepared for the exclusive use of Seattle DOT, HDR, and the project team for the University Bridge North Approach Planning Study project. This report should not be used for other purposes without Clarity Engineering's review.

The recommendations in this report supersede those provided in all previous versions of this report, memorandum, and those provided via email during the project.

Our studies were performed for alternatives analysis purposes and should not be used for final design or construction. Additional explorations and analyses will be required to develop final design recommendations for this project.

This report should not be used without our approval if any of the following occurs:

- Conditions change due to natural forces or human activity under, at, or adjacent to the site.
- Assumptions stated in this report have changed.
- Project details change or new information becomes available such that our recommendations may be affected.
- If the site ownership or land use has changed.

If any of these occur, we should be retained to review the applicability of our recommendations.

1.4 Limitations

This report for the University Bridge North Approach Planning Study was prepared in accordance with local generally accepted engineering principles, practices, and standards. No warranty is expressed or implied. The findings and recommendations contained in this report are based upon the services you requested and approved.

Geotechnical engineering requires the application of professional judgment, as no study can completely quantify subsurface conditions. Any interpretations of subsurface conditions in this report are based on our analyses, experience, and judgment. There is no warranty that these subsurface conditions occur anywhere on the site except at the exact location and exact time when and where the field tests were conducted. Groundwater levels can be especially sensitive to seasonal and other changes. Clarity Engineering is not responsible for interpretations others may make using this report.

The conclusions and recommendations in this report assume that field explorations and tests, and our interpretations accurately portray and represent subsurface conditions at the site. If, during excavation and/ or construction significantly different subsurface conditions are encountered from that described in this report, our firm should be immediately notified and retained to review these conditions and, if necessary, revise our recommendations. Unanticipated soil conditions are commonly encountered during excavation and construction and cannot be fully anticipated by widely spaced subsurface sampling locations and testing intervals. The owner should be prepared to accommodate potential extra costs through the development of a contingency fund.

If there is a significant lapse of time between our report submittal and the start of construction, we should be retained to review and verify site conditions.

Clarity Engineering cannot be responsible for any deviation from the intent of this report including, but not limited to the nature of the project, the construction timetable, and any construction methods discussed in this report. The recommendations contained in this report are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as may be specifically described in the report. Clarity Engineering will not be responsible or liable for any construction, scheduling, or safety activity on this site.

2 SUBSURFACE CONDITIONS

2.1 Regional Geology

The regional geologic condition of the site and greater Puget Sound is a result of glacial and non-glacial geologic processes. The most recent and extensive glacial activity in the Puget Sound area was the Vashon stade of the Fraser glaciation that ended about 10,000 years ago. During the Vashon stade, the advancing ice sheet blocked northward lowland drainage resulting in the formation of pro-glacial lakes, the establishment of southerly drainage, and the deposition of laminated to massive silt and clayey silt deposits. Such deposits are mapped as Lawton Clay. As pro-glacial lakes drained to the south, meltwater channels flowing from the toe of the glacier transported and deposited well sorted sands and gravels ahead of the advancing glacier. These advance outwash deposits were subsequently overridden and consolidated under the advancing ice sheet.

In a typical glacial deposition sequence, advance outwash coarsens upwards to glacial till. Glacial till, a mix of poorly sorted silt, sand, and sub-rounded to well-rounded gravels and cobbles, is transported by the glacier and deposited under the ice resulting in a very dense to over consolidated deposit. During glacial retreat, recessional outwash deposits were transported by glacial meltwater and deposited in outwash channels. These deposits are not overridden by glacial ice and are normally consolidated. These deposits include silt and clay that accumulated in or adjacent to recessional lakes.

2.2 Project Area Geology

We reviewed existing geotechnical and geologic information in the project area to characterize subsurface conditions for this study. The information includes:

- Geologic mapping,
- Test pit explorations performed for the original bridge design (City of Seattle, 1931),
- Two borings performed for a previous seismic retrofit (Shannon & Wilson, 1996),
- One boring performed for the Westlake Avenue N Sanitary Sewer System (City of Seattle, 1963), and
- One boring performed for the North Interceptor project (Metropolitan Engineers, 1974).

These subsurface exploration locations are shown in Figure 1 and boring logs are included in Appendix A.

In general, the area of the north approach is mapped as modified land and Vashon subglacial till that has been glacially overridden (Troost et al, 2005). Existing subsurface explorations in the area encountered up to 14 feet of loose to medium dense fill underlain by very dense glacial till consisting of silty, gravelly sand. Two logs (TH-11 and ME-B-13) noted "boulders" or other material that caused explorations to meet refusal within the glacial till unit. The glacial till is underlain by very dense silty sand that was characterized as advance outwash.

Boring SW-B-1 performed by Shannon & Wilson (1996) sampled soil from behind the north abutment. The top 16 feet consisted of fill material described as loose gravelly, silty sand. Below the fill, dense to very dense glacial till and advanced outwash were encountered.

Between bents 15 and 16, there is an existing 108-inch diameter sewer line that is about 32 feet below the ground surface. This sewer line was constructed between 1911-1913 by the City of Seattle. In the project vicinity, construction records indicate the sewer was "…hand tunneled and wood sets with both closed and open lagging were erected for temporary support. The tunnel was lined by casting concrete against the soil from invert to spring line and erecting a three-course brick arch above the spring line. Back packing with soil was used to fill the void between the brick and the timber or adjacent soil "(Metropolitan Engineers, 1974). The 1974 study was commissioned to evaluate if there were voids above the hand mined tunnel. Boring ME-B-13 of this study, located near the bridge and performed directly over the sewer tunnel, encountered loose soils indicating the tunneling may have created voids in the area above the tunnel. It is uncertain as to the extent of the disturbance induced by the tunnel construction. This disturbed ground is likely to be loose to medium dense with lower shear strength relative to surrounding fill outside the influence zone of the tunnel construction.

Groundwater was noted by Shannon & Wilson (1996) at a depth of about 43 feet within the advance outwash. It is possible for groundwater within advance outwash soils that are capped by glacial till to be pressurized resulting in a total hydraulic head greater than hydrostatic levels. While this scenario is common in the Puget Sound, it is unknown if these conditions have developed either permanently or seasonally at the site. There is also potential for groundwater within the fill to be perched on top of the glacial till deposits. Groundwater levels within the fill will likely vary with the seasons depending on precipitation levels.

3 EARTHQUAKE ENGINEERING

3.1 Seismic Ground Motions

This section presents seismic design ground motion parameters based on the procedures described in the SDOT BSRPPC. This document requires that retrofitted bridge structures be designed in accordance with the FHWA Seismic Retrofitting Manual for Highway Structures (2006) and the AASHTO Guide Specifications (2011). This FHWA manual specifies two earthquake ground motion hazard levels for evaluation and retrofit of bridges including Lower and Upper Level ground motions with a 100- and 1,000-year return period, respectively. The design spectrum for the Lower Level and Upper Level ground motions are obtained following the design spectrum construction method in Section 3.4.1 of AASHTO (2011).

In addition, the following amendments to the SDOT BSRPPC recommendations were requested by SDOT:

- Use the 2018 National Seismic Hazard Map (NSHM), prepared by Petersen et al, 2018, to select the B/C Boundary (Vs=760m/s) spectral accelerations at PGA, 0.2 second, and 1.0 second.
- Use the ASCE 7-16 site class designations and site coefficients (F_{PGA}, F_A, and F_V) for site conditioning.

The AASHTO Guide Specifications express the effects of site-specific subsurface conditions on the ground motion response in terms of the "site class" for the site. The "site class" represents the density or stiffness of the soil profile underlying the site and is used to account for the seismic response of the soil profile. Based on assumed shear wave velocity $V_{s,100}$ of about 1000 ft/s, the subsurface at the bridge site should be characterized as Site Class D.

The 2018 NSHM includes Puget Sound basin effects for structural periods between 0.5 to 10 seconds. However, note that Puget Sound basin effects are an area of active study and may change in the coming years. The 2018 NSHM also does not include near-fault directivity for the Seattle Fault. Given the distance of this bridge to the Seattle Fault and that it is on the footwall, in our opinion directivity effects do not need to be included. The recommended

Lower Level (100-year) and Upper Level (1,000-year) ground motion parameters for bridge retrofit and replacement alternatives are provided in Figure 2 and 3, respectively.

3.2 Liquefaction and Settlement Potential

Liquefaction is a momentary loss of some portion of soil shear strength during a seismic event. During a seismic event, the loose soil particles tend to contract, which transfers stress from soil particles to water within the pore space. The cyclic loading occurs in a short amount of time and the water between the soil grains does not have sufficient time to drain. The result is the water between the soil grains builds up excess pore pressures causing a reduction in the effective stress within the soil mass and a reduction, and sometimes total loss, of shear strength. Liquefaction can cause lateral spreading and settlement.

The subsurface information indicates that the foundation soils are generally very dense and are considered too dense to be susceptible to liquefaction, lateral spreading, and liquefaction-induced settlement. Fill soils that have a lower relative density are not saturated and therefore also not susceptible to liquefaction.

4 AS-BUILT ABUTMENT RECOMMENDATIONS

The north abutment consists of a cantilever retaining structure with deadman anchors. The deadman anchors are located beyond the active soil wedge formed at the abutment and thus provide additional lateral support to the wall. In addition, the abutment provides vertical and lateral support to the superstructure. We understand that static and seismic stability evaluations will be made of the abutment based on as-built conditions. Table 1 presents lateral loading soil parameters to be used in these analyses.

Table 1: Recommended Abutment Nominal Soil Parameters for Lateral Loading

Parameter	*Static Loading*	*Seismic Loading*	
		Lower Level	*Upper Level*
Active pressure EFP (Backfill)	40	48	62
Passive pressure EFP (Backfill)	575	540	480
Sliding Coefficient (Backfill)		0.40	
Sliding Coefficient (Foundation)		0.55	

Notes: Seismic pressures assume permanent horizontal abutment deformation of 1 to 2 inches.
EFP=Equivalent fluid pressure in pounds per cubic foot.

Active and passive earth pressures can be used to evaluate the abutment wall. We assume that fill is present behind and in front of the abutment and that the base of the abutment is on native glacial soils. Due to inertial effects within the soil, earth pressures will change depending on the seismic design level. During seismic loading the active pressures will increase, and the passive pressures will decrease. Resistance factors for use with earth pressures and sliding coefficients are shown in Section 5.1.2.

Active and passive earth pressures can also be used to evaluate the existing dead man anchors supporting the abutment. Lateral forces from soil pressures should be calculated from the portion of the pressure applied on the vertical face of the deadman. Note that the lateral soil resistance provided by the deadman will be the passive pressure minus the active pressure. Additional lateral resistance from sliding along the bottom of the deadman anchor can be estimated using the sliding coefficient for backfill shown in Table 1. Soil above the deadman anchor can be assumed to have a density of 120 pounds per cubic foot.

Bearing capacity recommendations for shallow foundations presented in Section 5.1.1 can be used to evaluate the abutment footing.

4.1 Springs for Structural Model

We understand that the abutment will be approximated by a horizontal and vertical spring in dynamic analyses of the bridge superstructure. The parameters in Table 1 can be used with the methods described in AASHTO LRFD Seismic Bridge Design (2011) Section 5.2.3.3.2 to calculate the lateral abutment spring assuming the soil factor, Fw, equals 0.03 for the backfill in equations 5.2.3.3.2-1 or 5.2.3.3.2-2. The vertical spring can be developed as discussed in Section 5.1.3**Error! Reference source not found.** assuming the abutment is a shallow foundation using the embedment depth measured at the wall face. Note that the lateral resistance and stiffness of these springs depends on the dynamic movement of the abutment and bridge structures and expansion joint behavior between the bridge superstructure and the abutment. While the joint remains open, the available lateral spring capacity is generally assumed to be equal to the seismic active pressure of the backfill. If the joint closes, the lateral spring capacity will be controlled by mobilized seismic passive soil pressures.

5 FOUNDATION RECOMMENDATIONS

We understand an as-built analysis of the existing foundations will be performed and design of new foundations may be needed for retrofit or rehabilitation of the north approach. Based on drawings for the original construction of the bridge provided by SDOT, we understand the north approach is supported by shallow square footings except at Bent 16 which is supported by timber piles. We assume piles were used to limit loading of the nearby buried sewer line and accommodate ground disturbance and voids caused by the sewer's construction. As-built drawings indicate the footings' widths range from 6 to 12 feet and have a length over width (L/B) ratio ranging from 1 to 2. The drawings also show the foundation embedment ranges from 10 to 13 feet.

For potential new foundations, we understand an approximate vertical loading of 2000 kips per bent is assumed. Shallow foundations or drilled, cast-in-place (CIP) piles or shafts may be used in all locations except between bents 15 and 16 near the existing 108-inch diameter sewer pile due to loose soil observed in boring ME-B-13 (Metropolitan Engineers, 1974) and the potential to load the sewer. Near the sewer, only drilled CIP piles or shafts can be used. This section presents recommendations for shallow and deep foundations.

5.1 Shallow Foundations

5.1.1 Bearing Capacity

Nominal bearing capacities and recommended resistance factors for design of the approach and abutment foundations for strength, service, and seismic limit states are presented in Table 2. These bearing capacities assume the foundation is cast on undisturbed very dense glacial till or till-like soils located about 10 to 15 feet below ground surface at bottom depths similar to the existing north approach footings.

Table 2: Recommended Bearing Capacity of Foundations

Limit State	*Nominal Bearing Capacity (ksf)*	*Recommended Resistance Factor*	*Factored Bearing Capacity (ksf)*
Strength	50	0.45	22.5
Service (0.5 inch)	30	1.0	30
Extreme (Seismic)	50	1.0	50

Notes: ksf = kips per square feet

5.1.2 Lateral Resistance

For evaluation of sliding of the foundation, we recommend a nominal coefficient of friction of 0.55 between a cast-in-place concrete footing and very dense, glacial foundation subgrade soil. Nominal passive pressures can be calculated assuming zero at the ground surface and increasing with depth using an equivalent fluid weight of 575 pounds per cubic foot (pcf). Lateral resistance from passive pressures should be calculated from the portion of the passive pressure applied on the vertical face (thickness) of the footing, ignoring the portion of passive pressure within 2 feet of the ground surface. Table 3 presents the recommended resistance factors for sliding and passive earth pressures.

Table 3: Recommended Resistance Factors for Lateral Resistance

Limit State	*Condition*	*Resistance Factor*
Strength	Cast-in-place concrete on sand	0.8
	Passive earth pressure	0.5
Extreme (Seismic & Scour)	Cast-in-place concrete on sand	1.0
	Passive earth pressure	1.0

5.1.3 Shallow Foundation Stiffness

The stiffness of the shallow foundations can be estimated using the methods in Section 6 of FHWA, Part 1 (2006) and Section 2.2 of NIST (2012). These equations require an estimate of the foundation material, Poisson's ratio, and strain-compatible shear modulus. Shear wave velocities and small strain shear modulus were estimated based on the subsurface explorations reviewed and our experience with similar soils. Degraded (large strain) shear modulus was estimated using shear modulus reduction values presented in NIST (2012).

Table 4 presents the recommended stiffness parameters for the site soils. A range of plus and minus 10% should be considered as potential uncertainty for the soil stiffness parameters.

Table 4: Recommended Soil Stiffness Parameters

Parameter	*Recommended Value*
Low strain (maximum) shear modulus, G_0	27 ksi
Shear wave velocity, V_s	1000 ft/s
Poisson's ratio, ν	0.35
Large strain effective shear modulus, G	
Lower Level Event, G/G_0=0.79[1]	21 ksi
Upper Level Event, G/G_0=0.47[1]	13 ksi

Notes: G/Go reduction factor based on NIST (2012), Table 2-1., ksi = kips per square inch, ft/s = feet per second

5.2 Deep Foundations

Deep foundations can be used for all new foundations and are assumed to be needed between bents 15 and 16 given potentially loose soils above the sewer line and to prevent loading of the sewer. Based on the very dense glacially consolidated soils below the sewer, we assumed drilled, CIP piles would be used for new deep foundations. A pile diameter of 3 feet was assumed to develop design parameters for the purposes of conceptual evaluations.

5.2.1 Axial Capacity

We performed axial capacity analyses in general accordance with methods of analysis outlined in AASHTO (2017) and Brown et al (2018). The analyses are based on existing subsurface information available at the site and our experience in similar soils. Axial loads applied to the CIP piles will be resisted by side and base resistance between the concrete and the soil. Figure 4 presents a pile capacity chart for 3-foot diameter (D) drilled piles. The axial resistance plots present assumed side and tip resistance, nominal resistance, and factored resistance as a function of depth. These recommended axial capacities apply to shafts that are spaced at least 3D on-center. We recommend resistance factors for pile design shown in Table 5 based on AASHTO (2017) which are incorporated into the factored resistance plots shown on Figure 4.

Table 5: Recommended Resistance Factors for Axial Capacity

Limit State	*Resistance Type*	*Loading Direction*	*Resistance Factor*
Strength Design	End	Compression	0.5
	Side	Compression	0.55
		Uplift	0.45
Extreme	End and Side	Compression	1.0
	Side	Uplift	0.8

5.2.2 Vertical Springs

Vertical springs to be used for loading evaluations were calculated based on load-displacement curves for drilled shafts (Chen and Kulhawy, 2002) and elastic compression along the length of the CIP pile. Based on axial load estimates, we have assumed a pile length of 40 feet for these calculations. Figure 5 presents the vertical springs for input into a structural model. Spring values for the base of the pile include vertical pile displacement only from load distribution along the side and at the base. Spring values shown for the top of the pile also include elastic compression of the pile.

5.2.3 Lateral Capacity and Horizontal Springs

The computer program LPILE (Ensoft, 2019) was used to estimate lateral capacities of the CIP piles. In addition, LPILE was used to generate P Y curves (load-deflection curves) to develop discrete spring values that will model soil-pile interaction in a structural model. Based on the subsurface conditions encountered in the existing borings, the soil parameters used for lateral resistance analyses are shown in Table 6.

Table 6: Lateral Analysis Input Parameters

Depth (feet)	*Layer Description*	*P-Y Soil Model*	*Effective Unit Weight (psf)*	*Friction Angle (degrees)*	*k (pci)*
0 to 15	Fill	API Sand	120	30	48
15 to 20	Weathered Glacial Till	API Sand	130	36	164
20 to 43	Glacial Till and Advance Outwash	API Sand	130	40	258
> 43	Advance Outwash	API Sand	67.6	40	176

Notes*:*

1. psf = pounds per square foot, pci = pounds per cubic inch
2. The soil profile and strength values represent an idealized soil profile based on borings SW-B-2.

Nominal lateral capacities were estimated for a 3-foot diameter, drilled CIP pile with approximately 2% longitudinal reinforcement steel. The top of the pile was assumed to be 4 feet below the ground surface and both free and fix-headed conditions were analyzed. No group effects were considered in this analysis. Lateral capacity estimates for prescribed displacements are shown in Table 7.

Table 7: Nominal Lateral Capacities of 3-Foot-Diameter CIP Piles

Head Condition	*Prescribed Displacement (in)*	*Shear at Pile Top (kips)*	*Peak Moment (kip-in)*	*Depth to Peak Moment Below Pile Head (ft)*
Free	1.0	178	1,070	10
Free	2.0	241	1,690	10
Fixed	0.5	257	1,640	0
Fixed	1.0	340	2,000	0

A plot of the p-y curves for depths every 2 feet for the top 20 feet of pile and every 4 feet thereafter are shown on Figure 6 and values are provided in Appendix B. To calculate discrete lateral springs to approximate soil stiffness values for the structural model, the p-y curve values must be multiplied by the tributary length of the pile where each spring is applied. The p-y curves shown on Figure 6 are for a single pile or for piles spaced greater than 6D. If pile spacing is less than 6D, the values of p should be multiplied by p-multiplier values to account for group effects. Table 8 presents recommended p-multiplier values in accordance with AASHTO (2017). Note that these multiplier values are applied to p-y curves only, and not the estimated lateral capacities provided above.

Table 8: Pile P-Multipliers for Group Effects

	P-Multipliers, Pm		
Pile Center-to-Center Spacing [1]	*Row 1*	*Row 2*	*Row 3 and higher*
3D	0.8	0.4	0.3
5D	1.0	0.85	0.7

Notes:
1. Center-to-center spacing is in the direction of loading with row 1 as the leading row.

5.3 Micropiles Foundations

Micropiles may be used to provide uplift capacity to existing shallow foundations. A micropile is a small diameter (6 to 12 inches), drilled and grouted pile, which is typically reinforced with a center threaded bar and sometimes an outer steel casing above the bond zone. Micropiles are installed by rotary drilling a borehole, placing reinforcement, and grouting from the bottom up.

Due to their small diameter, the end bearing is typically neglected because it is minor compared to the grout-to-ground capacity along the pile perimeter. The soil conditions and installation procedure strongly influence the grout-to-ground strength. For our analysis we have assumed that the micropiles would be constructed with gravity (non-pressurized) grouting during casing withdrawal (Type A installation in FHWA, 2000). Higher grout-to-ground strengths can be obtained by pressure grouting the micropiles.

The following recommendations are made for conceptual micropile design:

- For 8-inch diameter micropiles installed as described above, nominal axial resistance value of 8 to 10 kips per foot developed from grout-soil bond in the glacial soils should be assumed.
- The following resistance factors should be applied to the bond resistance:
  - Strength limit state compression and uplift: 0.55
  - Extreme limit state compression: 1.0
  - Extreme limit state uplift: 0.8

- All micropiles should extend a minimum of 10 feet into the bearing layer which is located approximately 15 feet below ground surface.
- Locate a minimum of two micropiles at each foundation element requiring retrofit.
- Lateral capacity of micropiles and friction at the base of pile-supported concrete footing should be ignored in the design calculations.

6 TIEBACK ANCHORS

We understand tieback anchors may be necessary for additional lateral resistance at the north abutment wall. Tieback anchors consist of steel strands or a reinforcing bar placed into predrilled holes typically drilled at an inclination of about 15 to 45 degrees from horizontal and backfilled with structural grout. The following recommendations are made for conceptual design:

- Tieback lengths will need to consider a no-load zone that starts at the base of the wall, is horizontal for a distance of H/4, where H is the height of the wall face, and then extends up towards the ground surface at an angle of 60 degrees from horizontal.
- Tieback anchor bond zones should be established within the dense glacial soils assumed to be at the same elevation as the bottom of the wall.
- Tieback anchors installed by cased, single-stage, primary pressure grouted methods could achieve nominal frictional value of 8 to 10 kips per foot in the glacial soils.
- The following resistance factors should be applied to the pullout resistance:
    - Strength limit state: 0.65
    - Extreme limit state: 1.0
- Tieback anchor zone lengths should be no less than 15 feet and no greater than 40 feet.
- Tieback anchors should be locked off with static loads only.

7 CONSTRUCTION CONSIDERATIONS

Excavations will be required to construct new shallow foundations. If space permits, these excavations could be made with open-cut slopes. For cuts greater than 4 feet, assume open-cut slopes would be no steeper than 1.5H:1V. Where space is limited, a cantilever soldier pile system could be used for excavation depths less than about 15 feet. Although groundwater is well below anticipated footing depths, local seeps may be encountered that require sump pumps to keep excavations dry.

Cast-in-place piles will require drill rigs and support cranes to construct. If the existing bridge deck remains in place during CIP pile construction, consideration should be given to the equipment height relative to the overhead clearance beneath the existing bridge. In addition, drilling piles can cause vibrations to nearby structures and utilities such as the sewer trunk. Consideration should be given for the use of oscillating and rotary drilling techniques to reduce risk to construction vibration induced damage.

8 ADDITIONAL SERVICES

The conclusions and recommendations presented in this report assume that Clarity Engineering will continue to be consulted to perform the following services:

- Review the Alternatives Comparison Report and retrofit project plans and specifications to evaluate the implementation of our design recommendations.

9 REFERENCES

AASHTO, 2011, Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition, with 2012, 2014, 2015, and 2022 Interim Revisions.

AASHTO, 2017, AASHTO LRFD Bridge Design Specifications, 8th Edition, November.

ASCE 7-22, 2022, Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

Brown, Dan A., Ph.D., P.E., John P. Turner*, Ph.D., P.E., Raymond J. Castelli, P.E., and Erik J. Loehr, Ph.D., P.E., 2018, "Drilled Shafts: Construction Procedures and Design Methods", FHWA NHI-18-024, September.

Chen, Y-J, and Kulhawy, F.H. (2002), "Evaluation of Drained Axial Capacity for Drilled Shafts," Geotechnical Special Publication No. 116, Deep Foundations 2002, M.W. O'Neill and F.C. Townsend, eds., ASCE, Reston, VA, pp. 1200-1214.

Ensoft Inc., L-PILE, 2019.

Federal Highway Administration (FHWA), 2006, Seismic Retrofitting Manual for Highway Structures: Part 1 – Bridges, FHWA-HRT-06-032, January.

Federal Highway Administration (FHWA), Micropile Design and Construction Guidelines, Publication No. FHWA-SA-97-070, June 2000.

Metropolitan Engineers, 1974, Final Report Soils Exploration, North Interceptor – Section N23, Seattle, Washington, June 24.

National Institute of Standards and Technology (NIST), 2012, Soil-Structure Interaction for Building Structures, NIST GCR 12-917-21.

NEHRP Recommended Seismic Provisions for New Buildings and Other Structures, 2009, Federal Emergency Management Agency.

Petersen MD, Shumway AM, Powers PM, et al. The 2018 update of the US National Seismic Hazard Model: Overview of model and implications. Earthquake Spectra. 2020;36(1):5-41.

Seattle Department of Transportation, 2015, Bridge Seismic Retrofit Philosophy, Policies, and Criteria, Revision 1, December.

Shannon & Wilson, Inc. 1996, SED Seismic Retrofit Study, University Bridge North Approach, Seattle, Washington, April.

Troost, K.G., Booth, D.B., Wisher, A.P., and Shimel, S.A., 2005, The geologic map of Seattle – a progress report: U. S. Geological Survey open file report 2005-1252, scale 1:24,000.

Legend

- Subsurface Explorations
- 5-foot Elevation Contours

Google Hybrid

Notes:

1. Vertical Datum: NAVD88, ft. Contours from King County LiDAR.
2. "UB" = University Bridge, "SW" = Shannon & Wilson, "ME" = Metropolitan Engineers, "DM" = Dames & Moore, "SEA" = City of Seattle

University Bridge North Approach Study
Seattle Department of Transportation
Seattle, Washington

SITE AND EXISTING EXPLORATION PLAN

October 2023 | 195-01

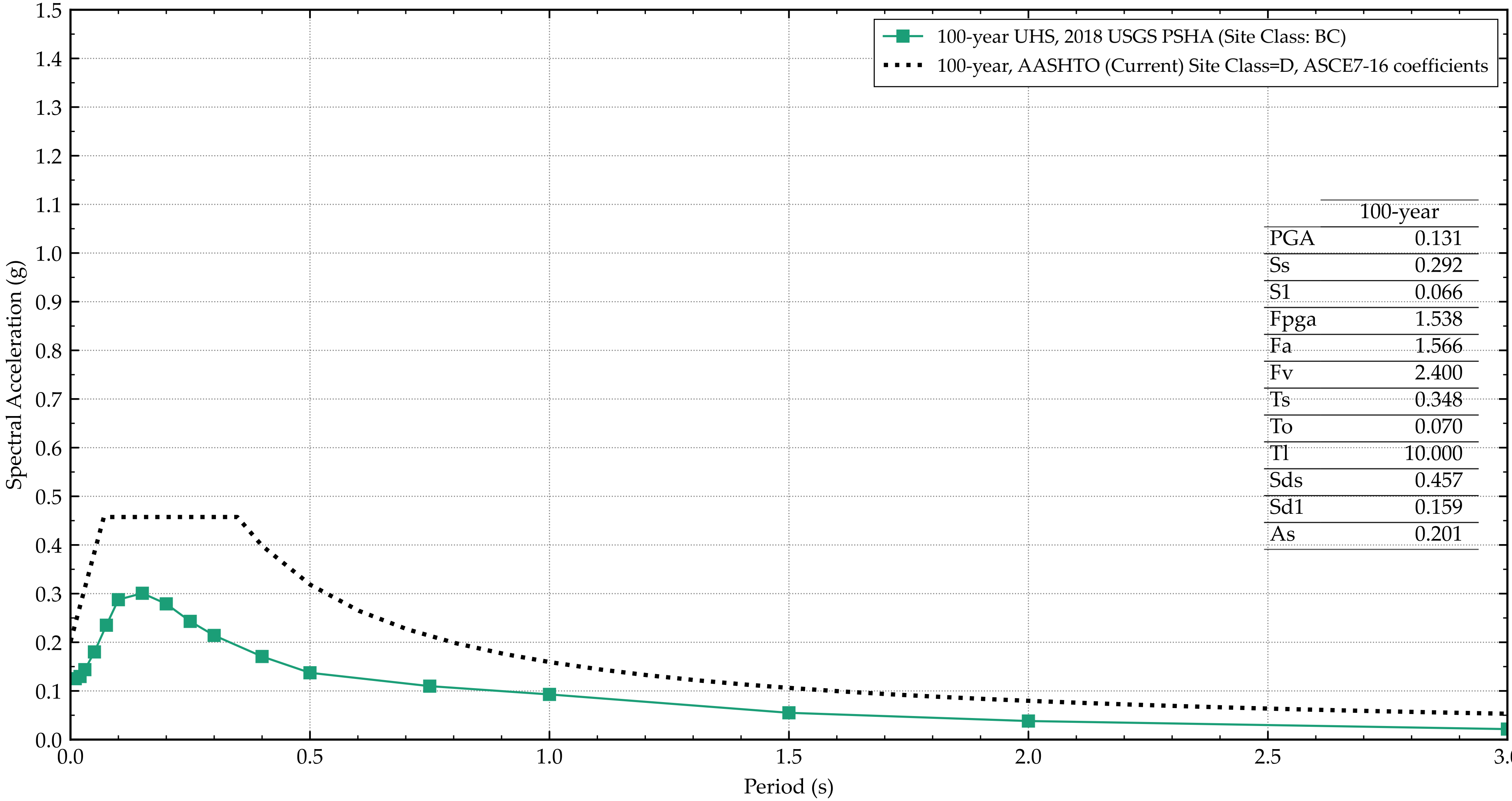
Clarity Engineering LLC
Geotechnical Consultants

FIG. 1

C:\Users\ClaireGibson\Clarity Engineering LLC\CELLC - Projects\195 University Bridge\Report\Site Plan.qgz\Site Plan.qgz

C:\Users\MattGibson\OD_CELLC\Clarity Engineering LLC\CELLC - Projects\195 University Bridge\Seismic\AASHTOhaz_2final.ipynb

ver0.15_by:MattGibson



Notes:

1. Assumed site $V_{S100} = 1,000$ ft/s which corresponds to site class D for the current AASHTO specification.
2. AASHTO two point spectrum calculated using the current AASHTO guide specification utilizing the 2018 USGS PSHA B/C boundary hazard curves and ASCE7-16 site coefficients.
3. 100 year multipoint spectra are uniform hazard spectra based on the 2018 USGS PSHA and do not include risk targeting or maximum direction factors.
4. Latitude= 47.6542, Longitude= -122.3193

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Seattle Department of Transportation
Seattle, Washington

100 YEAR ACCELERATION RESPONSE SPECTRA

October 2023 195-01

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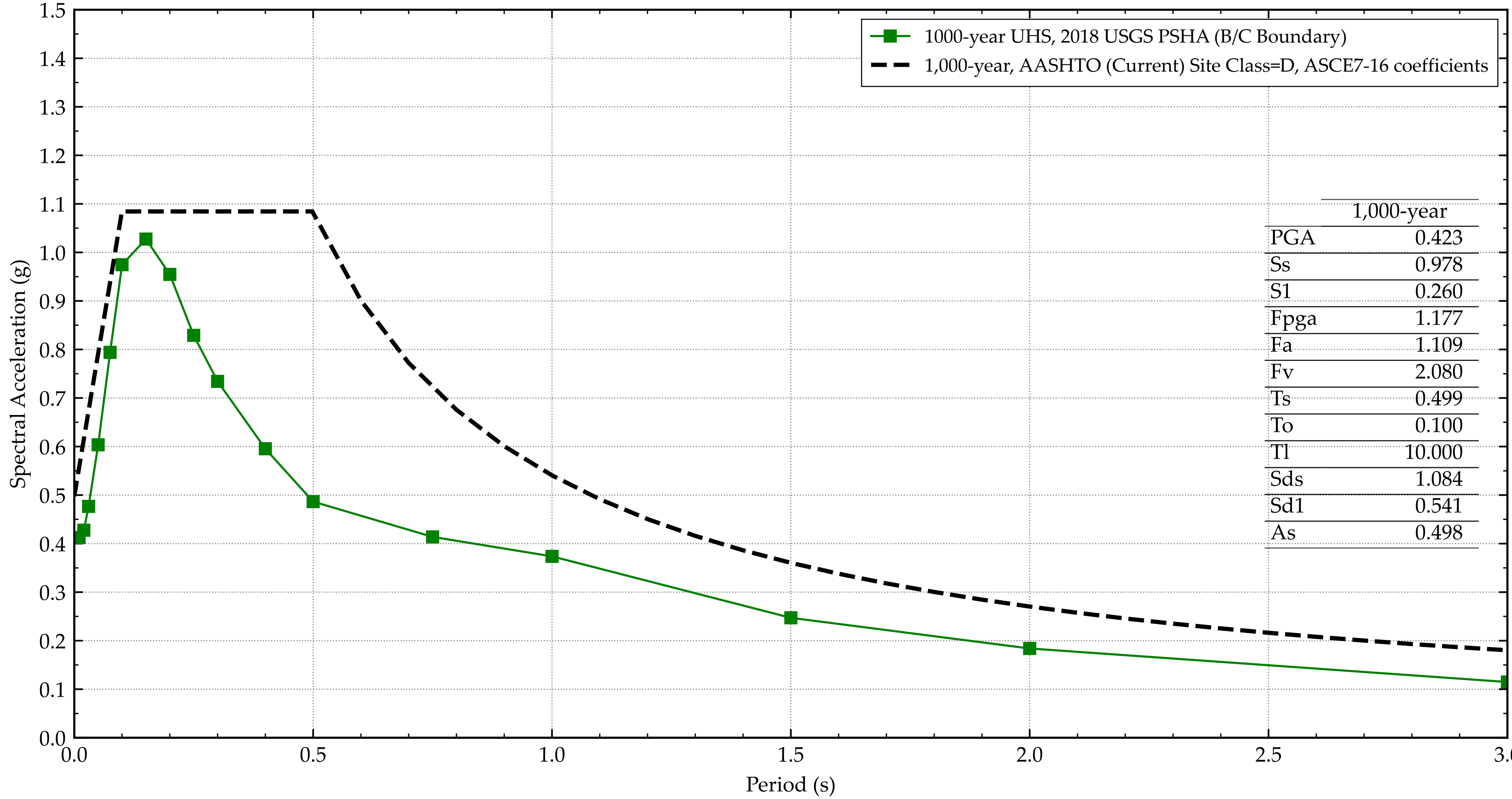
FIG. 2

FIG. 2



	1,000-year
PGA	0.423
Ss	0.978
S1	0.260
Fpga	1.177
Fa	1.109
Fv	2.080
Ts	0.499
To	0.100
Tl	10.000
Sds	1.084
Sd1	0.541
As	0.498

Notes:

1. Assumed site $V_{S100} = 1,000$ ft/s which corresponds to site class D for the current AASHTO specification.
2. AASHTO two point spectrum calculated using the current AASHTO guide specification utilizing the 2014 USGS PSHA B/C boundary hazard curves and ASCE7-16 site coefficients.
3. Latitude= 47.6542, Longitude= -122.3193

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1000 YEAR
ACCELERATION RESPONSE
SPECTRA

October 2023 195-01

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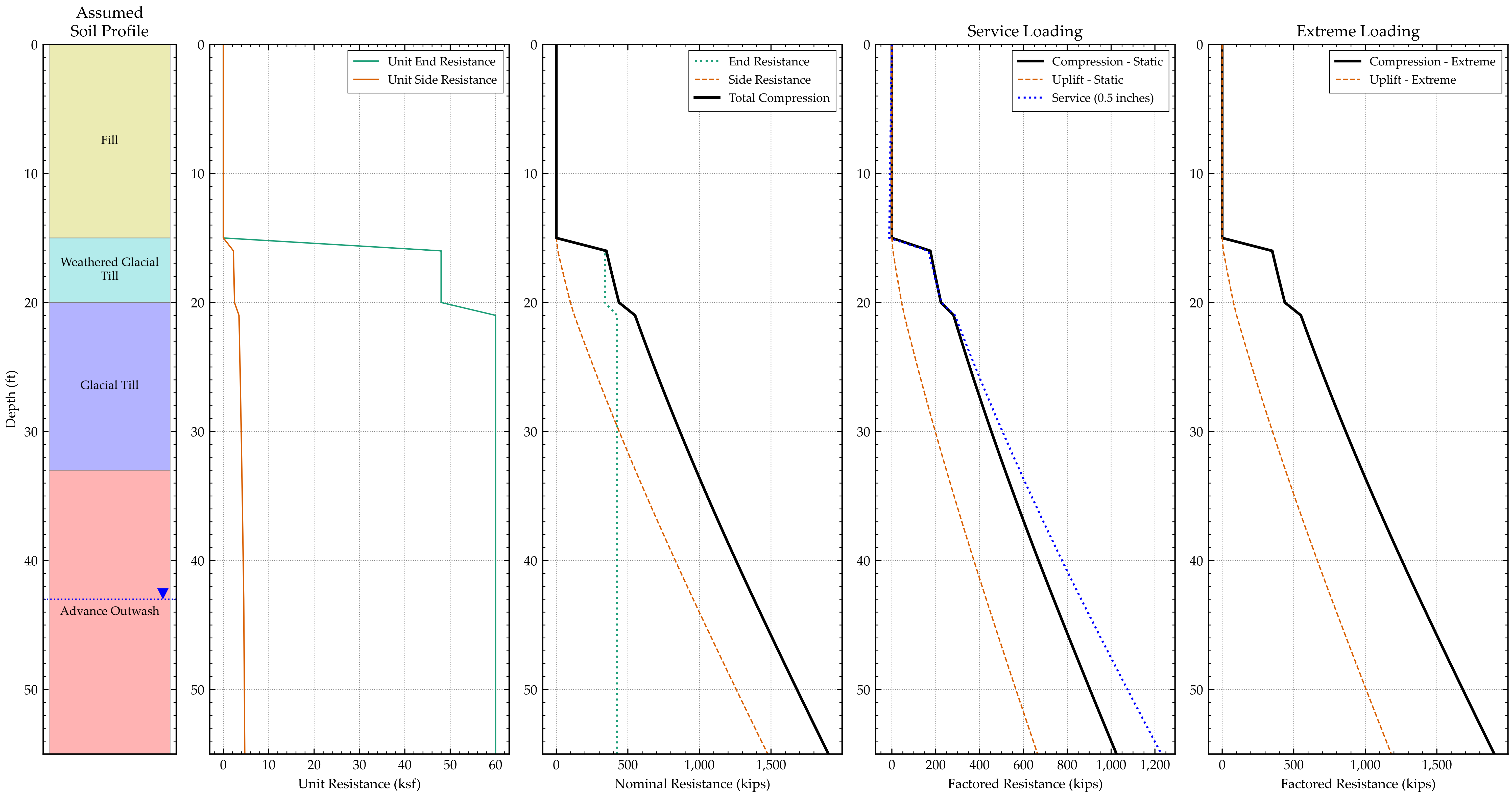
FIG. 3

FIG. 3



Notes:
1. The idealized soil profile is based on subsurface conditions in boring SW-B-2.
2. Factored compression resistance under static conditions includes factors of 0.55 for side resistance and 0.5 for tip resistance.
3. Factored uplift resistance includes factor of 0.45 under static conditions and 0.8 under extreme conditions.
4. These recommendations are for single pile capacity and do not consider piles spaced closer than 3 diameters center-to-center.

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CAST-IN-PLACE PILE
3-FT DIAMETER
RECOMMENDED AXIAL CAPACITY

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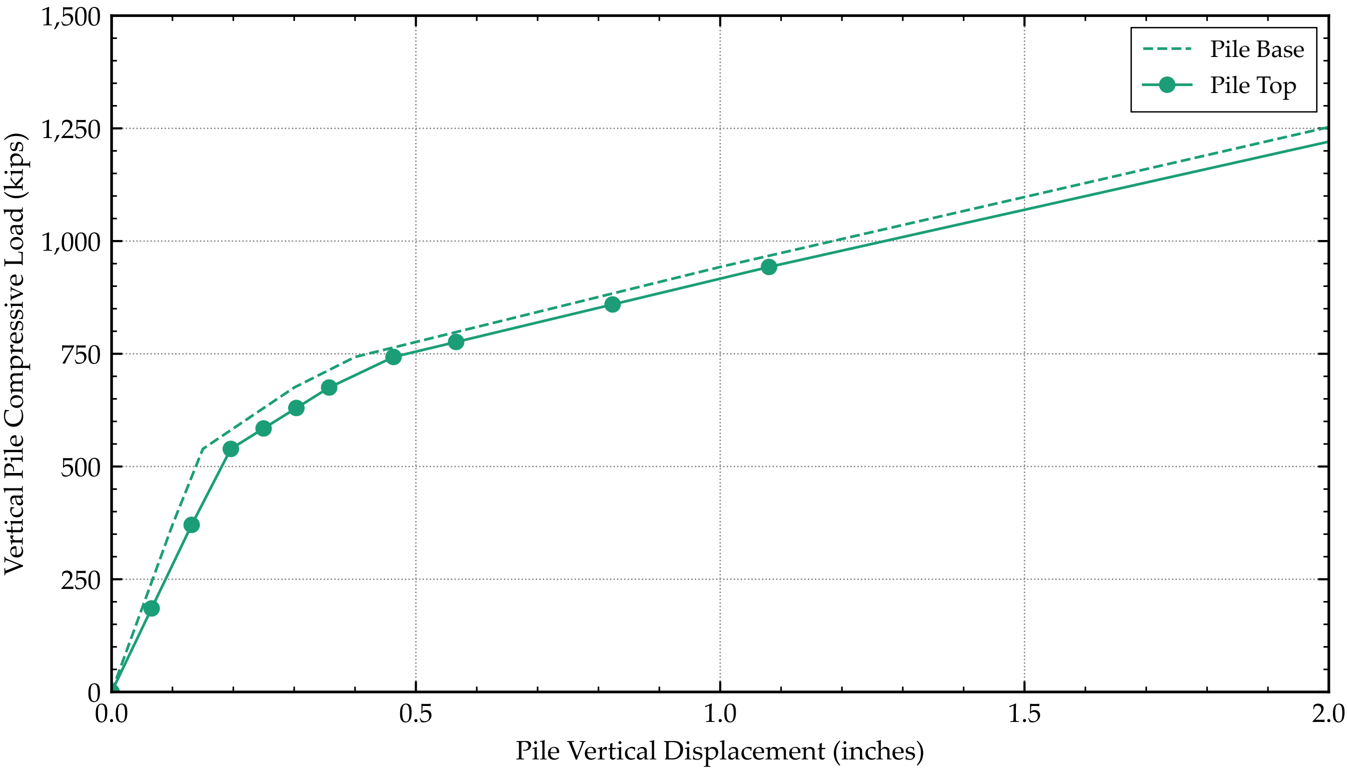
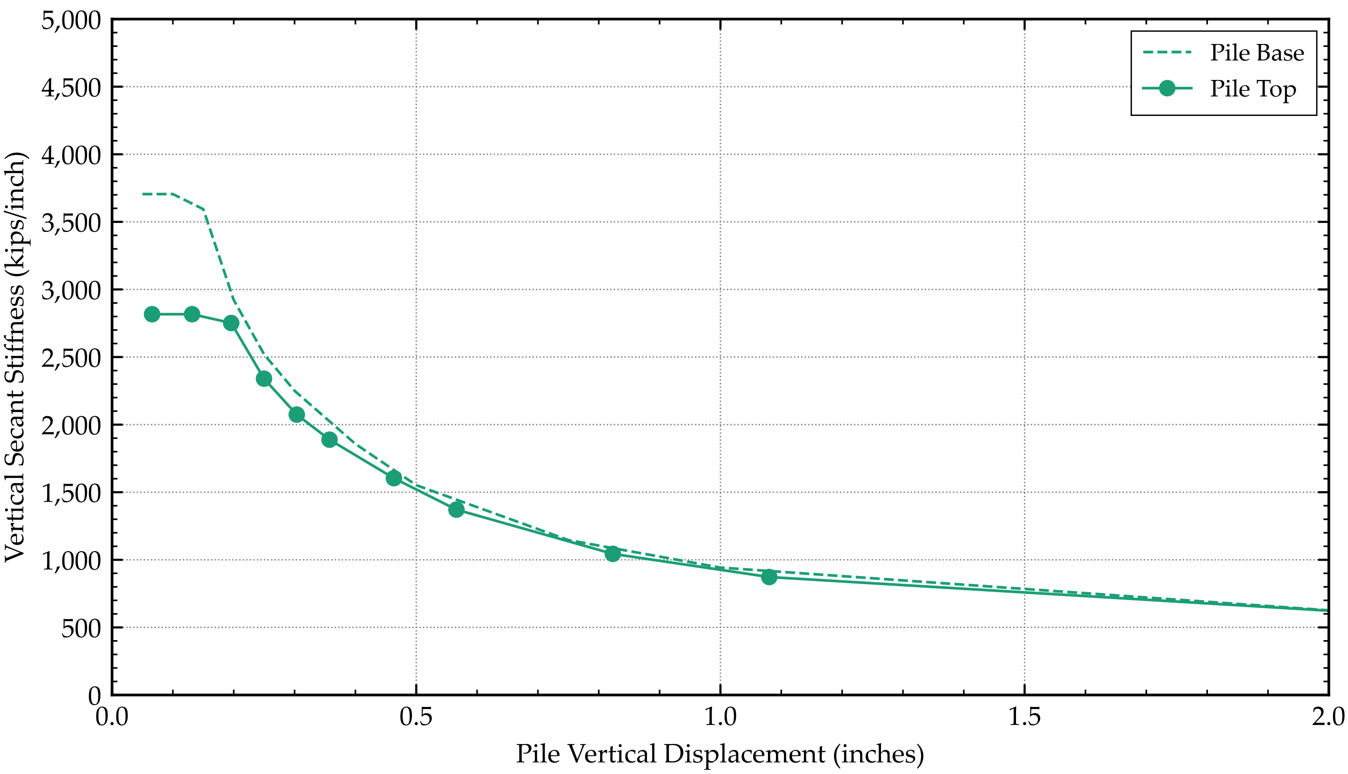
FIG. 4

C:\Users\ClaireGibson\Clarity Engineering LLC\CELLC - Projects\195 University Bridge\Analysis\Pile Axial Capacity.ipynb
ver0.18, byClaireGibson





Notes:
1. Pile lengths assumed to be 40 feet.
2. Only vertical compression loads considered.
3. Secant stiffness represents an equivalent linear spring at either the pile base or pile top.
4. Secant stiffness at top of pile includes elastic compression of the pile.

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CIP PILE FOUNDATION
AXIAL LOAD RESPONSE

October 2023 195-01

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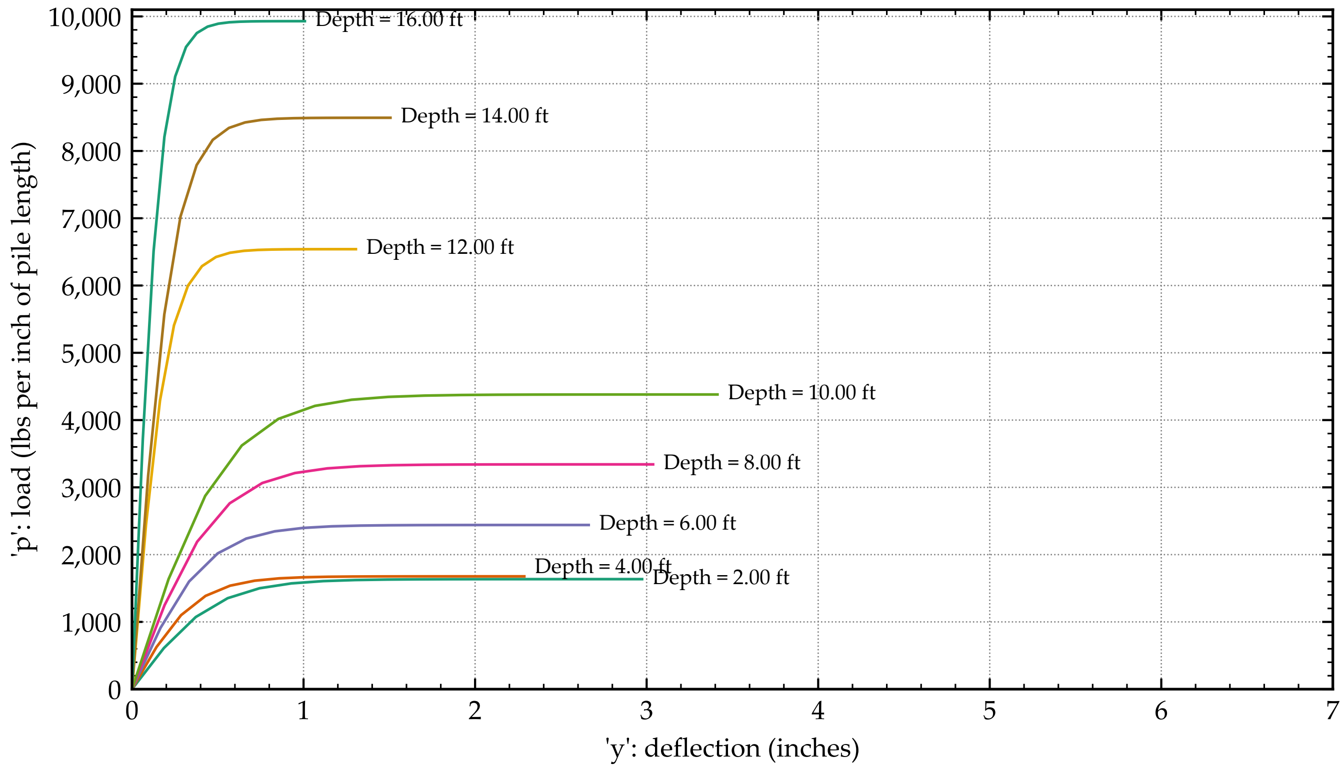
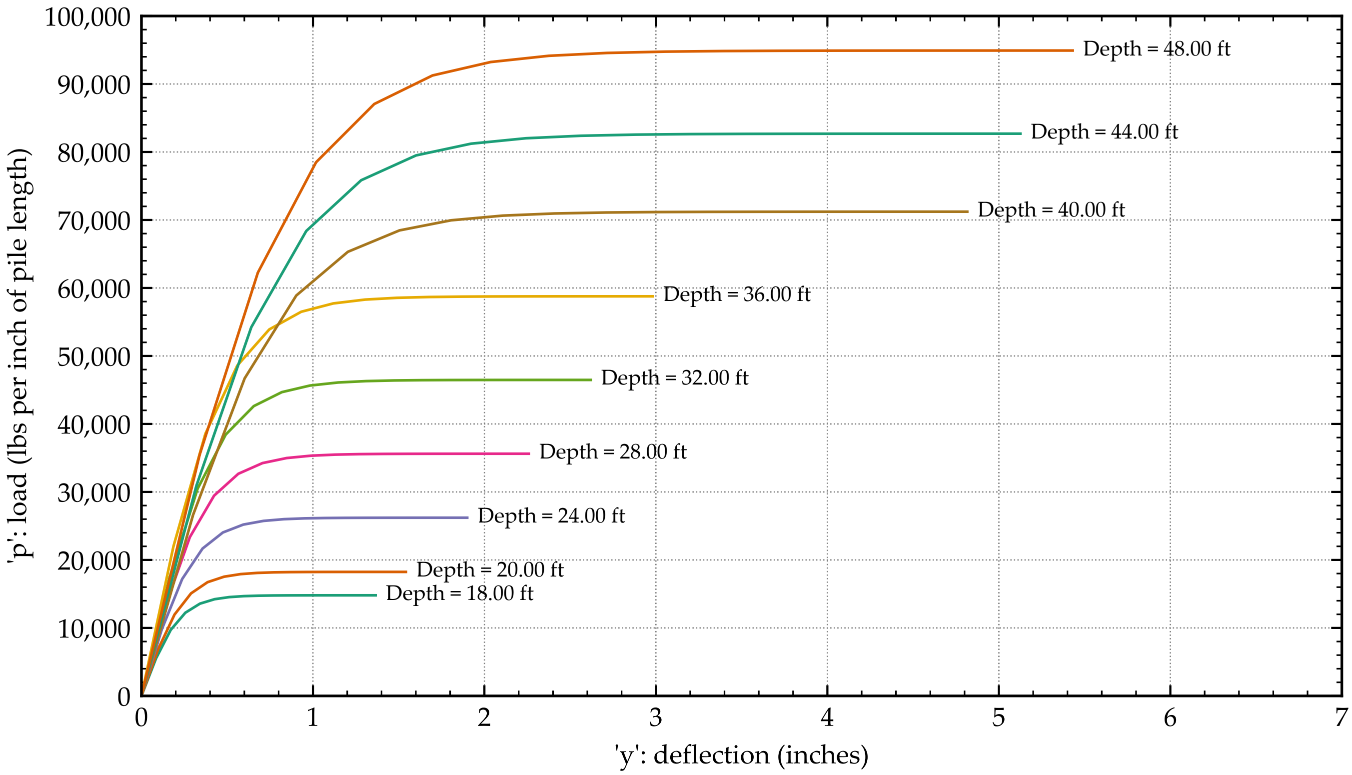
FIG. 5





Notes:
1. Depth is referenced to the pile top which is assumed 4 feet below the ground surface.
2. p-y response is based on a 3-foot diameter, concrete pile.
3. Tabulated values provided in Appendix B.
4. The load value for a discrete springs used in a structural model is calculated by multiplying the 'p' value by the tributary length of pile.

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3-FOOT DIAMETER CONCRETE CIP PILE FOUNDATION P-Y CURVES

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FIG. 6

APPENDIX A: SUBSURFACE INFORMATION

795 Untreated Timber piles. for spacing see details
Location & Levels on Test Holes F.B. 1630 & plan 782-22
T.H #1, 1929. F.B. 2104 N, Profile 12-6-29.
T-3, T-4 & T-1 Tunnel plans 48-79.
Anchor Piers F.B. 2104 F, G, H, I.
Public Utilities Maps 107 & 117

APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. Jan. 4 1932
ATTEST: [signature] SECRETARY
CHAIRMAN

THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS, CITY ENGINEER
DATE NOV. 16, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.

GEN. PLAN OF FOOTINGS & SOIL TEST HOLES
SCALE 1" = 50'-0"

DRAWN	TRACED	CHECKED	O.K.
H. D. Graves	H.D.G.	E J Legg	Clark H. Eldridge

APPROVED Dec. 4-1931 O. A. Piper

BRIDGE No.	FILE No.	SHEET No.
3	782-59	9

— 22859 —

PACIFIC TESTING LABORATORIES
3220 - 17th Avenue West
LOG OF BORING

00078

ORD ~~JOB~~ NO. 88326 NAME SUNNYSIDE AVE. #21 — TEST HOLES
LOCATION

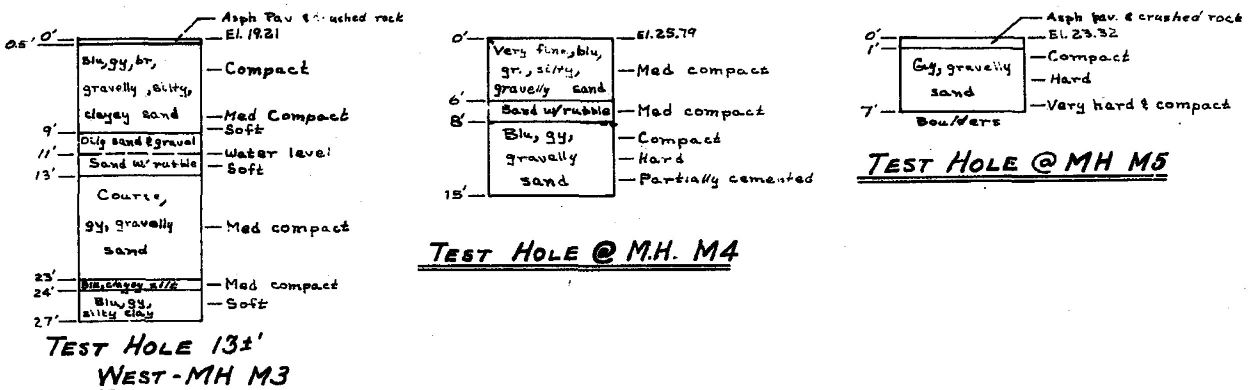
BORING NO. 11 Page No. ___ of ___
Type of Boring Power Auger
Rig
Date ___ Diam. 6"
Elev. 25.93'
Datum Existing grade
Field Party

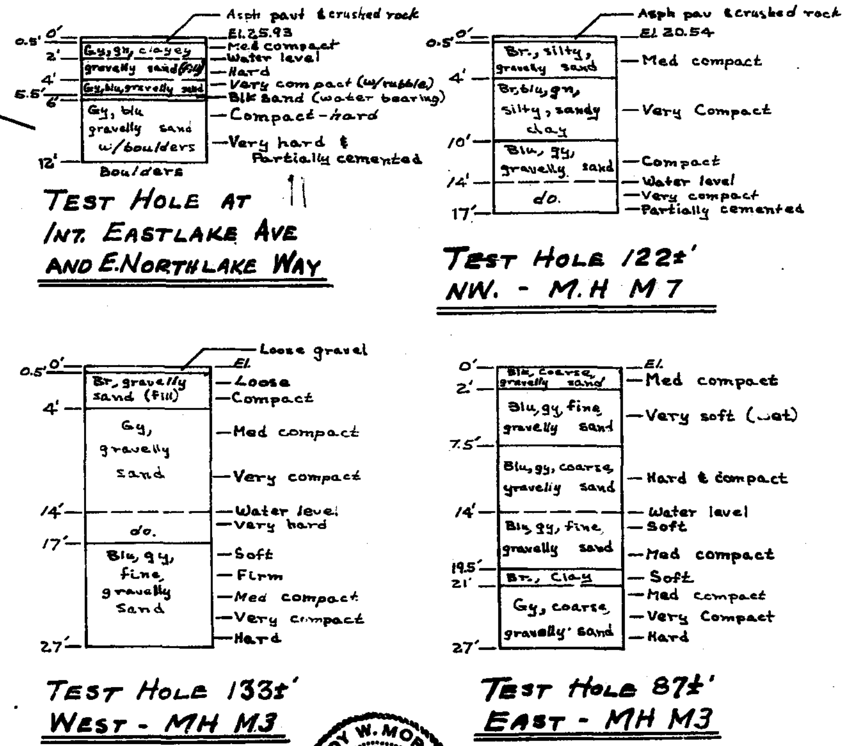
Location of Boring
EAST NORTHLAKE WAY
& 9th AVE. N.E.
Beneath University Bridge

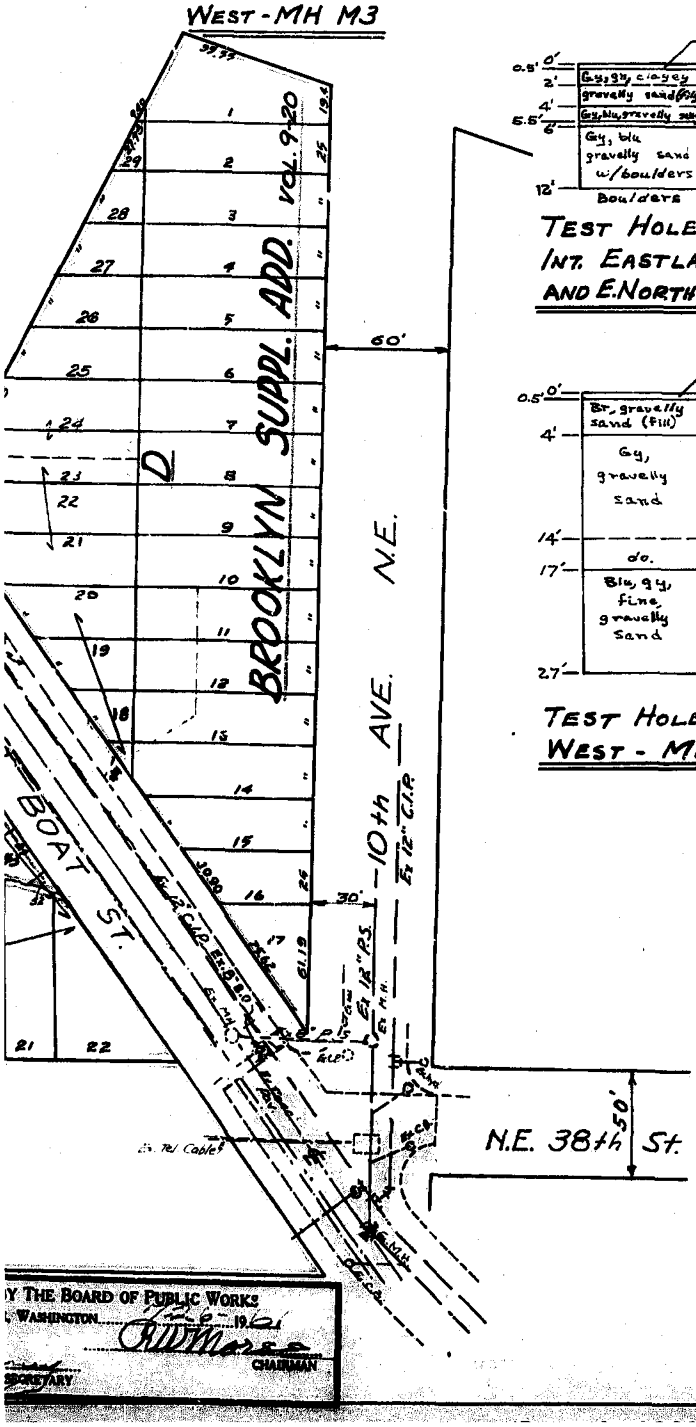
Water				
Level	2-0			
Time	10:30	AM		
Date	10/21/59			

Depth of Casing	Sample No.	Sample Depth	Blows/ft. Sampler	No. of Rings	DEPTH in Feet	Soil Graph	DESCRIPTION—Soil type, firmness, sampler driving records, depth and driving of casing, depth drilling mud used, groundwater variations and times.
		0-6"			0		blk. ASPHALTIC PAVING & crushed rock
					1		Gy, greenish, clyey, gr. SAND (FILL) Med COMPACT
					2		to HARD
					3		
					4		Rotten wood & rubble (FILL) Very Compact
					5		Gy, blu, gr. SAND Very Compact
					6		blk, SAND (water bearing)
					7		Gy, blu, gr. SAND Compact-HARD with boulders
					8		
					9		
					0		Very HARD
					1		& Partially CEMENTED
					20		Bottom of hole 12'-0
					3		
					4		Note: struck boulders @ 12'-0
					5		
					6		
					7		by: E.L.J.
					8		
					9		
					0		

-40
-30
-20
-10







ROY W. MORSE · STATE OF WASHINGTON · REGISTERED PROFESSIONAL ENGINEER

THE CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
ROY W. MORSE, CITY ENGINEER

IMPROVEMENT OF
WESTLAKE AVENUE NORTH ET AL
SANITARY SEWER SYSTEM

MICROFILMED
APR - 4 1966

K

RESOLUTION NO. 18168
ORDINANCE NO. 92174 APPROVED July 2, 1963
LOCAL IMPROVEMENT DISTRICT NO. 6284
SCALE: HORIZ., 1 INCH = 50 FEET
VERT., 1 INCH = 20 FEET INSPECTORS BOOK NO.
Sheet 34 of 35 Sheets

BY THE BOARD OF PUBLIC WORKS
WASHINGTON 7-6-1961
R.W. Morse
CHAIRMAN
SECRETARY

Drawn by R.H. 1-26-60
Traced by 1-26-60
Checked by
File No. 733-8
Contractor Ordered to Begin Work
Work Reported Complete

34

CALCULATION SHEET

METROPOLITAN ENGINEERS

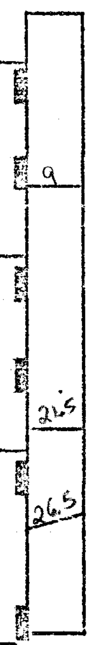
SEATTLE, WASHINGTON

BORING 13

ELEVATION 62.5
LOCATION STA 316+16 ℄
DATE DRILLED 6-17-74

ELEVATION - ft (EL 0 = MSL): 70, 60, 50, 40, 30

W %	N 1	N 2	N 3	N 4
9.5	5	3	3	
10.4	22	50/4"		
7.0	8	7	7	
7.4	6	7	10	
9.2	15	24	26	
8.8	6	7	8	6



BROWN FINE-VERY FINE SAND WITH SILT, PEBBLES, AND ORGANIC MATTER (FILL) - LOOSE

(DRILLED SOFT)

(ENCOUNTERED SOMETHING VERY HARD - NOT ABLE TO DRILL DEEPER. BORING RE-DRILLED BY MOVING 5' TO THE WEST)

GRAY FINE-VERY FINE SAND WITH SILT AND SOME PEBBLES - MEDIUM COMPACT

GRAY FINE SAND WITH SILTY VERY FINE SAND LENSES, OCCASIONAL PEBBLES - COMPACT

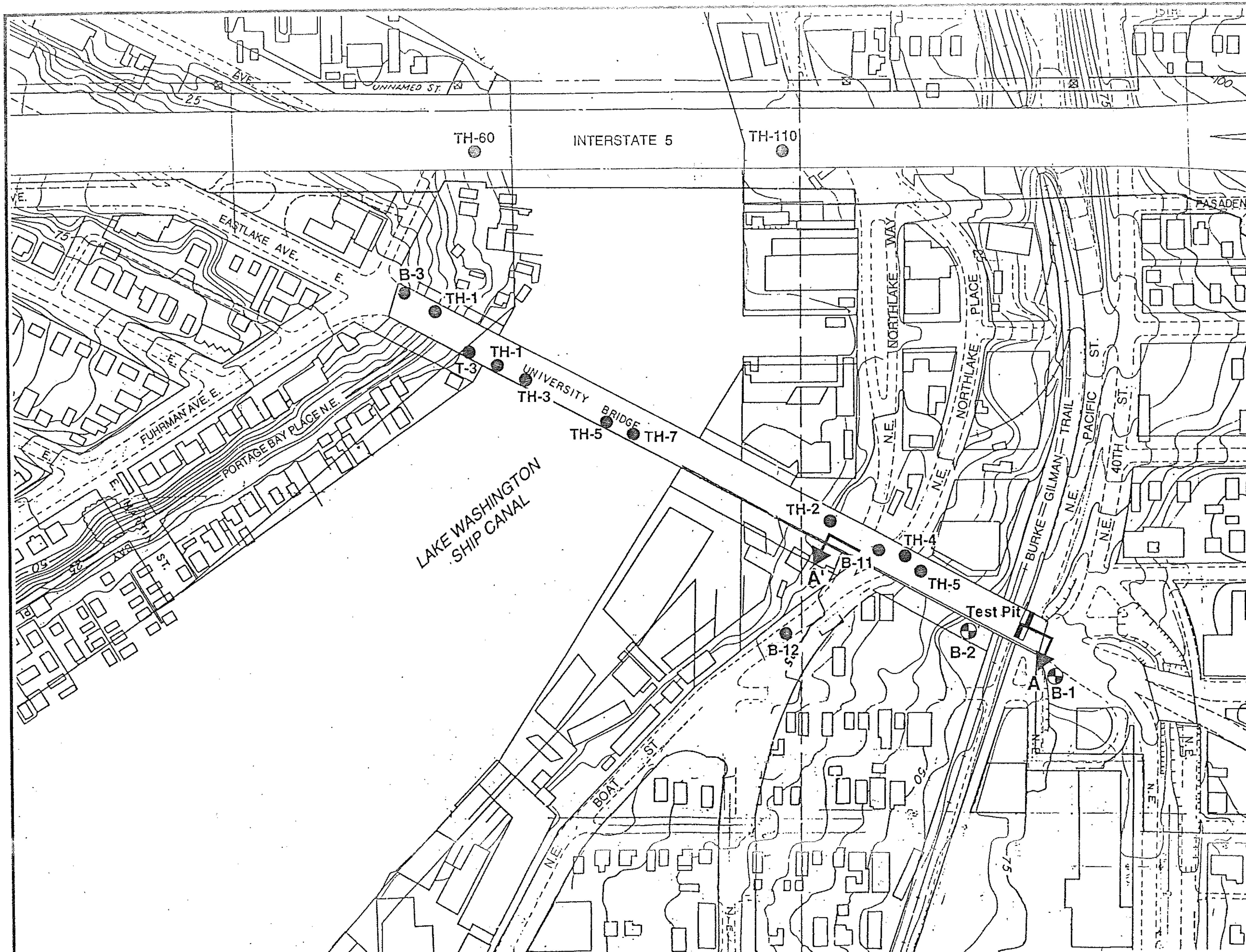
GRAY FINE SAND - MEDIUM COMPACT

SEWER

NOTE:

UPON COMPLETION BORING BACKFILLED WITH NATIVE SAND AND PEA GRAVEL. SURFACE PATCHED WITH COLD PATCH ASPHALT.

DATE	BY	JOB NO.	TITLE	PLATE
		M250D	LOG OF BORING	15



N

LEGEND

B-1 — Current Shannon & Wilson Boring Designation and Approximate Location

B-11, TH-1, T-3 — Previous SED and Shannon & Wilson Boring Designation and Approximate Location

Test Pit — Previous Test Pit Designation and Approximate Location

A — Subsurface Profile Designation and Location

NOTES

1. Plan provided by Seattle Engineering Department, dated 1958.
2. Contour interval is equal to 5 feet.

0 100 200 400

Approximate Scale in Feet

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University Bridge, North Approach
Seattle, Washington

SITE AND EXPLORATION PLAN

April 1996 W-6469-04

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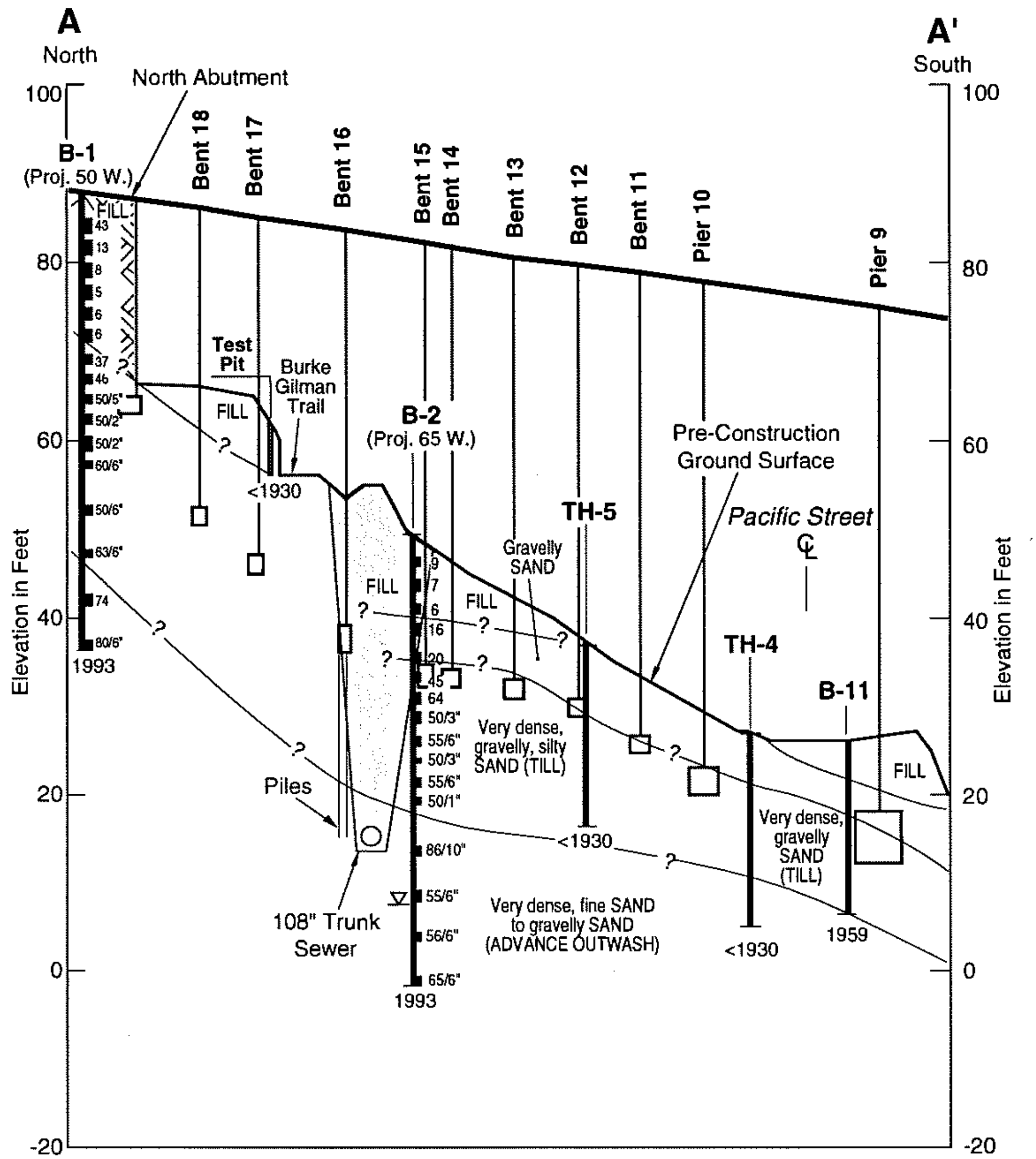
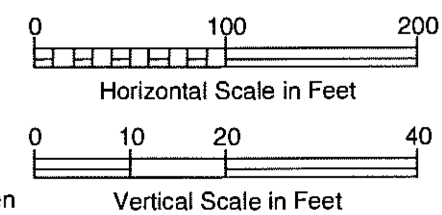
Geotechnical and Environmental Consultants

FIG. 2





LEGEND

B-12,TH-2	Boring Location and Designation
(Proj. 230' W.)	Offset Distance
10 / 50/4"	Sample Taken During Boring, Standard Penetration Resistance in Blows per Foot or Blows Per Inches Driven
▽	Water Level
?~~?	Approximate Geologic Contact
	Bottom of Boring
1959	Completion Date

NOTES

1. This profile is generalized from materials reported in boring logs obtained from SED and Shannon and Wilson files. Footing elevations are from SED plans and profiles. Variations between the profile and actual conditions are likely.
2. Profile has a 5x vertical exaggeration.

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GENERALIZED SUBSURFACE PROFILE A-A'

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FIG. 3

Shannon & Wilson, Inc. uses a soil classification system modified from the Unified Soil Classification (USC) System. Elements of the USC and other definitions are provided on this and the following page. Soil descriptions are based on visual-manual procedures (ASTM D 2488-93) unless otherwise noted.

S&W CLASSIFICATION OF SOIL CONSTITUENTS

- MAJOR constituents compose more than 50 percent, by weight,of the soil. Major constituents are capitalized (SAND).
- Minor constituents compose 12 to 50 percent of the soil and precede the major constituents (silty SAND). Minor constituents preceded by "slightly" compose 5 to 12 percent of the soil (slightly silty SAND).
- Trace constituents compose 0 to 5 percent of the soil (slightly silty SAND, trace of gravel).

MOISTURE CONTENT DEFINITIONS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

ABBREVIATIONS

ATD	At Time of Drilling
Elev.	Elevation
ft	feet
HSA	Hollow Stem Auger
ID	Inside Diameter
in	inches
lbs	pounds
Mon.	Monument cover
N	Blows for last 2 six-inch increments
NA	Not Applicable or Not Available
OD	Outside Diameter
OVA	Organic Vapor Analyzer
PID	Photoionization Detector
ppm	parts per million
PVC	Polyvinyl Chloride
SS	Split Spoon sampler
SPT	Standard Penetration Test
USC	Unified Soil Classification
WLI	Water Level Indicator

GRAIN SIZE DEFINITIONS

DESCRIPTION	SIEVE SIZE
FINES	< #200 (0.08 mm)
SAND*	
• Fine	• #200 - #40 (0.4 mm)
• Medium	• #40 - #10 (2 mm)
• Coarse	• #10 - #4 (5 mm)
GRAVEL*	
• Fine	• #4 - 3/4 inch
• Coarse	• 3/4 - 3 inches
COBBLES	3 - 12 inches
BOULDERS	> 12 inches

* Unless otherwise noted, sand and gravel, when present, range from fine to coarse in grain size.

RELATIVE DENSITY / CONSISTENCY

COARSE-GRAINED SOILS		FINE-GRAINED/COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
0 - 4	Very loose	<2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
Over 50	Very dense	15 - 30	Very stiff
		Over 30	Hard

WELL AND OTHER SYMBOLS

Cement	Asphalt or PVC Cap
Bentonite Grout	Cobbles
Bentonite Seal	Fill
Slough	Ash
Silica Sand	Bedrock
2" I.D. PVC Screen (0.010-inch Slot)	

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Seattle, Washington

SOIL CLASSIFICATION AND LOG KEY

April 1996 W-6469-04

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FIG. A-1
Sheet 1 of 2

UNIFIED SOIL CLASSIFICATION SYSTEM
(From ASTM D-2488-93 & 2487-93)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL②	TYPICAL DESCRIPTION
Coarse-Grained Soils *(more than 50% retained on No. 200 sieve)*	Gravels *(more than 50% of coarse fraction retained on No. 4 sieve)*	Clean Gravels① *(less than 5% fines)*	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		Gravels with① Fines *(more than 12% fines)*	GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
*[Use Dual Symbols for 5 - 12% Fines (i.e. GP-GM)]*①	Sands *(50% or more of coarse fraction passes the No. 4 sieve)*	Clean Sands① *(less than 5% fines)*	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP	Poorly-Graded Sand, Gravelly Sands, Little or No Fines
		Sands with① Fines*(more than 12% fines)*	SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
Fine-Grained Soils *(50% or more passes the No. 200 sieve)*	Silts and Clays *(liquid limit less than 50)*	Inorganic	ML	Inorganic Silts of Low to Medium Plasticity, Rock Flour, or Clayey Silts with Slight Plasticity
			CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
		Organic	OL	Organic Silts and Organic Silty Clays of Low Plasticity
	Silts and Clays *(liquid limit 50 or more)*	Inorganic	CH	Inorganic Clays of Medium to High Plasticity, Sandy Fat Clay, Gravelly Fat Clay
			MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sands or Silty Soils, Elastic Silt
		Organic	OH	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	Peat, Humus, Swamp Soils with High Organic Content (See D 4427-92)

NOTES

1. Dual symbols (symbols separated by a hyphen, i.e. SP-SM, slightly silty fine SAND) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.
2. Borderline symbols (symbols separated by a slash, i.e. CL/ML, silty CLAY/clayey SILT; GW/SW, sandy GRAVEL/gravelly SAND) indicated that the soil may fall into one of two possible basic groups.

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Seattle, Washington

SOIL CLASSIFICATION AND LOG KEY

April 1996 W-6469-04

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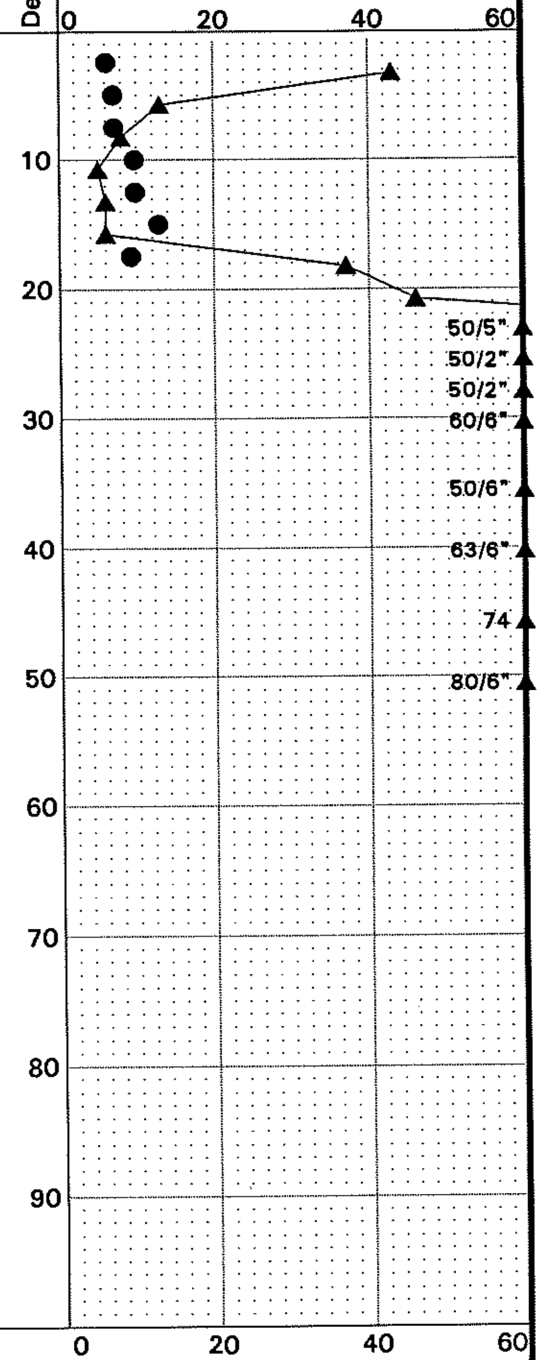
FIG. A-1
Sheet 2 of 2

MASTERLG 4/5/96

MATERIAL DESCRIPTION Surface Elevation: Approx. 88 Feet	Depth, Ft.	Symbol	Samples	Ground Water
Loose to dense, brown, slightly gravelly to gravelly, slightly silty to silty SAND; moist; occasional 3-inch cobbles from 0 to 6.5 feet; occasional iron-oxide staining; occasional organics; (Fill) SM. Grading to silty, sandy GRAVEL and silty, gravelly SAND at 12.5 feet.	16.5		1, 2, 3, 4, 5, 6	
Dense, brown, silty, gravelly SAND, silty, sandy GRAVEL, and sandy, gravelly SILT; moist; trace iron-oxide staining; SM/GM.	21.5		7, 8	
Very dense, gray and brown, silty, gravelly SAND and silty, sandy GRAVEL; moist; iron-oxide staining from 40 feet; (Till-like) SM/GM.	40.5		9, 10, 11, 12, 13, 14	
Very dense, brown, slightly silty, fine SAND; moist; trace gravel; (Advance Outwash?) SP-SM.	51.0		15, 16	
BOTTOM OF BORING COMPLETED 10/28/93				

Standard Penetration Resistance
(140 lb. weight, 30" drop)
▲ Blows per foot



● % Water Content

Plastic Limit ├──●──┤ Liquid Limit
Natural Water Content

LEGEND

- • Sample Not Recovered
- ⌶ 2" O.D. Split Spoon Sample
- Ⅱ 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- ⊻ Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of 'Symbols' and definitions.
5. USC letter symbol based on visual classification.

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Seattle, Washington

LOG OF BORING B-1

April 1996 W-6469-04

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FIG. A-2

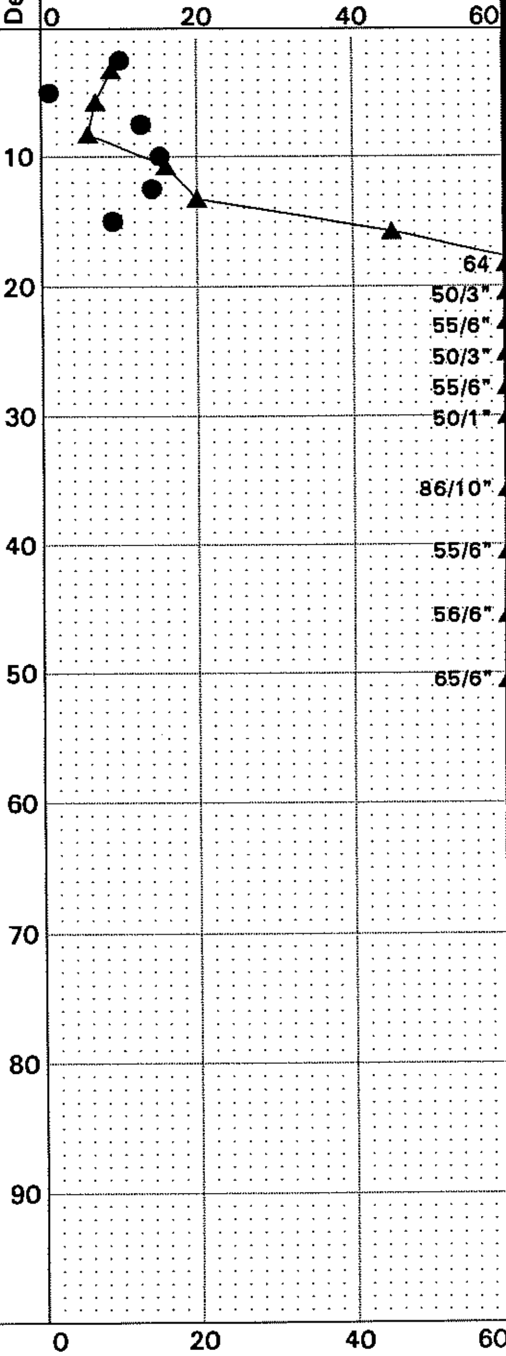
MASTERLG 4/5/96

MATERIAL DESCRIPTION Surface Elevation: Approx. 49.5 Feet	Depth, Ft.	Samples
Loose, dark brown, slightly silty, sandy GRAVEL and gravelly SAND; dry to moist; occasional cobble in top 1 foot; trace of tar and brick fragments; iron-oxide staining from 0 to 4 feet; (Fill) GM/SM.	9.0	1, 2, 3
Medium dense, brown, slightly gravelly, silty SAND and sandy SILT; moist; iron-oxide staining; trace organics; (Fill?) SM/ML.	14.0	4, 5, 6
Dense to very dense, brown, slightly silty to silty, slightly gravelly to gravelly SAND and sandy GRAVEL; moist; iron-oxide staining at 27.5 feet; (Till-like) SM/GM.	33.0	7, 8, 9, 10, 11, 12
Very dense, gray, slightly silty to silty SAND; moist to wet at approximately 43 feet; slightly gravelly at 35 feet; (Advance Outwash?) SP-SM.	50.0	13, 14, 15
Very dense, gray, sandy SILT; moist; (Advance Outwash?) ML.	51.0	16

BOTTOM OF BORING
COMPLETED 10/29/93

Ground Water: Observed During Drilling ∇

Standard Penetration Resistance
(140 lb. weight, 30" drop)
▲ Blows per foot



● % Water Content

Plastic Limit ├──●──┤ Liquid Limit
Natural Water Content

LEGEND

- • Sample Not Recovered
- ⌶ 2" O.D. Split Spoon Sample
- ⌶ 3" O.D. Shelby Tube Sample
- Surface Seal
- Annular Sealant
- Piezometer Screen
- Grout
- ∇ Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. Refer to KEY for explanation of 'Symbols' and definitions.
5. USC letter symbol based on visual classification.

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LOG OF BORING B-2

April 1996 W-6469-04

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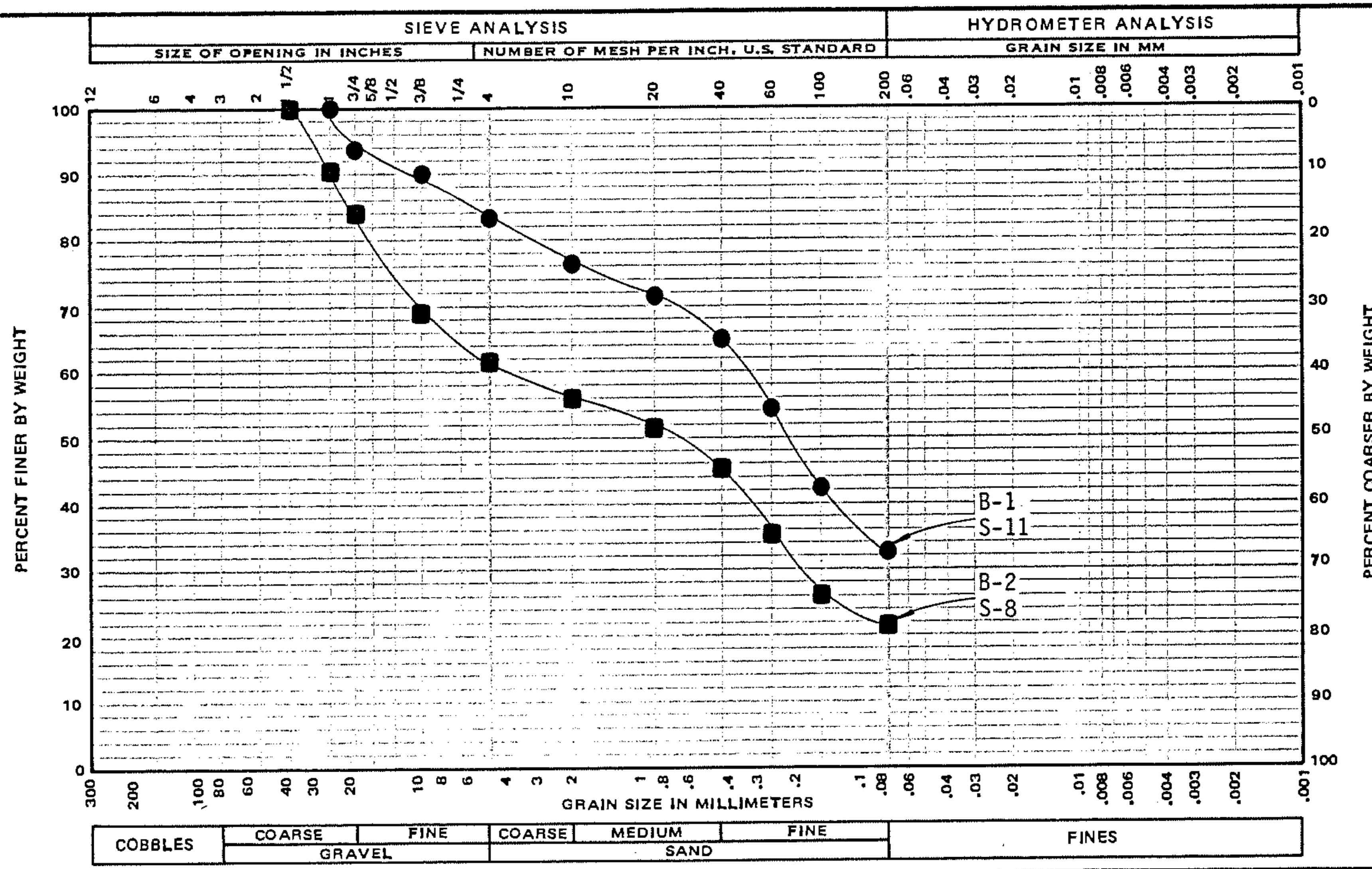
FIG. A-3



SAMPLE NO.	DEPTH-FT.	U.S.C.	CLASSIFICATION	NAT. W.C. %	LL	PL	PI
B-1 S-11	27.5-28.2	SM	Gray, gravelly, silty SAND.	9.1			
B-2 S-8	20.0-20.8	SM	Gray, silty, gravelly SAND.	6.1			

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University Bridge
Seattle, Washington

GRAIN SIZE DISTRIBUTION

March 1994 W-6469-04

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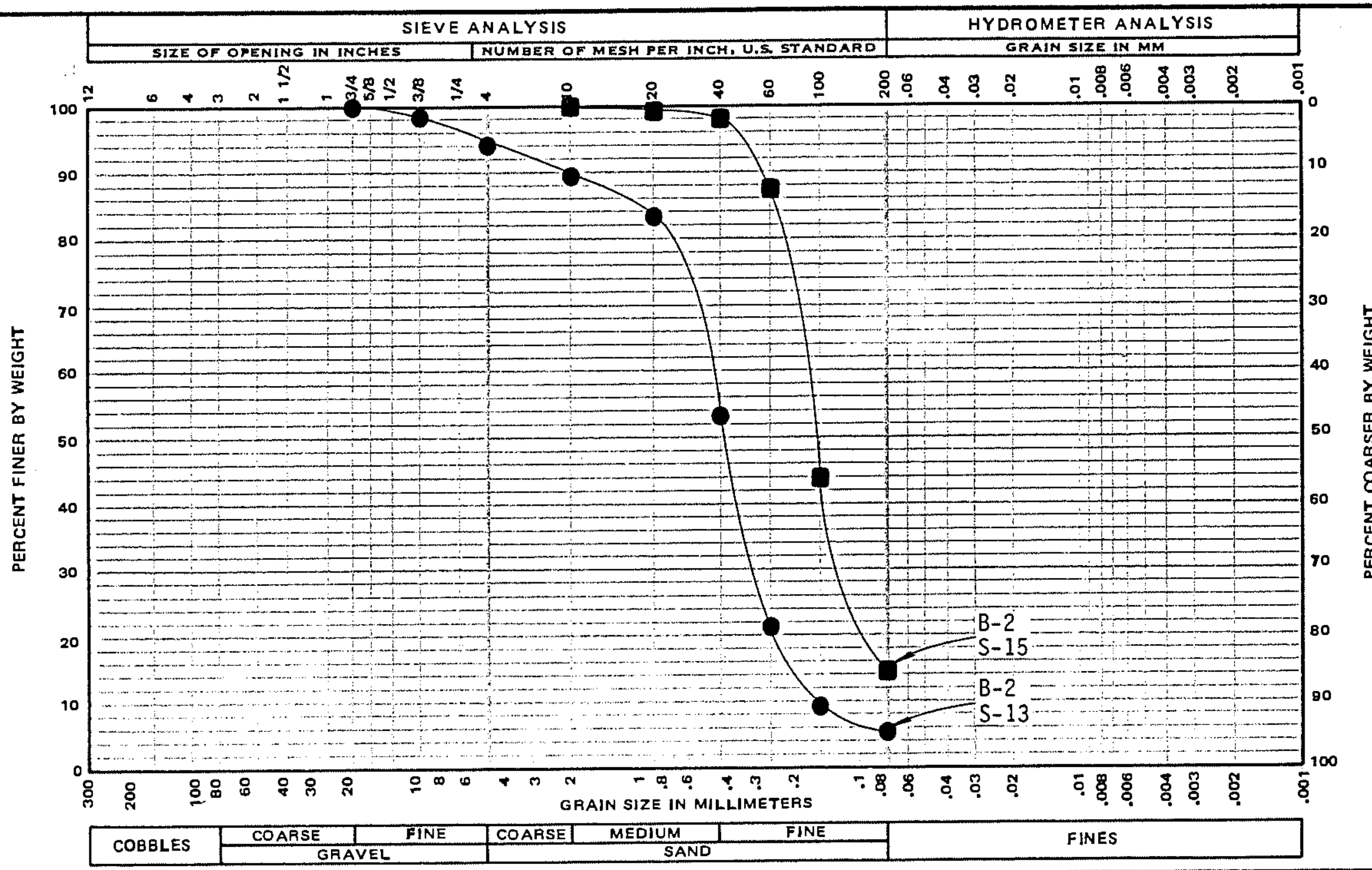
FIG. B-1

FIG. B-1



SAMPLE NO.	DEPTH-FT.	U.S.C.	CLASSIFICATION	NAT. W.C. %	LL	PL	PI
B-2 S-13	35.0-36.3	SP-SM	Gray, slightly silty, slightly gravelly SAND.	4.4			
B-2 S-15	45.0-46.0	SM	Gray, silty SAND.	22.4			

SED Seismic Retrofit Study
University Bridge
Seattle, Washington

GRAIN SIZE DISTRIBUTION

March 1994 W-6469-04

SHANNON & WILSON, INC.
Geotechnical Consultants

FIG. B-2

FIG. B-2

APPENDIX B: P-Y CURVE DATA

University Bridge North Approach Planning Study

p-y Curve Data

X = y (in)   Y = p (lbs/in)

Depth = 2.00 ft		Depth = 4.00 ft		Depth = 6.00 ft		Depth = 8.00 ft		Depth = 10.00 ft	
X	Y	X	Y	X	Y	X	Y	X	Y
0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
0.19	611.2	0.14	626.7	0.17	912.0	0.19	1248.7	0.21	1636.8
0.37	1072.6	0.29	1099.9	0.33	1600.5	0.38	2191.4	0.43	2872.5
0.56	1352.3	0.43	1386.7	0.50	2018.0	0.57	2763.0	0.64	3621.8
0.74	1500.0	0.57	1538.2	0.67	2238.3	0.76	3064.7	0.85	4017.4
0.93	1572.3	0.71	1612.3	0.83	2346.2	0.95	3212.4	1.07	4211.0
1.12	1606.4	0.86	1647.3	1.00	2397.1	1.14	3282.1	1.28	4302.2
1.30	1622.2	1.00	1663.5	1.16	2420.6	1.33	3314.3	1.49	4344.5
1.49	1629.4	1.14	1670.9	1.33	2431.4	1.52	3329.1	1.71	4363.9
1.67	1632.7	1.29	1674.3	1.50	2436.4	1.71	3335.9	1.92	4372.8
1.86	1634.2	1.43	1675.8	1.66	2438.6	1.90	3339.0	2.13	4376.8
2.04	1634.9	1.57	1676.5	1.83	2439.7	2.09	3340.4	2.35	4378.7
2.23	1635.2	1.72	1676.9	2.00	2440.1	2.28	3341.0	2.56	4379.5
2.42	1635.4	1.86	1677.0	2.16	2440.4	2.47	3341.3	2.77	4379.9
2.60	1635.4	2.00	1677.1	2.33	2440.5	2.66	3341.5	2.99	4380.1
2.79	1635.5	2.14	1677.1	2.50	2440.5	2.85	3341.5	3.20	4380.2
2.97	1635.5	2.29	1677.1	2.66	2440.5	3.04	3341.5	3.41	4380.2

Depth = 12.00 ft		Depth = 14.00 ft		Depth = 16.00 ft		Depth = 18.00 ft		Depth = 20.00 ft	
X	Y	X	Y	X	Y	X	Y	X	Y
0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
0.08	2444.0	0.09	3174.0	0.06	3710.5	0.09	5529.4	0.10	6816.4
0.16	4289.1	0.19	5570.1	0.13	6511.8	0.17	9703.8	0.19	11962.4
0.24	5407.9	0.28	7023.0	0.19	8210.3	0.26	12234.9	0.29	15082.7
0.33	5998.5	0.38	7790.0	0.25	9107.0	0.34	13571.1	0.39	16729.9
0.41	6287.6	0.47	8165.4	0.31	9545.9	0.43	14225.2	0.48	17536.2
0.49	6423.9	0.56	8342.4	0.38	9752.8	0.51	14533.6	0.58	17916.3
0.57	6487.0	0.66	8424.4	0.44	9848.6	0.60	14676.3	0.67	18092.3
0.65	6516.0	0.75	8462.0	0.50	9892.6	0.68	14741.9	0.77	18173.2
0.73	6529.2	0.85	8479.2	0.57	9912.7	0.77	14771.9	0.87	18210.1
0.82	6535.3	0.94	8487.1	0.63	9921.9	0.85	14785.6	0.96	18227.0
0.90	6538.0	1.04	8490.7	0.69	9926.1	0.94	14791.8	1.06	18234.7
0.98	6539.3	1.13	8492.3	0.76	9928.0	1.02	14794.7	1.16	18238.2
1.06	6539.9	1.22	8493.0	0.82	9928.9	1.11	14796.0	1.25	18239.8
1.14	6540.1	1.32	8493.4	0.88	9929.3	1.19	14796.5	1.35	18240.5
1.22	6540.2	1.41	8493.5	0.94	9929.5	1.28	14796.8	1.45	18240.9
1.31	6540.3	1.51	8493.6	1.01	9929.6	1.36	14796.9	1.54	18241.0

Depth = 24.00 ft		Depth = 28.00 ft		Depth = 32.00 ft		Depth = 36.00 ft		Depth = 40.00 ft		Depth = 44.00 ft		Depth = 48.00 ft	
X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
0.12	9794.5	0.14	13311.4	0.16	17367.3	0.19	21962.1	0.30	26614.2	0.32	30901.8	0.34	35470.7
0.24	17188.8	0.28	23360.8	0.33	30478.5	0.37	38542.2	0.60	46706.3	0.64	54230.8	0.68	62248.9
0.36	21672.3	0.42	29454.1	0.49	38428.5	0.56	48595.4	0.90	58889.1	0.96	68376.2	1.02	78485.8
0.47	24039.1	0.56	32670.9	0.66	42625.3	0.75	53902.6	1.20	65320.5	1.28	75843.7	1.36	87057.3
0.59	25197.7	0.71	34245.5	0.82	44679.7	0.93	56500.5	1.50	68468.7	1.60	79499.1	1.70	91253.2
0.71	25743.9	0.85	34987.8	0.98	45648.1	1.12	57725.2	1.81	69952.8	1.92	81222.3	2.04	93231.1
0.83	25996.8	0.99	35331.5	1.15	46096.6	1.30	58292.2	2.11	70639.9	2.24	82020.1	2.38	94146.9
0.95	26112.9	1.13	35489.3	1.31	46302.5	1.49	58552.6	2.41	70955.5	2.56	82386.5	2.72	94567.5
1.07	26166.0	1.27	35561.5	1.47	46396.6	1.68	58671.7	2.71	71099.8	2.88	82554.1	3.05	94759.8
1.19	26190.3	1.41	35594.4	1.64	46439.7	1.86	58726.1	3.01	71165.7	3.20	82630.6	3.39	94847.7
1.31	26201.4	1.55	35609.5	1.80	46459.3	2.05	58750.9	3.31	71195.8	3.52	82665.5	3.73	94887.7
1.42	26206.4	1.69	35616.3	1.97	46468.2	2.24	58762.2	3.61	71209.5	3.84	82681.4	4.07	94906.0
1.54	26208.7	1.84	35619.5	2.13	46472.3	2.42	58767.4	3.91	71215.7	4.16	82688.7	4.41	94914.3
1.66	26209.8	1.98	35620.9	2.29	46474.2	2.61	58769.7	4.21	71218.6	4.48	82692.0	4.75	94918.1
1.78	26210.2	2.12	35621.5	2.46	46475.0	2.80	58770.8	4.51	71219.9	4.81	82693.5	5.09	94919.9
1.90	26210.5	2.26	35621.8	2.62	46475.4	2.98	58771.3	4.82	71220.5	5.13	82694.2	5.43	94920.7

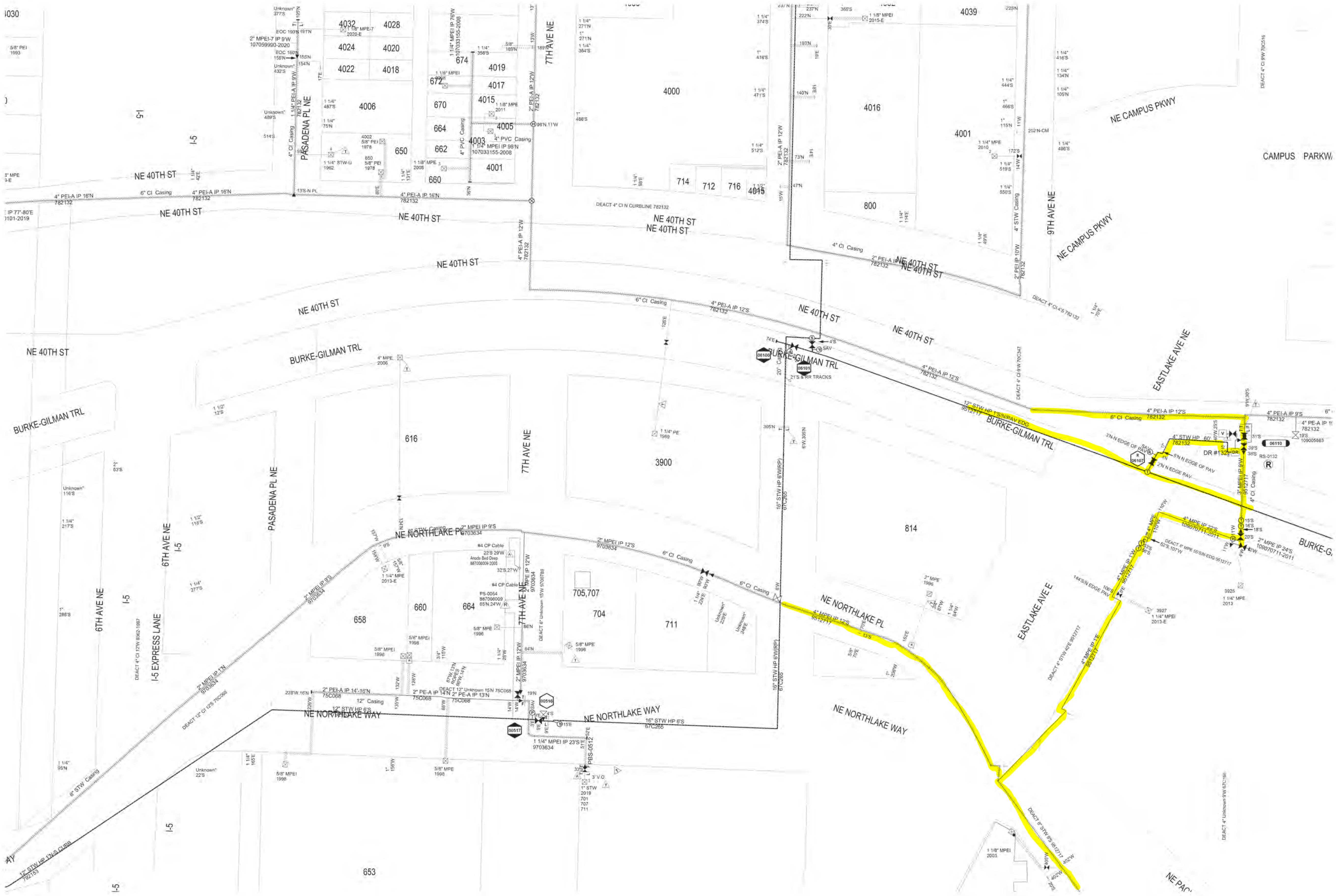
Attachment E

Utility Exhibits

PSE Gas Line

184071C

E-1

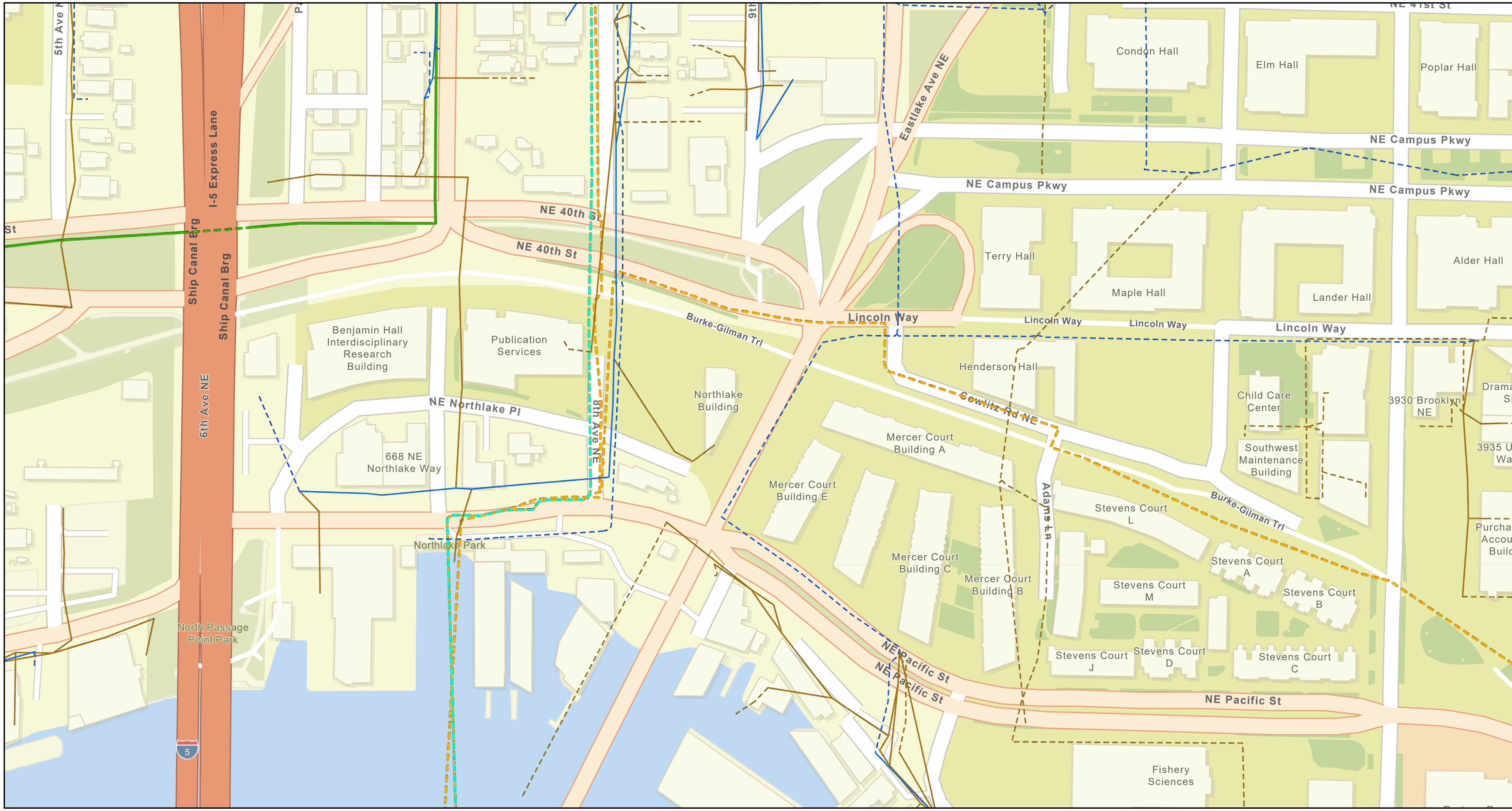


185071A

Plat: 184071E
Date Refreshed: 08-20-2022

E-2

LUMEN Relocate Utility Map



11/10/2022, 3:24:42 PM

1:2,866

Local Copper UG Route

Local Copper Aerial Route

Fiber Routes

Aerial

Underground

Routes Leased

LONGHAUL,UNDERGROUND

Routes Owned

METRO,AERIAL

METRO,UNDERGROUND

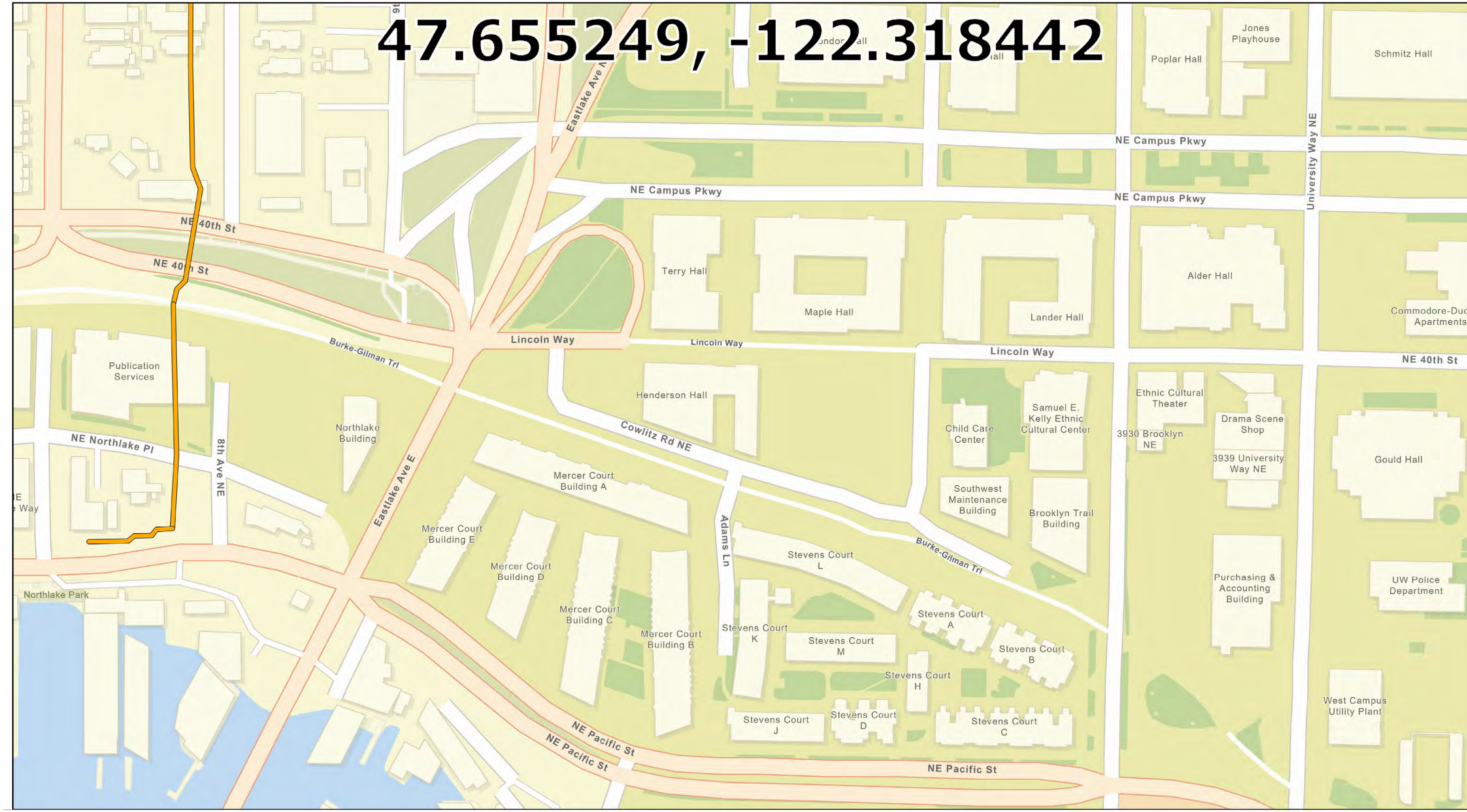
METRO/LONGHAUL,UNDERGROUND

0 0.02 0.04 0.09 mi

0 0.04 0.07 0.15 km

Esri Community Maps Contributors, University of Washington, City of Seattle, King County, WA State Parks GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

Date: 11/8/2022



EarthLink Fiber symbolid

Aerial

Buried

Windstream Fiber Placement Type

Aerial

Buried

Windstream Copper placement

Aerial

Buried

MFS/Adesta Fiber Placement Type

Aerial

Buried

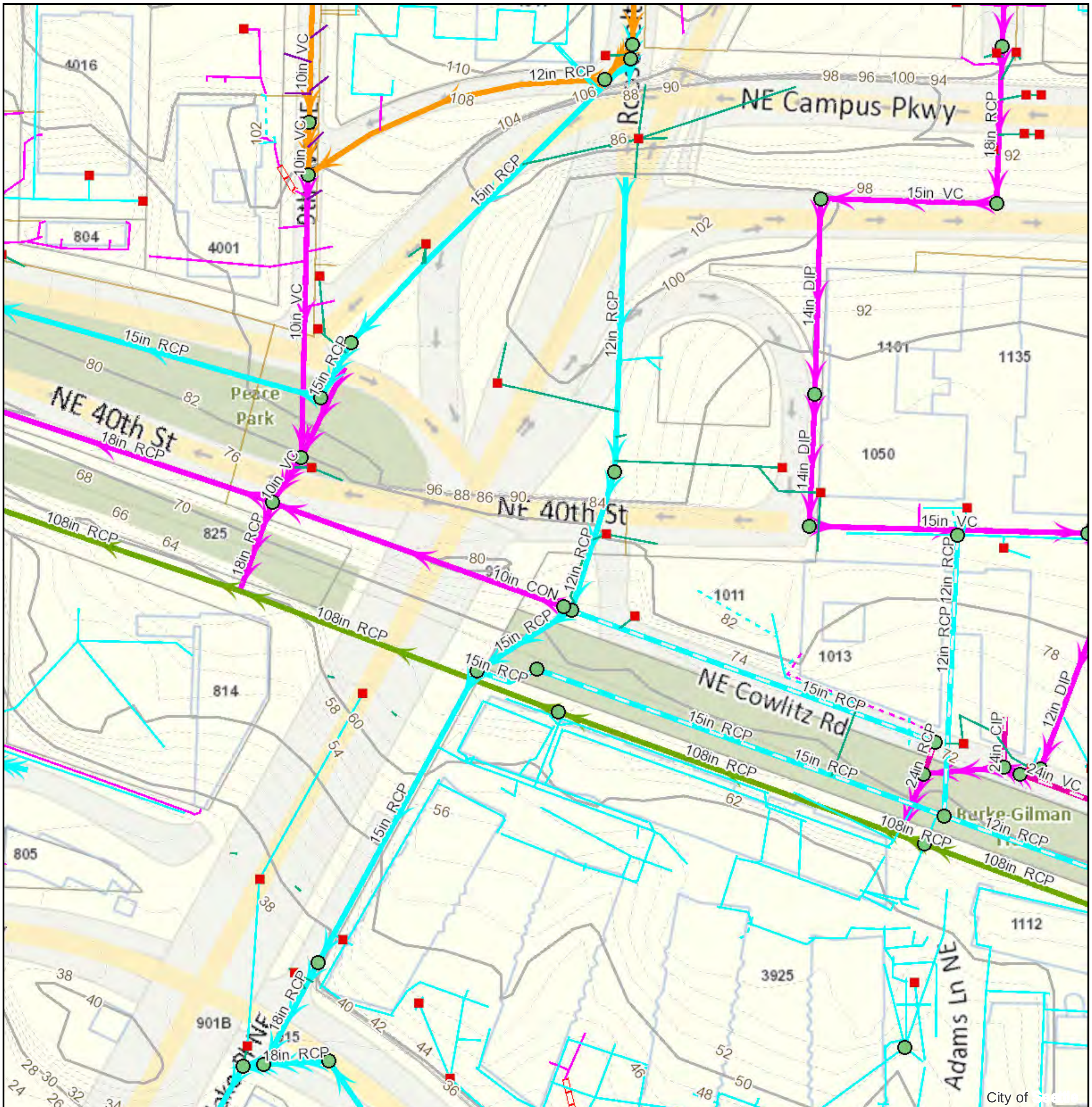
Conduit Ownership

Windstream Conduit

Third Party Conduit

0 0.03 0.06 0.11 Miles

0 0.04 0.09 0.17 Kilometers



DSO maps **Sewer & Drainage**

100

Feet

N

- City Limits
- Catch Basin, Junction Box, Sand Box

Maintenance Holes and Other Structures

- Maintenance Hole
- Other Structure

Ditches and Culverts

- Ditch
- Culvert

Side Sewers and Laterals

- Drainage Lateral
- Side Sewer
- Drainage Lateral (Not Inspected)
- Side Sewer (Not Inspected)
- SPU Drainage Lateral
- SPU Side Sewer
- Phantom Connector
- Side Sewer and Lateral (Lined)

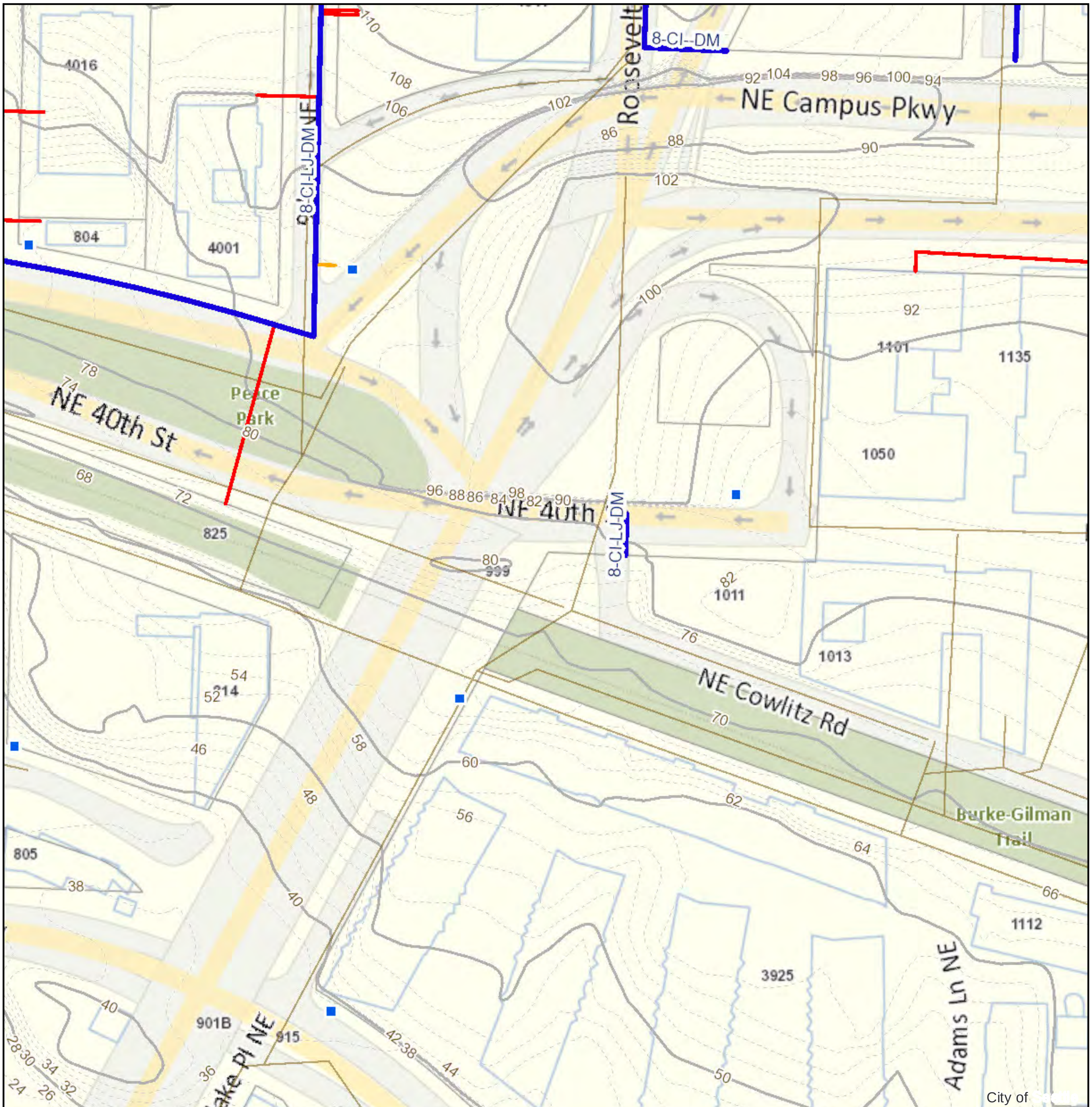
Private Mainlines

- Private Drainage Main
- Private Sanitary Main
- Private Combined Main

Mainlines (Permitted Use)

- King County Main
- SPU Drainage Main
- SPU Combined Main
- SPU Sanitary Main

11/8/2022



DSO maps **Water**

100
Feet
N

City Limits
Hydrant Location
Water Mains
Same Side Tap Only
No New Taps
Water Service
Header
Inactive
Active
Drainage Infrastructure
Topography - 2 Foot
10ft. contour
2ft. contour
Parcel
Red: Band_1
Green: Band_2
Blue: Band_3

11/8/2022

From:	Dean, David <David.Dean@seattle.gov>
Sent:	Friday, July 14, 2023 7:58 AM
To:	Wooton, Elisabeth
Cc:	Perander, Eivind
Subject:	RE: HOLD University Bridge N Approach: Alternative Evaluation Workshop

Hi Elisabeth,

Below is some feedback from SCL Streetlighting:

- This bridge had a rewiring project in 2010, after that, SDOT installed new pedestrian lights that were used as a pilot, I am not sure if an agreement exists for these pedestrian lights.
- I assume photometrics were reviewed in 2010 with the addition of the new ped lights, but SDOT Signals group may have an interest to review these again in case they see a need for larger lighting revisions to help ensure the roadway is meeting current lighting requirements.
- There is only one light pole (1315883) that has failed that we are aware of, it is located on the west side of Eastlake, just south of NE Campus Pkwy. It was knocked down and SCL is not able to use the foundation to install a new pole. This light will be something we request to be repaired no matter which alternative is chosen.

Thank you,
David

DAVID DEAN
SEATTLE CITY LIGHT
O: 206-386-1643 | M: 206-714-7294

From: Wooton, Elisabeth <Elisabeth.Wooton@seattle.gov>
Sent: Monday, July 03, 2023 2:54 PM
To: Loo, Kit <Kit.Loo@seattle.gov>; Gallardo, Abner <Abner.Gallardo@seattle.gov>; Foun, Kevin <Kevin.Foun@seattle.gov>; Harrison, Lisa M <Lisa.M.Harrison@Seattle.gov>; Flathman, Jennifer <Jennifer.Flathman@seattle.gov>; Manescu, Silvia <Silvia.Manescu@seattle.gov>; Stover, Victor <VStover@kingcounty.gov>; Perander, Eivind <Eivind.Perander@seattle.gov>; Alfi, Aziz <Aziz.Alfi@seattle.gov>; Lombana, Edward <Edward.Lombana@seattle.gov>; Danielsen, Michael <Michael.Danielsen@seattle.gov>; Marek, John <John.Marek@seattle.gov>; Barnes, Chris <Chris.Barnes@seattle.gov>; Le, Tom <Tom.Le@seattle.gov>; Jung, Mary <Mary.Jung@seattle.gov>; Kelleher, Shannon <Shannon.Kelleher@seattle.gov>; Orr, Matthew <Matt.Orr@seattle.gov>; Hankamer, Joanna <Joanna.Hankamer@seattle.gov>; Dean, David <David.Dean@seattle.gov>; Ducey, Wes <Wes.Ducey@seattle.gov>; Gilbane, Loretta <Loretta.Gilbane@seattle.gov>
Cc: Jumpawong, Ken <Ken.Jumpawong@hdrinc.com>
Subject: RE: HOLD University Bridge N Approach: Alternative Evaluation Workshop

Hi all,

Thank you to those of you who were able to attend our workshop last Thursday. Even if you were unable to attend, I invite you to review and comment the material that were presented and discussed.

Attached you will find the following draft deliverables for your review:
- Draft Alternatives Development Memo (especially relevant discipline discussions in Section 3)
- Draft Alternatives Evaluation Matrix

I would appreciate your review and feedback by **COB next Friday (7/14)**. Please reach out with any questions or think you will need more time.

Appreciate your help!
Elisabeth

Elisabeth Wooton *(she/her/hers)*
206-735-1123 | elisabeth.wooton@seattle.gov

-----Original Appointment-----
From: Wooton, Elisabeth
Sent: Wednesday, May 17, 2023 4:57 PM
To: Wooton, Elisabeth; Loo, Kit; Gallardo, Abner; Foun, Kevin; Harrison, Lisa M; Flathman, Jennifer; Manescu, Silvia; Stover, Victor; Perander, Eivind; Alfi, Aziz; Danielsen, Michael; Marek, John; Bloomer, Leslie; Barnes, Chris; Le, Tom; Jung, Mary; Kelleher, Shannon; Orr, Matthew; Hankamer, Joanna; Dean, David; Ducey, Wes; Gilbane, Loretta; Jumpawong, Ken; Kelsie Jeppesen; Ade Bright; bing@bingmaconsultant.com; Libby, Mark A.; john.seyer@hdrinc.com
Cc: Lombana, Edward
Subject: HOLD University Bridge N Approach: Alternative Evaluation Workshop
When: Thursday, June 29, 2023 9:00 AM-12:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

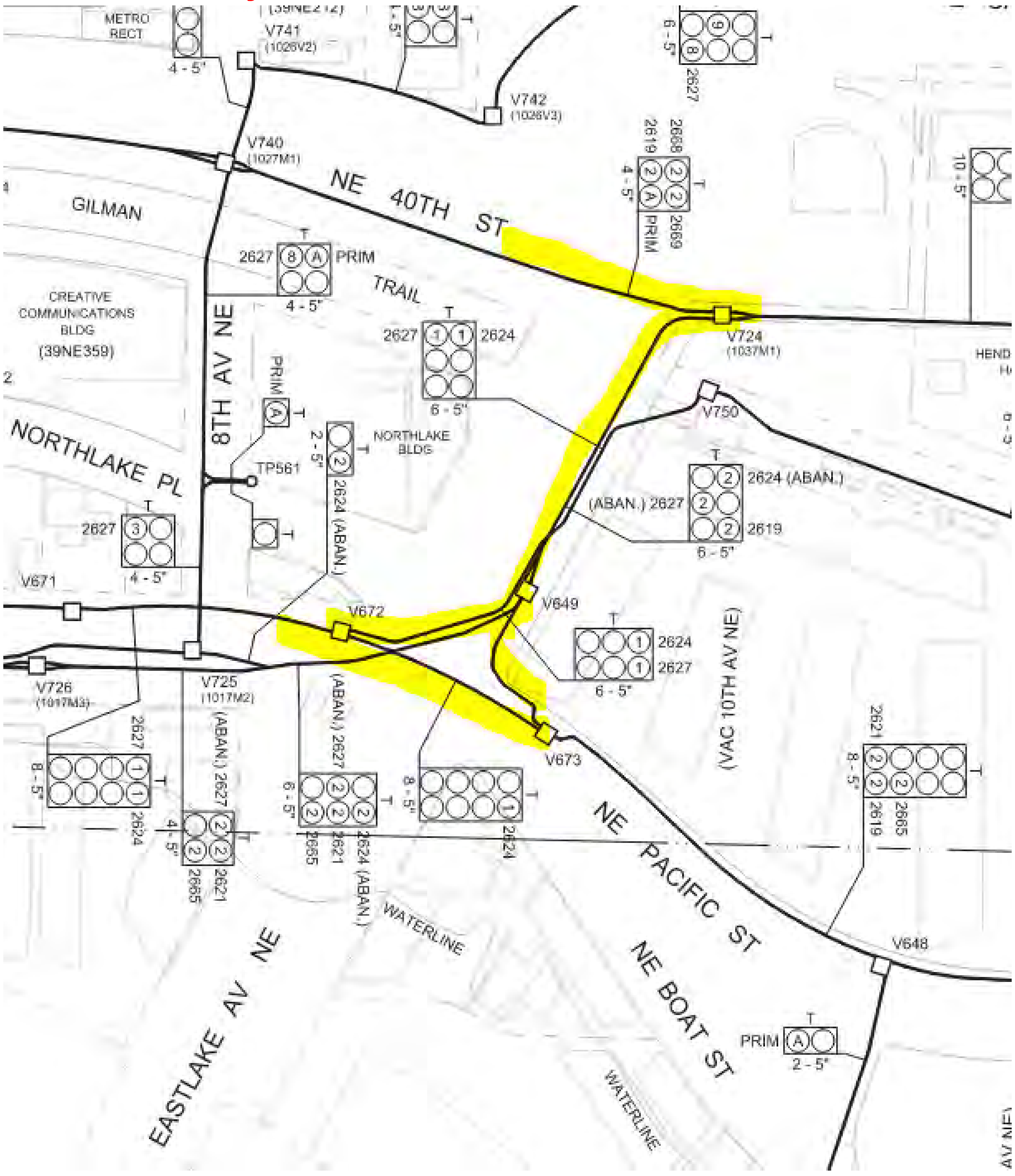
*****UPDATED WITH AGENDA AND LINK TO MATERIALS*****

This is the second (and final) workshop for the University Bridge Planning Study. See attached for the meeting agenda and following link to the draft memo for your pre-review and reference:
Draft Final Alternatives Development Memo_06.20.2023_PreReview.pdf

The purpose of this consultant-led workshop is to review the following three (3) final alternatives that were advanced for further design and evaluation:
- Bridge Retrofit with CFRP and Reinforced Concrete Strengthening (Combination of Alternatives 1A and 1B)
- Hybrid with In-Kind Superstructure Replacement (Alternative 3C)
- Bridge Replacement with Precast Concrete Girders (Alternative 2B)

We will be asking for SME input on design, constraints/risks, evaluation criteria/weighting, and the preliminary findings. Your feedback will help to finalize our study recommendations.

AGENDA



Ken Jumpawong, P.E.(WA), S.E.(WA, AK)
D 425.450.4500 M 503.929.8223

hdrinc.com/follow-us

Please note the following out-of-office periods:
September 18-21, PTO

From: Wooton, Elisabeth <Elisabeth.Wooton@seattle.gov>
Sent: Wednesday, August 30, 2023 8:34 AM
To: Jumpawong, Ken <Ken.Jumpawong@hdrinc.com>
Subject: FW: SCL Facilities Near the Eastlake Bridge

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Ken,

We got this response from SCL regarding the Comparison Report. Wanted to pass it along so you and team can take a look.

Thanks!
Elisabeth

Elisabeth Wooton *(she/her/hers)*
206-735-1123 | elisabeth.wooton@seattle.gov

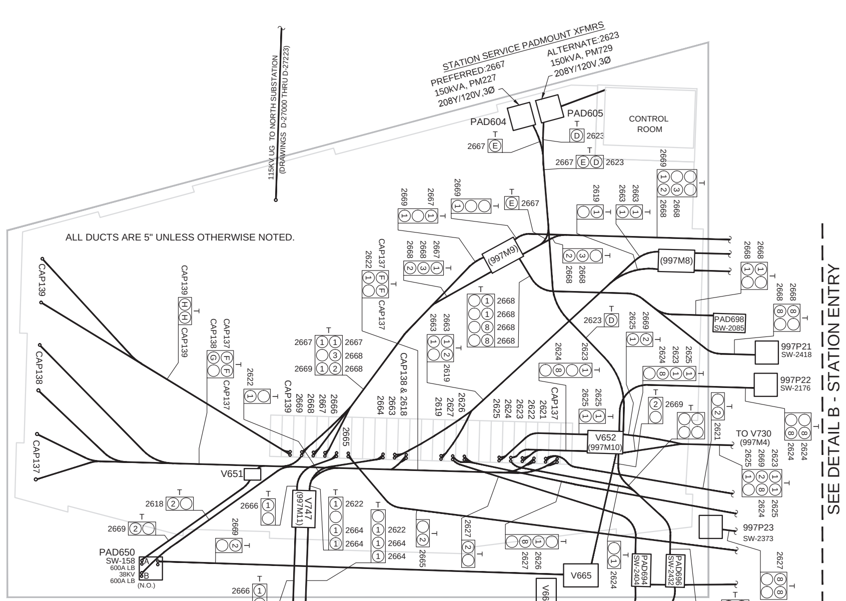
From: Russo, Dave <Dave.Russo@seattle.gov>
Sent: Wednesday, August 30, 2023 8:25 AM
To: Wooton, Elisabeth <Elisabeth.Wooton@seattle.gov>
Cc: Danielsen, Michael <Michael.Danielsen@seattle.gov>
Subject: SCL Facilities Near the Eastlake Bridge

The utilities section did not discuss the 26KV system in the vicinity of the bridge. Not sure how this was missed, but I've included a copy of the drawing. In addition to customer loads in the areas NE of the UW, these ducts supply the entire UW Campus itself.
Relocating the ducts & cables will be a difficult & expensive process, & the design of the replacement or renovation of the bridge should take this into account. Any work SCL does is billable.

Dave
Pronouns: he/him/his
I contain multitudes
David A. Russo, PE
Principal Power Systems Engineer
North Systems Design
206-615-0621

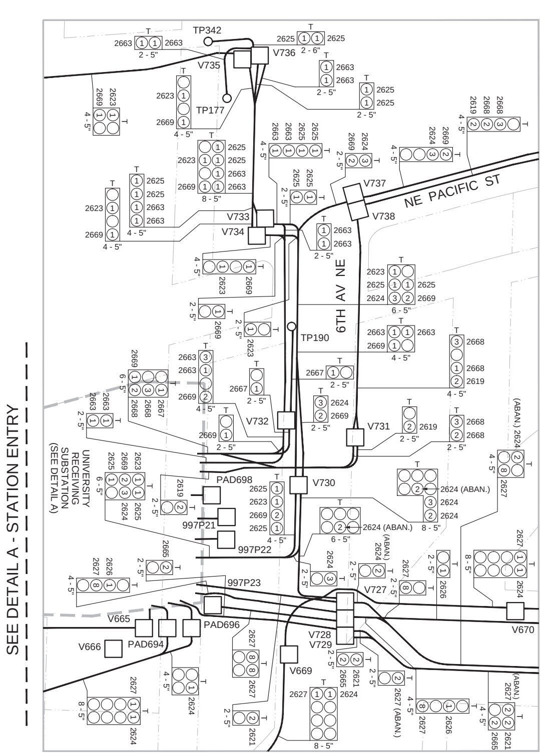
SCL - Power Systems

SITE PLAN



DETAIL A - STATION ENTRY

SCALE: 1"=25'



DETAIL B - STATION ENTRY

SCALE: 1"=50'

CONDUIT INFORMATION

ALL DUCTS ARE VIEWED LOOKING NORTH AND EAST.
UNLESS OTHERWISE NOTED, ALL CONDUITS ARE 5".
NO SECONDARY DUCT OCCUPANCIES ARE SHOWN.

CABLE INFORMATION

NOTE NO.	CONDUCTOR
1	FEEDER: 3 - 1000kCM 1/C 28kV CU & 1 - 4/0 CU
2	FEEDER: 3 - 750kCM 1/C 28kV CU & 1 - 4/0 CU
3	FEEDER: 3 - 500kCM 1/C 28kV CU (NEUTRAL UNK)
4	FEEDER: 3 - 500kCM 1/C 28kV CU & 1 - 4/0 CU & 1 - 2/0 CU
5	FEEDER: 3 - 500kCM 1/C 28kV CU & 1 - 2/0 CU & 1#2 CU
6	FEEDER: 3 - 350kCM 2/C 28kV CU & 1 - 4/0 CU
7	FEEDER: 3 - 350kCM 2/C 28kV CU & 2 - 2/0 CU
8	FEEDER: 1 - 350kCM 6/C 28kV CU (NETWORK CABLES)
9	FEEDER: 3 - 500kCM 3/C 27kV CU PILC

A	PRIMARY DISTRIBUTION: 3#1 2/C 28kV AL
B	PRIMARY DISTRIBUTION: 3 - 1/0 2/C 28kV AL
C	PRIMARY DISTRIBUTION: 1 - 1/0 2/C 28kV AL
D	STATION SVC (2623): 3#1 2/C 28kV & 1 - 2/0 CU
E	STATION SVC (2667): 3#1 2/C 28kV & 1 - 2/0 CU
F	CAP BANK 137: 3 - 1000kCM 1/C 28kV CU
G	CAP BANK 138: 3 - 1000kCM 1/C 28kV CU
H	CAP BANK 139: 3 - 500kCM 1/C 28kV CU

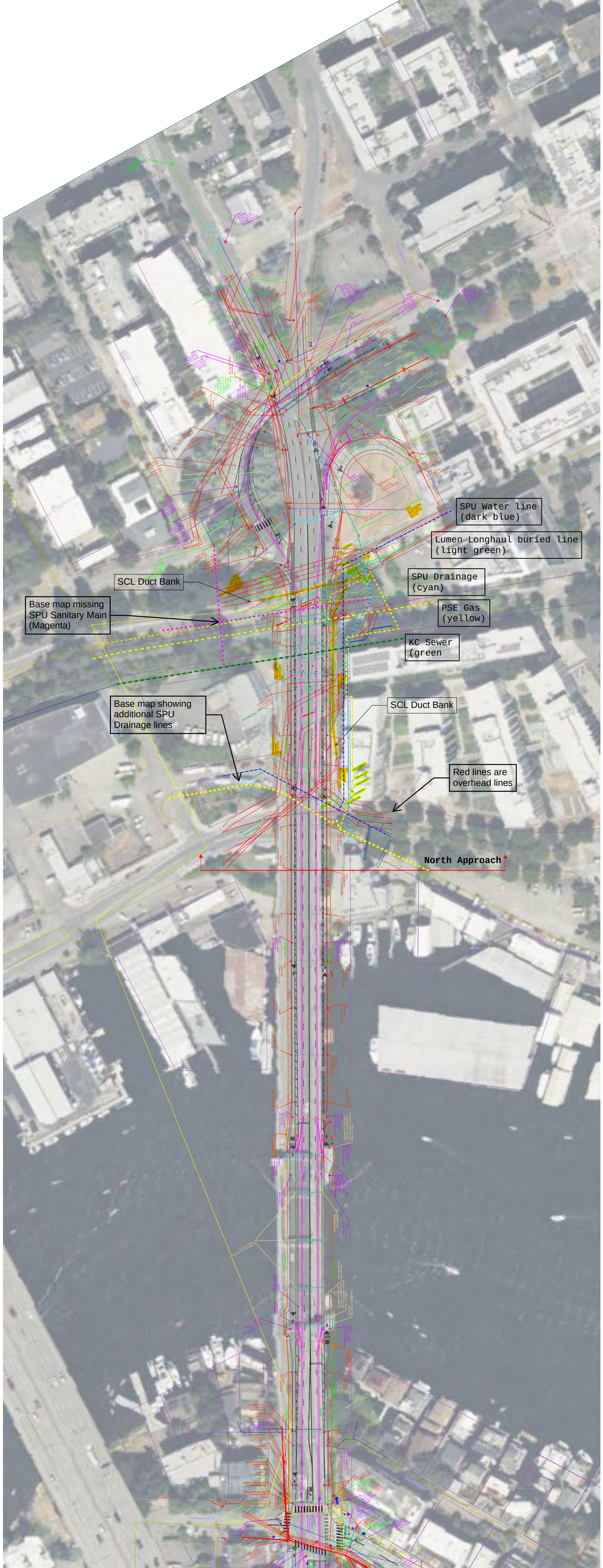
REVISION DESCRIPTION

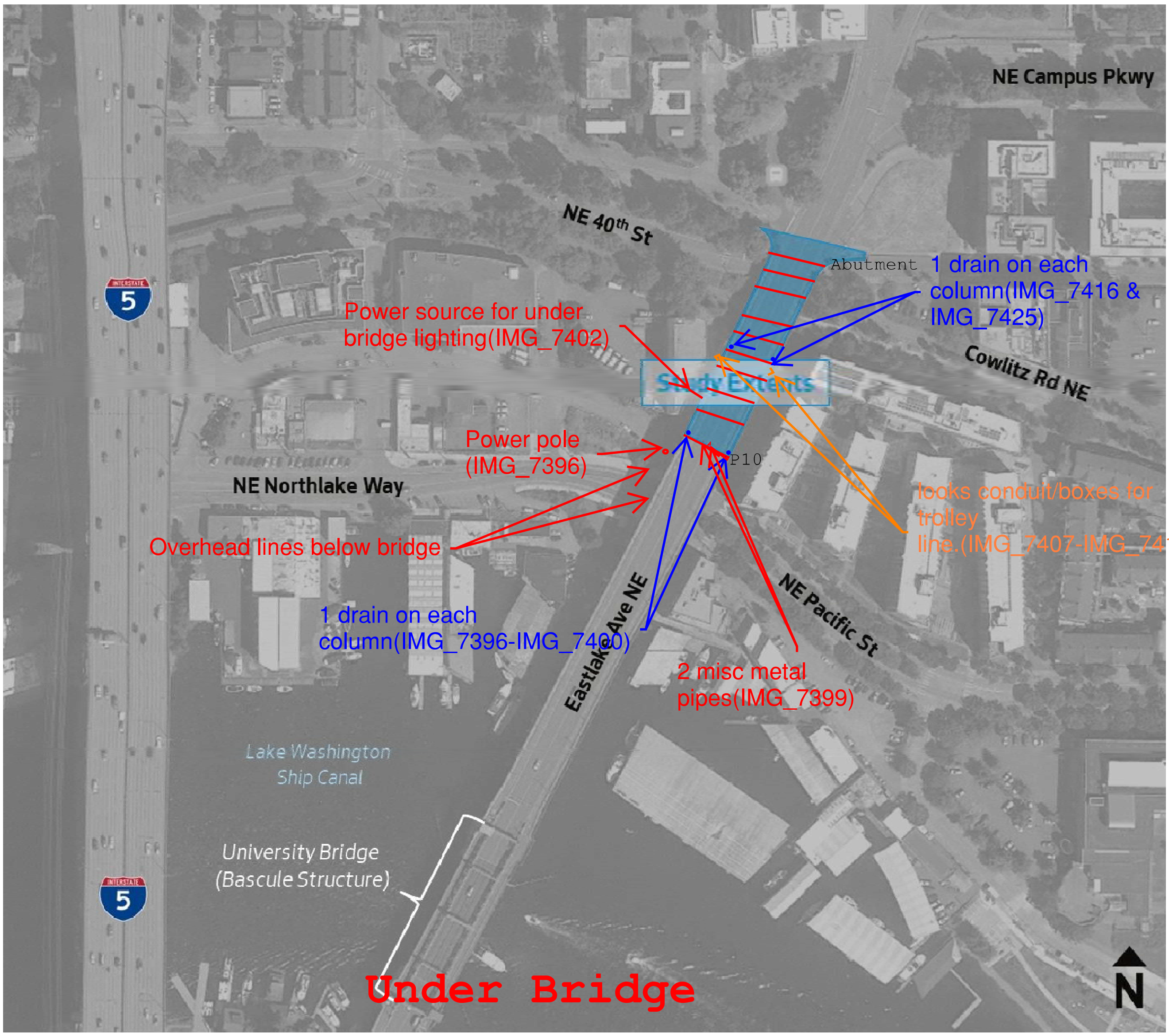
REV	DATE	UPDATED	CHECKED	W.O.#	DESCRIPTION
0	12/29/2014	A. DO	S.C.C.	NONE	CREATED AW-27B. INCORPORATED AND SUPERSEDED D-20044 (UNIVERSITY RECEIVING SUBSTATION DRAWING).
1	09/16/2015	A. DO	S.C.C.	1305224	INSTALLED V697 AND PAD698. ADDED NETWORK SW-PAD 997P21 FOR REFERENCE.
2	06/06/2016	SKS	S.C.C.	1514520	REMOVED TP266. INSTALLED V655 AND V754 AND EXTENDED PRIMARY BETWEEN THEM.
2	06/06/2016	SKS	S.C.C.	1206306	ABANDONED F-2624 IN PLACE AND RE-ROUTED FEEDER FROM SUB THROUGH V695, P696, V667, V668, V669, V670, V671, V672, V750, V751, V752, AND V753 TO UW WEST SUB.
2	06/06/2016	SKS	S.C.C.	1206306	ABANDONED F-2627 IN PLACE AND RE-ROUTED FEEDER FROM SUB THROUGH V693, P694, V667, V668, V669, V670, V671, V672, V750, V751, V752, AND V753 TO UW WEST SUB.

Seattle City Light
Distribution Engineering

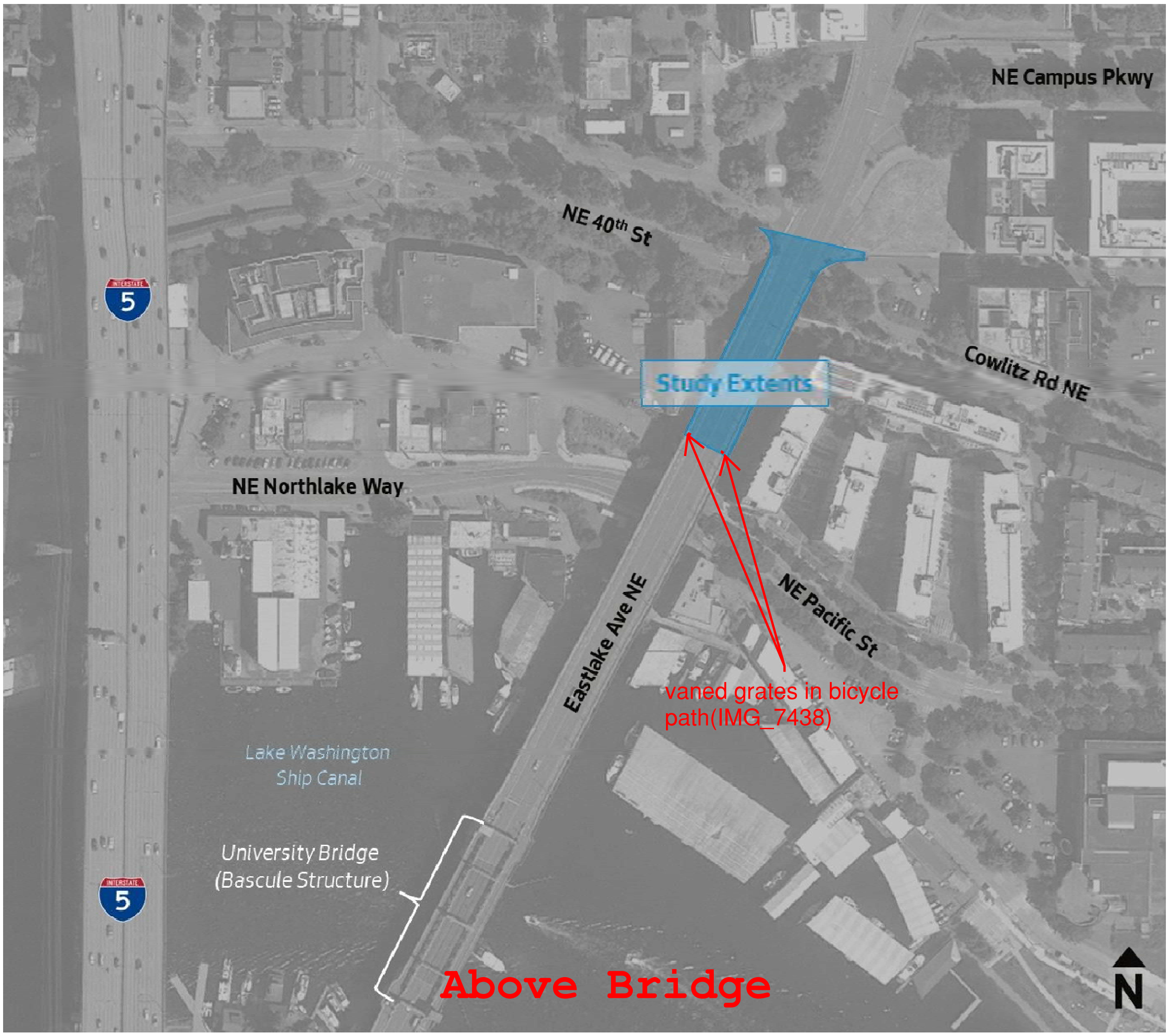
ARTERIAL WIDENING
NE PACIFIC STREET
MONTLAKE BLVD NE TO 4TH AV NE
UNIVERSITY RECEIVING SUBSTATION

CITY - SECTION/TOWNSHIP/RANGE: UNIVERSITY DISTRICT		
UPDATED BY & DATE: SKS 06/06/2016		
CHECKED BY & DATE: S.C.C. 07/02/2016		
DRAWN BY & DATE: A. DO 11/21/2014		
QUARTERSECTION NUMBER(S): 39NE, 39SE, 40NW, 40SW	REV: 2	SHEET: 1 OF 2
SHEET CONTENTS: SITE PLAN	DRAWING NUMBER: AW-27B	


SPU Water line
(dark blue)
Lumen Longhaul buried line
(light green)
SCL Duct Bank
SPU Drainage
(cyan)
Base map missing
SPU Sanitary Main
(Magenta)
PSE Gas
(yellow)
KC Sewer
(green
Base map showing
additional SPU
Drainage lines
SCL Duct Bank
Red lines are
overhead lines
North Approach



NE Campus Pkwy
NE 40th St
Abutment
1 drain on each column(IMG_7416 & IMG_7425)
Power source for under bridge lighting(IMG_7402)
Study Extents
Cowlitz Rd NE
Power pole (IMG_7396)
P10
NE Northlake Way
looks conduit/boxes for trolley line.(IMG_7407-IMG_7411)
Overhead lines below bridge
1 drain on each column(IMG_7396-IMG_7400)
Eastlake Ave NE
NE Pacific St
2 misc metal pipes(IMG_7399)
Lake Washington Ship Canal
University Bridge (Bascule Structure)
5
Under Bridge
N


NE Campus Pkwy
NE 40th St
5
Cowlitz Rd NE
Study Extents
NE Northlake Way
NE Pacific St
Eastlake Ave NE
vaned grates in bicycle
path(IMG_7438)
Lake Washington
Ship Canal
University Bridge
(Bascule Structure)
5
Above Bridge
N

E-12


IMG_7399
Miscellaneous pipes through bridge deck


IMG_7400
Bridge drain

IMG_7402


IMG_7411
Overhead Contact System boxes and conduits

E-17

E-18

Overhead lines form NE Northlake looking east

Overhead lines form NE Northlake looking north

North Approach Utilities
South Approach Utilities

REGION No	STATE	FEDERAL AID PROJECT No
	WA	

"AS BUILT" PER PLAN EXCEPT AS NOTED

University Bridge - North Approach Superbent - Plans

NSA0528
S1-38

Property of City of Seattle
782-194-A41

Andersen Bjornstad Kane Jacobs • Inc

APPROVED FOR ADVERTISING
KENNETH J. NAKATSU
DIRECTOR OF ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON 19
BY:
CONTRACTING SERVICES ADMINISTRATOR

NAME OR INITIALS AND DATE	INITIALS AND DATE
DESIGNED EE	REVIEWED:
CHECKED JML	DES. CONST.
DRAWN BJB	TRANS. SVC. PROJ. MGR.
CHECKED JML	RECEIVED
DESIGN REVIEW JHC	REVISED AS BUILT ABC 11/02/00

All work done in accordance with the City of Seattle Standard Plans and Specifications in effect on the date shown above, and supplemented by Special Provisions.

THE CITY OF SEATTLE
DEPARTMENT OF ENGINEERING
CYRIL E. B. JUANITAS
ACTING DIRECTOR OF ENGINEERING
ORDINANCE NO. APPROVED
FUND:
SCALE: SCALE INSPECTOR'S BOOK

Bridge Seismic Retrofit Program Phase 1 - Contract 7

JOB NO. PC ES2258A
R/W
CO ES2440C
VAULT PLAN NO. 782-194
SHEET 41 OF 94

PROJECT No: 93044.04
CADD FILE: UBSBFDN.DGN
PLOTTED: 10 OCT 95
VAULT SERIAL NO. 32796

REGION No	STATE	FEDERAL AID PROJECT No
	WA	

North Approach Utilities

South Approach Utilities

NOTES:

1. CONTRACTOR MAY CORE DRILL EXISTING DECK SLAB AT TWO LOCATIONS IN EACH BAY FOR PLACING CONCRETE. MAXIMUM HOLE DIAMETER IS 8 INCHES.

ELEVATION LOOKING NORTH

¼"=1'-0"

"AS BUILT" PER PLAN EXCEPT AS NOTED

University Bridge - North Approach Superbent - South Elevation

NSA0528

S1-39

Property of City of Seattle

782-194-A42

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DESIGNED	EE	REVIEWED:	
CHECKED	JML	DES.	CONST.
DRAWN	AKM	TRANS. SVC.	PROJ. MGR.
CHECKED	JML	RECEIVED	
DESIGN REVIEW	JHC	REVISED AS BUILT	ABK 11/03/00

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DEPARTMENT OF ENGINEERING
CYRIL E.B. JUANITAS
ACTING DIRECTOR OF ENGINEERING
ORDINANCE NO. APPROVED
FUND:
SCALE: SCALE INSPECTOR'S BOOK

Bridge Seismic Retrofit Program Phase 1 - Contract 7

JOB NO. PC ES2258A
R/W
CO ES2440C

VAULT PLAN NO. 782-194

SHEET 42 OF 94

93044.04 UBSB15.DGN 10 OCT 95

VAULT SERIAL NO. 32796

North Approach Utilities

South Approach Utilities

Property of City of Seattle 782-59-7

22857

E-23

North Approach Utilities
South Approach Utilities
FOOTING ~ GENERAL PLAN
Scale 1" = 50'
ELEVATION
℄ 10TH AVE. N.E.
℄ 9TH AVE. N.E
℄ NORTHLAKE AVE
℄ E. 39TH ST.
℄ N.P.RY. R. of W.
℄ E. PACIFIC ST.
℄ EASTLAKE AVE.
℄ FUHRMAN AVE.
HARBOR LINE
108" Trunk Sewer
Ex. 12" C.I.P.
Ex. 6" Gas
42 Steel Pipe
For Map of Utilities see Sheet #112
℄ Tunnel
W.L. of WALL
BENT #18
BENT #17
BENT #16
BENT #15
BENT #14
BENT #13
BENT #12
BENT #11
PIER #10
PIER #9
PIER #8
PIER #7
PIER #6
PIER #5
PIER #4
℄ ANCHOR PIER
℄ Bascule Span
Axis of Canal
℄ ANCHOR PIER
PIER #3
PIER #2
W.L. ABUT. #1
36.96 32.28 50.59 44.47 14.47 35.5 35.5 35.5 35.5 99.963 99.963 101.046 80.554 132.451 80.554 59.40 145.5 145.5 51.18 99.95 51.48 121.89
2.7134%
Curb Grade Line
3.04%
W.S. + 8.0
Sta. 15+90.21
Sta. 15+53.25
Sta. 15+20.97
Sta. 14+70.38
Sta. 14+25.91
Sta. 14+11.432
Sta. 13+75.932
Sta. 13+40.432
Sta. 13+04.932
Sta. 12+69.432
Sta. 11+69.469
Sta. 10+69.506
Sta. 9+68.459
Sta. 8+87.905
Sta. 7+55.454
Sta. 6+74.9
Sta. 6+15.5
Sta. 4+70
Sta. 4+60
Sta. 3+24.5
Sta. 2+73.32
Sta. 1+73.37
Sta. 1+21.89
Sta. 0+00
795 Untreated Timber piles. for spacing see details
Location & Levels on Test Holes F.B. 1630 & plan 782-22
T.H. #1, 1929. F.B. 2104 N, Profile 12-6-29.
T-3, T-4 & T-1 Tunnel plans 48-79.
Anchor Piers F.B. 2104 F, G, H, I.
Public Utilities Maps 107 & 117
THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS CITY ENGINEER
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
GEN. PLAN of FOOTINGS & SOIL TEST HOLES
SCALE 1" = 50'-0"
DRAWN H. D. Graves
TRACED H. D. G.
CHECKED E J Legg
APPROVED Dec. 4-1931
BRIDGE NO. 3
FILE NO. 782-59
SHEET NO. 9
APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. Jan. 4 1932
CHAIRMAN
ATTEST
SECRETARY
MAY 19 1977
Property of City of Seattle
782-59-9

— 22859 —

North Approach Utilities
South Approach Utilities
Light Dept. Connection
The City Lighting Department will furnish and install all material necessary to connect their wires to wires extending out of weatherheads at conduits #1, 4 & 7 including relay controls, transformers and switches at conduits #1 & 4.
The contractor will pay the Light Dept. their bill for this work.
Cost of this Item will be included in price bid for Wiring.
℄ E. 40TH ST.
For Lower Roadway Lighting see sheet #108
Conduit #7
Ex. Pole #3
2 Trolley Poles
2 Trolley Poles
2 Stair Lights
℄ 10TH AVE. N.E.
Special Hand Hole.
3-1½" Conduits Up Pole to Secondary Cross Arm
#1 for Roadway Lighting
#2 for Oper. Tower Lighting
#3 for Power
Ex. Pole #1
Conduits #2 & 3
Special Hand Hole
℄ BRIDGE
Std. Hand Hole
2 Trolley Poles.
3-1½" Conduits
#4 for Roadway Lighting
#5 for Oper. Tower Lighting
#6 for Power.
℄ FUHRMAN AVE.
Ex. Pole #2
℄ EASTLAKE AVE.
℄ FUHRMAN AVE.
To Ex. Pole #1.
4-4-6 Lead Covered Triplex Cable in 1½" Conduit from Secondary Cross Arm, down pole, underground and up Concrete and Steel Column to hand hole in sidewalk.
Triple Pole Main Line Fuse Cutout 60A-250V. 3-60 A. Fuses
2-3 to 2 Wire Double Branch Fuse Cut-Outs. 30A-250V. 8-15A. Fuses.
2-#6 & 1-#8 R.C. Wire in 1½" Conduit.
Double Pole Main Line Fuse Cutout 30A.250V. 2-5A-Fuses for each Lamp.
All Lamps on Trolley Poles to be 300W 125V. P.S. Mazda Type "C."
#8 Rubber Covered Wire
Pole Wiring to be #10 Rubber Covered in ¾" Conduit.
Lamps on Stairway to be 150W. 125V. P.S. Mazda Type "C."
2-#12 R.C. Wires in ¾" Conduit.
#8 R.C.
WIRING DIAGRAM - NORTH APPROACH.
Lamps & Fuses same as for N. Approach.
Triple Pole Main Line Fuse Cutout 60A. 250V. 3-40A Fuses.
To Ex. Pole #2
6-6-8 Lead Cov. Triplex Cable in 1½" conduit from Secondary Cross Arm on Pole, down pole & underground to hand hole in sidewalk.
2 #6 Rubber Cov. Wires in 1½" Conduit.
2 Single Pole Fuse Cutouts 30A. 250V. 2-15A. Fuses.
WIRING DIAGRAM - SOUTH APPROACH.
R. 1'-6"
3"
1"x⅜" Strap Iron, welded to Pipe, grind smooth and galvanize.
1½" Pipe
2" Pipe
Westinghouse Streethood body with globe & socket holder complete Cat. No. 354557. or equal
Light alabaster rectilinear globe Cat. No. 350572. or equal
9'-0" above walk to light center.
2" Galv. Std. Pipe
Top of Pipe Rail
½" Weep Hole.
¾" Conduit.
PIPE RAILING LAMP POST FOR LOADING PLATFORM AND STAIRS
12 Required.
MAY 1 9 1977
APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. Jan. 4 1932
ATTEST: SECRETARY CHAIRMAN
THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS CITY ENGINEER
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
LIGHTING, GEN. PLAN & WIRING DIAGRAM
SCALE AS SHOWN
DRAWN Lamb TRACED Sullivan CHECKED Gaines
APPROVED Dec. 4, 1931
BRIDGE NO. 3 FILE NO. 782-59 SHEET NO. 107
Property of City of Seattle
782-59-107
22956

North Approach Utilities
South Approach Utilities

North Approach Utilities
South Approach Utilities
PLAN
Scale-1"=60'-0"
ELEVATION
1 Layer of water proof felt, 1" of hairfelt, all joints broken, 3 ply J.M. Asbestos water proof jacket. Pipe to be laid on conduit hangers see sheet 109
See Sheet #112 for Utilities
Anchor Beam
2 Bridge Inlets 2 Track Inlets
8" P.S.
Std. C.B.
2.71%
3.04%
8" P.S. 11.5%
Ex. 12" Watermain
Elev. 10.00
Elev. 8.
El. 10.0
El. 29.0
PLAN.
ELEVATION
SEC. ON ℄.
Bridge Inlet
Track Inlet
Curb
6" 60° Branch.
6"-60° Y Branch
2-60° Y Branches.
Symm. about ℄.
To C.B. Similar to Bent #15.
DRAINAGE AT PIER No. 10.
Scale-1/4"=1'-0"
SEC: A-A.
Symm. about ℄ Bridge
6"-45° Y Branch.
2-6"-45° Y Branches
Lead Joint 6" C.I. Pipe
Proposed Ground Line
Std. C.B.
Elev. 47.00
8" Sew. Pipe
Plug for Cleanout
Pipe Straps
6" Galv. Steel Pipe
6"-45° Branch. Brass Cleanout Plug.
6"-45° Y Branches. Brass Cleanout Plugs.
ELEVATION.
DRAINAGE AT BENT No. 15.
Scale-1/4"=1'-0"
NOTE:-
All drainage pipe above ground to be 6" galv. Steel pipe Std. weight with one length of Cast Iron pipe at ground line. All fittings to be Cast Iron drainage fitting for Screw pipe Galv. using a Y-branch and brass Cleanout plug at each change in direction unless otherwise noted. Piping underground to be city Standard 8" Sewer pipe. All Galv. pipe to be painted 2 field Coats as required for Structural Steel.
MAY 1 9 1977
APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN.
ATTEST:
SECRETARY
CHAIRMAN
THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS CITY ENGINEER
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE, GEN. PLAN; DRAIN AT PIERS 10 & 15
SCALE — AS SHOWN.
DRAWN Lamb
TRACED Sullivan
CHECKED E.J.Legg
Bridge No. 3
File No. 782-59
Sheet No. 111
Property of City of Seattle
782-59-111

North Approach Utilities
South Approach Utilities

THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS CITY ENGINEER
DATE NOV. 18, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE & UTILITIES, SO. ABUT.-BRIDGE INLET
SCALE AS SHOWN

DRAWN	TRACED	CHECKED	O.K.
Lamb	Sullivan	E.J. Legg	Ralph H. Edwards

APPROVED Dec. 4, 1931 C. A. Piper

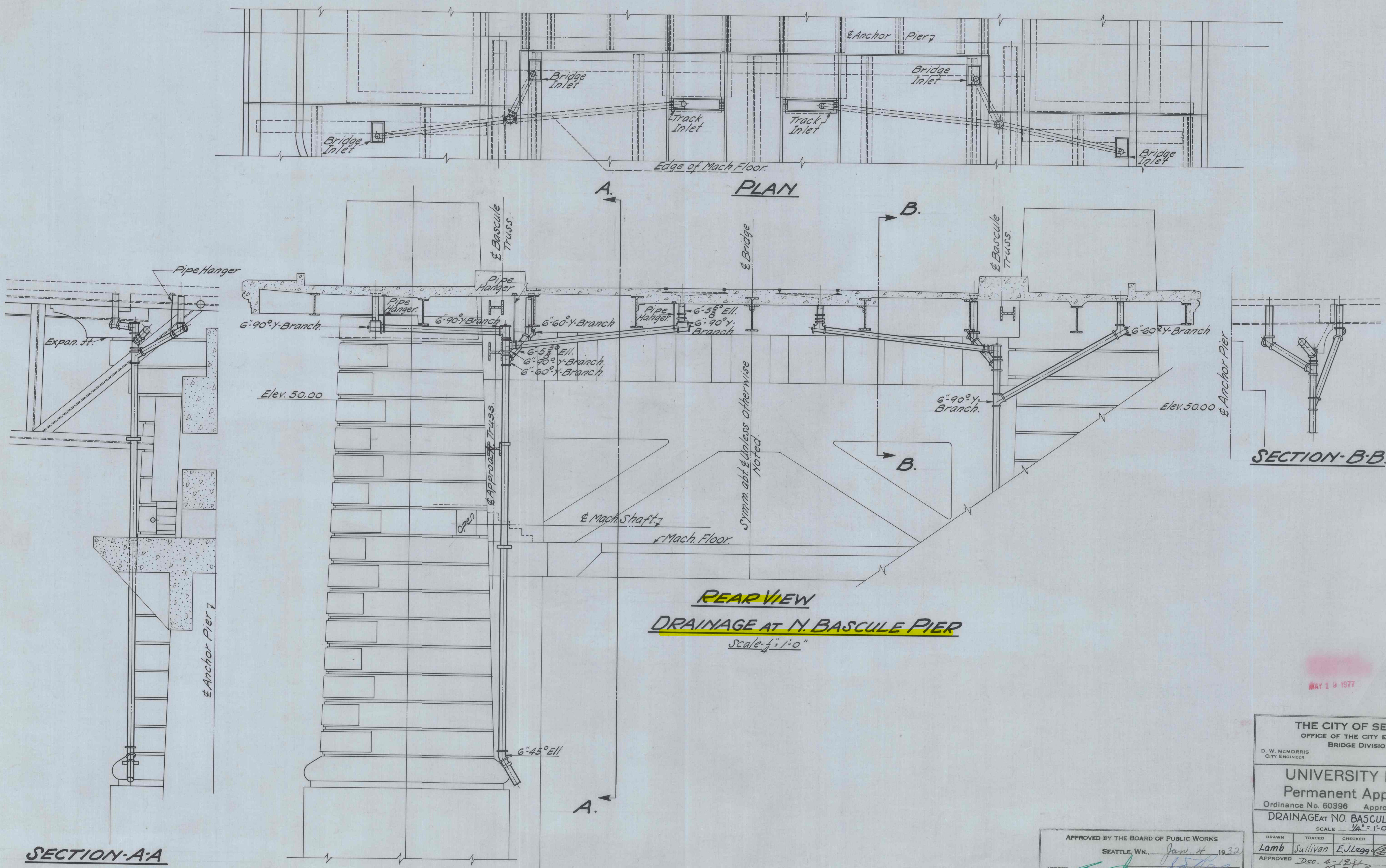
BRIDGE NO. 3 FILE NO. 782-59 SHEET NO. 112

APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. June 4 1932
ATTEST: SECRETARY CHAIRMAN

Property of City of Seattle 782-59-112

— 22961 —

North Approach Utilities
South Approach Utilities



APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. Jan 4 1932
ATTEST: ______ SECRETARY ______ CHAIRMAN

THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS, CITY ENGINEER
DATE NOV. 16, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE AT NO. BASCULE PIER
SCALE ¼" = 1'-0"

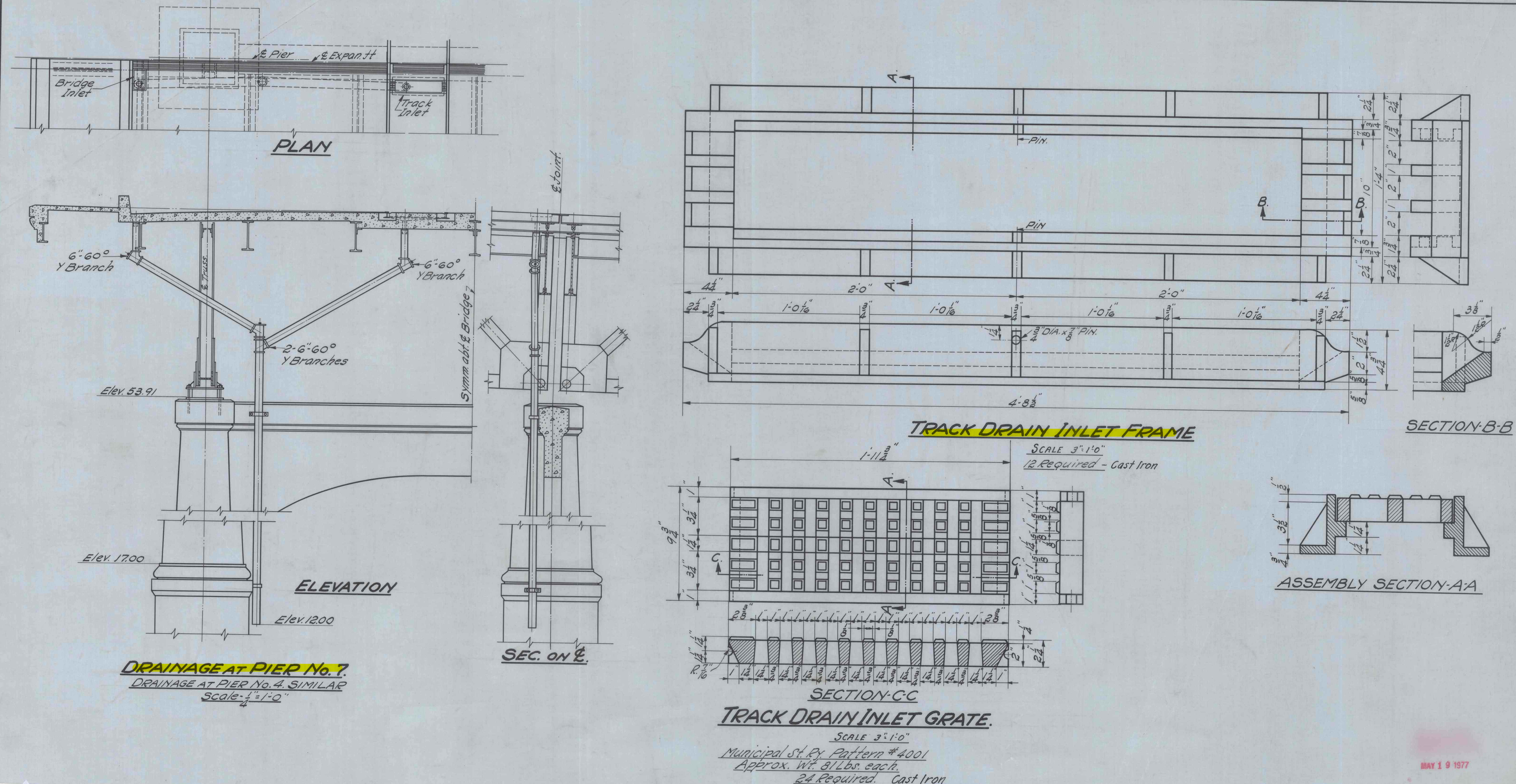
DRAWN	TRACED	CHECKED	O.K.
Lamb	Sullivan	E.J.Legg	Clark H. Eldridge

APPROVED Dec. 4 - 1931 O. A. Piper

BRIDGE NO. 3 | FILE NO. 782-59 | SHEET NO. 113

22962

North Approach Utilities
South Approach Utilities



MAY 1 9 1977

APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN., Jan 4 1932
CHAIRMAN
ATTEST:
SECRETARY

THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS, CITY ENGINEER
DATE NOV. 16, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE AT PIER 7 & 4; TRACK INLET
SCALE — AS SHOWN

DRAWN	TRACED	CHECKED	O. K.
Lamb	Sullivan	E.J. Legg.	[illegible]

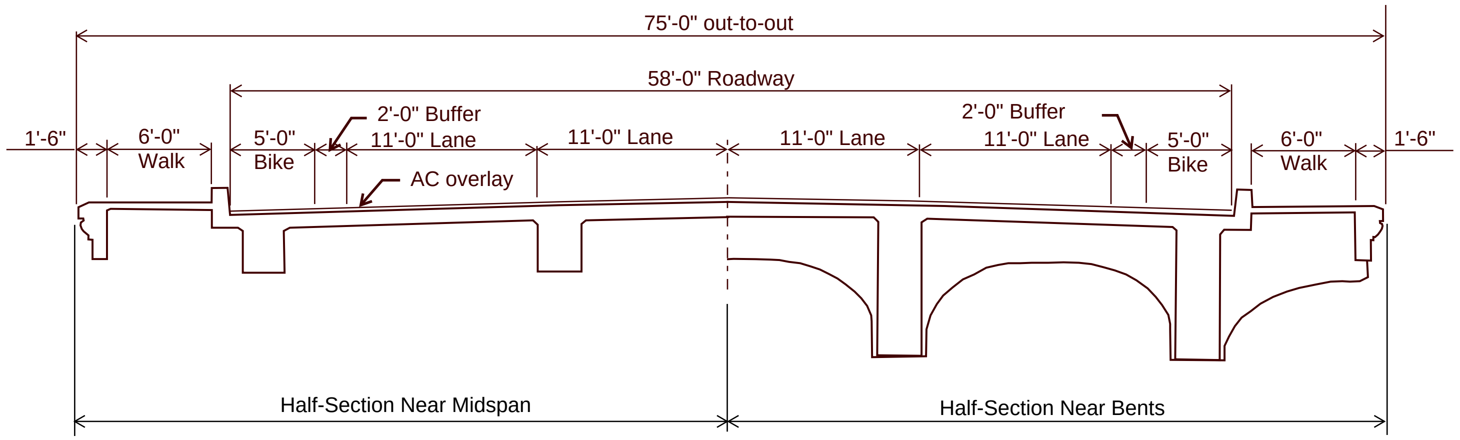
APPROVED Dec. 4-1931
O. A. Piper

BRIDGE No. 3 | FILE No. 782-59 | SHEET No. 114

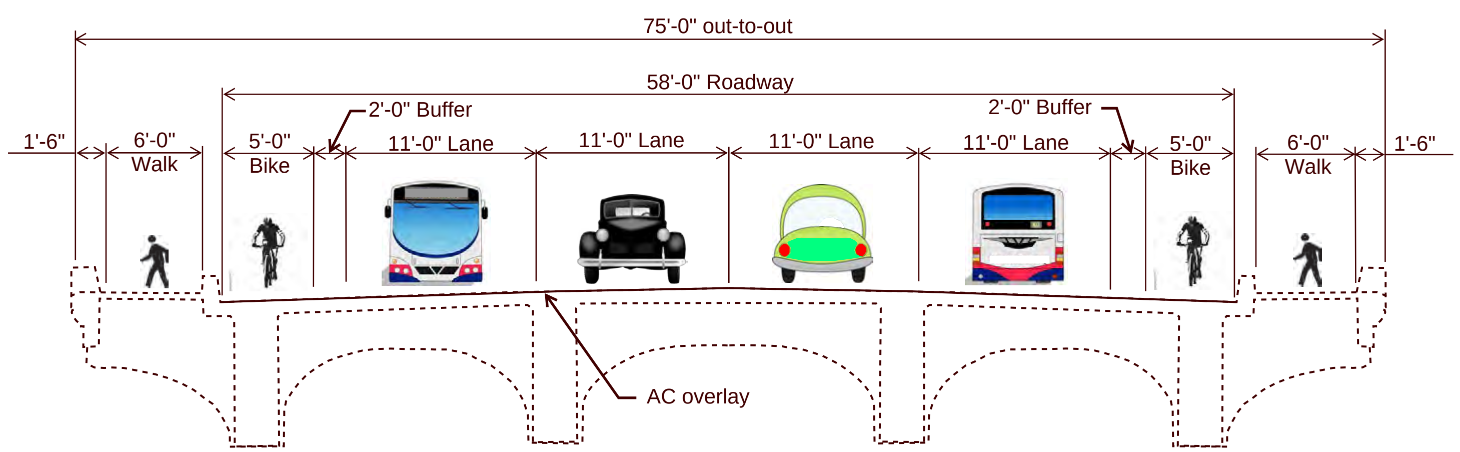
22963

Attachment F

MOT Exhibits



TYPICAL SECTION



TYPICAL 1-STAGE CONSTRUCTION SECTION

Seismic retrofit
Superstructure rehab
Remove asphalt overlay in certain sections
Nighttime, single-lane closures
OCS maintained at all times

ALT 1 - CONSTRUCTION PHASING

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED	REVIEWED:
CHECKED	DES. CONST.
	SDOT PROJ. MGR.
DRAWN	RECEIVED
CHECKED	REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

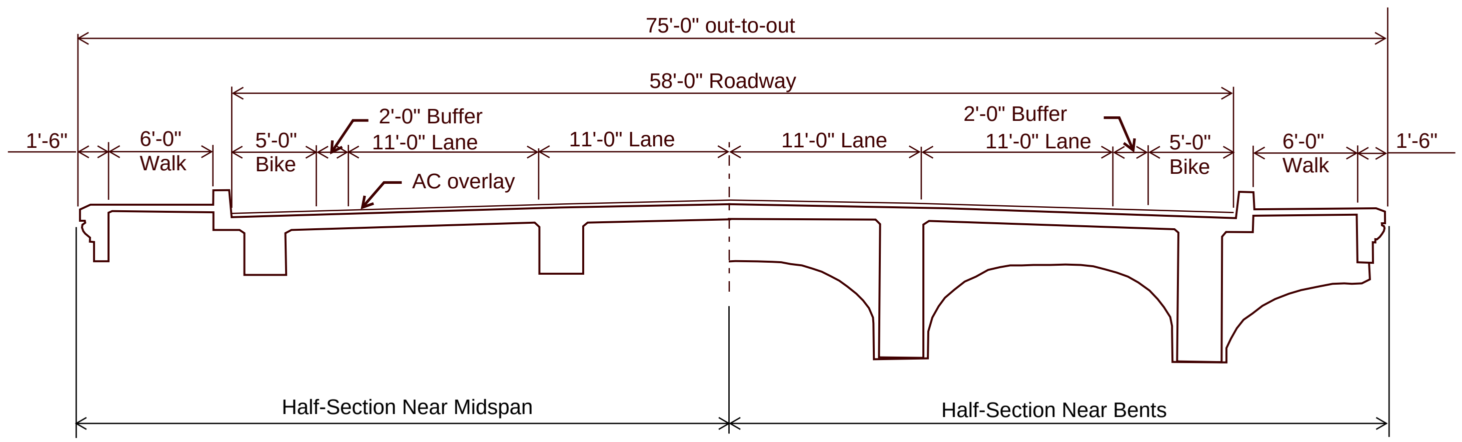
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #
SHEET 8 OF 9

VAULT SERIAL NO. | DATE | MARK | NATURE REVISIONS | MADE | CHK'D | REV'D

SDCI #########, SDOT #########

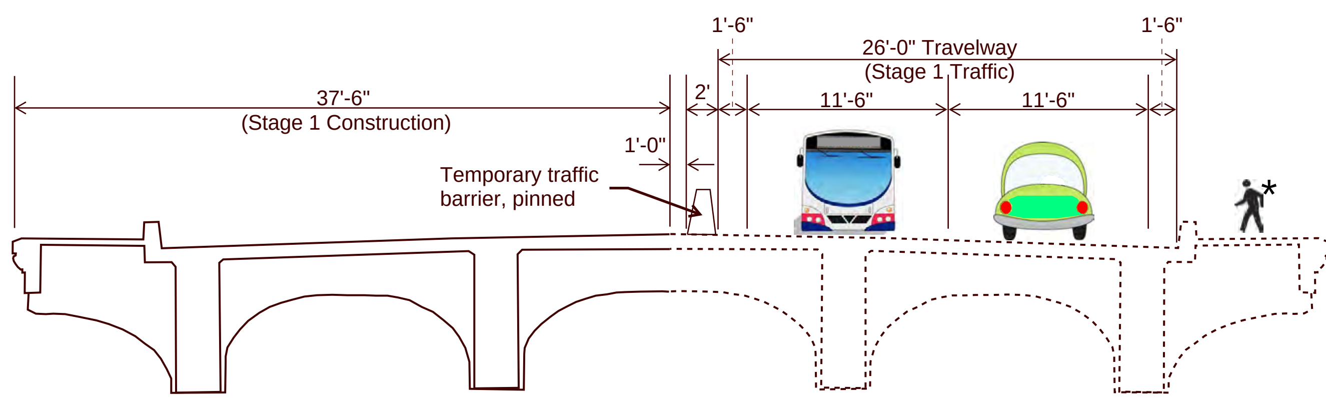
C:\pwworking\west01\d2973966\S-202B.dwg
Feb-23-23 8:58pm



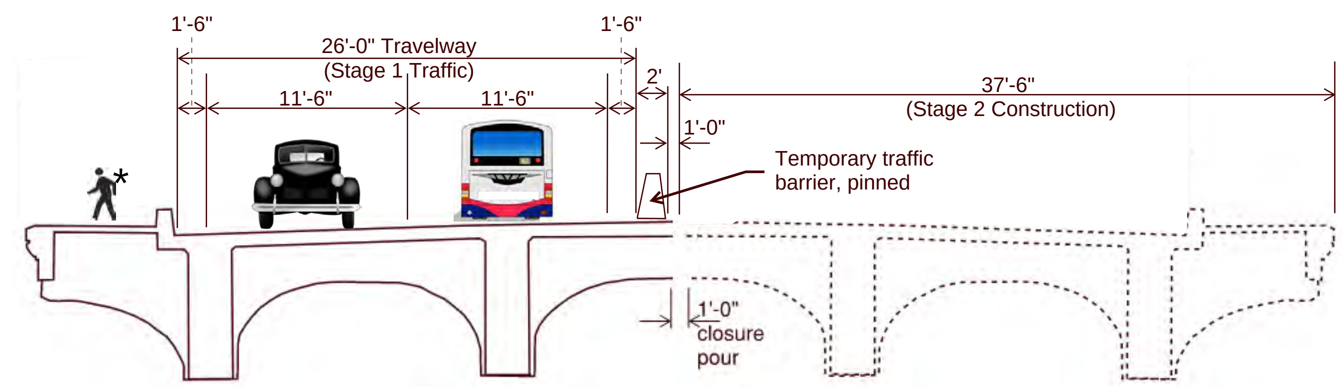
TYPICAL SECTION

ALT 3 (Shown):
Superstructure replacement
Cast-in-place in-kind girder superstructure
Long-term two-lane arrangement

ALT 2 (Similar):
Bridge replacement
Long-term two-lane arrangement
Same impacts as Alternative 3



TYPICAL 2-STAGE CONSTRUCTION SECTION - PHASE 1



TYPICAL 2-STAGE CONSTRUCTION SECTION - PHASE 2

* Pedestrians include dismounted cyclists

ALT 2 - CONSTRUCTION PHASING
ALT 3 - CONSTRUCTION PHASING

VAULT SERIAL NO. | DATE | MARK | NATURE REVISIONS | MADE | CHK'D | REV'D

SDCI ########, SDOT ########

C:\pwworking\west01\d2973966\S-202B.dwg
Feb-23-23 8:58pm

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PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE
DESIGNED
CHECKED
DRAWN
CHECKED

INITIALS AND DATE
REVIEWED:
DES. CONST.
SDOT PROJ. MGR.
RECEIVED
REVISED AS BUILT

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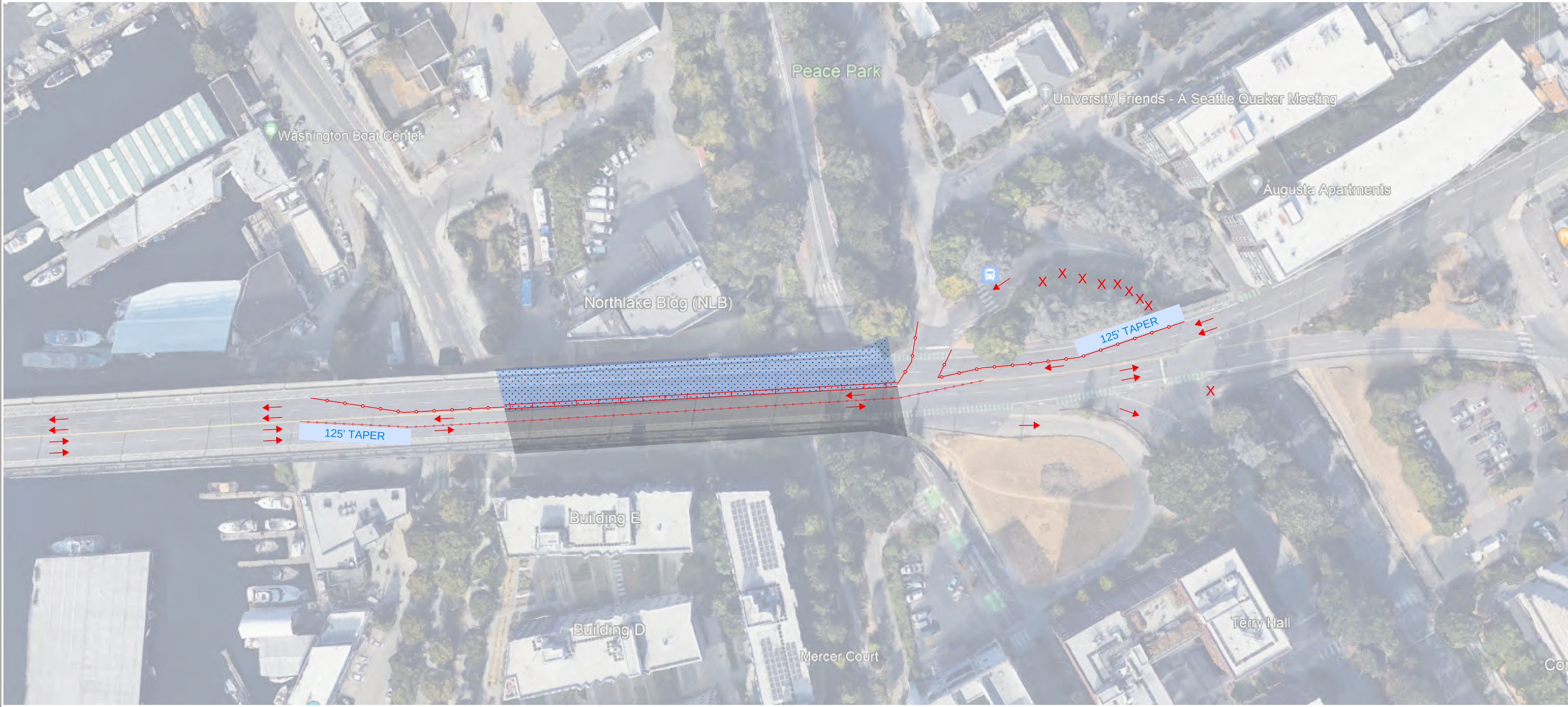
Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #
SHEET 8 OF 9



ALT 2 & 3 - PHASE 1 CONSTRUCTION

VAULT SERIAL NO.	DATE	MARK	NATURE REVISIONS	MADE	CHK'D	REV'D

SDCI ########, SDOT ########

C:\pwworking\west01\d2973966\S-202B.dwg
Feb-23-23 8:58pm

HDR

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DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED	REVIEWED:
CHECKED	DES. CONST.
	SDOT PROJ. MGR.
DRAWN	RECEIVED
CHECKED	REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #
SHEET 8 OF 9

ALT 2 & 3 - PHASE 2 CONSTRUCTION

REV'D	CHK'D	MADE	NATURE	REVISIONS	MARK	DATE	VAULT SERIAL NO.

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DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED CHECKED	REVIEWED: DES. SDOT CONST. PROJ. MGR.
DRAWN CHECKED	RECEIVED REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #
SHEET 8 OF 9

SDCI ########, SDOT ########

C:\pwworking\west01\d2973966\S-202B.dwg
Feb-23-23 8:58pm

U District Bridge Alternatives Analysis

Potential Detours for WB NE 40th Street (Vehicles)

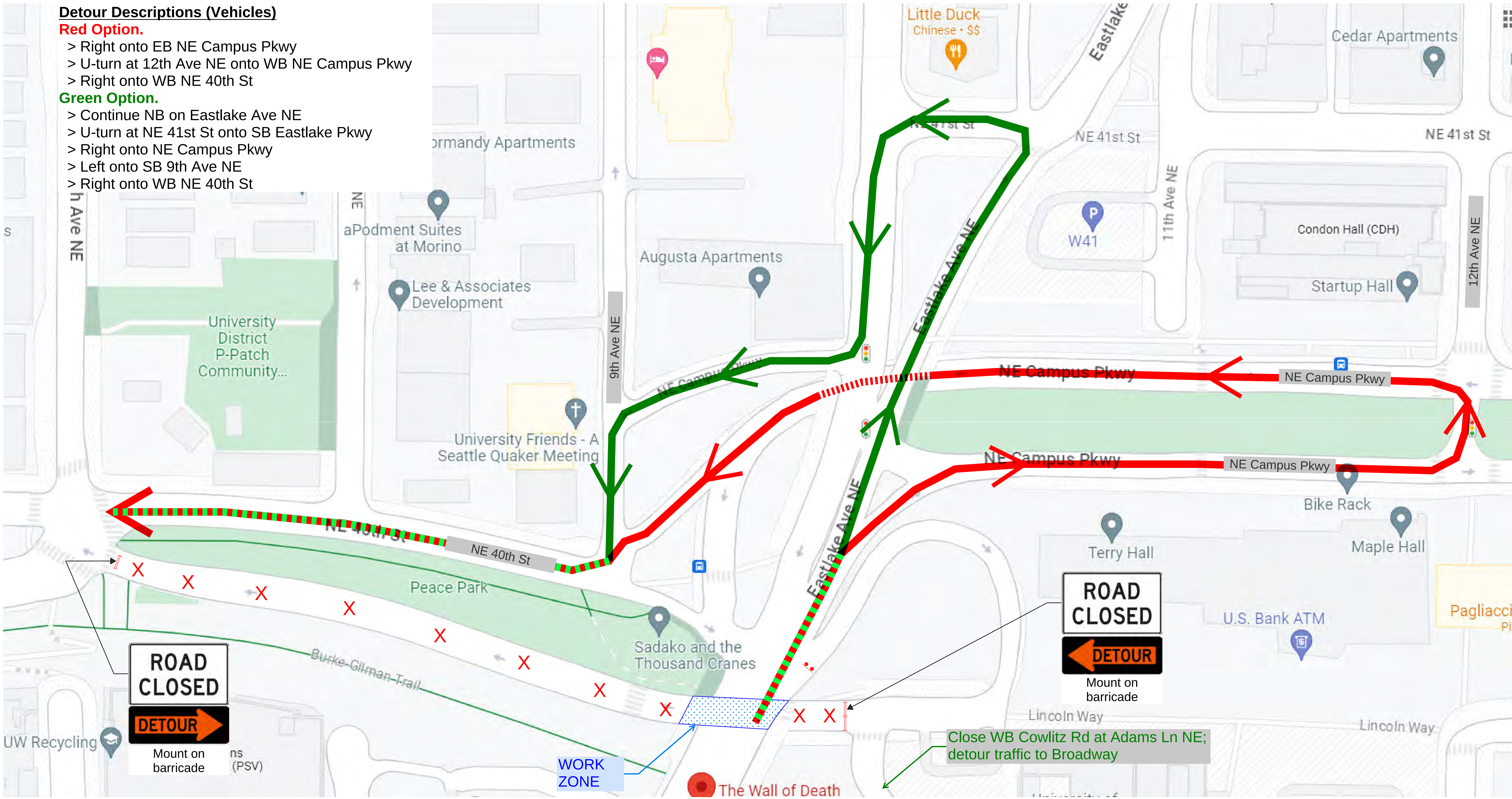
Detour Descriptions (Vehicles)

Red Option.

> Right onto EB NE Campus Pkwy
> U-turn at 12th Ave NE onto WB NE Campus Pkwy
> Right onto WB NE 40th St

Green Option.

> Continue NB on Eastlake Ave NE
> U-turn at NE 41st St onto SB Eastlake Pkwy
> Right onto NE Campus Pkwy
> Left onto SB 9th Ave NE
> Right onto WB NE 40th St



U District Bridge Alternatives Analysis

Potential Detour for Burke-Gilman Trail

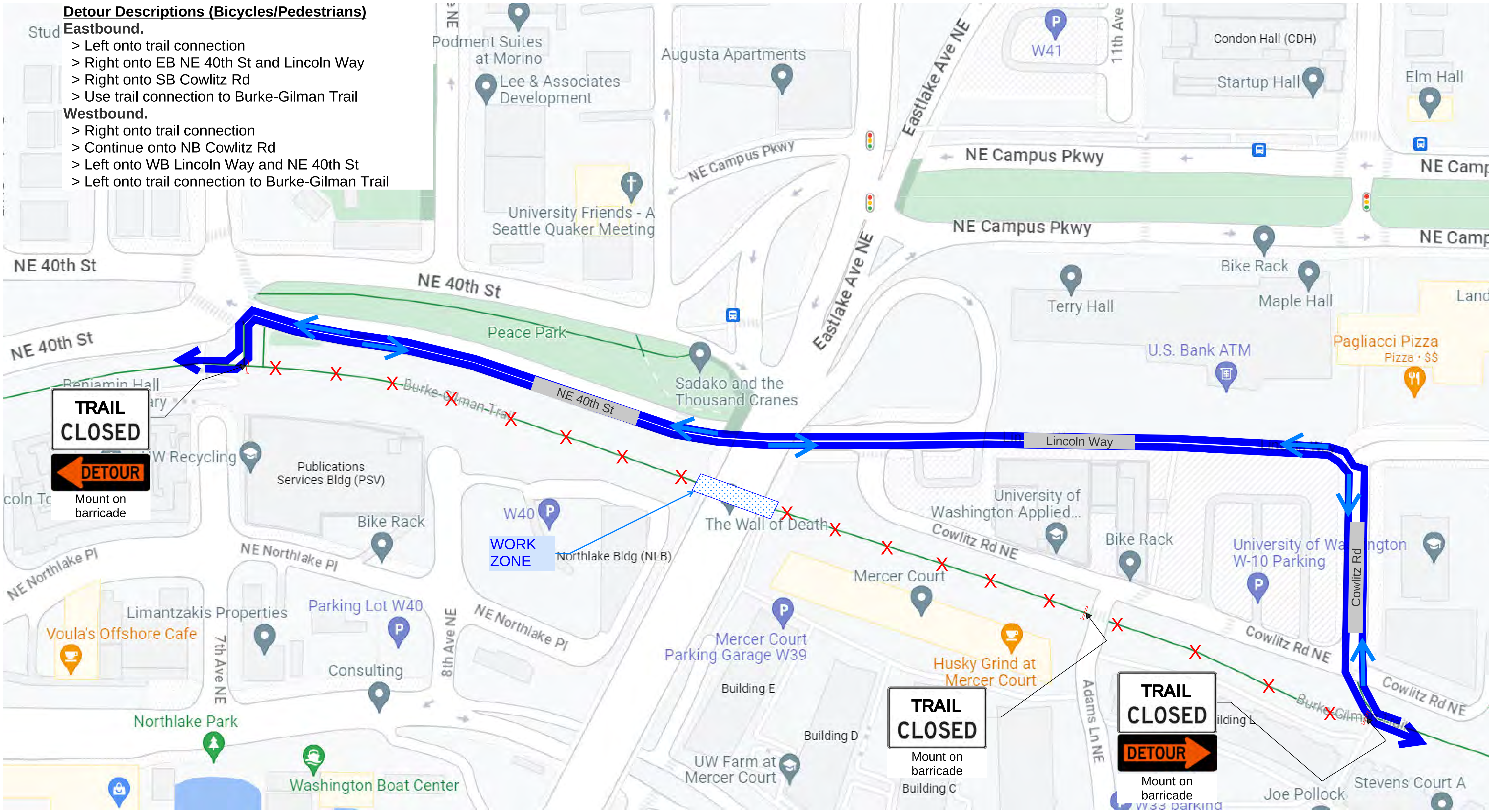
Detour Descriptions (Bicycles/Pedestrians)

Eastbound.

> Left onto trail connection
> Right onto EB NE 40th St and Lincoln Way
> Right onto SB Cowlitz Rd
> Use trail connection to Burke-Gilman Trail

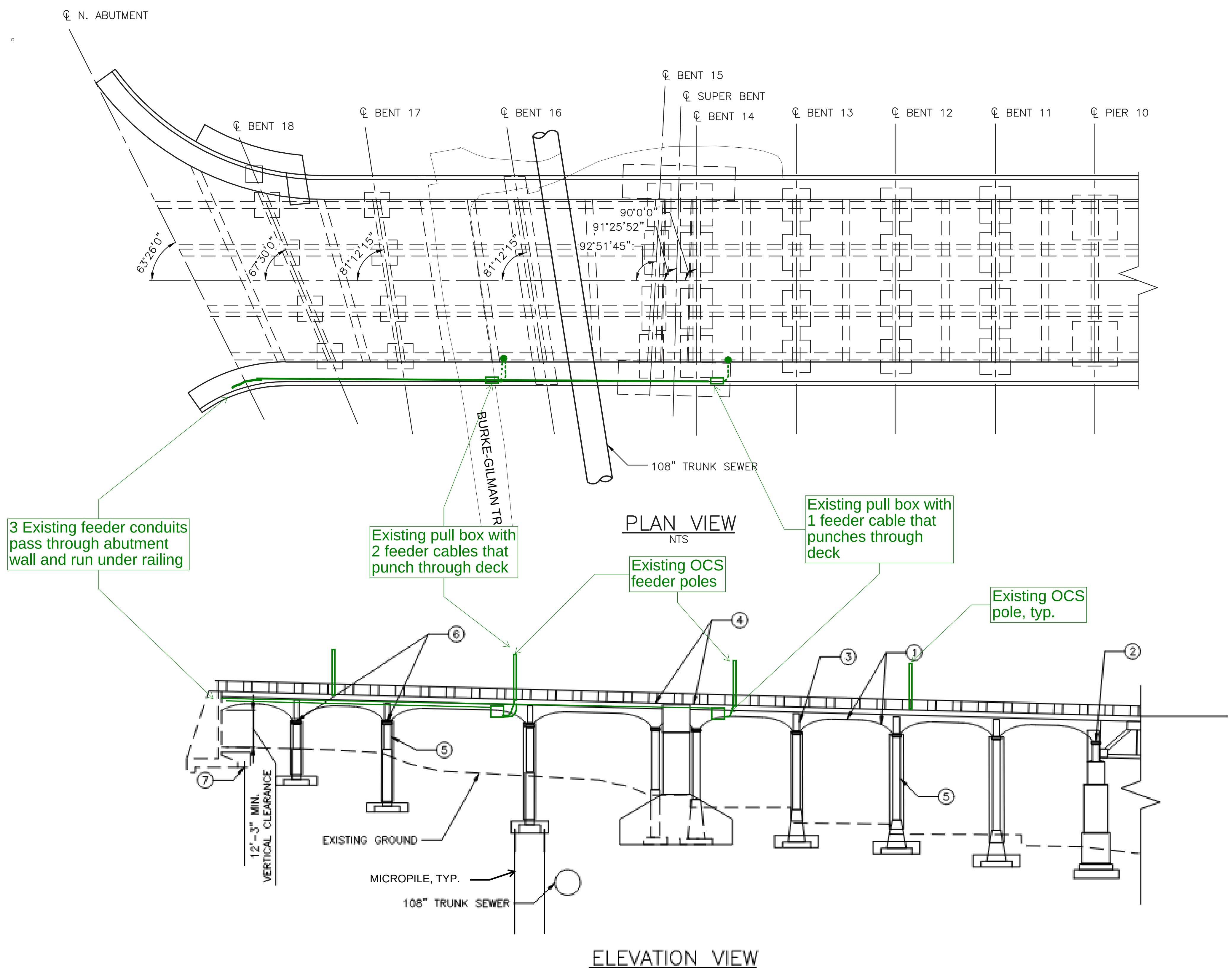
Westbound.

> Right onto trail connection
> Continue onto NB Cowlitz Rd
> Left onto WB Lincoln Way and NE 40th St
> Left onto trail connection to Burke-Gilman Trail



Attachment G

OCS Exhibits



PROPOSED REHABILITATION WORK

1. CFRP STRENGTHENING FOR SHEAR AND FLEXURE ON GIRDERS, TYPICAL ALL SPANS.
2. PIER 10 DIAPHRAGM ENLARGEMENT AND STRENGTHENING.
3. CONCRETE DIAPHRAGM ENLARGEMENT, TYPICAL AT INTERMEDIATE, TYPICAL ALL SPANS.
4. NEAR SURFACE MOUNTED CFRP BARS FOR NEGATIVE FLEXURE OVER BENTS.
5. 5-FT DIAMETER STEEL JACKETING OF COLUMNS AND FOOTING STRENGTHENING, TYPICAL AT INTERMEDIATE BENTS.
6. SEAT BOLSTER AT ROCKER BEARINGS.
7. N. ABUTMENT FOOTING STRENGTHEING WITH MICROPILES.

SDCI ########, SDOT ########

VAULT SERIAL NO. | DATE | MARK | NATURE REVISIONS | MADE | CHK'D | REV'D

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Jun-16-23 1:06pm

ALT 1 — LAYOUT

HDR

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

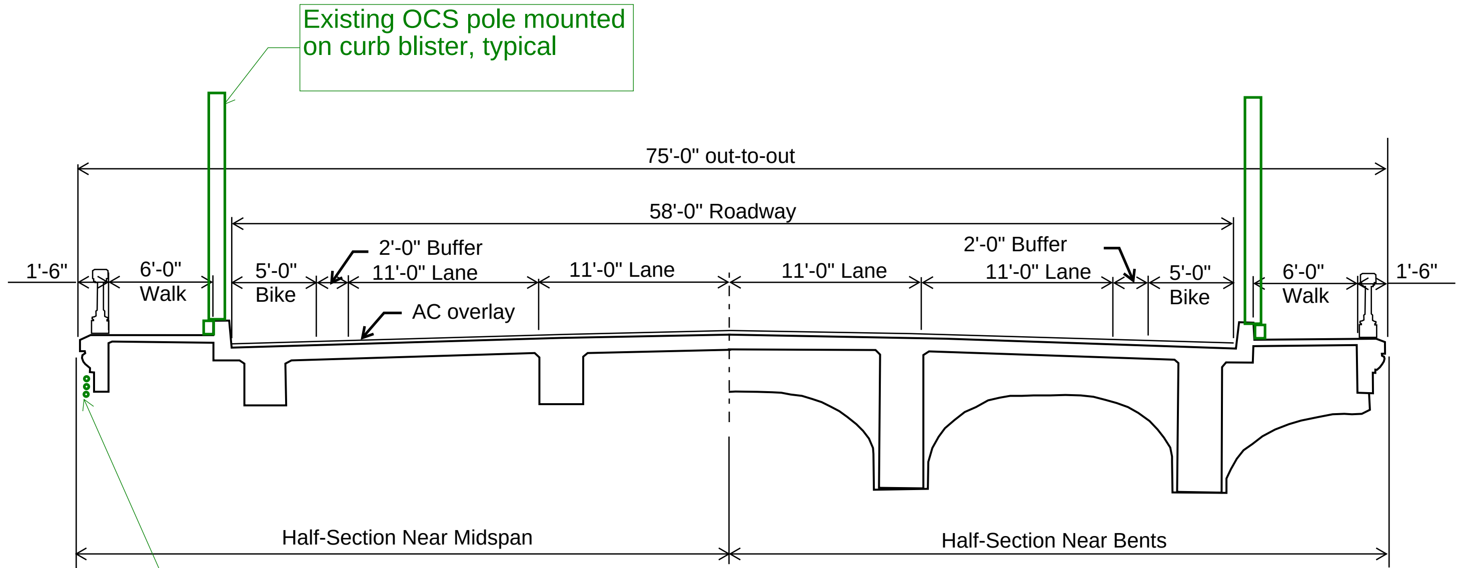
INITIALS AND DATE	INITIALS AND DATE
DESIGNED	REVIEWED:
CHECKED	DES. CONST.
	SDOT PROJ. MGR.
DRAWN	RECEIVED
CHECKED	REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

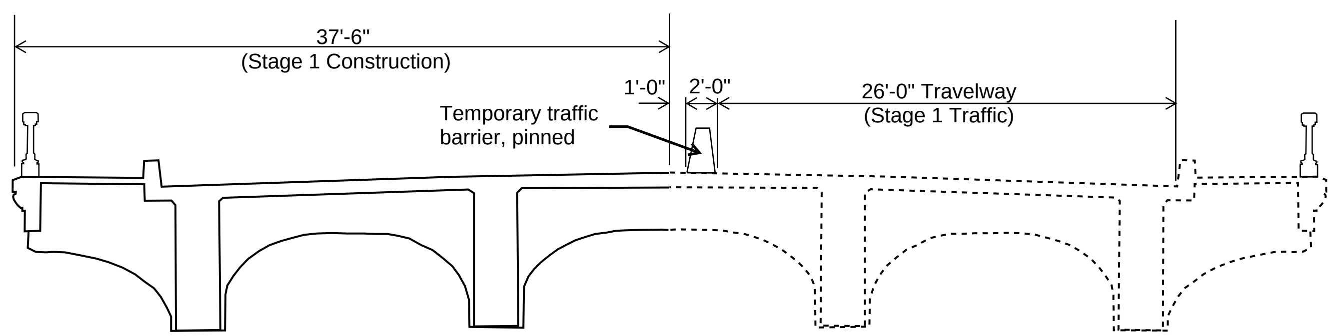
Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #
S-102
SHEET 1 OF 7



TYPICAL SECTION



TYPICAL 2-STAGE CONSTRUCTION SECTION

VAULT SERIAL NO.	DATE	MARK	NATURE	MADE	CHK'D	REV'D

REVISIONS

SDCI ########, SDOT ########

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ALT 1 - BRIDGE CROSS-SECTIONS

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BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED CHECKED	REVIEWED: DES. CONST. SDOT PROJ. MGR.
DRAWN CHECKED	RECEIVED REVISED AS BUILT

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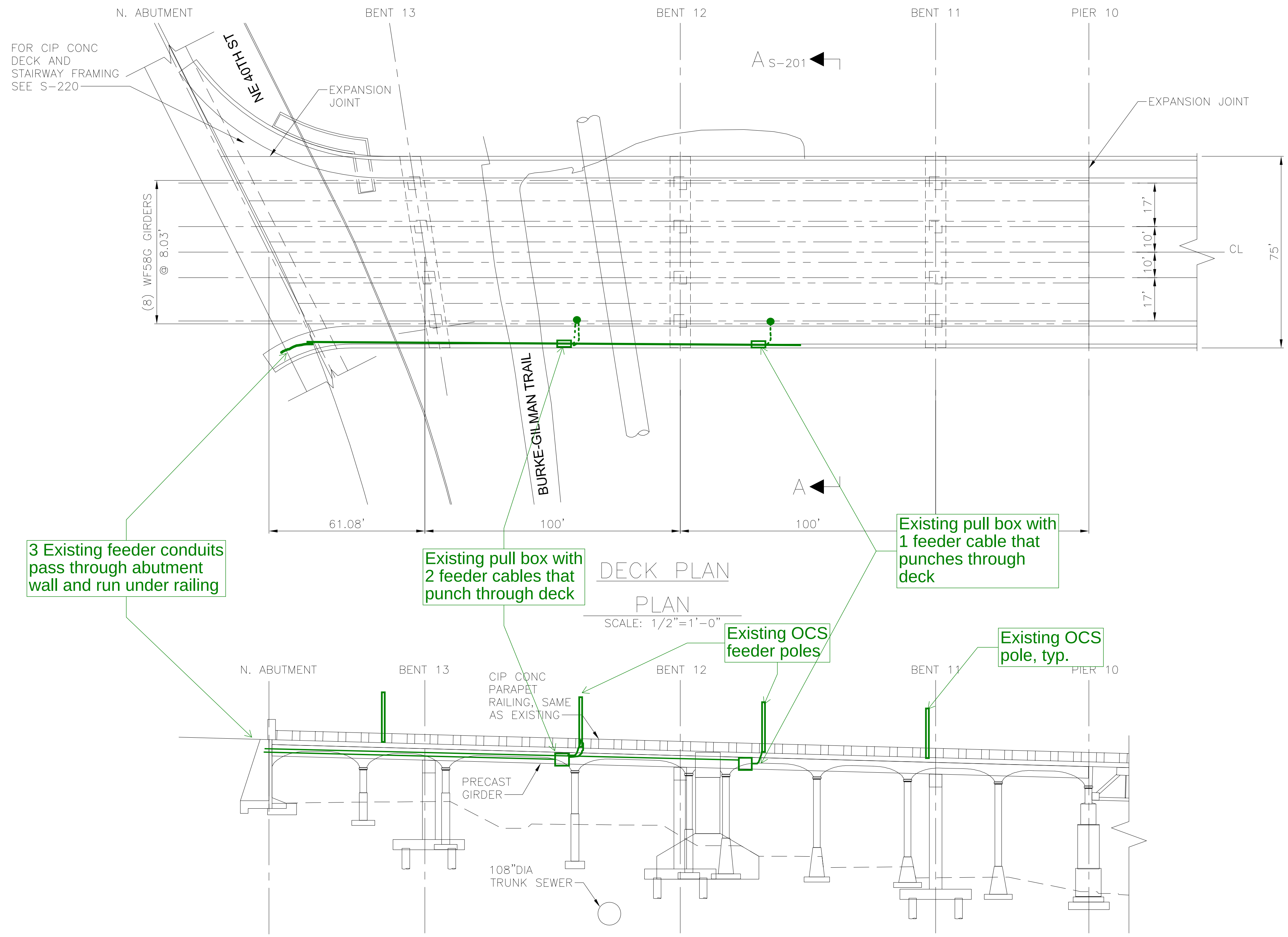
Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #



DECK PLAN

PLAN

SCALE: 1/2"=1'-0"

DECK PLAN

PLAN

SCALE: 1/2"=1'-0"

VAULT SERIAL NO.	DATE	MARK	NATURE	MADE	CHK'D	REV'D

REVISIONS

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Jun-09-23 7:08pm

SDCI ########, SDOT ########

ALT 2 - DECK PLAN AND ELEVATION

BRIGHT ENGINEERING, INC
Consulting Structural & Civil Engineering
1809 7th Avenue, Suite 1100 Seattle WA 98101
206-625-3777 Fax 206-625-1851

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED	REVIEWED:
CHECKED	DES. CONST.
	SDOT PROJ. MGR.
DRAWN	RECEIVED
CHECKED	REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

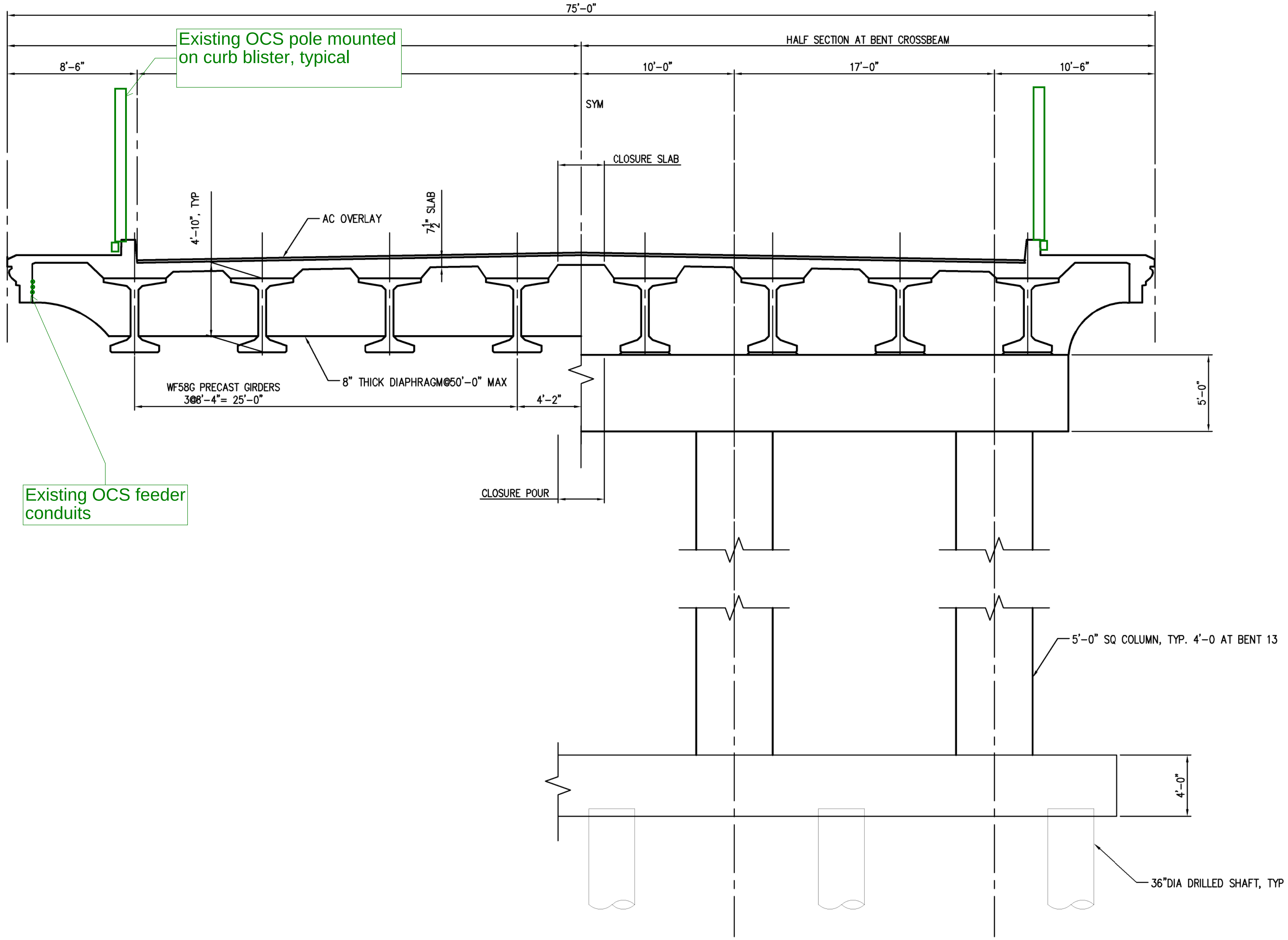
Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE:

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #

S-101

SHEET 2 OF 9



CROSS SECTION A
SCALE: 1/4"=1'-0"

SDCI #######, SDOT #######

ALT 2 - CROSS SECTIONS AND DETAILS

MARK	DATE	NATURE	REVISIONS	MADE	CHK'D	REV'D	VAULT SERIAL NO.

BRIGHT ENGINEERING, INC
Consulting Structural & Civil Engineering
1809 7th Avenue, Suite 1100 Seattle WA 98101
206-625-3777 Fax 206-625-1851

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON 20
BY:
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE
DESIGNED ####
CHECKED AB
DRAWN SL
CHECKED ####

INITIALS AND DATE
REVIEWED:
DES. CONST.
SDOT PROJ. MGR.
RECEIVED
REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

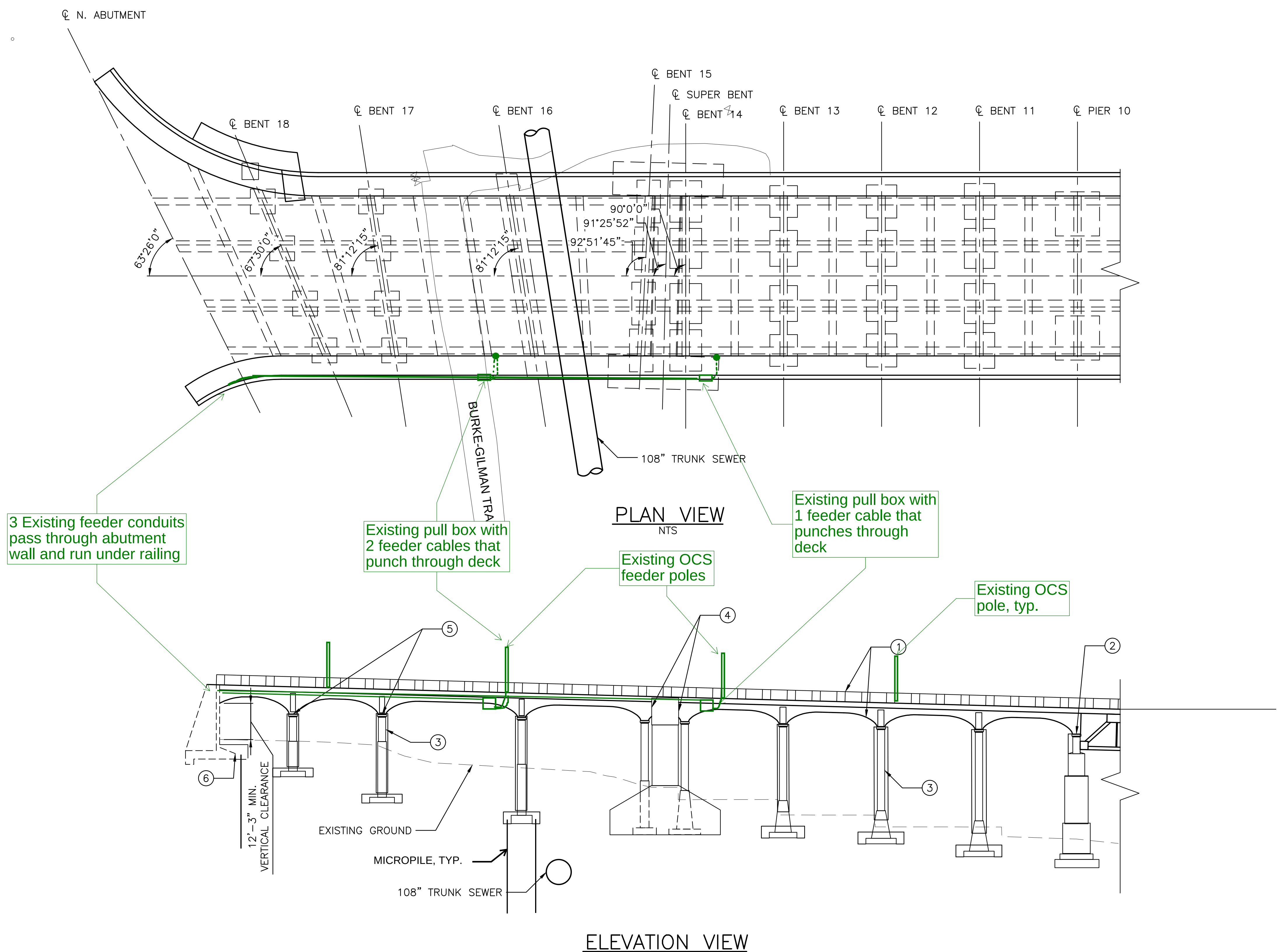
Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE:

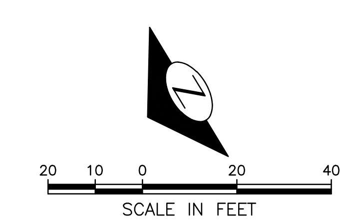
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #
S-210
SHEET 4 OF 9

PROPOSED REHABILITATION WORK

1. REMOVE AND RECONSTRUCT SUPERSTRUCTURE.
2. PIER 10 DIAPHRAGM ENLARGEMENT AND STRENGTHENING.
3. 5–FT. DIAMETER STEEL JACKETING OF COLUMNS AND FOOTING STRENGTHENING, TYPICAL AT INTERMEDIATE.
4. SUPERBENT CONNECTION OF NEW SUPERSTRUCTURE.
5. BEARING REPLACEMENT.
6. N. ABUTMENT FOOTING STRENGTHENING WITH MICROPILES





SDCI ########, SDOT ########

ALT 3 – LAYOUT

REVISIONS					
MARK	DATE	NATURE	MADE	CHK'D	REV'D

VAULT SERIAL NO.

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HDR

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DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
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	SDOT PROJ. MGR.
DRAWN	RECEIVED
CHECKED	REVISED AS BUILT

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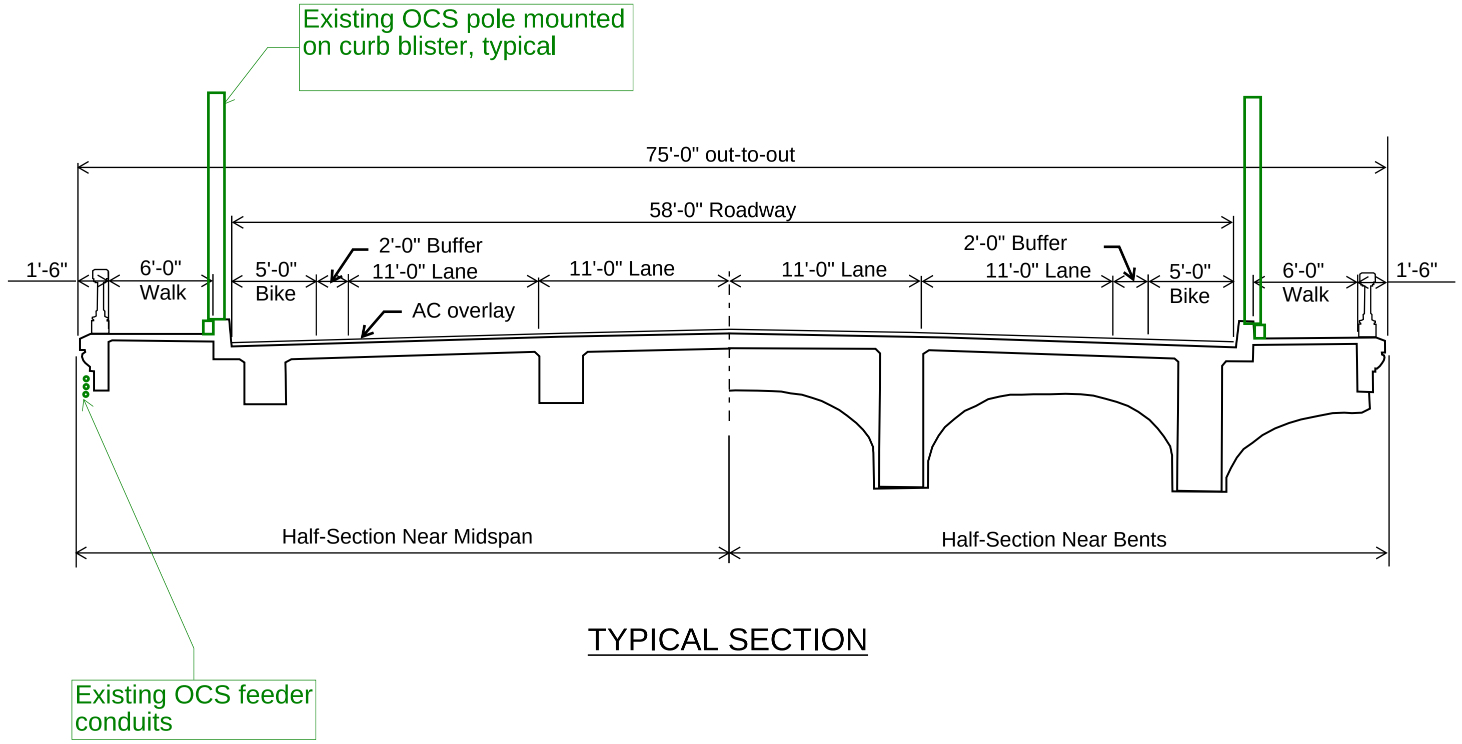
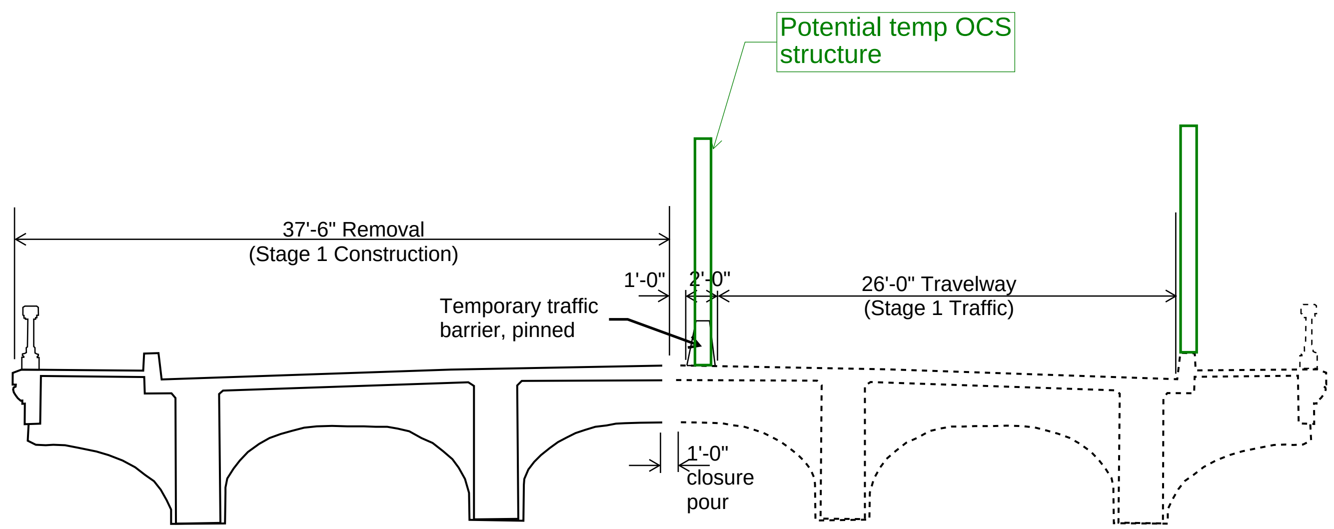
Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #
S-102
SHEET 1 OF 8



TYPICAL SECTION



TYPICAL 2-STAGE CONSTRUCTION SECTION

VAULT SERIAL NO.	DATE	MARK	NATURE REVISIONS	MADE	CHK'D	REV'D

SDCI ########, SDOT ########

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ALT 3 - BRIDGE CROSS-SECTIONS

HDR

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LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . . . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED CHECKED	REVIEWED: DES. CONST. SDOT PROJ. MGR.
DRAWN CHECKED	RECEIVED REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: H. 1"=20', V. 1"=10'

UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC
CO
VPI #
SHEET 2 OF 8

Attachment H

Construction Cost and Schedule Exhibits

Bid	Description - University Bridge Alt 1 - 10.17.2023	Bid Quan	Unit	Unit Cost	Total
1-000	MINOR CHANGE	1.000	CALC	$1.00	$1
2-000	FIELD OFFICE FOR ENGINEERS'S STAFF	1.000	LS	$215,000.00	$215,000
3-000	SCHEDULE UPDATE, MIN. BID ($1500/EA)	14.000	EA	$2,500.00	$35,000
4-000	MOBILIZATION	1.000	LS	$1,300,000.00	$1,300,000
5-000	MAINT AND PROTECTION OF TRAFFIC CONTROL INCL FLAGG	1.000	LS	$750,000.00	$750,000
6-000	TRAFFIC CONTROL PEACE OFFICERS	610.000	HR	$150.00	$91,500
7-000	PORTABLE CHANGEABLE MESSAGE SIGN	61.000	WK	$1,500.00	$91,500
8-000	TESC	1.000	LS	$600,000.00	$600,000
9-000	TREE, VEGETATION & SOIL PROTECTIO	1.000	LS	$50,000.00	$50,000
10-000	SPILL PLAN (SP)	1.000	LS	$6,000.00	$6,000
11-000	Misc Civil Items	1.000	LS	$1,925,000.00	$1,925,000
12-000	Ex Stair Modification	1.000	LS	$600,000.00	$600,000
13-000	AC - Graind and Overlay	2,146.000	sy	$80.00	$171,680
100-000	CFRP Strengthening On Girders	1.000	LS	$125,000.00	$125,000
200-000	Pier 10 Diaphragm Enlargement	1.000	LS	$500,000.00	$500,000
300-000	Conc. Diaphragm Enlargement	1.000	LS	$750,000.00	$750,000
400-000	Near Surface CFRP Bars	1.000	LS	$250,000.00	$250,000
500-000	Column Jackets	25.000	EA	$45,000.00	$1,125,000
550-000	Footing Strengthening	1.000	LS	$4,295,000.00	$4,295,000
600-000	Seat Bolster At Rocker Bearing	1.000	LS	$75,000.00	$75,000
700-000	North Abut Footing Strengthening	1.000	LS	$500,000.00	$500,000
1200-000	Temporary OCS	1.000	LS	$75,000.00	$75,000

				Subtotal:	**$ 13,530,681**
	Design Contingency - 30%	30.00%	%		$ 4,059,204

	Before Tax **Total:**	**$ 17,589,885**
Tax	10.25% %	$ 1,802,963.24
City of Seattle - Alter 1 - Retrofit (Total)	**Total:**	**$ 19,392,849**

Bid	Description - University Bridge Alt 2 - 08.15.2023	Bid Quan	Unit	Unit Cost	Total
1-000	MINOR CHANGE	1.000	CALC	$1.00	$1
2-000	FIELD OFFICE FOR ENGINEERS'S STAFF	1.000	LS	$500,000.00	$500,000
3-000	SCHEDULE UPDATE, MIN. BID ($1500/EA)	37.000	EA	$2,500.00	$92,500
4-000	MOBILIZATION	1.000	LS	$3,380,000.00	$3,380,000
5-000	MAINT AND PROTECTION OF TRAFFIC CONTROL INCL FLAGG	1.000	LS	$2,500,000.00	$2,500,000
6-000	TRAFFIC CONTROL PEACE OFFICERS	1,560.000	HR	$150.00	$234,000
7-000	PORTABLE CHANGEABLE MESSAGE SIGN	156.000	WK	$1,500.00	$234,000
8-000	TESC	1.000	LS	$1,750,000.00	$1,750,000
9-000	TREE, VEGETATION & SOIL PROTECTIO	1.000	LS	$50,000.00	$50,000
10-000	SPILL PLAN (SP)	1.000	LS	$6,000.00	$6,000
11-000	Misc Civil Items	1.000	LS	$4,950,000.00	$4,950,000
12-000	Ex Stair Modification	1.000	LS	$600,000.00	$600,000
13-000	AC - Graind and Overlay	2,146.000	sy	$80.00	$171,680
200-000	Pier 10 Diaphragm Enlargement	1.000	LS	$500,000.00	$500,000
300-000	Bridge Demo with Temp Support	25,000.000	SF	$150.00	$3,750,000
350-000	North Abut Fascia Wall	3,075.000	SF	$150.00	$461,250
390-000	Temp Shoring for New Foundation	13,080.000	SF	$110.00	$1,438,800
400-000	36" Dia Drill Shaft	2,160.000	LF	$1,500.00	$3,240,000
500-000	Shaft Cap Foundation	685.000	CY	$1,300.00	$890,500
600-000	Columns Conc	462.000	CY	$2,425.00	$1,120,350
700-000	Conc. Pier Cap	333.000	CY	$2,500.00	$832,500
800-000	PC Conc. Girder	2,568.000	LF	$900.00	$2,311,200
900-000	Conc Deck	25,000.000	SF	$100.00	$2,500,000
1000-000	Bridge Barrier	682.000	LF	$300.00	$204,600
1100-000	Bridge Curb	682.000	LF	$75.00	$51,150
1200-000	Temporary OCS	1.000	LS	$300,000.00	$300,000
1300-000	Permanent OCS	1.000	LS	$1,500,000.00	$1,500,000
1400-000	Temp Illumination	1.000	LS	$100,000.00	$100,000
1500-000	Permanent Illumination	1.000	LS	$500,000.00	$500,000
				Subtotal:	**$ 34,168,531**
	Design Contingency - 30%	30.00%	%		$ 10,250,559

			Before Tax **Total:**	**$ 44,419,090**
Tax	10.25%	%		$ 4,552,956.76
City of Seattle - Alter 2 - Bridge Replacement (Total)			**Total:**	**$ 48,972,047**

Ott - Sakai & Associates, LLC

H-3

Bid	Description - University Bridge Alt 3 - 10.17.2023	Bid Quan	Unit	Unit Cost	Total
1-000	MINOR CHANGE	1.000	CALC	$1.00	$1
2-000	FIELD OFFICE FOR ENGINEERS'S STAFF	1.000	LS	$350,000.00	$350,000
3-000	SCHEDULE UPDATE, MIN. BID ($1500/EA)	31.000	EA	$2,500.00	$77,500
4-000	MOBILIZATION	1.000	LS	$2,860,000.00	$2,860,000
5-000	MAINT AND PROTECTION OF TRAFFIC CONTROL INCL FLAGG	1.000	LS	$1,750,000.00	$1,750,000
6-000	TRAFFIC CONTROL PEACE OFFICERS	1,340.000	HR	$150.00	$201,000
7-000	PORTABLE CHANGEABLE MESSAGE SIGN	134.000	WK	$1,500.00	$201,000
8-000	TESC	1.000	LS	$1,350,000.00	$1,350,000
9-000	TREE, VEGETATION & SOIL PROTECTIO	1.000	LS	$50,000.00	$50,000
10-000	SPILL PLAN (SP)	1.000	LS	$6,000.00	$6,000
11-000	Misc Civil Items	1.000	LS	$3,500,000.00	$3,500,000
12-000	Ex Stair Modification	1.000	LS	$600,000.00	$600,000
13-000	AC - Graind and Overlay	2,146.000	sy	$80.00	$171,680
200-000	Pier 10 Diaphragm Enlargement	1.000	LS	$500,000.00	$500,000
300-000	Superstructure Demo with Falsework	25,000.000	SF	$100.00	$2,500,000
400-000	CIP Superstructure	25,000.000	SF	$264.30	$6,607,500
500-000	Column Jackets	25.000	EA	$45,000.00	$1,125,000
550-000	Footing Strengthening	1.000	LS	$4,275,000.00	$4,275,000
600-000	Seat Bolster At Rocker Bearing	1.000	LS	$75,000.00	$75,000
700-000	North Abut Footing Strengthening	1.000	LS	$500,000.00	$500,000
1000-000	Bridge Barrier	682.000	LF	$300.00	$204,600
1100-000	Bridge Curb	682.000	LF	$75.00	$51,150
1200-000	Temporary OCS	1.000	LS	$300,000.00	$300,000
1300-000	Permanent OCS	1.000	LS	$1,500,000.00	$1,500,000
1400-000	Temp Illumination	1.000	LS	$100,000.00	$100,000
1500-000	Permanent Illumination	1.000	LS	$500,000.00	$500,000
				Subtotal:	**$ 29,355,431**
	Design Contingency - 30%	30.00%	%		$ 8,806,629

			Before Tax **Total:**	**$ 38,162,060**
Tax	10.25%	%		$ 3,911,611.18
City of Seattle - Alter 3 - In Kind Superstructure & Retrofit (Total)			**Total:**	**$ 42,073,671**

ESTIMATE RECAP - BID QUANTITIES

	DIRECT	INDIRECT	TOTAL	% OF TOTAL
Labor	788,267.89	1,174,458.60	1,962,726.49	17.406%
Burden	465,233.58	153,372.06	618,605.64	5.486%
Lab+Bur	1,253,501.47	1,327,830.66	2,581,332.13	22.892%
Perm Matl	702,747.54		702,747.54	6.232%
Const Exp	796,868.49	361,750.00	1,158,618.49	10.275%
Equipment	413,491.62	147,812.00	561,303.62	4.978%
Subs	5,265,422.15		5,265,422.15	46.696%
Other	201,128.00	805,380.00	1,006,508.00	8.926%
Total Costs:	8,633,159.27	2,642,772.66	11,275,931.93	99.999%
% of Total	76.563%	23.437%	100.000%	

Escalation on:	**Labor**	**Burden**	**Perm Matl**	**Const Matl**	**Co Eqp**	**Rented Eqp**
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
	Eq Op Exp	**Sub**	**Misc1**	**Misc2**	**Misc3**	**Total Escalation**
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

* Data Below here is dependent on the Summary Process. *
The Summary Process was last run 10/17/2023 at 9:08 PM

Markup on Resource Costs	2,255,186.38	20.0000%
MARKUP TOTALS ===>	2,255,186.38	20.0000%
	=============	(% of costs)
COST + MARKUP ------------------->	$13,531,118.31	
	(On Takeoff Quantity)	

There * ARE NOT * closing accounts for this bid.

		-Effect on Bid-
Rounding difference:	5.02	Adjusted
Unbalancing difference:	-442.31	Adjusted
From Cut&Add Sheet-costs:		(on Bid Quantity)
From Cut&Add Sheet-markup:		(on Bid Quantity)
Pass Through Adjustments:		None
Net Adjustments (to the balanced bid):	-$437.29	[or desired bid]
BALANCED BID TOTAL	$13,531,118.29	
DESIRED BID (if specified)		
BID TOTAL (on bid quantities)	$13,530,681.00	
BID COSTS (on bid quantities)	$11,275,931.91	
MARKUP (on bid quantities)	$2,254,749.09	19.996%
EXPECTED JOB VALUE (on takeoff quantities):	$13,530,681.00	

H-5

EXPECTED COSTS (on takeoff quantities):		$11,275,931.93	
EXPECTED MARKUP (on takeoff quantities):		$2,254,749.07	19.996%

Adjust to Bid Quantities = Y

On Takeoff Quantities

Labor Hrs. (MH/MHS)	14,895	1,400	16,295
(incl burden)	1,253,501	145,180	1,398,682
Labor (DAY/DAYS)	0	0	0
(incl burden)	0	0	0
Labor (OtherUnits)	0	1,182,650	1,182,650
(incl burden)			
Labor Burden	465,233	153,372	618,605

Spread Indirects on:	Total Cost	Spread Markup on:	Total Cost
Spread Addons&Bond on:	Total Cost		

Markup on:	Labor	Burden	PermMatl	CM	CoEqp	RentedEqp
	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
	EOE	Sub	Misc1	Misc2	Misc3	
	20.00%	20.00%	0.00%	0.00%	0.00%	

Key Indicators

Balanced Markup	/	Total Labor	=	Balanced Markup/Total Labor
2,255,186.38	/	2,581,332.13	=	87.37%
Indirect Cost	/	Direct Cost	=	Indirect Cost/Direct Cost
2,642,772.66	/	8,633,159.27	=	30.61%
Direct Manhours	+	Indirect Manhours	=	Total Manhours
14,895.12	+	1,400.00	=	16,295.12
Direct Manhours	/	Job Duration	=	Hours/MO
14,895	/	14	=	1,064

------ ESTIMATE NOTES: ------

Bid Date: 04/01/2024

Owner:

Engr Firm:

Estimator-In-Charge:

Desired Bid (if specified) = 0.00

Notes:

Last Summary on 10/17/2023 at 9:08 PM.

Last Spread on 10/17/2023 at 9:08 PM.

H-7

ESTIMATE RECAP - BID QUANTITIES

	DIRECT	INDIRECT	TOTAL	% OF TOTAL
Labor	1,918,314.65	3,048,426.30	4,966,740.95	17.443%
Burden	1,156,768.99	400,345.44	1,557,114.43	5.468%
Lab+Bur	3,075,083.64	3,448,771.74	6,523,855.38	22.911%
Perm Matl	1,881,092.21		1,881,092.21	6.606%
Const Exp	1,431,919.96	931,500.00	2,363,419.96	8.300%
Equipment	1,382,825.83	390,646.00	1,773,471.83	6.228%
Subs	13,319,018.14		13,319,018.14	46.775%
Other	769,609.10	1,844,000.00	2,613,609.10	9.179%
Total Costs:	21,859,548.88	6,614,917.74	28,474,466.62	99.999%
% of Total	76.769%	23.231%	100.000%	

Escalation on:	**Labor**	**Burden**	**Perm Matl**	**Const Matl**	**Co Eqp**	**Rented Eqp**
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
	Eq Op Exp	**Sub**	**Misc1**	**Misc2**	**Misc3**	**Total Escalation**
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

* Data Below here is dependent on the Summary Process. *
The Summary Process was last run 08/15/2023 at 9:16 PM

Markup on Resource Costs	5,694,893.34	20.0000%
MARKUP TOTALS ===>	5,694,893.34	20.0000%
	=============	(% of costs)
COST + MARKUP ------------------->	$34,169,359.96	
	(On Takeoff Quantity)	

There * ARE NOT * closing accounts for this bid.

		-Effect on Bid-
Rounding difference:	45.17	Adjusted
Unbalancing difference:	-875.14	Adjusted
From Cut&Add Sheet-costs:		(on Bid Quantity)
From Cut&Add Sheet-markup:		(on Bid Quantity)
Pass Through Adjustments:		None
Net Adjustments (to the balanced bid):	-$829.97	[or desired bid]
BALANCED BID TOTAL	$34,169,359.97	
DESIRED BID (if specified)		
BID TOTAL (on bid quantities)	$34,168,530.00	
BID COSTS (on bid quantities)	$28,474,466.63	
MARKUP (on bid quantities)	$5,694,063.37	19.997%
EXPECTED JOB VALUE (on takeoff quantities):	$34,168,530.00	

EXPECTED COSTS	(on takeoff quantities):	$28,474,466.62	
EXPECTED MARKUP	(on takeoff quantities):	$5,694,063.38	19.997%

Adjust to Bid Quantities = Y

On Takeoff Quantities

Labor Hrs. (MH/MHS)	35,741	3,700	39,441
(incl burden)	3,075,083	383,691	3,458,775
Labor (DAY/DAYS)	0	0	0
(incl burden)	0	0	0
Labor (OtherUnits)	0	3,065,080	3,065,080
(incl burden)			
Labor Burden	1,156,768	400,345	1,557,114

Spread Indirects on: Total Cost — Spread Markup on: Total Cost
Spread Addons&Bond on: Total Cost

Markup on:	Labor	Burden	PermMatl	CM	CoEqp	RentedEqp
	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
	EOE	Sub	Misc1	Misc2	Misc3	
	20.00%	20.00%	0.00%	0.00%	0.00%	

Key Indicators

Balanced Markup	/	Total Labor	=	Balanced Markup/Total Labor
5,694,893.34	/	6,523,855.38	=	87.29%
Indirect Cost	/	Direct Cost	=	Indirect Cost/Direct Cost
6,614,917.74	/	21,859,548.88	=	30.26%
Direct Manhours	+	Indirect Manhours	=	Total Manhours
35,741.67	+	3,700.00	=	39,441.67
Direct Manhours	/	Job Duration	=	Hours/MO
35,742	/	36	=	993

------ ESTIMATE NOTES: ------

Bid Date: 04/01/2024 Owner:
Engr Firm:
Estimator-In-Charge: Desired Bid (if specified) = 0.00
Notes: Estimate created on: 06/13/2023 by User#: 5 - Bing Ma

```
Source estimate used: L:\HEAVYBID\EST\COS-UBR-A1

************Estimate created on: 06/14/2023 by User#: 5 - Bing Ma
Source estimate used: L:\HEAVYBID\EST\COS-UBR-A3
```

Last Summary on 08/15/2023 at 9:16 PM.
Last Spread on 08/15/2023 at 9:16 PM.

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ESTIMATE RECAP - BID QUANTITIES

	DIRECT	INDIRECT	TOTAL	% OF TOTAL
Labor	2,180,650.98	2,622,476.80	4,803,127.78	19.634%
Burden	1,319,392.48	344,984.70	1,664,377.18	6.804%
Lab+Bur	3,500,043.46	2,967,461.50	6,467,504.96	26.438%
Perm Matl	968,453.40		968,453.40	3.959%
Const Exp	2,271,312.86	473,250.00	2,744,562.86	11.219%
Equipment	1,096,799.06	333,056.00	1,429,855.06	5.845%
Subs	10,795,670.27		10,795,670.27	44.131%
Other	470,594.52	1,586,080.00	2,056,674.52	8.407%
Total Costs:	19,102,873.57	5,359,847.50	24,462,721.07	99.999%
% of Total	78.090%	21.910%	100.000%	

Escalation on:	Labor	Burden	Perm Matl	Const Matl	Co Eqp	Rented Eqp
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

	Eq Op Exp	Sub	Misc1	Misc2	Misc3	Total Escalation
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

* Data Below here is dependent on the Summary Process. *
The Summary Process was last run 10/17/2023 at 9:26 PM

Markup on Resource Costs	4,892,544.20	20.0000%
MARKUP TOTALS ===>	4,892,544.20	20.0000%
	=============	(% of costs)
COST + MARKUP ------------------->	$29,355,265.27	
	(On Takeoff Quantity)	

There * ARE NOT * closing accounts for this bid.

		-Effect on Bid-
Rounding difference:	-112.00	Adjusted
Unbalancing difference:	277.73	Adjusted
From Cut&Add Sheet-costs:		(on Bid Quantity)
From Cut&Add Sheet-markup:		(on Bid Quantity)
Pass Through Adjustments:		None
Net Adjustments (to the balanced bid):	$165.73	[or desired bid]
BALANCED BID TOTAL	$29,355,265.27	
DESIRED BID (if specified)		
BID TOTAL (on bid quantities)	$29,355,431.00	
BID COSTS (on bid quantities)	$24,462,721.07	
MARKUP (on bid quantities)	$4,892,709.93	20.000%
EXPECTED JOB VALUE (on takeoff quantities):	$29,355,431.00	

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EXPECTED COSTS	(on takeoff quantities):	$24,462,721.07	
EXPECTED MARKUP	(on takeoff quantities):	$4,892,709.93	20.000%

Adjust to Bid Quantities = Y

On Takeoff Quantities

Labor Hrs. (MH/MHS)	40,308	3,200	43,508
(incl burden)	3,500,043	331,841	3,831,884
Labor (DAY/DAYS)	0	0	0
(incl burden)	0	0	0
Labor (OtherUnits)	0	2,635,620	2,635,620
(incl burden)			
Labor Burden	1,319,392	344,984	1,664,377

Spread Indirects on: Total Cost
Spread Markup on: Total Cost
Spread Addons&Bond on: Total Cost

Markup on:	Labor	Burden	PermMatl	CM	CoEqp	RentedEqp
	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
	EOE	Sub	Misc1	Misc2	Misc3	
	20.00%	20.00%	0.00%	0.00%	0.00%	

Key Indicators

Balanced Markup	/	Total Labor	=	Balanced Markup/Total Labor
4,892,544.20	/	6,467,504.96	=	75.65%
Indirect Cost	/	Direct Cost	=	Indirect Cost/Direct Cost
5,359,847.50	/	19,102,873.57	=	28.06%
Direct Manhours	+	Indirect Manhours	=	Total Manhours
40,308.38	+	3,200.00	=	43,508.38
Direct Manhours	/	Job Duration	=	Hours/MO
40,308	/	31	=	1,300

------ ESTIMATE NOTES: ------

Bid Date: 04/01/2024
Owner:
Engr Firm:
Estimator-In-Charge:
Desired Bid (if specified) = 0.00
Notes: `Estimate created on: 06/14/2023 by User#: 5 - Bing Ma`

Source estimate used: L:\HEAVYBID\EST\COS-UBR-A1

Last Summary on 10/17/2023 at 9:26 PM.

Last Spread on 10/17/2023 at 9:26 PM.

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 1000 CLIENT# = 104001
Description = MINOR CHANGE Unit = CALC Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
80001000	**~~OWNER FORCE ACCOUNT**	**Quan: 1.00 CAL**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
6FA	STATE ESTIMATE - FA	1.00	1.00	CALC	1.000			1			1
=====> **Item Totals:**	**1000 - MINOR CHANGE**										
$1.00					[ ]			1			**1**
1.000			1	CALC				1.00			1.00

BID ITEM = 2000 CLIENT# = 107105
Description = FIELD OFFICE FOR ENGINEERS'S STAFF Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
99003040	**Temp Toilets**	**Quan: 14.00 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1UTPT	Portable Toilets	2.00	28.00	EAMO	200.000			5,600			5,600
99004010	**Dumpster Service**	**Quan: 14.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1CUMO	Debris Box/Monthly Trash	2.00	28.00	MO	1,000.000			28,000			28,000
A	**Field Office**	**Quan: 14.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1OFTRRT	Field Office Trailer Rent	1.00	14.00	MO	2,500.000			35,000			35,000
B	**Office Furniture**	**Quan: 14.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1ITINAC	Internet Air Cards	1.00	14.00	MO	70.000			980			980
1SPCPMT	Copier/Printer Supplies	1.00	14.00	MO	100.000			1,400			1,400
1SPMO	Monthly Office/Engineering	1.00	28.00	MMO	135.000			3,780			3,780
$6,160.00					[ ]			6,160			6,160
D	**Sheds/Storage Facilities**	**Quan: 14.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1YDSH	Yard/Job Shacks and Sheds	1.00	4.00	EA	3,000.000			12,000			12,000
E	**Drinking Water**	**Quan: 14.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1SPH2	Drinking Water	1.00	14.00	MO	350.000			4,900			4,900
F	**Final Cleanup**	**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
ZZZZZZ	(Mod) general		40.00	CH	**Prod: 40.0000 CH**	Lab Pcs: 5.00			Eqp Pcs: 1.00		
8LB426	LDR-BCKHOE CAT 426	1.00	40.00	HR	52.568				2,103		2,103
CJM	CARPENTER J/M	1.00	40.00	MH	53.700	3,496					3,496
LCOM	LABORER, COMMON G#	3.00	120.00	MH	44.530	8,317					8,317
OP4	OPER 4 (EX/BLADE/DOZ	1.00	40.00	MH	53.980	3,681					3,681
$17,597.08	200.0000 MH/LS		200.00	MH	[9650.8]	15,494			2,103		17,597
G	**Temp Fence**	**Quan: 1,000.00 FT**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1YDFN	Temporary Fencing	1.00	1,000.00	LF	15.000			15,000			15,000
J	**Computer Connect**	**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
1ITINWF	Pt to Pt Wifi Connection	1.00	14.00	MO	500.000			7,000			7,000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 2000 CLIENT# = 107105
Description = FIELD OFFICE FOR ENGINEERS'S STAFF Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

=====> **Item Totals: 2000 - FIELD OFFICE FOR ENGINEERS'S STAFF**

$131,257.08	200.0000 MH/LS		200.00	MH	[9650.8]	15,494		113,660	2,103		**131,257**
131,257.080	1 LS					15,494.36		113,660.00	2,102.72		131,257.08

BID ITEM = 3000 CLIENT# = 108005
Description = SCHEDULE UPDATE, MIN. BID ($1500/EA) Unit = EA Takeoff Quan: 14.000 Engr Quan: 14.000

99001050 Outside Engineering Quan: 14.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

1OEALL	OUTSIDE Engineering	1.00	112.00	HR	200.000			22,400			22,400

=====> **Item Totals: 3000 - SCHEDULE UPDATE, MIN. BID ($1500/EA)**

$22,400.00					[ ]			22,400			**22,400**
1,600.000	14 EA							1,600.00			1,600.00

BID ITEM = 4000 CLIENT# = 109005
Description = MOBILIZATION Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

99004020 Final Project Clean-Up Quan: 50.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

<u>LAB3</u> Laborer 3 50.00 CH **Prod: 6.2500 S** Lab Pcs: 3.00 Eqp Pcs: 2.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	50.00	HR	17.692				885		885
8TRPU450	FLATRACK, BAREBED	1.00	50.00	HR	29.277				1,464		1,464
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	100.00	MH	45.610	7,064					7,064
LGFM	Laborer-General Foreman	1.00	50.00	MH	55.170	4,120					4,120
$13,533.02	3.0000 MH/HR		150.00	MH	[146.39]	11,185			2,348		13,533

99008030 Equipment In & Out Quan: 20.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0214

**Unreviewed

<u>SUPTEQ</u> Move Equipment 80.00 CH **Prod: 4.0000 HU** Lab Pcs: 1.00 Eqp Pcs: 2.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	80.00	HR	6.538				523		523
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	80.00	HR	38.395				3,072		3,072
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	80.00	MH	57.740	7,731					7,731
$11,326.02	4.0000 MH/EA		80.00	MH	[230.96]	7,731			3,595		11,326

C Yard Set-up Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

<u>ZZZZZZ</u> (Mod) general 40.00 CH **Prod: 40.0000 CH** Lab Pcs: 5.00 Eqp Pcs: 1.00

8LB426	LDR-BCKHOE CAT 426	1.00	40.00	HR	52.568				2,103		2,103
CJM	CARPENTER J/M	1.00	40.00	MH	53.700	3,496					3,496
LCOM	LABORER, COMMON G#	3.00	120.00	MH	44.530	8,317					8,317
OP4	OPER 4 (EX/BLADE/DOZ	1.00	40.00	MH	53.980	3,681					3,681
$17,597.08	200.0000 MH/LS		200.00	MH	[9650.8]	15,494			2,103		17,597

=====> **Item Totals: 4000 - MOBILIZATION**

$42,456.12	430.0000 MH/LS		430.00	MH	[21589.5]	34,410			8,046		**42,456**
42,456.120	1 LS					34,410.31			8,045.81		42,456.12

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 5000 CLIENT# = 110005
Description = MAINT AND PROTECTION OF TRAFFIC CONTROL Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

13001000 ~~TRAFFIC CONTROL Quan: 264.00 DAY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

```
Subcontract out to DBE traffic control.

12 months of work. Flagger onsite the whole time.
Traffic Closure 1 months.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC	TRAFFIC CONTROL	1.00	264.00	DAY	250.000					66,000	66,000
4TC6956	SEQUENTIAL ARROW SI	2.00	440.00	HR	4.000					1,760	1,760
4TC6968	TRAFFIC CTL VEHICAL	1.00	264.00	DAY	100.000					26,400	26,400
4TC6972DT	TRAFFIC CTL SUPV. DT	1.00	0.00	HR	110.000						
4TC6972OT	TRAFFIC CTL SUPV. OT	1.00	2,080.00	HR	88.000					183,040	183,040
4TC6979DT	TRAFFIC CTL LABOR - D	1.00	0.00	HR	120.000						
4TC6979OT	TRAFFIC CTL LABOR - O	1.00	2,080.00	HR	100.000					208,000	208,000
4TC7449	OP TRK MTD IMP ATTE	1.00	220.00	HR	30.000					6,600	6,600
$491,800.00					[ ]					491,800	491,800

=====> **Item Totals: 5000 - MAINT AND PROTECTION OF TRAFFIC CONTROL**

$491,800.00					[ ]					491,800	**491,800**
491,800.000			1 LS							491,800.00	491,800.00

BID ITEM = 6000 CLIENT# = 110020
Description = TRAFFIC CONTROL PEACE OFFICERS Unit = HR Takeoff Quan: 610.000 Engr Quan: 610.000

13001095 Uniformed Police Officers Quan: 610.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4POLT	POLICE TRAFFIC CONT	1.00	610.00	HR	125.000					76,250	76,250

BID ITEM = 7000 CLIENT# = 110025
Description = PORTABLE CHANGEABLE MESSAGE SIGN Unit = WK Takeoff Quan: 61.000 Engr Quan: 61.000

13001083 PCMS Boards Quan: 264.00 SH Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

```
2 each.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC6995	OP P/CH MESSAGE SIGN	2.00	5,280.00	HR	10.000					52,800	52,800

BID ITEM = 8000 CLIENT# = 801001
Description = TESC Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

```
Part of Field Engineer duty.
```

16000501 Dev SWPP Plan Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	40.00	HR	200.000			8,000			8,000

16002001 Buy ESA/HV Fence Quan: 1,210.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECFNSLTNW	SILT FENCE NO WIRE	1.05	1,270.50	LF	1.500			1,906			1,906
3ECPOSTSTLT	STEEL "T" POST	1.05	212.17	EA	4.500			955			955
$2,860.52					[ ]			2,861			2,861

Cost Report

BID ITEM = 8000 CLIENT# = 801001
Description = TESC Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16002006	**Buy Drain Inlet Protection**				**Quan: 30.00 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3ECCBIN	CATCH BASIN INSERT	1.00	30.00	EA	30.000			900			900
16002030	**I/R ESA/HV Fence**				**Quan: 1,210.00 LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
16E2HV	(Mod) HIGH VIS FENCE		10.08	CH	**Prod:**	**40.0001 UM**	Lab Pcs:	3.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	10.08	HR	29.277				295		295
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	20.17	MH	44.530	1,398					1,398
LGFM	Laborer-General Foreman	1.00	10.08	MH	55.170	831					831
$2,523.80	0.0250 MH/LF		30.25	MH	[1.202]	2,229			295		2,524
16002035	**I/R DI Protection**				**Quan: 30.00 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
16E01O	MISC TESC CREW		15.00	CH	**Prod:**	**1.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	15.00	HR	29.277				439		439
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	15.00	MH	44.530	1,040					1,040
LGFM	Laborer-General Foreman	1.00	15.00	MH	55.170	1,236					1,236
$2,714.95	1.0000 MH/EA		30.00	MH	[49.85]	2,276			439		2,715
16003003	**Buy Matting/Netting**				**Quan: 3,000.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3ECJUTEMAT	JUTE MATTING	1.05	349.97	SY	0.400			140			140
3ECPOSTWD	WOOD POST - 2'	1.00	150.00	EA	0.750			113			113
$252.49					[ ]			252			252
16003030	**I/R Slope Covering**				**Quan: 3,000.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
16E01O	MISC TESC CREW		5.00	CH	**Prod:**	**300.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	5.00	HR	29.277				146		146
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	5.00	MH	44.530	347					347
LGFM	Laborer-General Foreman	1.00	5.00	MH	55.170	412					412
$904.98	0.0033 MH/SF		10.00	MH	[0.166]	759			146		905
16005001	**Buy Quarry Spalls**				**Quan: 123.00 TN**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
2AGGRQS	QUARRY SPALLS	1.05	129.15	TON	30.000		3,875				3,875
16005002	**Buy Fabric**				**Quan: 1,800.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
2GEOTEXSS	GEOTEX SOIL STABILIZ	1.20	240.00	SY	0.950		228				228
16005030	**Inst Constr Entrance**				**Quan: 2.00 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
16E5CE	CONST ENTRANCE		16.00	CH	**Prod:**	**1.0000 SU**	Lab Pcs:	2.50	Eqp Pcs:		1.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	16.00	HR	103.977				1,664		1,664
8TRDU5	JOB HAUL DUMP TRUC	0.50	8.00	HR	32.200				258		258
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	16.00	MH	44.530	1,109					1,109
OBH	OP ENG BACKHOE <3CY	1.00	16.00	MH	58.090	1,553					1,553
OBHL	OP ENG BACKHOE/L<75	0.50	8.00	MH	57.740	773					773

Cost Report

BID ITEM = 8000 CLIENT# = 801001
Description = TESC Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$5,356.52	20.0000 MH/EA		40.00	MH	[1051.92]	3,435			1,921		5,357

16005031 Rem Constr Entrance Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16E5CE	CONST ENTRANCE		12.00	CH	**Prod:**	**0.7500 SU**		Lab Pcs:	2.50	Eqp Pcs:	1.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	12.00	HR	103.977				1,248		1,248
8TRDU5	JOB HAUL DUMP TRUC	0.50	6.00	HR	32.200				193		193
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	12.00	MH	44.530	832					832
OBH	OP ENG BACKHOE <3CY	1.00	12.00	MH	58.090	1,165					1,165
OBHL	OP ENG BACKHOE/L<75	0.50	6.00	MH	57.740	580					580
$4,017.39	15.0000 MH/EA		30.00	MH	[788.94]	2,576			1,441		4,017

16007030 Maint TESC Quan: 520.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16E01O	MISC TESC CREW		520.00	CH	**Prod:**	**1.0000 HU**		Lab Pcs:	2.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	520.00	HR	29.277				15,224		15,224
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	520.00	MH	44.530	36,042					36,042
LGFM	Laborer-General Foreman	1.00	520.00	MH	55.170	42,853					42,853
$94,118.82	2.0000 MH/HR		1,040.00	MH	[99.7]	78,895			15,224		94,119

16007080 Street Sweeping Quan: 1,040.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EROS6470	STREET CLEANING	1.00	1,040.00	HR	200.000					208,000	208,000

25002025 Disposal Fee - Clean Dirt Quan: 67.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRECYTTCD	EXPORT T&T - CLEAN S	1.00	67.00	TKYD	22.000			1,474			1,474

90001090 Water truck Quan: 12.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8TRWA4	==> WATER TRUCK 4000	1.00	2,080.00	HR	50.119				104,248		104,248

=====> **Item Totals: 8000 - TESC**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$439,473.49	1,180.2500 MH/LS		1,180.25	MH	[58974]	90,170	4,103	13,487	123,714	208,000	**439,473**
439,473.490	1 LS					90,169.67	4,102.50	13,487.01	123,714.31	208,000.00	439,473.49

BID ITEM = 9000 CLIENT# = 801002
Description = TREE, VEGETATION & SOIL PROTECTIO Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

16002001 Buy ESA/HV Fence Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECFNSLTNW	SILT FENCE NO WIRE	1.05	2,100.00	LF	1.500			3,150			3,150
3ECPOSTSTLT	STEEL "T" POST	1.05	350.70	EA	4.500			1,578			1,578
$4,728.15					[ ]			4,728			4,728

16002030 I/R ESA/HV Fence Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16E2HV	(Mod) HIGH VIS FENCE		16.66	CH	**Prod:**	**40.0002 UM**		Lab Pcs:	3.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.67	HR	29.277				488		488
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	33.33	MH	44.530	2,310					2,310

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Cost Report

BID ITEM = 9000 CLIENT# = 801002
Description = TREE, VEGETATION & SOIL PROTECTIO Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LGFM	Laborer-General Foreman	1.00	16.67	MH	55.170	1,374					1,374
$4,171.94	0.0250 MH/LF		50.00	MH	[1.202]	3,684			488		4,172

A Clear and Grub Quan: 0.50 AC Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

3CLR32 Clear and Grub 320 EXC 40.00 CH **Prod: 80.0000 HU** Lab Pcs: 5.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	40.00	HR	103.977				4,159		4,159
8LD950	WHL LOADER CAT 950	1.00	40.00	HR	65.800				2,632		2,632
8TRDU5	JOB HAUL DUMP TRUC	1.00	40.00	HR	32.200				1,288		1,288
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	80.00	MH	45.610	5,651					5,651
LGFM	Laborer-General Foreman	1.00	40.00	MH	55.170	3,296					3,296
OBHL	OP ENG BACKHOE/L<75	1.00	40.00	MH	57.740	3,866					3,866
OFELL	OP ENG LOADER	1.00	40.00	MH	57.470	3,852					3,852
$25,915.89	400.0000 MH/AC		200.00	MH	[20928]	16,666			9,250		25,916

B Haul and Dispose of Waste Quan: 10.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRECYTTUNS	EXPORT T&T - UNSUITA	1.00	100.00	TKYD	25.000			2,500			2,500

=====> **Item Totals: 9000 - TREE, VEGETATION & SOIL PROTECTIO**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$37,315.98	250.0000 MH/LS		250.00	MH	[12867.86]	20,350		7,228	9,738		**37,316**
37,315.980	1 LS					20,349.65		7,228.15	9,738.18		37,315.98

BID ITEM = 10000 CLIENT# = 801003
Description = SPILL PLAN (SP) Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

16000503 Dev Spill Prevention Plan Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OE	OUTSIDE ENGINEERING	1.00	24.00	HR	200.000			4,800			4,800

=====> **Item Totals: 10000 - SPILL PLAN (SP)**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$4,800.00					[ ]			4,800			**4,800**
4,800.000	1 LS							4,800.00			4,800.00

BID ITEM = 11000
Description = Misc Civil Items Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

50000 Misc. Civil Items Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

15% of direct cost.

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4	SUBCONTRACTORS	1.00	1.00	LS	1,240,000.000					1,240,000	1,240,000

BID ITEM = 12000
Description = Ex Stair Modification Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A Ex Stair Modification Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4	SUBCONTRACTORS	1.00	1.00	LS	500,000.000					500,000	500,000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 13000
Description = AC - Grind and Overlay Unit = SY Takeoff Quan: 2,146.000 Engr Quan: 2,146.000

40002080 HMA milling/plane-SY Quan: 2,146.00 SY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4GRHMA5711	PLAN'G BITUMINOUS P	1.00	2,146.00	SY	13.500					28,971	28,971
4GRHMA5711M	MOB FOR AC GRINDING	1.00	1.00	EA	5,000.000					5,000	5,000
$33,971.00					[ ]					33,971	33,971

40002082 Haul/Disp grindings Quan: 24.00 LD Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRECYGR	EXPORT T&T - GRINDIN	1.00	178.80	TKYD	50.000			8,940			8,940

40002091 HMA Machine Quan: 402.30 TN Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

small qty

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4HMA5739	HMA PAVEMENT	1.00	402.30	TON	180.000					72,414	72,414

=====> Item Totals: 13000 - AC - Grind and Overlay

$115,325.00					[ ]			8,940		106,385	**115,325**
53.740			2146 SY					4.17		49.57	53.74

BID ITEM = 100000
Description = CFRP Strengthening On Girders Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A CFRP Strengthening On Girders Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4CFRP	CFRP INSTALLATION	1.00	3,600.00	SF	25.000					90,000	90,000

PARENT ITEM = 200000
Description = Pier 10 Diaphragm Enlargement Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 200000:

BID ITEM = 200010
Description = Crossbeam Prep Unit = SF Takeoff Quan: 300.000 Engr Quan: 0.000

50002015 Rent Falsework Matl Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FM$CAPFW	PIER CAP FALSEWORK -	1.00	3,360.00	SF	25.000			84,000			84,000

50002036 Roughen Surface Quan: 300.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 12.50 CH **Prod: 8.0000 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	12.50	HR	17.692				221		221
8TRPU450	FLATRACK, BAREBED	1.00	12.50	HR	29.277				366		366
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	25.00	MH	45.610	1,766					1,766
LGFM	Laborer-General Foreman	1.00	12.50	MH	55.170	1,030					1,030
$3,383.22	0.1250 MH/SF		37.50	MH	[6.1]	2,796			587		3,383

50002066 S/S Cap Falsework Quan: 3.41 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 68.20 CH **Prod: 120.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Cost Report

BID ITEM = 200010
Description = Crossbeam Prep — Unit = SF — Takeoff Quan: 300.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	68.20	HR	29.277				1,997		1,997
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	68.20	MH	64.070	6,832					6,832
CJM	CARPENTER J/M	5.00	341.00	MH	53.700	29,807					29,807
$38,635.11	120.0000 MH/EA		409.20	MH	[6651.399]	36,638			1,997		38,635
=====> **Item Totals: 200010 - Crossbeam Prep**											
$126,018.33	1.4890 MH/SF		446.70	MH	[81.704]	39,435		84,000	2,584		**126,018**
420.061	300 SF					131.45		280.00	8.61		420.06

BID ITEM = 200020
Description = Crossbeam Retrofit — Unit = CY — Takeoff Quan: 88.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002001	**Buy Concrete**		**Quan: 88.00 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	96.80	CY	6.000		581				581
2CONADFUEL	FUEL SURCHARGE	1.10	96.80	CY	2.000		194				194
2CONADHW	CONCRETE-HOT WATE	1.10	96.80	CY	8.000		774				774
2CONC4	CONCRETE CL 4000	1.10	96.80	CY	145.000		14,036				14,036
5COPUSM	SM QTY CON PUMPING	1.10	96.80	CY	35.000			3,388			3,388
$18,972.80					[ ]		15,585	3,388			18,973
50002003	**Buy Dowels & Epoxy**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	6.60	EA	90.000		594				594
2REB-EP	REINF STEEL-EPOXY-C	1.10	220.00	LB	2.000		440				440
$1,034.00					[ ]		1,034				1,034
50002011	**Buy Lumber/Plywood**		**Quan: 2,160.00 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMBR	FORM LUMBER	1.10	7,365.60	BF	1.200			8,839			8,839
3PLY34MDO	3/4" MDO PLYWOOD	1.10	2,376.00	SF	2.000			4,752			4,752
$13,590.72					[ ]			13,591			13,591
50002035	**D/B Dowel to Existing**		**Quan: 100.00 EA**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
LAB3	Laborer 3		25.00	CH	**Prod: 4.0000 UH**	Lab Pcs: 3.00		Eqp Pcs: 2.00			
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	25.00	HR	17.692				442		442
8TRPU450	FLATRACK, BAREBED	1.00	25.00	HR	29.277				732		732
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	50.00	MH	45.610	3,532					3,532
LGFM	Laborer-General Foreman	1.00	25.00	MH	55.170	2,060					2,060
$6,766.49	0.7500 MH/EA		75.00	MH	[36.598]	5,592			1,174		6,766
50002065	**Fab Cap Sideform**		**Quan: 1,600.00 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		40.00	CH	**Prod: 10.0000 UM**	Lab Pcs: 4.00		Eqp Pcs: 1.00			
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	40.00	MH	64.070	4,007					4,007
CJM	CARPENTER J/M	3.00	120.00	MH	53.700	10,489					10,489
$15,667.15	0.1000 MH/SF		160.00	MH	[5.629]	14,496			1,171		15,667

Cost Report

BID ITEM = 200020
Description = Crossbeam Retrofit | Unit = CY | Takeoff Quan: 88.000 | Engr Quan: 0.000

50002068 S/S Cap Sideform Quan: 1,600.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		66.66	CH	**Prod:**	**4.0000 UM**	Lab Pcs:	6.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	66.67	HR	29.277				1,952		1,952
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	66.67	MH	64.070	6,679					6,679
CJM	CARPENTER J/M	5.00	333.33	MH	53.700	29,136					29,136
$37,766.60	0.2500 MH/SF		400.00	MH	[13.857]	35,815			1,952		37,767

50002072 Plc/Fin Cap Conc Quan: 88.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
PLCAP	P/F Cap Concrete		22.00	CH	**Prod:**	**0.8889 UM**	Lab Pcs:	4.50		Eqp Pcs:	3.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	22.00	HR	17.692				389		389
8ML60	JLG 60' MANLIFT	1.00	22.00	HR	45.891				1,010		1,010
8TRPU450	FLATRACK, BAREBED	1.00	22.00	HR	29.277				644		644
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	0.50	11.00	MH	52.600	935					935
LATO	LABORER, AIR TOOL O	3.00	66.00	MH	45.610	4,662					4,662
LGFM	Laborer-General Foreman	1.00	22.00	MH	55.170	1,813					1,813
$9,453.39	1.1250 MH/CY		99.00	MH	[54.575]	7,410			2,043		9,453

50002075 Cure Substructure Conc Quan: 8,140.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CURE	MISC CONC Cure		102.77	CH	**Prod:**	**39.6000 UM**	Lab Pcs:	2.00		Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	102.78	HR	10.382				1,067		1,067
8TRPU450	FLATRACK, BAREBED	1.00	102.78	HR	29.277				3,009		3,009
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	102.78	MH	44.530	7,124					7,124
LGFM	Laborer-General Foreman	1.00	102.78	MH	55.170	8,470					8,470
$19,669.96	0.0252 MH/SF		205.56	MH	[1.259]	15,594			4,076		19,670

50002077 Surface Finish Quan: 8,140.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
FINCAP	Finish Caps		101.75	CH	**Prod:**	**40.0000 UM**	Lab Pcs:	2.00		Eqp Pcs:	3.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	50.88	HR	17.692				900		900
8GEL2	Light Tower-4kW to 20k	1.00	101.75	HR	14.500				1,475		1,475
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	101.75	HR	9.682				985		985
8TRPU450	FLATRACK, BAREBED	1.00	101.75	HR	29.277				2,979		2,979
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	101.75	MH	62.860	9,935					9,935
CMJM	CEMENT MASON J/M	1.00	101.75	MH	52.600	8,650					8,650
$24,925.18	0.0250 MH/SF		203.50	MH	[1.443]	18,586			6,340		24,925

50002078 I/R Cold Weather Protection Quan: 8,140.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
SUPTCO	COLD WEATHER SUPPORT		44.00	CH	**Prod:**	**61.6667 UM**	Lab Pcs:	3.00		Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	44.00	HR	9.682				426		426
8TRPU450	FLATRACK, BAREBED	1.00	44.00	HR	29.277				1,288		1,288
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	88.00	MH	44.530	6,099					6,099
LGFM	Laborer-General Foreman	1.00	44.00	MH	55.170	3,626					3,626
$11,439.59	0.0162 MH/SF		132.00	MH	[0.78]	9,725			1,714		11,440

Cost Report

BID ITEM = 200020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 88.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002089	**Pigseal BR Substructure**				**Quan: 8,140.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	8,140.00	SF	0.750					6,105	6,105
50002098	**Rebar Bridge Substructure**				**Quan: 44,000.00 LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	44,000.00	LB	0.035			1,540			1,540
4REBSUB	SUBSTRUCTURE REBAR	1.00	44,000.00	LB	1.250					55,000	55,000
$56,540.00					[ ]			1,540		55,000	56,540
50004030	**S/S Cap/Abut Access**				**Quan: 560.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
CARP6	Carpenter 6 - S/S		23.33	CH	**Prod:**	**4.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	23.33	HR	29.277				683		683
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	23.33	MH	64.070	2,337					2,337
CJM	CARPENTER J/M	5.00	116.67	MH	53.700	10,198					10,198
$13,218.10	0.2500 MH/SF		140.00	MH	[13.857]	12,535			683		13,218
90001030	**Forklift**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
8FK9KM	==> FORKLIFT 9K - MO	1.00	0.50	MO	2,576.000				1,288		1,288
90001040	**Manlift**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
Additional manlift from activity.											
8ML60	==> JLG 60' MANLIFT	1.00	110.00	HR	45.891				5,048		5,048
90001060	**Generator**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
8GEN6	==> ENG DRIVEN GEN 6.	1.00	110.00	HR	9.682				1,065		1,065
90001080	**Light towers**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	110.00	HR	14.500				1,595		1,595

=====> **Item Totals: 200020 - Crossbeam Retrofit**

$244,145.01	16.0802 MH/CY		1,415.06	MH	[860.702]	119,754	16,619	18,519	28,149	61,105	**244,145**
2,774.375	88 CY					1,360.84	188.85	210.44	319.87	694.38	2,774.38

Total of Above Sub-Biditems

=====> **Item Totals: 200000 - Pier 10 Diaphragm Enlargement**

$370,163.34	**1,861.7600 MH/LS**		**1,861.76**	**MH**	**[100252.94]**	**159,188**	**16,619**	**102,519**	**30,733**	**61,105**	**370,163**
370,163.340	**1 LS**					**159,188.16**	**16,618.80**	**102,518.72**	**30,732.66**	**61,105.00**	**370,163.34**

PARENT ITEM = 300000
Description = Conc. Diaphragm Enlargement Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 300000:

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 300010
Description = Crossbeam Prep Unit = SF Takeoff Quan: 528.000 Engr Quan: 0.000

50002015 Rent Falsework Matl Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FM$CAPFW	PIER CAP FALSEWORK -	1.00	3,360.00	SF	25.000			84,000			84,000

50002036 Roughen Surface Quan: 528.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LAB3	Laborer 3		22.00	CH	**Prod:**	**8.0000 UM**	Lab Pcs:	3.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	22.00	HR	17.692				389		389
8TRPU450	FLATRACK, BAREBED	1.00	22.00	HR	29.277				644		644
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	44.00	MH	45.610	3,108					3,108
LGFM	Laborer-General Foreman	1.00	22.00	MH	55.170	1,813					1,813
$5,954.52	0.1250 MH/SF		66.00	MH	[6.1]	4,921			1,033		5,955

50002066 S/S Cap Falsework Quan: 6.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		120.00	CH	**Prod:**	**120.0000 MU**	Lab Pcs:	6.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	120.00	HR	29.277				3,513		3,513
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	120.00	MH	64.070	12,021					12,021
CJM	CARPENTER J/M	5.00	600.00	MH	53.700	52,446					52,446
$67,979.70	120.0000 MH/EA		720.00	MH	[6651.4]	64,466			3,513		67,980

=====> **Item Totals: 300010 - Crossbeam Prep**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$157,934.22	1.4886 MH/SF		786.00	MH	[81.684]	69,388		84,000	4,547		**157,934**
299.118	528 SF					131.42		159.09	8.61		299.12

BID ITEM = 300020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 118.000 Engr Quan: 0.000

50002001 Buy Concrete Quan: 118.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CONADEC	CONCRETE-ENVIRO CH	1.10	129.80	CY	6.000		779				779
2CONADFUEL	FUEL SURCHARGE	1.10	129.80	CY	2.000		260				260
2CONADHW	CONCRETE-HOT WATE	1.10	129.80	CY	8.000		1,038				1,038
2CONC4	CONCRETE CL 4000	1.10	129.80	CY	145.000		18,821				18,821
5COPUSM	SM QTY CON PUMPING	1.10	129.80	CY	35.000			4,543			4,543
$25,440.80					[ ]		20,898	4,543			25,441

50002003 Buy Dowels & Epoxy Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	44.00	EA	90.000		3,960				3,960
2REB-EP	REINF STEEL-EPOXY-C	1.10	1,056.00	LB	2.000		2,112				2,112
$6,072.00					[ ]		6,072				6,072

50002011 Buy Lumber/Plywood Quan: 1,480.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.10	5,046.80	BF	1.200			6,056			6,056
3PLY34MDO	3/4" MDO PLYWOOD	1.10	1,628.00	SF	2.000			3,256			3,256
$9,312.16					[ ]			9,312			9,312

50002035 D/B Dowel to Existing Quan: 480.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Cost Report

BID ITEM = 300020
Description = Crossbeam Retrofit — Unit = CY — Takeoff Quan: 118.000 — Engr Quan: 0.000

LAB3 — Laborer 3 — 120.00 CH — **Prod: 4.0000 UH** — Lab Pcs: 3.00 — Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	120.00	HR	17.692				2,123		2,123
8TRPU450	FLATRACK, BAREBED	1.00	120.00	HR	29.277				3,513		3,513
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	240.00	MH	45.610	16,954					16,954
LGFM	Laborer-General Foreman	1.00	120.00	MH	55.170	9,889					9,889
$32,479.26	0.7500 MH/EA		360.00	MH	[36.598]	26,843			5,636		32,479

50002065 — Fab Cap Sideform — Quan: 1,480.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CARP4 — Carpenter 4 - Med & PREFAB — 37.00 CH — **Prod: 10.0000 UM** — Lab Pcs: 4.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	37.00	HR	29.277				1,083		1,083
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	37.00	MH	64.070	3,706					3,706
CJM	CARPENTER J/M	3.00	111.00	MH	53.700	9,702					9,702
$14,492.09	0.1000 MH/SF		148.00	MH	[5.629]	13,409			1,083		14,492

50002067 — S/S Cap Soffit — Quan: 3,600.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CARP6 — Carpenter 6 - S/S — 150.00 CH — **Prod: 4.0000 UM** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	150.00	HR	29.277				4,392		4,392
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	150.00	MH	64.070	15,026					15,026
CJM	CARPENTER J/M	5.00	750.00	MH	53.700	65,557					65,557
$84,974.62	0.2500 MH/SF		900.00	MH	[13.857]	80,583			4,392		84,975

50002068 — S/S Cap Sideform — Quan: 4,440.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CARP6 — Carpenter 6 - S/S — 185.00 CH — **Prod: 4.0000 UM** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	185.00	HR	29.277				5,416		5,416
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	185.00	MH	64.070	18,532					18,532
CJM	CARPENTER J/M	5.00	925.00	MH	53.700	80,854					80,854
$104,802.02	0.2500 MH/SF		1,110.00	MH	[13.857]	99,386			5,416		104,802

50002072 — Plc/Fin Cap Conc — Quan: 118.00 CY — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

PLCAP — P/F Cap Concrete — 24.00 CH — **Prod: 1.0926 UM** — Lab Pcs: 4.50 — Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	24.00	HR	17.692				425		425
8ML60	JLG 60' MANLIFT	1.00	24.00	HR	45.891				1,101		1,101
8TRPU450	FLATRACK, BAREBED	1.00	24.00	HR	29.277				703		703
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	0.50	12.00	MH	52.600	1,020					1,020
LATO	LABORER, AIR TOOL O	3.00	72.00	MH	45.610	5,086					5,086
LGFM	Laborer-General Foreman	1.00	24.00	MH	55.170	1,978					1,978
$10,312.78	0.9152 MH/CY		108.00	MH	[44.4]	8,084			2,229		10,313

50002075 — Cure Substructure Conc — Quan: 4,440.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CURE — MISC CONC Cure — 56.06 CH — **Prod: 39.6000 UM** — Lab Pcs: 2.00 — Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	56.06	HR	10.382				582		582
8TRPU450	FLATRACK, BAREBED	1.00	56.06	HR	29.277				1,641		1,641
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM	**= 300020**										
Description =	Crossbeam Retrofit			Unit =	CY	Takeoff Quan:		118.000	Engr Quan:		0.000
LCOM	LABORER, COMMON G#	1.00	56.06	MH	44.530	3,886					3,886
LGFM	Laborer-General Foreman	1.00	56.06	MH	55.170	4,620					4,620
$10,728.71	0.0252 MH/SF		112.12	MH	[1.259]	8,505			2,223		10,729
50002077	**Surface Finish**			**Quan:**	**4,440.00 SF**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
FINCAP	Finish Caps		55.50	CH	**Prod:**	**40.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		3.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	27.75	HR	17.692				491		491
8GEL2	Light Tower-4kW to 20k	1.00	55.50	HR	14.500				805		805
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	55.50	HR	9.682				537		537
8TRPU450	FLATRACK, BAREBED	1.00	55.50	HR	29.277				1,625		1,625
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	55.50	MH	62.860	5,419					5,419
CMJM	CEMENT MASON J/M	1.00	55.50	MH	52.600	4,718					4,718
$13,595.51	0.0250 MH/SF		111.00	MH	[1.443]	10,138			3,458		13,596
50002078	**I/R Cold Weather Protection**			**Quan:**	**4,440.00 SF**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
SUPTCO	COLD WEATHER SUPPORT		24.00	CH	**Prod:**	**61.6667 UM**	Lab Pcs:	3.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	24.00	HR	9.682				232		232
8TRPU450	FLATRACK, BAREBED	1.00	24.00	HR	29.277				703		703
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	48.00	MH	44.530	3,327					3,327
LGFM	Laborer-General Foreman	1.00	24.00	MH	55.170	1,978					1,978
$6,239.76	0.0162 MH/SF		72.00	MH	[0.78]	5,305			935		6,240
50002089	**Pigseal BR Substructure**			**Quan:**	**4,440.00 SF**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	4,440.00	SF	0.750					3,330	3,330
50002098	**Rebar Bridge Substructure**			**Quan:**	**24,000.00 LB**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	24,000.00	LB	0.035			840			840
4REBSUB	SUBSTRUCTURE REBAR	1.00	24,000.00	LB	1.250					30,000	30,000
$30,840.00					[ ]			840		30,000	30,840
90001030	**Forklift**			**Quan:**	**2.00 UM**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
8FK9KM	==> FORKLIFT 9K - MO	1.00	2.00	MO	2,576.000				5,152		5,152
90001040	**Manlift**			**Quan:**	**2.00 UM**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
Additional manlift from activity.											
8ML60	==> JLG 60' MANLIFT	1.00	440.00	HR	45.891				20,192		20,192
90001060	**Generator**			**Quan:**	**2.00 UM**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
8GEN6	==> ENG DRIVEN GEN 6.	1.00	440.00	HR	9.682				4,260		4,260
90001080	**Light towers**			**Quan:**	**2.00 UM**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**		
											**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	440.00	HR	14.500				6,380		6,380
=====> **Item Totals:**	**300020**		**- Crossbeam Retrofit**								
$388,603.83	24.7552 MH/CY		2,921.12	MH	[1339.042]	252,253	26,970	14,695	61,356	33,330	**388,604**
3,293.253	118 CY					2,137.74	228.56	124.54	519.97	282.46	3,293.25

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 300020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 118.000 Engr Quan: 0.000

Total of Above Sub-Biditems

=====> Item Totals: 300000 - Conc. Diaphragm Enlargement

$546,538.05	**3,707.1200 MH/LS**		**3,707.12**	**MH**	**[201135.95]**	**321,640**	**26,970**	**98,695**	**65,903**	**33,330**	**546,538**
546,538.050	**1 LS**					**321,640.43**	**26,969.80**	**98,695.16**	**65,902.66**	**33,330.00**	**546,538.05**

BID ITEM = 400000
Description = Near Surface CFRP Bars Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A Near Surface CFRP Bars Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

4CFRP02	TITANIUM DECK STREN	1.00	400.00	LF	500.000					200,000	200,000

BID ITEM = 500000
Description = Column Jackets Unit = EA Takeoff Quan: 25.000 Engr Quan: 25.000

20001080 Bridge Demo - Ex Strut Quan: 6.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

4DEMO	DEMOLITION	1.00	6.00	EA	8,000.000					48,000	48,000

50008002 Buy Grout Quan: 71.88 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

2CONADEC	CONCRETE-ENVIRO CH	1.10	79.07	CY	6.000		474				474
2CONADFUEL	FUEL SURCHARGE	1.10	79.07	CY	2.000		158				158
2CONADHW	CONCRETE-HOT WATE	1.10	79.07	CY	8.000		633				633
2CONADPRIME	2CY GROUT TO PRIME P	1.00	12.50	EA	325.000		4,063				4,063
2CONADSL	SHORT LOAD <9CY PER	1.10	79.07	CY	40.000		3,163				3,163
2CONCLM	CONC-COLUMN JACKET	1.10	79.07	CY	180.000		14,233				14,233
$22,723.02					[ ]		22,723				22,723

50008003 Buy Column Casing Quan: 125,000.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

2SSFCOLB	STEEL COL JACKET - 1/2	1.00	125,000.00	LB	3.900		487,500				487,500

50008032 Asbuilt Column Height Quan: 25.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP2 Carpenter 2 - SMALL WORK 31.25 CH **Prod:** **2.5000 MU** Lab Pcs: 2.00 Eqp Pcs: 0.00

A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	31.25	MH	64.070	3,130					3,130
CJM	CARPENTER J/M	1.00	31.25	MH	53.700	2,732					2,732
$5,861.99	2.5000 MH/EA		62.50	MH	[147.213]	5,862					5,862

50008033 Prep Ex Column Quan: 2,500.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 62.50 CH **Prod:** **40.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	62.50	HR	17.692				1,106		1,106
8TRPU450	FLATRACK, BAREBED	1.00	62.50	HR	29.277				1,830		1,830
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	125.00	MH	45.610	8,830					8,830
LGFM	Laborer-General Foreman	1.00	62.50	MH	55.170	5,151					5,151
$16,916.24	0.0750 MH/SF		187.50	MH	[3.66]	13,981			2,936		16,916

Cost Report

BID ITEM = 500000
Description = Column Jackets Unit = EA Takeoff Quan: 25.000 Engr Quan: 25.000

50008034 Set Column Casing Quan: 25.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 187.50 CH **Prod: 45.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	187.50	HR	29.277				5,489		5,489
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	187.50	MH	64.070	18,783					18,783
CJM	CARPENTER J/M	5.00	937.50	MH	53.700	81,946					81,946
$106,218.26	45.0000 MH/EA		1,125.00	MH	[2494.275]	100,729			5,489		106,218

50008035 Weld Column Casing Quan: 471.88 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PB4 4 MAN PB CREW 125.00 CH **Prod: 0.9438 UM** Lab Pcs: 4.00 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	125.00	HR	29.277				3,660		3,660
8WELD400D	WELDER 400 AMP	1.00	125.00	HR	9.420				1,177		1,177
8WELDLN25	lLN25 WIRE FEED	1.00	125.00	HR	2.500				313		313
A	~~~~~LABOR~~~		0.00	MH	0.000						
PILE	PB Journeyman	3.00	375.00	MH	54.100	32,963					32,963
PILE4M	PB Foreman	1.00	125.00	MH	64.510	12,589					12,589
$50,702.16	1.0595 MH/LF		500.00	MH	[60.081]	45,553			5,150		50,702

50008036 Grout Column Casing Quan: 71.88 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLCOL P/F Columns 143.76 CH **Prod: 8.0000 MU** Lab Pcs: 4.00 Eqp Pcs: 6.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	2.00	287.52	HR	17.692				5,087		5,087
8GEN6	ENG DRIVEN GEN 6.5 K	2.00	287.52	HR	9.682				2,784		2,784
8ML80	JLG 80' MANLIFT	1.00	143.76	HR	67.911				9,763		9,763
8TRPU450	FLATRACK, BAREBED	1.00	143.76	HR	29.277				4,209		4,209
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	0.50	71.88	MH	53.700	6,283					6,283
CMJM	CEMENT MASON J/M	0.50	71.88	MH	52.600	6,111					6,111
LATO	LABORER, AIR TOOL O	2.00	287.52	MH	45.610	20,311					20,311
LGFM	Laborer-General Foreman	1.00	143.76	MH	55.170	11,847					11,847
$66,394.02	8.0000 MH/CY		575.04	MH	[399.08]	44,552			21,842		66,394

50008037 Drill Weld Relief Holes Quan: 200.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PB4 4 MAN PB CREW 100.00 CH **Prod: 2.0000 UH** Lab Pcs: 4.00 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	100.00	HR	29.277				2,928		2,928
8WELD400D	WELDER 400 AMP	1.00	100.00	HR	9.420				942		942
8WELDLN25	lLN25 WIRE FEED	1.00	100.00	HR	2.500				250		250
A	~~~~~LABOR~~~		0.00	MH	0.000						
PILE	PB Journeyman	3.00	300.00	MH	54.100	26,371					26,371
PILE4M	PB Foreman	1.00	100.00	MH	64.510	10,072					10,072
$40,561.75	2.0000 MH/EA		400.00	MH	[113.405]	36,442			4,120		40,562

50008054 Roughen Surface Quan: 2,500.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 83.33 CH **Prod: 10.0000 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	83.33	HR	17.692				1,474		1,474
8TRPU450	FLATRACK, BAREBED	1.00	83.33	HR	29.277				2,440		2,440
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	166.67	MH	45.610	11,774					11,774
LGFM	Laborer-General Foreman	1.00	83.33	MH	55.170	6,867					6,867

Cost Report

BID ITEM = 500000
Description = Column Jackets Unit = EA Takeoff Quan: 25.000 Engr Quan: 25.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$22,554.80	0.1000 MH/SF		250.00	MH	[4.88]	18,641			3,914		22,555
50008081	**Paint Column Casing**		**Quan: 2,500.00**	**SF**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
4PNT4468CJ	2 PAINT COL JCKTS,2FI	1.00	2,500.00	SF	10.000					25,000	25,000
90001030	**Forklift**		**Quan: 2.00**	**UM**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
8FK9KM	==> FORKLIFT 9K - MO	1.00	2.00	MO	2,576.000				5,152		5,152
90001040	**Manlift**		**Quan: 2.00**	**UM**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
Additional manlift from activity.											
8ML60	==> JLG 60' MANLIFT	1.00	440.00	HR	45.891				20,192		20,192
90001060	**Generator**		**Quan: 2.00**	**UM**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
8GEN6	==> ENG DRIVEN GEN 6.	1.00	440.00	HR	9.682				4,260		4,260
90001080	**Light towers**		**Quan: 2.00**	**UM**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	440.00	HR	14.500				6,380		6,380

=====> Item Totals: 500000 - Column Jackets

$928,416.36	124.0016 MH/EA	3,100.04 MH	[6684.154]	265,759	510,223	79,434	73,000	**928,416**
37,136.654	25 EA			10,630.35	20,408.92	3,177.38	2,920.00	37,136.65

PARENT ITEM = 550000
Description = Footing Strengthening Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 550000:

BID ITEM = 550010
Description = Temp Shoring Unit = SF Takeoff Quan: 18,050.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
60001005	**Buy Soldier Piles**		**Quan: 1,106,207.14**	**LB**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
3SHTEMPPILES	TEMPORARY SHORING	1.00	1,106,207.14	LB	0.450			497,793			497,793
60001079	**Support Equipment**		**Quan: 3.00**	**MO**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
SUPTDS	Drill Support		660.00	CH	**Prod: 0.0000**	Lab Pcs: 2.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	660.00	HR	65.800				43,428		43,428
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	660.00	MH	44.530	45,746					45,746
OFELL	OP ENG LOADER	1.00	660.00	MH	57.470	63,564					63,564
$152,738.39	440.0000 MH/MO		1,320.00	MH	[22440]	109,310			43,428		152,738
60001080	**Driller Mobilization**		**Quan: 2.00**	**EA**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
4XPIDRMOB	MOB DRILL SUB	1.00	2.00	EA	15,000.000					30,000	30,000
60001081	**Soldier Pile Drilling**		**Quan: 7,878.97**	**LF**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	7,878.97	LF	85.000					669,712	669,712

Cost Report

BID ITEM = 550010
Description = Temp Shoring Unit = SF Takeoff Quan: 18,050.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
60001087	**Haul Drill Spoils**				**Quan: 2,077.18 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4EWHSP	HAUL DRILL SPOILS	1.00	2,077.18	CY	40.000					83,087	83,087
=====> **Item Totals:**	**550010 - Temp Shoring**										
$1,433,331.25	0.0731 MH/SF		1,320.00	MH	[3.73]	109,310		497,793	43,428	782,800	**1,433,331**
79.409	18050 SF					6.06		27.58	2.41	43.37	79.41

BID ITEM = 550020
Description = Footing Excavation Unit = CY Takeoff Quan: 5,277.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16003001	**Buy Plastic**				**Quan: 11,559.69 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3ECPOLYVB6M	6 MIL POLY SHEETING	1.05	1,348.50	SY	0.280			378			378
16003002	**Buy Sand Bags**				**Quan: 288.99 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3ECSB	SANDBAGS	1.05	303.44	EA	3.000			910			910
16003030	**I/R Slope Covering**				**Quan: 34,679.08 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
16E01O	MISC TESC CREW		57.79	CH	**Prod: 299.9998 UM**			Lab Pcs: 2.00		Eqp Pcs: 1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	57.80	HR	29.277				1,692		1,692
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	57.80	MH	44.530	4,006					4,006
LGFM	Laborer-General Foreman	1.00	57.80	MH	55.170	4,763					4,763
$10,461.66	0.0033 MH/SF		115.60	MH	[0.166]	8,769			1,692		10,462
25005080	**Structure Exc Class A**				**Quan: 5,277.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4EW4006	STR EXC CL A W/HAUL	1.00	5,277.00	CY	45.000					237,465	237,465
=====> **Item Totals:**	**550020 - Footing Excavation**										
$249,214.56	0.0219 MH/CY		115.60	MH	[1.092]	8,769		1,288	1,692	237,465	**249,215**
47.227	5277 CY					1.66		0.24	0.32	45.00	47.23

BID ITEM = 550030
Description = Micropiles - 12" dia Unit = EA Takeoff Quan: 24.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1030	**Micropiles**				**Quan: 24.00 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4XPGMP	MICROPILE	1.00	24.00	EA	10,000.000					240,000	240,000
4XPGMPT	MICROPILE - PROOF TE	1.00	2.00	EA	5,000.000					10,000	10,000
4XPGMVT	MICROPILE - VERTIFICA	1.00	4.00	EA	2,500.000					10,000	10,000
$260,000.00					[ ]					260,000	260,000
=====> **Item Totals:**	**550030 - Micropiles - 12" dia**										
$260,000.00					[ ]					260,000	**260,000**
10,833.333	24 EA									10,833.33	10,833.33

Cost Report

BID ITEM = 550040
Description = Footing Retrofit — Unit = CY — Takeoff Quan: 469.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000170	**CONC PUMP TRUCK**		**Quan:**	**469.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
5COPULA	LARAGE QTY CON PUM	1.00	422.10	CY	25.000			10,553			10,553
5COPUSM	SM QTY CON PUMPING	1.00	46.90	CY	35.000			1,642			1,642
$12,194.00					[ ]			12,194			12,194
50002001	**Buy Concrete**		**Quan:**	**469.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	515.98	CY	6.000		3,096				3,096
2CONADFUEL	FUEL SURCHARGE	1.10	515.98	CY	2.000		1,032				1,032
2CONADHW	CONCRETE-HOT WATE	1.10	515.98	CY	8.000		4,128				4,128
2CONC4	CONCRETE CL 4000	1.10	515.90	CY	145.000		74,806				74,806
$83,061.18					[ ]		83,061				83,061
50002003	**Buy Dowels & Epoxy**		**Quan:**	**1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	44.00	EA	90.000		3,960				3,960
2REB-EP	REINF STEEL-EPOXY-C	1.10	1,034.00	LB	2.000		2,068				2,068
$6,028.00					[ ]		6,028				6,028
50002011	**Buy Lumber/Plywood**		**Quan:**	**751.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
3LMBR	FORM LUMBER	1.10	2,560.91	BF	1.200			3,073			3,073
3PLY34MDO	3/4" MDO PLYWOOD	1.10	826.10	SF	2.000			1,652			1,652
$4,725.29					[ ]			4,725			4,725
50002013	**Rent Ftg/Abutment Form**		**Quan:**	**751.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
3FMEFCO	EFCO PLATE GIRDER FO	1.00	751.00	SFMO	3.500			2,629			2,629
50002030	**F/G Footing**		**Quan:**	**2,760.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
25E4FG	Str Exc - FINEGRADE		69.00	CH	**Prod:**	**20.0000 UM**		Lab Pcs:	2.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	69.00	HR	34.582				2,386		2,386
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	69.00	MH	44.530	4,783					4,783
ODL	OP ENG DOZER D9 & <	1.00	69.00	MH	57.470	6,645					6,645
$13,814.06	0.0500 MH/SF		138.00	MH	[2.55]	11,428			2,386		13,814
50002032	**Fab Footing Form**		**Quan:**	**751.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		15.64	CH	**Prod:**	**12.0000 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	15.65	HR	29.277				458		458
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	15.65	MH	64.070	1,568					1,568
CJM	CARPENTER J/M	3.00	46.94	MH	53.700	4,103					4,103
$6,128.87	0.0833 MH/SF		62.59	MH	[4.692]	5,671			458		6,129
50002033	**S/S Footing Form**		**Quan:**	**3,005.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
CARP6	Carpenter 6 - S/S		100.16	CH	**Prod:**	**5.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	100.17	HR	29.277				2,933		2,933
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	100.17	MH	64.070	10,034					10,034
CJM	CARPENTER J/M	5.00	500.83	MH	53.700	43,777					43,777

Cost Report

BID ITEM = 550040
Description = Footing Retrofit Unit = CY Takeoff Quan: 469.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$56,744.26	0.2000 MH/SF		601.00	MH	[11.086]	53,812			2,933		56,744

50002034 Plc/Fin Footing Conc Quan: 469.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLSOGK P/F SLAB ON GRADE 48.00 CH **Prod: 2.4427 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	48.00	MH	52.600	4,081					4,081
LATO	LABORER, AIR TOOL O	2.00	96.00	MH	45.610	6,782					6,782
LGFM	Laborer-General Foreman	1.00	48.00	MH	55.170	3,956					3,956
$16,223.20	0.4093 MH/CY		192.00	MH	[20.366]	14,818			1,405		16,223

50002035 D/B Dowel to Existing Quan: 470.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 78.33 CH **Prod: 6.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	78.33	HR	17.692				1,386		1,386
8TRPU450	FLATRACK, BAREBED	1.00	78.33	HR	29.277				2,293		2,293
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	156.67	MH	45.610	11,067					11,067
LGFM	Laborer-General Foreman	1.00	78.33	MH	55.170	6,455					6,455
$21,201.49	0.5000 MH/EA		235.00	MH	[24.398]	17,522			3,679		21,201

50002036 Roughen Surface Quan: 2,000.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 24.00 CH **Prod: 27.7778 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	24.00	HR	17.692				425		425
8TRPU450	FLATRACK, BAREBED	1.00	24.00	HR	29.277				703		703
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	48.00	MH	45.610	3,391					3,391
LGFM	Laborer-General Foreman	1.00	24.00	MH	55.170	1,978					1,978
$6,495.83	0.0360 MH/SF		72.00	MH	[1.757]	5,369			1,127		6,496

50002043 S/S Thru Rebar Bulkhead Quan: 72.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 12.00 CH **Prod: 1.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	12.00	HR	29.277				351		351
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	12.00	MH	64.070	1,202					1,202
CJM	CARPENTER J/M	5.00	60.00	MH	53.700	5,245					5,245
$6,797.96	1.0000 MH/LF		72.00	MH	[55.428]	6,447			351		6,798

50002075 Cure Substructure Conc Quan: 2,760.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CURE MISC CONC Cure 27.60 CH **Prod: 50.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	27.60	HR	10.382				287		287
8TRPU450	FLATRACK, BAREBED	1.00	27.60	HR	29.277				808		808
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	27.60	MH	44.530	1,913					1,913
LGFM	Laborer-General Foreman	1.00	27.60	MH	55.170	2,274					2,274
$5,282.06	0.0200 MH/SF		55.20	MH	[0.997]	4,187			1,095		5,282

50002076 Point/Patch Quan: 3,005.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINCAP Finish Caps 15.02 CH **Prod: 100.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 3.50

Cost Report

BID ITEM = 550040
Description = Footing Retrofit | Unit = CY | Takeoff Quan: 469.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	7.51	HR	17.692				133		133
8GEL2	Light Tower-4kW to 20k	1.00	15.03	HR	14.500				218		218
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	15.03	HR	9.682				145		145
8TRPU450	FLATRACK, BAREBED	1.00	15.03	HR	29.277				440		440
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	15.03	MH	62.860	1,468					1,468
CMJM	CEMENT MASON J/M	1.00	15.03	MH	52.600	1,278					1,278
$3,681.65	0.0100 MH/SF		30.06	MH	[0.577]	2,745			936		3,682

50002098 Rebar Bridge Substructure — Quan: 117,250.00 LB — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

use 250 lb/cy

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3RE-H	REBAR HOISTING SUPP	1.10	128,975.00	LB	0.035			4,514			4,514
4REBSUB	SUBSTRUCTURE REBAR	1.10	128,975.00	LB	1.250					161,219	161,219
$165,732.88					[ ]			4,514		161,219	165,733

90001080 Light towers — Quan: 2.00 UM — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEL2	==> Light Tower-4kW to 2	2.00	440.00	HR	14.500				6,380		6,380

=====> Item Totals: 550040 - Footing Retrofit

$417,119.23	3.1084 MH/CY		1,457.85	MH	[163.931]	121,999	89,089	24,062	20,751	161,219	**417,119**
889.380			469	CY		260.13	189.96	51.30	44.24	343.75	889.38

BID ITEM = 550060
Description = Footing Backfill | Unit = CY | Takeoff Quan: 4,808.000 | Engr Quan: 0.000

25005082 Structure BF Class A — Quan: 4,808.00 CY — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EW7011	GBF-FOUNDATION CL A	1.00	4,808.00	CY	37.000					177,896	177,896

PARENT ITEM = 550070
Description = Pier 10 Footing Streengthening | Unit = CY | Takeoff Quan: 135.000 | Engr Quan: 135.000

Listing of Sub-Biditems of Parent Item 550070:

BID ITEM = 550071
Description = Temp Shoring | Unit = SF | Takeoff Quan: 1,166.000 | Engr Quan: 0.000

30001090 Utility Locating Service — Quan: 40.00 HR — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRTHRVTRK	VACUUM TRUCK RENT	1.00	40.00	HR	300.000			12,000			12,000

60001005 Buy Soldier Piles — Quan: 91,260.00 LB — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3SHTEMPPILES	TEMPORARY SHORING	1.00	91,260.00	LB	0.450			41,067			41,067

60001079 Support Equipment — Quan: 0.50 MO — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

SUPTDS Drill Support 110.00 CH **Prod:** **0.0000** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	110.00	HR	65.800				7,238		7,238
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM	**= 550071**										
Description =	Temp Shoring			Unit =	SF	Takeoff Quan:		1,166.000	Engr Quan:		0.000
LCOM	LABORER, COMMON G#	1.00	110.00	MH	44.530	7,624					7,624
OFELL	OP ENG LOADER	1.00	110.00	MH	57.470	10,594					10,594
$25,456.40	440.0000 MH/MO		220.00	MH	[22440]	18,218			7,238		25,456
60001080	**Driller Mobilization**		**Quan: 0.50 EA**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPIDRMOB	MOB DRILL SUB	1.00	0.50	EA	15,000.000					7,500	7,500
60001081	**Soldier Pile Drilling**		**Quan: 780.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	780.00	LF	100.000					78,000	78,000
60001087	**Haul Drill Spoils**		**Quan: 91.00 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EWHSP	HAUL DRILL SPOILS	1.00	91.00	CY	40.000					3,640	3,640
=====> **Item Totals:**	**550071 - Temp Shoring**										
$167,663.40	0.1886 MH/SF		220.00	MH	[9.623]	18,218		53,067	7,238	89,140	**167,663**
143.794	1166 SF					15.62		45.51	6.21	76.45	143.79
BID ITEM	**= 550072**										
Description =	Footing Excavation			Unit =	CY	Takeoff Quan:		684.000	Engr Quan:		0.000
16003001	**Buy Plastic**		**Quan: 1,498.36 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3ECPOLYVB6M	6 MIL POLY SHEETING	1.05	174.79	SY	0.280			49			49
16003002	**Buy Sand Bags**		**Quan: 37.46 EA**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3ECSB	SANDBAGS	1.05	39.33	EA	3.000			118			118
16003030	**I/R Slope Covering**		**Quan: 4,495.07 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
16E01O	MISC TESC CREW		7.49	CH	**Prod: 299.9993 UM**		Lab Pcs: 2.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	7.49	HR	29.277				219		219
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	7.49	MH	44.530	519					519
LGFM	Laborer-General Foreman	1.00	7.49	MH	55.170	617					617
$1,355.65	0.0033 MH/SF		14.98	MH	[0.166]	1,136			219		1,356
25005080	**Structure Exc Class A**		**Quan: 684.00 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW4006	STR EXC CL A W/HAUL	1.00	684.00	CY	45.000					30,780	30,780
=====> **Item Totals:**	**550072 - Footing Excavation**										
$32,302.58	0.0219 MH/CY		14.98	MH	[1.092]	1,136		167	219	30,780	**32,303**
47.226	684 CY					1.66		0.24	0.32	45.00	47.23
BID ITEM	**= 550073**										
Description =	Footing Retrofit			Unit =	CY	Takeoff Quan:		135.000	Engr Quan:		0.000
50000170	**CONC PUMP TRUCK**		**Quan: 135.00 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 550073											
Description =	Footing Retrofit			Unit = CY		Takeoff Quan:		135.000	Engr Quan:		0.000
5COPULA	LARAGE QTY CON PUM	1.00	121.50	CY	25.000			3,038			3,038
5COPUSM	SM QTY CON PUMPING	1.00	13.50	CY	35.000			473			473
$3,510.00					[ ]			3,510			3,510
50002001	**Buy Concrete**				**Quan: 135.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	148.52	CY	6.000		891				891
2CONADFUEL	FUEL SURCHARGE	1.10	148.52	CY	2.000		297				297
2CONADHW	CONCRETE-HOT WATE	1.10	148.52	CY	8.000		1,188				1,188
2CONC4	CONCRETE CL 4000	1.10	148.50	CY	145.000		21,533				21,533
$23,908.82					[ ]		23,909				23,909
50002003	**Buy Dowels & Epoxy**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	44.00	EA	90.000		3,960				3,960
2REB-EP	REINF STEEL-EPOXY-C	1.10	1,034.00	LB	2.000		2,068				2,068
$6,028.00					[ ]		6,028				6,028
50002011	**Buy Lumber/Plywood**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3LMBR	FORM LUMBER	1.10	3,273.60	BF	1.200			3,928			3,928
3PLY34MDO	3/4" MDO PLYWOOD	1.10	1,056.00	SF	2.000			2,112			2,112
$6,040.32					[ ]			6,040			6,040
50002013	**Rent Ftg/Abutment Form**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3FMEFCO	EFCO PLATE GIRDER FO	1.00	960.00	SFMO	3.500			3,360			3,360
50002030	**F/G Footing**				**Quan: 640.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
25E4FG	Str Exc - FINEGRADE		16.00	CH	**Prod:**	**20.0000 UM**		Lab Pcs: 2.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	16.00	HR	34.582				553		553
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	16.00	MH	44.530	1,109					1,109
ODL	OP ENG DOZER D9 & <	1.00	16.00	MH	57.470	1,541					1,541
$3,203.26	0.0500 MH/SF		32.00	MH	[2.55]	2,650			553		3,203
50002032	**Fab Footing Form**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		20.00	CH	**Prod:**	**12.0000 UM**		Lab Pcs: 4.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	20.00	HR	29.277				586		586
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	20.00	MH	64.070	2,003					2,003
CJM	CARPENTER J/M	3.00	60.00	MH	53.700	5,245					5,245
$7,833.58	0.0833 MH/SF		80.00	MH	[4.691]	7,248			586		7,834
50002033	**S/S Footing Form**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
CARP6	Carpenter 6 - S/S		40.00	CH	**Prod:**	**4.0000 UM**		Lab Pcs: 6.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	40.00	MH	64.070	4,007					4,007
CJM	CARPENTER J/M	5.00	200.00	MH	53.700	17,482					17,482
$22,659.90	0.2500 MH/SF		240.00	MH	[13.857]	21,489			1,171		22,660

Cost Report

BID ITEM = 550073
Description = Footing Retrofit Unit = CY Takeoff Quan: 135.000 Engr Quan: 0.000

50002034 Plc/Fin Footing Conc Quan: 135.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLSOGK P/F SLAB ON GRADE 13.81 CH **Prod: 2.4427 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	13.82	HR	29.277				405		405
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	13.82	MH	52.600	1,175					1,175
LATO	LABORER, AIR TOOL O	2.00	27.63	MH	45.610	1,952					1,952
LGFM	Laborer-General Foreman	1.00	13.82	MH	55.170	1,139					1,139
$4,670.19	0.4094 MH/CY		55.27	MH	[20.367]	4,266			405		4,670

50002035 D/B Dowel to Existing Quan: 272.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 45.33 CH **Prod: 6.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	45.33	HR	17.692				802		802
8TRPU450	FLATRACK, BAREBED	1.00	45.33	HR	29.277				1,327		1,327
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	90.67	MH	45.610	6,405					6,405
LGFM	Laborer-General Foreman	1.00	45.33	MH	55.170	3,736					3,736
$12,269.72	0.5000 MH/EA		136.00	MH	[24.398]	10,141			2,129		12,270

50002036 Roughen Surface Quan: 576.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 6.91 CH **Prod: 27.7778 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	6.91	HR	17.692				122		122
8TRPU450	FLATRACK, BAREBED	1.00	6.91	HR	29.277				202		202
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	13.82	MH	45.610	976					976
LGFM	Laborer-General Foreman	1.00	6.91	MH	55.170	569					569
$1,870.21	0.0359 MH/SF		20.73	MH	[1.756]	1,546			325		1,870

50002075 Cure Substructure Conc Quan: 1,152.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CURE MISC CONC Cure 11.52 CH **Prod: 50.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	11.52	HR	10.382				120		120
8TRPU450	FLATRACK, BAREBED	1.00	11.52	HR	29.277				337		337
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	11.52	MH	44.530	798					798
LGFM	Laborer-General Foreman	1.00	11.52	MH	55.170	949					949
$2,204.68	0.0200 MH/SF		23.04	MH	[0.997]	1,748			457		2,205

50002076 Point/Patch Quan: 960.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINCAP Finish Caps 4.80 CH **Prod: 100.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 3.50

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	2.40	HR	17.692				42		42
8GEL2	Light Tower-4kW to 20k	1.00	4.80	HR	14.500				70		70
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	4.80	HR	9.682				46		46
8TRPU450	FLATRACK, BAREBED	1.00	4.80	HR	29.277				141		141
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	4.80	MH	62.860	469					469
CMJM	CEMENT MASON J/M	1.00	4.80	MH	52.600	408					408
$1,175.78	0.0100 MH/SF		9.60	MH	[0.577]	877			299		1,176

Cost Report

Activity / Resource	Desc	Quantity Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 550073										
Description =	Footing Retrofit			Unit = CY	Takeoff Quan:		135.000	Engr Quan:		0.000
50002098	**Rebar Bridge Substructure**		**Quan: 15,000.00 LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
use 250 lb/cy										
3RE-H	REBAR HOISTING SUPP	1.10	16,500.00 LB	0.035			578			578
4REBSUB	SUBSTRUCTURE REBAR	1.10	16,500.00 LB	1.250					20,625	20,625
$21,202.50				[ ]			578		20,625	21,203
90001080	**Light towers**		**Quan: 2.00 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	440.00 HR	14.500				6,380		6,380
=====> **Item Totals: 550073**	**- Footing Retrofit**									
$126,316.96	4.4195 MH/CY		596.64 MH	[233.618]	49,963	29,937	13,488	12,304	20,625	**126,317**
935.681	135 CY				370.10	221.75	99.91	91.14	152.78	935.68
BID ITEM = 550074										
Description =	Footing Backfill			Unit = CY	Takeoff Quan:		549.000	Engr Quan:		0.000
25005082	**Structure BF Class A**		**Quan: 549.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW7011	GBF-FOUNDATION CL A	1.00	549.00 CY	37.000					20,313	20,313
				Total of Above Sub-Biditems						
=====> **Item Totals: 550070**	**- Pier 10 Footing Streengthening**									
$346,595.94	**6.1601 MH/CY**		**831.62 MH**	**[322.26]**	**69,318**	**29,937**	**66,722**	**19,761**	**160,858**	**346,596**
2,567.377	**135 CY**				**513.47**	**221.75**	**494.24**	**146.38**	**1,191.54**	**2,567.38**
				Total of Above Sub-Biditems						
=====> **Item Totals: 550000**	**- Footing Strengthening**									
$2,884,156.98	**3,725.0700 MH/LS**		**3,725.07 MH**	**[193471.66]**	**309,397**	**119,026**	**589,865**	**85,632**	**1,780,237**	**2,884,157**
2,884,156.980	**1 LS**				**309,396.76**	**119,026.00**	**589,864.78**	**85,632.04**	**1,780,237.40**	**2,884,156.98**
BID ITEM = 600000										
Description =	Seat Bolster At Rocker Bearing			Unit = LS	Takeoff Quan:		1.000	Engr Quan:		1.000
A	**Seat Bolster At Rocker Bearing**		**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
4	SUBCONTRACTORS	1.00	1.00 LS	50,000.000					50,000	50,000

Cost Report

PARENT ITEM = 700000
Description = North Abut Footing Strengthening | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 700000:

BID ITEM = 700010
Description = Temp Shoring | Unit = SF | Takeoff Quan: 1,001.000 | Engr Quan: 0.000

60001005 Buy Soldier Piles — Quan: 61,347.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3SHTEMPPILES	TEMPORARY SHORING	1.00	61,347.00	LB	0.450			27,606			27,606

60001079 Support Equipment — Quan: 0.25 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTDS Drill Support 55.00 CH Prod: 0.0000 Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	55.00	HR	65.800				3,619		3,619
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	55.00	MH	44.530	3,812					3,812
OFELL	OP ENG LOADER	1.00	55.00	MH	57.470	5,297					5,297
$12,728.20	440.0000 MH/MO		110.00	MH	[22440]	9,109			3,619		12,728

60001080 Driller Mobilization — Quan: 1.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4XPIDRMOB	MOB DRILL SUB	1.00	1.00	EA	15,000.000					15,000	15,000

60001081 Soldier Pile Drilling — Quan: 436.94 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	436.94	LF	85.000					37,140	37,140

60001087 Haul Drill Spoils — Quan: 115.19 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EWHSP	HAUL DRILL SPOILS	1.00	115.19	CY	40.000					4,608	4,608

=====> Item Totals: 700010 - Temp Shoring

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$97,081.85	0.1098 MH/SF		110.00	MH	[5.604]	9,109		27,606	3,619	56,748	**97,082**
96.985	1001 SF					9.10		27.58	3.62	56.69	96.98

BID ITEM = 700020
Description = Footing Excavation | Unit = CY | Takeoff Quan: 320.000 | Engr Quan: 0.000

16003001 Buy Plastic — Quan: 700.99 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECPOLYVB6M	6 MIL POLY SHEETING	1.05	81.77	SY	0.280			23			23

16003002 Buy Sand Bags — Quan: 17.52 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECSB	SANDBAGS	1.05	18.40	EA	3.000			55			55

16003030 I/R Slope Covering — Quan: 2,102.96 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E01O MISC TESC CREW 3.50 CH Prod: 300.0029 UM Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	3.50	HR	29.277				102		102
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	3.50	MH	44.530	243					243
LGFM	Laborer-General Foreman	1.00	3.50	MH	55.170	288					288
$633.48	0.0033 MH/SF		7.00	MH	[0.166]	531			102		633

Cost Report

BID ITEM = 700020
Description = Footing Excavation — Unit = CY — Takeoff Quan: 320.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
25005080	**Structure Exc Class A**		**Quan: 320.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW4006	STR EXC CL A W/HAUL	1.00	320.00	CY	45.000					14,400	14,400
=====> **Item Totals:**	**700020 - Footing Excavation**										
$15,111.58	0.0218 MH/CY		7.00	MH	[1.091]	531		78	102	14,400	**15,112**
47.224	320 CY					1.66		0.24	0.32	45.00	47.22

BID ITEM = 700030
Description = Micropiles - 12" dia — Unit = EA — Takeoff Quan: 12.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1030	**Micropiles**		**Quan: 12.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPGMP	MICROPILE	1.00	12.00	EA	10,000.000					120,000	120,000
4XPGMPT	MICROPILE - PROOF TE	1.00	0.75	EA	5,000.000					3,750	3,750
4XPGMVT	MICROPILE - VERTIFICA	1.00	0.75	EA	2,500.000					1,875	1,875
$125,625.00					[ ]					125,625	125,625
=====> **Item Totals:**	**700030 - Micropiles - 12" dia**										
$125,625.00					[ ]					125,625	**125,625**
10,468.750	12 EA									10,468.75	10,468.75

BID ITEM = 700040
Description = Footing Retrofit — Unit = CY — Takeoff Quan: 143.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000170	**CONC PUMP TRUCK**		**Quan: 143.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5COPULA	LARAGE QTY CON PUM	1.00	128.70	CY	25.000			3,218			3,218
5COPUSM	SM QTY CON PUMPING	1.00	14.30	CY	35.000			501			501
$3,718.00					[ ]			3,718			3,718
50002001	**Buy Concrete**		**Quan: 143.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	157.32	CY	6.000		944				944
2CONADFUEL	FUEL SURCHARGE	1.10	157.32	CY	2.000		315				315
2CONADHW	CONCRETE-HOT WATE	1.10	157.32	CY	8.000		1,259				1,259
2CONC4	CONCRETE CL 4000	1.10	157.30	CY	145.000		22,809				22,809
$25,325.62					[ ]		25,326				25,326
50002003	**Buy Dowels & Epoxy**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	3.30	EA	90.000		297				297
2REB-EP	REINF STEEL-EPOXY-C	1.10	92.40	LB	2.000		185				185
$481.80					[ ]		482				482
50002011	**Buy Lumber/Plywood**		**Quan: 370.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMBR	FORM LUMBER	1.10	1,261.70	BF	1.200			1,514			1,514
3PLY34MDO	3/4" MDO PLYWOOD	1.10	407.00	SF	2.000			814			814
$2,328.04					[ ]			2,328			2,328
50002013	**Rent Ftg/Abutment Form**		**Quan: 370.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed

Cost Report

BID ITEM = 700040
Description = Footing Retrofit Unit = CY Takeoff Quan: 143.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FMEFCO	EFCO PLATE GIRDER FO	1.00	370.00	SFMO	3.500			1,295			1,295

50002030 F/G Footing **Quan: 369.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
25E4FG	Str Exc - FINEGRADE		9.22	CH	**Prod:**	**20.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	9.23	HR	34.582				319		319
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	9.23	MH	44.530	640					640
ODL	OP ENG DOZER D9 & <	1.00	9.23	MH	57.470	889					889
$1,847.87	0.0500 MH/SF		18.46	MH	[2.551]	1,529			319		1,848

50002032 Fab Footing Form **Quan: 370.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP4	Carpenter 4 - Med & PREFAB		7.70	CH	**Prod:**	**12.0001 UM**	Lab Pcs:	4.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	7.71	HR	29.277				226		226
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	7.71	MH	64.070	772					772
CJM	CARPENTER J/M	3.00	23.12	MH	53.700	2,021					2,021
$3,018.95	0.0833 MH/SF		30.83	MH	[4.691]	2,793			226		3,019

50002033 S/S Footing Form **Quan: 740.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		24.66	CH	**Prod:**	**5.0000 UM**	Lab Pcs:	6.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	24.67	HR	29.277				722		722
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	24.67	MH	64.070	2,471					2,471
CJM	CARPENTER J/M	5.00	123.33	MH	53.700	10,780					10,780
$13,973.72	0.2000 MH/SF		148.00	MH	[11.086]	13,251			722		13,974

50002034 Plc/Fin Footing Conc **Quan: 143.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
PLSOGK	P/F SLAB ON GRADE		14.63	CH	**Prod:**	**2.4427 UM**	Lab Pcs:	4.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	14.64	HR	29.277				429		429
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	14.64	MH	52.600	1,245					1,245
LATO	LABORER, AIR TOOL O	2.00	29.27	MH	45.610	2,068					2,068
LGFM	Laborer-General Foreman	1.00	14.64	MH	55.170	1,206					1,206
$4,947.35	0.4094 MH/CY		58.55	MH	[20.369]	4,519			429		4,947

50002035 D/B Dowel to Existing **Quan: 41.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LAB3	Laborer 3		6.83	CH	**Prod:**	**6.0000 UH**	Lab Pcs:	3.00	Eqp Pcs:	2.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	6.83	HR	17.692				121		121
8TRPU450	FLATRACK, BAREBED	1.00	6.83	HR	29.277				200		200
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	13.67	MH	45.610	966					966
LGFM	Laborer-General Foreman	1.00	6.83	MH	55.170	563					563
$1,849.27	0.5000 MH/EA		20.50	MH	[24.398]	1,529			321		1,849

50002036 Roughen Surface **Quan: 250.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LAB3	Laborer 3		3.00	CH	**Prod:**	**27.7778 UM**	Lab Pcs:	3.00	Eqp Pcs:	2.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	3.00	HR	17.692				53		53

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 700040											
Description =	Footing Retrofit			Unit = CY		Takeoff Quan:		143.000	Engr Quan:		0.000
8TRPU450	FLATRACK, BAREBED	1.00	3.00	HR	29.277				88		88
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	6.00	MH	45.610	424					424
LGFM	Laborer-General Foreman	1.00	3.00	MH	55.170	247					247
$811.97	0.0360 MH/SF		9.00	MH	[1.757]	671			141		812
50002043	**S/S Thru Rebar Bulkhead**			**Quan: 9.00 LF**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
CARP6	Carpenter 6 - S/S		1.50	CH	**Prod: 1.0000 UM**		Lab Pcs: 6.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	1.50	HR	29.277				44		44
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	1.50	MH	64.070	150					150
CJM	CARPENTER J/M	5.00	7.50	MH	53.700	656					656
$849.74	1.0000 MH/LF		9.00	MH	[55.429]	806			44		850
50002075	**Cure Substructure Conc**			**Quan: 1,107.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
CURE	MISC CONC Cure		11.07	CH	**Prod: 50.0000 UM**		Lab Pcs: 2.00		Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	11.07	HR	10.382				115		115
8TRPU450	FLATRACK, BAREBED	1.00	11.07	HR	29.277				324		324
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	11.07	MH	44.530	767					767
LGFM	Laborer-General Foreman	1.00	11.07	MH	55.170	912					912
$2,118.56	0.0200 MH/SF		22.14	MH	[0.997]	1,680			439		2,119
50002076	**Point/Patch**			**Quan: 740.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
FINCAP	Finish Caps		3.70	CH	**Prod: 100.0000 UM**		Lab Pcs: 2.00		Eqp Pcs: 3.50		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	1.85	HR	17.692				33		33
8GEL2	Light Tower-4kW to 20k	1.00	3.70	HR	14.500				54		54
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	3.70	HR	9.682				36		36
8TRPU450	FLATRACK, BAREBED	1.00	3.70	HR	29.277				108		108
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	3.70	MH	62.860	361					361
CMJM	CEMENT MASON J/M	1.00	3.70	MH	52.600	315					315
$906.30	0.0100 MH/SF		7.40	MH	[0.577]	676			230		906
50002098	**Rebar Bridge Substructure**			**Quan: 35,750.00 LB**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
use 250 lb/cy											
3RE-H	REBAR HOISTING SUPP	1.10	39,325.00	LB	0.035			1,376			1,376
4REBSUB	SUBSTRUCTURE REBAR	1.10	39,325.00	LB	1.250					49,156	49,156
$50,532.63					[ ]			1,376		49,156	50,533
90001080	**Light towers**			**Quan: 0.50 UM**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	110.00	HR	14.500				1,595		1,595
=====> Item Totals: 700040	**- Footing Retrofit**										
$115,599.82	2.2648 MH/CY		323.88	MH	[120.716]	27,453	25,807	8,717	4,466	49,156	**115,600**
808.390	143 CY					191.98	180.47	60.96	31.23	343.75	808.39

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 700060
Description = Footing Backfill Unit = CY Takeoff Quan: 178.000 Engr Quan: 0.000

25005082 Structure BF Class A Quan: 178.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EW7011	GBF-FOUNDATION CL A	1.00	178.00	CY	37.000					6,586	6,586

Total of Above Sub-Biditems

=====> Item Totals: 700000 - North Abut Footing Strengthening

					Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$360,004.25	**440.8800 MH/LS**	**440.88 MH**		**[23221.33]**	**37,093**	**25,807**	**36,402**	**8,187**	**252,515**	**360,004**
360,004.250	**1 LS**				**37,093.26**	**25,807.42**	**36,401.67**	**8,187.15**	**252,514.75**	**360,004.25**

BID ITEM = 1200000
Description = Temporary OCS Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

1200000 Temporary OCS Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

```
Existing conduit is underneath the overhang.  Should not have any work at this location.
```

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	50,000.000					50,000	50,000

PARENT ITEM = 9000000
Description = General Conditions Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 9000000:

BID ITEM = 9000010
Description = Salaried Staff and Admin Unit = MO Takeoff Quan: 14.000 Engr Quan: 0.000

A Salaried and Admin Quan: 14.00 MO Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
ZBUS1	==> CLERICAL OFFICE H	1.00	14.00	MO	9,000.000	137,340					137,340
ZENG1H	==> PROJECT ENGINEER	1.00	14.00	MO	20,000.000	305,200					305,200
ZENG3H	==> FIELD ENGINEER	1.00	14.00	MO	12,500.000	190,750					190,750
ZPM	==> PROJECT MANAGE	1.00	7.00	MO	25,000.000	190,750					190,750
ZSUP1H	==> PROJECT SUPERINT	1.00	14.00	MO	22,000.000	335,720					335,720
$1,159,760.00					[ ]	1,159,760					1,159,760

=====> Item Totals: 9000010 - Salaried Staff and Admin

			Labor					Total
$1,159,760.00		[ ]	1,159,760					**1,159,760**
82,840.000	14 MO		82,840.00					82,840.00

BID ITEM = 9000040
Description = Construction Support Unit = MO Takeoff Quan: 14.000 Engr Quan: 0.000

A Project Signs Quan: 8.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3PROJECTSIGN	Project Sign	1.00	8.00	EA	500.000			4,000			4,000

Cost Report

BID ITEM = 9000040
Description = Construction Support Unit = MO Takeoff Quan: 14.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
B	**Photographs**	**Quan:**	**8.00**	**WK**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	8.00	WK	1,000.000			8,000			8,000
C	**Insurance Deductable**	**Quan:**	**1.00**	**LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	25,000.000			25,000			25,000
=====> **Item Totals:**	**9000040 - Construction Support**										
$37,000.00					[ ]			37,000			**37,000**
2,642.857			14	MO				2,642.86			2,642.86

BID ITEM = 9000050
Description = Safety Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
99005010	**Job Safety Expenses**	**Quan:**	**1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
Z*SA	==> TOTAL HOUR - SAF	1.00	14,000.00	LBHR	1.500	22,890					22,890
$22,890.00					[ ]	22,890					22,890
A	**First Aid Station**	**Quan:**	**2.00**	**EA**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	2.00	EA	10,000.000			20,000			20,000
B	**First Aid Kits, Supplies**	**Quan:**	**61.00**	**WK**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	61.00	WK	250.000			15,250			15,250
D	**Sbstance Abuse Testing**	**Quan:**	**8.00**	**EA**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	8.00	EA	250.000			2,000			2,000
=====> **Item Totals:**	**9000050 - Safety**										
$60,140.00					[ ]	22,890		37,250			**60,140**
60,140.000			1	LS		22,890.00		37,250.00			60,140.00

BID ITEM = 9000060
Description = Tools and Equipment Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
99002040	**Communication (FOH)**	**Quan:**	**1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
1ITCLBY	Cellular Phone Buy	1.00	10.00	EA	1,000.000			10,000			10,000
1ITCP	Computers	1.00	49.00	MMO	120.000			5,880			5,880
$15,880.00					[ ]			15,880			15,880
A	**Staff Pickups**	**Quan:**	**1.00**	**LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
8TRPU150M	==> C.P.O. VEHICLES -	1.00	49.00	MO	1,600.000				78,400		78,400
B	**Forklift**	**Quan:**	**7.00**	**MO**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	1,400.00	HR	49.580				69,412		69,412
OBH	==> OP ENG BACKHOE	1.00	1,400.00	MH	58.090	145,181					145,181

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 9000060											
Description =	Tools and Equipment				Unit = LS	Takeoff Quan: 1.000			Engr Quan: 0.000		
$214,592.66	200.0000 MH/MO		1,400.00	MH	[12779.8]	145,181			69,412		214,593
C	**Small Tools**		**Quan: 15,000.00**	**HR**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3SMALLTOOLS	Small Tools	1.00	15,000.00	HR	2.500			37,500			37,500
=====> Item Totals:	**9000060 - Tools and Equipment**										
$346,372.66	1,400.0000 MH/LS		1,400.00	MH	[89458.6]	145,181		53,380	147,812		**346,373**
346,372.660	1 LS					145,180.66		53,380.00	147,812.00		346,372.66
BID ITEM = 9000070											
Description =	Misc.Overtime				Unit = LS	Takeoff Quan: 1.000			Engr Quan: 0.000		
A	**Misc.Overtime**		**Quan: 1.00**	**LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	100,000.000			100,000			100,000
=====> Item Totals:	**9000070 - Misc.Overtime**										
$100,000.00					[ ]			100,000			**100,000**
100,000.000	1 LS							100,000.00			100,000.00
BID ITEM = 9000080											
Description =	Contingency				Unit = LS	Takeoff Quan: 1.000			Engr Quan: 0.000		
A	**Contingency**		**Quan: 1.00**	**LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	150,000.000			150,000			150,000
=====> Item Totals:	**9000080 - Contingency**										
$150,000.00					[ ]			150,000			**150,000**
150,000.000	1 LS							150,000.00			150,000.00
BID ITEM = 9090000											
Description =	Bond/Insurance/Tax				Unit = LS	Takeoff Quan: 1.000			Engr Quan: 0.000		
A	**Bond, Insurance**		**Quan: 1.00**	**LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
1BIBR	Builder's Risk Insurance	1.00	13,600,000.00	DLR	0.004			54,400			54,400
1BICG	Contractor's General Liabili	1.00	13,600,000.00	DLR	0.009			122,400			122,400
1BIPP	P&P Bond	1.00	13,600,000.00	DLR	0.007			95,200			95,200
1BISUB	SUBCONTRCTOR BOND	1.00	6,500,000.00	DLR	0.015			97,500			97,500
$369,500.00					[ ]			369,500			369,500
=====> Item Totals:	**9090000 - Bond/Insurance/Tax**										
$369,500.00					[ ]			369,500			**369,500**
369,500.000	1 LS							369,500.00			369,500.00

Cost Report

Activity / Resource	Desc	Quantity Pcs	Quantity Unit		Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 9100000											
Description =	Escalation			Unit = LS	Takeoff Quan: 1.000		Engr Quan: 0.000				
A	**Labor Escalation**			**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
1	GEN CONDITION/INDIR	1.00	2,500,000.00 LS		0.040			100,000			100,000
B	**Equipment Escalation**			**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
1	GEN CONDITION/INDIR	1.00	1,000,000.00 LS		0.060			60,000			60,000
C	**Subcontractor-Labor Escalation**			**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
1	GEN CONDITION/INDIR	1.00	6,000,000.00 LS		0.040			240,000			240,000
D	**Subcontractor-Equipment Escalation**			**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
1	GEN CONDITION/INDIR	1.00	500,000.00 LS		0.040			20,000			20,000
=====> **Item Totals:**	**9100000 - Escalation**										
$420,000.00					[ ]			420,000			**420,000**
420,000.000		1 LS						420,000.00			420,000.00

Total of Above Sub-Biditems

=====> **Item Totals:**	**9000000 - General Conditions**								
$2,642,772.66	**1,400.0000 MH/LS**	**1,400.00 MH**	**[89458.6]**	**1,327,831**		**1,167,130**	**147,812**		**2,642,773**
2,642,772.660	**1 LS**			**1,327,830.66**		**1,167,130.00**	**147,812.00**		**2,642,772.66**

			Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$11,275,930.31	*** **Report Totals** ***	16,295.12 MH	2,581,332	702,748	2,165,126	561,302	5,265,422	**11,275,930**

>>> indicates Non Additive Activity
------Report Notes:------
The estimate was prepared with TAKEOFF Quantities.
This report shows TAKEOFF Quantities with the resources.

'Unreviewed' Activities are marked.

Bid Date: 04/01/24 Owner: Engineering Firm:
Estimator-In-Charge:

JOB NOTES

* on units of MH indicate average labor unit cost was used rather than base rate.
[ ] in the Unit Cost Column = Labor Unit Cost Without Labor Burdens
In equipment resources, rent % and EOE % not = 100% are represented as XXX%YYY where XXX=Rent% and YYY=EOE%
------Calendar Codes------

508	**5x8 Hr - Single Shift (Default Calendar)**
510	5x10 Single Shift
WEK	12 Weekend Closure

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 1000 CLIENT# = 104001
Description = MINOR CHANGE Unit = CALC Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
80001000	**~~OWNER FORCE ACCOUNT**				**Quan: 1.00 CAL**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
6FA	STATE ESTIMATE - FA	1.00	1.00	CALC	0.000						

=====> **Item Totals: 1000 - MINOR CHANGE**
$0.00 [ ]
0.000 1 CALC

BID ITEM = 2000 CLIENT# = 107105
Description = FIELD OFFICE FOR ENGINEERS'S STAFF Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
99003040	**Temp Toilets**				**Quan: 37.00 UM**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
1UTPT	Portable Toilets	2.00	74.00	EAMO	200.000			14,800			14,800
99004010	**Dumpster Service**				**Quan: 37.00 MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
1CUMO	Debris Box/Monthly Trash	2.00	74.00	MO	1,000.000			74,000			74,000
99004020	**Final Project Clean-Up**				**Quan: 50.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
LAB3	Laborer 3		50.00	CH	**Prod: 6.2500 S**		Lab Pcs: 3.00		Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	50.00	HR	17.692				885		885
8TRPU450	FLATRACK, BAREBED	1.00	50.00	HR	29.277				1,464		1,464
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	100.00	MH	45.610	7,064					7,064
LGFM	Laborer-General Foreman	1.00	50.00	MH	55.170	4,120					4,120
$13,533.02	3.0000 MH/HR		150.00	MH	[146.39]	11,185			2,348		13,533
A	**Field Office**				**Quan: 37.00 MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
1OFTRRT	Field Office Trailer Rent	1.00	37.00	MO	2,500.000			92,500			92,500
B	**Office Furniture**				**Quan: 37.00 MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
1ITINAC	Internet Air Cards	1.00	37.00	MO	70.000			2,590			2,590
1SPCPMT	Copier/Printer Supplies	1.00	37.00	MO	100.000			3,700			3,700
1SPMO	Monthly Office/Engineering	1.00	74.00	MMO	135.000			9,990			9,990
$16,280.00					[ ]			16,280			16,280
C	**Yard Set-up**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
ZZZZZZ	(Mod) general		40.00	CH	**Prod: 40.0000 CH**		Lab Pcs: 5.00		Eqp Pcs: 1.00		
8LB426	LDR-BCKHOE CAT 426	1.00	40.00	HR	52.568				2,103		2,103
CJM	CARPENTER J/M	1.00	40.00	MH	53.700	3,496					3,496
LCOM	LABORER, COMMON G#	3.00	120.00	MH	44.530	8,317					8,317
OP4	OPER 4 (EX/BLADE/DOZ	1.00	40.00	MH	53.980	3,681					3,681
$17,597.08	200.0000 MH/LS		200.00	MH	[9650.8]	15,494			2,103		17,597
D	**Sheds/Storage Facilities**				**Quan: 37.00 MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
1YDSH	Yard/Job Shacks and Sheds	1.00	12.00	EA	3,000.000			36,000			36,000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 2000 CLIENT# = 107105
Description = FIELD OFFICE FOR ENGINEERS'S STAFF Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

E Drinking Water Quan: 37.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1SPH2	Drinking Water	1.00	37.00	MO	350.000			12,950			12,950

F Final Cleanup Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

ZZZZZZ (Mod) general 20.00 CH **Prod:** **20.0000 CH** Lab Pcs: 5.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8LB426	LDR-BCKHOE CAT 426	1.00	20.00	HR	52.568				1,051		1,051
CJM	CARPENTER J/M	1.00	20.00	MH	53.700	1,748					1,748
LCOM	LABORER, COMMON G#	3.00	60.00	MH	44.530	4,159					4,159
OP4	OPER 4 (EX/BLADE/DOZ	1.00	20.00	MH	53.980	1,840					1,840
$8,798.55	100.0000 MH/LS		100.00	MH	[4825.4]	7,747			1,051		8,799

G Temp Fence Quan: 1,000.00 FT Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1YDFN	Temporary Fencing	1.00	1,000.00	LF	15.000			15,000			15,000

J Computer Connect Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1ITINWF	Pt to Pt Wifi Connection	1.00	37.00	MO	500.000			18,500			18,500

=====> **Item Totals: 2000 - FIELD OFFICE FOR ENGINEERS'S STAFF**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$319,958.65	450.0000 MH/LS		450.00	MH	[21795.7]	34,426		280,030	5,503		**319,959**
319,958.650	1 LS					34,426.12		280,030.00	5,502.53		319,958.65

BID ITEM = 3000 CLIENT# = 108005
Description = SCHEDULE UPDATE, MIN. BID ($1500/EA) Unit = EA Takeoff Quan: 37.000 Engr Quan: 37.000

99001050 Outside Engineering Quan: 37.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	296.00	HR	200.000			59,200			59,200

=====> **Item Totals: 3000 - SCHEDULE UPDATE, MIN. BID ($1500/EA)**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$59,200.00					[ ]			59,200			**59,200**
1,600.000	37 EA							1,600.00			1,600.00

BID ITEM = 4000 CLIENT# = 109005
Description = MOBILIZATION Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

99004020 Final Project Clean-Up Quan: 50.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 80.00 CH **Prod:** **10.0000 S** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	80.00	HR	17.692				1,415		1,415
8TRPU450	FLATRACK, BAREBED	1.00	80.00	HR	29.277				2,342		2,342
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	160.00	MH	45.610	11,303					11,303
LGFM	Laborer-General Foreman	1.00	80.00	MH	55.170	6,593					6,593
$21,652.83	4.8000 MH/HR		240.00	MH	[234.224]	17,895			3,758		21,653

99008030 Equipment In & Out Quan: 60.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTEQ Move Equipment 240.00 CH **Prod:** **4.0000 HU** Lab Pcs: 1.00 Eqp Pcs: 2.00

Cost Report

BID ITEM = 4000 CLIENT# = 109005
Description = MOBILIZATION Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	240.00	HR	6.538				1,569		1,569
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	240.00	HR	38.395				9,215		9,215
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	240.00	MH	57.740	23,194					23,194
$33,978.04	4.0000 MH/EA		240.00	MH	[230.96]	23,194			10,784		33,978

C — Yard Set-up — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

ZZZZZZ (Mod) general 80.00 CH **Prod: 80.0000 CH** Lab Pcs: 5.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8LB426	LDR-BCKHOE CAT 426	1.00	80.00	HR	52.568				4,205		4,205
CJM	CARPENTER J/M	1.00	80.00	MH	53.700	6,993					6,993
LCOM	LABORER, COMMON G#	3.00	240.00	MH	44.530	16,635					16,635
OP4	OPER 4 (EX/BLADE/DOZ	1.00	80.00	MH	53.980	7,361					7,361
$35,194.19	400.0000 MH/LS		400.00	MH	[19301.6]	30,989			4,205		35,194

=====> Item Totals: 4000 - MOBILIZATION

$90,825.06	880.0000 MH/LS		880.00	MH	[44870.4]	72,078			18,747		**90,825**
90,825.060	1 LS					72,078.18			18,746.88		90,825.06

BID ITEM = 5000 CLIENT# = 110005
Description = MAINT AND PROTECTION OF TRAFFIC CONTROL Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

13001000 — ~~TRAFFIC CONTROL — Quan: 792.00 DAY — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Subcontract out to DBE traffic control.

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC	TRAFFIC CONTROL	1.00	792.00	DAY	250.000					198,000	198,000
4TC6956	SEQUENTIAL ARROW SI	2.00	3,120.00	HR	4.000					12,480	12,480
4TC6968	TRAFFIC CTL VEHICAL	1.00	792.00	DAY	100.000					79,200	79,200
4TC6972DT	TRAFFIC CTL SUPV. DT	1.00	0.00	HR	110.000						
4TC6972OT	TRAFFIC CTL SUPV. OT	1.00	7,920.00	HR	88.000					696,960	696,960
4TC6979DT	TRAFFIC CTL LABOR - D	1.00	0.00	HR	120.000						
4TC6979OT	TRAFFIC CTL LABOR - O	1.00	7,920.00	HR	100.000					792,000	792,000
4TC7449	OP TRK MTD IMP ATTE	1.00	1,560.00	HR	30.000					46,800	46,800
$1,825,440.00					[ ]					1,825,440	1,825,440

13003080 — Inst Temp Barrier — Quan: 400.00 LF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4BARPT6781	TEMP CONC. BARRIER	1.00	400.00	LF	25.000					10,000	10,000

13003083 — Pin Temp Barrier — Quan: 333.00 LF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4BARPTPIN	PIN TEMP BARRIER	1.00	333.00	LF	10.000					3,330	3,330

13003091 — Crash Cushion — Quan: 2.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4GRAMA7440	TEMP IMPACT ATTENU	1.00	2.00	EA	6,250.000					12,500	12,500

13003096 — Pedestrian/Water Barrier — Quan: 400.00 LF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3	SUPPLIES & CONSUMA	1.00	400.00	LF	50.000			20,000			20,000

13004081 — Temp Stripe (Paint) — Quan: 2,000.00 LF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4STP6888	TEMP PVMT MARKING	1.00	2,000.00	LF	0.387					775	775

Cost Report

Activity / Resource	Desc	Pcs	Quantity Unit		Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 5000 CLIENT# = 110005
Description = MAINT AND PROTECTION OF TRAFFIC CONTROL Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

13004095 Refr Markings Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4STP6806	PAINT LINE	1.00	2,000.00	LF	0.250					500	500

=====> **Item Totals: 5000 - MAINT AND PROTECTION OF TRAFFIC CONTROL**

				Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$1,872,545.00				[ ]			20,000		1,852,545	**1,872,545**
1,872,545.000		1 LS					20,000.00		1,852,545.00	1,872,545.00

BID ITEM = 6000 CLIENT# = 110020
Description = TRAFFIC CONTROL PEACE OFFICERS Unit = HR Takeoff Quan: 1,560.000 Engr Quan: 1,560.000

13001095 Uniformed Police Officers Quan: 1,560.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4POLT	POLICE TRAFFIC CONT	1.00	1,560.00	HR	125.000					195,000	195,000

BID ITEM = 7000 CLIENT# = 110025
Description = PORTABLE CHANGEABLE MESSAGE SIGN Unit = WK Takeoff Quan: 156.000 Engr Quan: 156.000

13001083 PCMS Boards Quan: 792.00 SH Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

2 each.

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC6995	OP P/CH MESSAGE SIGN	1.00	7,920.00	HR	10.000					79,200	79,200

BID ITEM = 8000 CLIENT# = 801001
Description = TESC Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Part of Field Engineer duty.

16000501 Dev SWPP Plan Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	40.00	HR	200.000			8,000			8,000

16002001 Buy ESA/HV Fence Quan: 1,210.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECFNSLTNW	SILT FENCE NO WIRE	1.05	1,270.50	LF	1.500			1,906			1,906
3ECPOSTSTLT	STEEL "T" POST	1.05	212.17	EA	4.500			955			955
$2,860.52					[ ]			2,861			2,861

16002006 Buy Drain Inlet Protection Quan: 30.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECCBIN	CATCH BASIN INSERT	1.00	30.00	EA	30.000			900			900

16002030 I/R ESA/HV Fence Quan: 1,210.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E2HV (Mod) HIGH VIS FENCE 10.08 CH **Prod:** **40.0001 UM** Lab Pcs: 3.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	10.08	HR	29.277				295		295
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	20.17	MH	44.530	1,398					1,398
LGFM	Laborer-General Foreman	1.00	10.08	MH	55.170	831					831
$2,523.80	0.0250 MH/LF		30.25	MH	[1.202]	2,229			295		2,524

Cost Report

BID ITEM = 8000 CLIENT# = 801001
Description = TESC Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16002035	**I/R DI Protection**		**Quan: 30.00**	**EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
16E01O	MISC TESC CREW		15.00	CH	**Prod: 1.0000 UM**		Lab Pcs: 2.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	15.00	HR	29.277				439		439
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	15.00	MH	44.530	1,040					1,040
LGFM	Laborer-General Foreman	1.00	15.00	MH	55.170	1,236					1,236
$2,714.95	1.0000 MH/EA		30.00	MH	[49.85]	2,276			439		2,715
16003003	**Buy Matting/Netting**		**Quan: 3,000.00**	**SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
3ECJUTEMAT	JUTE MATTING	1.05	349.97	SY	0.400			140			140
3ECPOSTWD	WOOD POST - 2'	1.00	150.00	EA	0.750			113			113
$252.49					[ ]			252			252
16003030	**I/R Slope Covering**		**Quan: 3,000.00**	**SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
16E01O	MISC TESC CREW		5.00	CH	**Prod: 300.0000 UM**		Lab Pcs: 2.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	5.00	HR	29.277				146		146
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	5.00	MH	44.530	347					347
LGFM	Laborer-General Foreman	1.00	5.00	MH	55.170	412					412
$904.98	0.0033 MH/SF		10.00	MH	[0.166]	759			146		905
16005001	**Buy Quarry Spalls**		**Quan: 123.00**	**TN**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
2AGGRQS	QUARRY SPALLS	1.05	129.15	TON	30.000		3,875				3,875
16005002	**Buy Fabric**		**Quan: 1,800.00**	**SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
2GEOTEXSS	GEOTEX SOIL STABILIZ	1.20	240.00	SY	0.950		228				228
16005030	**Inst Constr Entrance**		**Quan: 2.00**	**EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
16E5CE	CONST ENTRANCE		16.00	CH	**Prod: 1.0000 SU**		Lab Pcs: 2.50		Eqp Pcs: 1.50		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	16.00	HR	103.977				1,664		1,664
8TRDU5	JOB HAUL DUMP TRUC	0.50	8.00	HR	32.200				258		258
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	16.00	MH	44.530	1,109					1,109
OBH	OP ENG BACKHOE <3CY	1.00	16.00	MH	58.090	1,553					1,553
OBHL	OP ENG BACKHOE/L<75	0.50	8.00	MH	57.740	773					773
$5,356.52	20.0000 MH/EA		40.00	MH	[1051.92]	3,435			1,921		5,357
16005031	**Rem Constr Entrance**		**Quan: 2.00**	**EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
16E5CE	CONST ENTRANCE		12.00	CH	**Prod: 0.7500 SU**		Lab Pcs: 2.50		Eqp Pcs: 1.50		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	12.00	HR	103.977				1,248		1,248
8TRDU5	JOB HAUL DUMP TRUC	0.50	6.00	HR	32.200				193		193
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	12.00	MH	44.530	832					832
OBH	OP ENG BACKHOE <3CY	1.00	12.00	MH	58.090	1,165					1,165
OBHL	OP ENG BACKHOE/L<75	0.50	6.00	MH	57.740	580					580
$4,017.39	15.0000 MH/EA		30.00	MH	[788.94]	2,576			1,441		4,017

Cost Report

BID ITEM = 8000 CLIENT# = 801001
Description = TESC — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16007030	**Maint TESC**		**Quan: 1,364.00**	**HR**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2 hours per day											
16E01O	MISC TESC CREW		1,364.00	CH	Prod: 1.0000 HU	Lab Pcs: 2.00	Eqp Pcs: 1.00				
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	1,364.00	HR	29.277				39,934		39,934
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	1,364.00	MH	44.530	94,542					94,542
LGFM	Laborer-General Foreman	1.00	1,364.00	MH	55.170	112,406					112,406
$246,880.88	2.0000 MH/HR		2,728.00	MH	[99.7]	206,947			39,934		246,881
16007080	**Street Sweeping**		**Quan: 2,728.00**	**HR**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EROS6470	STREET CLEANING	1.00	2,728.00	HR	188.000					512,864	512,864
90001090	**Water truck**		**Quan: 30.00**	**UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8TRWA4	==> WATER TRUCK 4000	1.00	5,200.00	HR	50.119				260,619		260,619
=====> **Item Totals:**	**8000 - TESC**										
$1,051,996.83	2,868.2500 MH/LS		2,868.25	MH	[143120.8]	218,222	4,103	12,013	304,795	512,864	**1,051,997**
1,051,996.830	1 LS					218,221.96	4,102.50	12,013.01	304,795.36	512,864.00	1,051,996.83

BID ITEM = 9000 CLIENT# = 801002
Description = TREE, VEGETATION & SOIL PROTECTION PLA — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16002001	**Buy ESA/HV Fence**		**Quan: 2,000.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3ECFNSLTNW	SILT FENCE NO WIRE	1.05	2,100.00	LF	1.500			3,150			3,150
3ECPOSTSTLT	STEEL "T" POST	1.05	350.70	EA	4.500			1,578			1,578
$4,728.15					[ ]			4,728			4,728
16002030	**I/R ESA/HV Fence**		**Quan: 2,000.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
16E2HV	(Mod) HIGH VIS FENCE		16.66	CH	Prod: 40.0002 UM	Lab Pcs: 3.00	Eqp Pcs: 1.00				
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.67	HR	29.277				488		488
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	33.33	MH	44.530	2,310					2,310
LGFM	Laborer-General Foreman	1.00	16.67	MH	55.170	1,374					1,374
$4,171.94	0.0250 MH/LF		50.00	MH	[1.202]	3,684			488		4,172
A	**Clear and Grub**		**Quan: 0.50**	**AC**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3CLR32	Clear and Grub 320 EXC		40.00	CH	Prod: 80.0000 HU	Lab Pcs: 5.00	Eqp Pcs: 4.00				
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	40.00	HR	103.977				4,159		4,159
8LD950	WHL LOADER CAT 950	1.00	40.00	HR	65.800				2,632		2,632
8TRDU5	JOB HAUL DUMP TRUC	1.00	40.00	HR	32.200				1,288		1,288
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	80.00	MH	45.610	5,651					5,651
LGFM	Laborer-General Foreman	1.00	40.00	MH	55.170	3,296					3,296
OBHL	OP ENG BACKHOE/L<75	1.00	40.00	MH	57.740	3,866					3,866
OFELL	OP ENG LOADER	1.00	40.00	MH	57.470	3,852					3,852

Cost Report

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 9000 CLIENT# = 801002
Description = TREE, VEGETATION & SOIL PROTECTION PLA Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$25,915.89	400.0000 MH/AC		200.00 MH	[20928]	16,666			9,250		25,916
B	**Haul and Dispose of Waste**		**Quan: 10.00 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5TRECYTTUNS	EXPORT T&T - UNSUITA	1.00	100.00 TKYD	25.000			2,500			2,500
=====> **Item Totals:**	**9000 - TREE, VEGETATION & SOIL PROTECTION PLA**									
$37,315.98	250.0000 MH/LS		250.00 MH	[12867.86]	20,350		7,228	9,738		**37,316**
37,315.980	1 LS				20,349.65		7,228.15	9,738.18		37,315.98

BID ITEM = 10000 CLIENT# = 801003
Description = SPILL PLAN (SP) Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16000503	**Dev Spill Prevention Plan**		**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
1OE	OUTSIDE ENGINEERING	1.00	24.00 HR	220.000			5,280			5,280
=====> **Item Totals:**	**10000 - SPILL PLAN (SP)**									
$5,280.00				[ ]			5,280			**5,280**
5,280.000	1 LS						5,280.00			5,280.00

BID ITEM = 11000
Description = Misc Civil Items Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000	**Misc. Civil Items**		**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
`15% of direct cost.`										
4	SUBCONTRACTORS	1.00	1.00 LS	3,250,000.000					3,250,000	3,250,000

BID ITEM = 12000
Description = Ex Stair Modification Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Ex Stair Modification**		**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4	SUBCONTRACTORS	1.00	1.00 LS	500,000.000					500,000	500,000

BID ITEM = 13000
Description = AC - Graind and Overlay Unit = SY Takeoff Quan: 2,146.000 Engr Quan: 2,146.000

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
40002080	**HMA milling/plane-SY**		**Quan: 2,146.00 SY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4GRHMA5711	PLAN'G BITUMINOUS P	1.00	2,146.00 SY	13.500					28,971	28,971
4GRHMA5711M	MOB FOR AC GRINDING	1.00	1.00 EA	5,000.000					5,000	5,000
$33,971.00				[ ]					33,971	33,971
40002082	**Haul/Disp grindings**		**Quan: 24.00 LD**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5TRECYGR	EXPORT T&T - GRINDIN	1.00	178.80 TKYD	50.000			8,940			8,940

Cost Report

BID ITEM = 13000
Description = AC - Graind and Overlay | Unit = SY | Takeoff Quan: 2,146.000 | Engr Quan: 2,146.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
40002091	**HMA Machine**	**Quan: 402.30 TN**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
small qty											
4HMA5739	HMA PAVEMENT	1.00	402.30	TON	180.000					72,414	72,414
=====> **Item Totals:**	**13000 - AC - Graind and Overlay**										
$115,325.00					[ ]			8,940		106,385	**115,325**
53.740	2146 SY							4.17		49.57	53.74

PARENT ITEM = 200000
Description = Pier 10 Diaphragm Enlargement | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 200000:

BID ITEM = 200010
Description = Crossbeam Prep | Unit = SF | Takeoff Quan: 300.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002015	**Rent Falsework Matl**	**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
3FM$CAPFW	PIER CAP FALSEWORK -	1.00	3,360.00	SF	18.000			60,480			60,480
50002036	**Roughen Surface**	**Quan: 300.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
LAB3	Laborer 3		12.50	CH	**Prod: 8.0000 UM**		Lab Pcs: 3.00			Eqp Pcs: 2.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	12.50	HR	17.692				221		221
8TRPU450	FLATRACK, BAREBED	1.00	12.50	HR	29.277				366		366
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	25.00	MH	45.610	1,766					1,766
LGFM	Laborer-General Foreman	1.00	12.50	MH	55.170	1,030					1,030
$3,383.22	0.1250 MH/SF		37.50	MH	[6.1]	2,796			587		3,383
50002066	**S/S Cap Falsework**	**Quan: 3.41 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
CARP6	Carpenter 6 - S/S		68.20	CH	**Prod: 120.0000 MU**		Lab Pcs: 6.00			Eqp Pcs: 1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	68.20	HR	29.277				1,997		1,997
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	68.20	MH	64.070	6,832					6,832
CJM	CARPENTER J/M	5.00	341.00	MH	53.700	29,807					29,807
$38,635.11	120.0000 MH/EA		409.20	MH	[6651.399]	36,638			1,997		38,635
=====> **Item Totals:**	**200010 - Crossbeam Prep**										
$102,498.33	1.4890 MH/SF		446.70	MH	[81.704]	39,435		60,480	2,584		**102,498**
341.661	300 SF					131.45		201.60	8.61		341.66

BID ITEM = 200020
Description = Crossbeam Retrofit | Unit = CY | Takeoff Quan: 88.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002001	**Buy Concrete**	**Quan: 88.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**						**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	96.80	CY	6.000		581				581
2CONADFUEL	FUEL SURCHARGE	1.10	96.80	CY	2.000		194				194

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Cost Report

BID ITEM = 200020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 88.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CONADHW	CONCRETE-HOT WATE	1.10	96.80	CY	8.000		774				774
2CONC4	CONCRETE CL 4000	1.10	96.80	CY	145.000		14,036				14,036
5COPUSM	SM QTY CON PUMPING	1.10	96.80	CY	35.000			3,388			3,388
$18,972.80					[ ]		15,585	3,388			18,973

50002003 Buy Dowels & Epoxy Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	6.60	EA	90.000		594				594
2REB-EP	REINF STEEL-EPOXY-C	1.10	220.00	LB	0.900		198				198
$792.00					[ ]		792				792

50002011 Buy Lumber/Plywood Quan: 2,160.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.10	7,365.60	BF	1.200			8,839			8,839
3PLY34MDO	3/4" MDO PLYWOOD	1.10	2,376.00	SF	2.000			4,752			4,752
$13,590.72					[ ]			13,591			13,591

50002035 D/B Dowel to Existing Quan: 100.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

LAB3 Laborer 3 25.00 CH **Prod: 4.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	25.00	HR	17.692				442		442
8TRPU450	FLATRACK, BAREBED	1.00	25.00	HR	29.277				732		732
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	50.00	MH	45.610	3,532					3,532
LGFM	Laborer-General Foreman	1.00	25.00	MH	55.170	2,060					2,060
$6,766.49	0.7500 MH/EA		75.00	MH	[36.598]	5,592			1,174		6,766

50002065 Fab Cap Sideform Quan: 1,600.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CARP4 Carpenter 4 - Med & PREFAB 40.00 CH **Prod: 10.0000 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	40.00	MH	64.070	4,007					4,007
CJM	CARPENTER J/M	3.00	120.00	MH	53.700	10,489					10,489
$15,667.15	0.1000 MH/SF		160.00	MH	[5.629]	14,496			1,171		15,667

50002068 S/S Cap Sideform Quan: 1,600.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CARP6 Carpenter 6 - S/S 66.66 CH **Prod: 4.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	66.67	HR	29.277				1,952		1,952
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	66.67	MH	64.070	6,679					6,679
CJM	CARPENTER J/M	5.00	333.33	MH	53.700	29,136					29,136
$37,766.60	0.2500 MH/SF		400.00	MH	[13.857]	35,815			1,952		37,767

50002072 Plc/Fin Cap Conc Quan: 88.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

PLCAP P/F Cap Concrete 22.00 CH **Prod: 0.8889 UM** Lab Pcs: 4.50 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	22.00	HR	17.692				389		389
8ML60	JLG 60' MANLIFT	1.00	22.00	HR	45.891				1,010		1,010
8TRPU450	FLATRACK, BAREBED	1.00	22.00	HR	29.277				644		644
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	0.50	11.00	MH	52.600	935					935
LATO	LABORER, AIR TOOL O	3.00	66.00	MH	45.610	4,662					4,662
LGFM	Laborer-General Foreman	1.00	22.00	MH	55.170	1,813					1,813

Cost Report

BID ITEM = 200020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 88.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$9,453.39	1.1250 MH/CY		99.00	MH	[54.575]	7,410			2,043		9,453
50002075	**Cure Substructure Conc**		**Quan: 8,140.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CURE	MISC CONC Cure		102.77	CH	**Prod:**	**39.6000 UM**	Lab Pcs:	2.00		Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	102.78	HR	10.382				1,067		1,067
8TRPU450	FLATRACK, BAREBED	1.00	102.78	HR	29.277				3,009		3,009
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	102.78	MH	44.530	7,124					7,124
LGFM	Laborer-General Foreman	1.00	102.78	MH	55.170	8,470					8,470
$19,669.96	0.0252 MH/SF		205.56	MH	[1.259]	15,594			4,076		19,670
50002077	**Surface Finish**		**Quan: 8,140.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
FINCAP	Finish Caps		101.75	CH	**Prod:**	**40.0000 UM**	Lab Pcs:	2.00		Eqp Pcs:	3.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	50.88	HR	17.692				900		900
8GEL2	Light Tower-4kW to 20k	1.00	101.75	HR	14.500				1,475		1,475
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	101.75	HR	9.682				985		985
8TRPU450	FLATRACK, BAREBED	1.00	101.75	HR	29.277				2,979		2,979
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	101.75	MH	62.860	9,935					9,935
CMJM	CEMENT MASON J/M	1.00	101.75	MH	52.600	8,650					8,650
$24,925.18	0.0250 MH/SF		203.50	MH	[1.443]	18,586			6,340		24,925
50002078	**I/R Cold Weather Protection**		**Quan: 8,140.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
SUPTCO	COLD WEATHER SUPPORT		44.00	CH	**Prod:**	**61.6667 UM**	Lab Pcs:	3.00		Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	44.00	HR	9.682				426		426
8TRPU450	FLATRACK, BAREBED	1.00	44.00	HR	29.277				1,288		1,288
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	88.00	MH	44.530	6,099					6,099
LGFM	Laborer-General Foreman	1.00	44.00	MH	55.170	3,626					3,626
$11,439.59	0.0162 MH/SF		132.00	MH	[0.78]	9,725			1,714		11,440
50002089	**Pigseal BR Substructure**		**Quan: 8,140.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	8,140.00	SF	0.750					6,105	6,105
50002098	**Rebar Bridge Substructure**		**Quan: 44,000.00**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	44,000.00	LB	0.035			1,540			1,540
4REBSUB	SUBSTRUCTURE REBAR	1.00	44,000.00	LB	1.000					44,000	44,000
$45,540.00					[ ]			1,540		44,000	45,540
50004030	**S/S Cap/Abut Access**		**Quan: 560.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		23.33	CH	**Prod:**	**4.0000 UM**	Lab Pcs:	6.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	23.33	HR	29.277				683		683
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	23.33	MH	64.070	2,337					2,337
CJM	CARPENTER J/M	5.00	116.67	MH	53.700	10,198					10,198
$13,218.10	0.2500 MH/SF		140.00	MH	[13.857]	12,535			683		13,218
90001030	**Forklift**		**Quan: 0.50**	**UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 200020
Description = Crossbeam Retrofit | Unit = CY | Takeoff Quan: 88.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9KM	==> FORKLIFT 9K - MO	1.00	0.50	MO	2,576.000				1,288		1,288

90001040 Manlift Quan: 0.50 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

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Additional manlift from activity.
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8ML60	==> JLG 60' MANLIFT	1.00	110.00	HR	45.891				5,048		5,048

90001060 Generator Quan: 0.50 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEN6	==> ENG DRIVEN GEN 6.	1.00	110.00	HR	9.682				1,065		1,065

90001080 Light towers Quan: 0.50 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEL2	==> Light Tower-4kW to 2	2.00	110.00	HR	14.500				1,595		1,595

=====> **Item Totals: 200020 - Crossbeam Retrofit**

$232,903.01	16.0802 MH/CY		1,415.06	MH	[860.702]	119,754	16,377	18,519	28,149	50,105	**232,903**
2,646.625	88 CY					1,360.84	186.10	210.44	319.87	569.38	2,646.63

Total of Above Sub-Biditems

=====> **Item Totals: 200000 - Pier 10 Diaphragm Enlargement**

$335,401.34	**1,861.7600 MH/LS**		**1,861.76**	**MH**	**[100252.94]**	**159,188**	**16,377**	**78,999**	**30,733**	**50,105**	**335,401**
335,401.340	**1 LS**					**159,188.16**	**16,376.80**	**78,998.72**	**30,732.66**	**50,105.00**	**335,401.34**

PARENT ITEM = 300000
Description = Bridge Demo with Temp Support | Unit = SF | Takeoff Quan: 25,000.000 | Engr Quan: 25,000.000

Listing of Sub-Biditems of Parent Item 300000:

BID ITEM = 301000
Description = Temp Shoring for Footing Demo | Unit = SF | Takeoff Quan: 18,050.000 | Engr Quan: 0.000

60001005 Buy Soldier Piles Quan: 1,106,207.14 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3SHTEMPPILES	TEMPORARY SHORING	1.00	1,106,207.14	LB	0.350			387,173			387,173

60001079 Support Equipment Quan: 3.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTDS Drill Support 660.00 CH **Prod: 0.0000** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	660.00	HR	65.800				43,428		43,428
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	660.00	MH	44.530	45,746					45,746
OFELL	OP ENG LOADER	1.00	660.00	MH	57.470	63,564					63,564
$152,738.39	440.0000 MH/MO		1,320.00	MH	[22440]	109,310			43,428		152,738

60001080 Driller Mobilization Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4XPIDRMOB	MOB DRILL SUB	1.00	2.00	EA	15,000.000					30,000	30,000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 301000
Description = Temp Shoring for Footing Demo | Unit = SF | Takeoff Quan: 18,050.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
60001081	**Soldier Pile Drilling**		**Quan: 7,878.97**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	7,878.97	LF	100.000					787,897	787,897
60001087	**Haul Drill Spoils**		**Quan: 2,077.18**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EWHSP	HAUL DRILL SPOILS	1.00	2,077.18	CY	40.000					83,087	83,087
=====> Item Totals:	**301000 - Temp Shoring for Footing Demo**										
$1,440,895.09	0.0731 MH/SF		1,320.00	MH	[3.73]	109,310		387,173	43,428	900,984	**1,440,895**
79.828	18050 SF					6.06		21.45	2.41	49.92	79.83

BID ITEM = 302000
Description = Temp Support for Superstructure Demo | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002505	**Buy/Rent FW Beams**		**Quan: 100,000.00**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3FWBM	STEEL BEAM	1.00	100,000.00	LB	0.880			88,000			88,000
50002510	**Buy FW Timber**		**Quan: 70.00**	**MBF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMLG	LUMBER > 6x	1.00	70,000.00	BF	1.400			98,000			98,000
50002530	**Haul Falsework Matl**		**Quan: 20.00**	**LD**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
SUPTEQ	Move Equipment		80.00	CH	**Prod: 4.0000 HU**	Lab Pcs: 1.00			Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	80.00	HR	6.538				523		523
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	80.00	HR	38.395				3,072		3,072
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	80.00	MH	57.740	7,731					7,731
$11,326.02	4.0000 MH/LD		80.00	MH	[230.96]	7,731			3,595		11,326
50002531	**Build FW Pads**		**Quan: 2,520.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
25E4GR	Grading Crew		12.60	CH	**Prod: 50.0000 UM**	Lab Pcs: 4.00			Eqp Pcs: 5.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CO563	COMPACT CAT CP563	1.00	12.60	HR	43.020				542		542
8DO5	D5 DOZER (25k)	1.00	12.60	HR	34.582				436		436
8EX312	EXCAV CAT 312 (25K LB	1.00	12.60	HR	69.932				881		881
8GR140	BLADE - 12G & 140G	1.00	12.60	HR	72.110				909		909
8TRPU450	FLATRACK, BAREBED	1.00	12.60	HR	29.277				369		369
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	12.60	MH	57.740	1,218					1,218
ODL	OP ENG DOZER D9 & <	1.00	12.60	MH	57.470	1,214					1,214
OP4	OPER 4 (EX/BLADE/DOZ	1.00	12.60	MH	53.980	1,159					1,159
OPAKH	OP ENG COMPACTOR H	1.00	12.60	MH	57.470	1,214					1,214
$7,940.44	0.0200 MH/SF		50.40	MH	[1.133]	4,804			3,136		7,940
50002532	**F/G FW Pads**		**Quan: 2,520.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
25E4GR	Grading Crew		31.50	CH	**Prod: 20.0000 UM**	Lab Pcs: 4.00			Eqp Pcs: 5.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CO563	COMPACT CAT CP563	1.00	31.50	HR	43.020				1,355		1,355
8DO5	D5 DOZER (25k)	1.00	31.50	HR	34.582				1,089		1,089

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 302000											
Description =	Temp Support for Superstructure Demo			Unit = LS		Takeoff Quan:		1.000	Engr Quan:		0.000
8EX312	EXCAV CAT 312 (25K LB	1.00	31.50	HR	69.932				2,203		2,203
8GR140	BLADE - 12G & 140G	1.00	31.50	HR	72.110				2,271		2,271
8TRPU450	FLATRACK, BAREBED	1.00	31.50	HR	29.277				922		922
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	31.50	MH	57.740	3,044					3,044
ODL	OP ENG DOZER D9 & <	1.00	31.50	MH	57.470	3,034					3,034
OP4	OPER 4 (EX/BLADE/DOZ	1.00	31.50	MH	53.980	2,898					2,898
OPAKH	OP ENG COMPACTOR H	1.00	31.50	MH	57.470	3,034					3,034
$19,851.17	0.0500 MH/SF		126.00	MH	[2.833]	12,010			7,841		19,851
50002533	**Set FW Pads**		**Quan: 2,520.00 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		21.00	CH	**Prod: 20.0000 UM**	Lab Pcs:			6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	21.00	HR	29.277				615		615
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	21.00	MH	64.070	2,104					2,104
CJM	CARPENTER J/M	5.00	105.00	MH	53.700	9,178					9,178
$11,896.43	0.0500 MH/SF		126.00	MH	[2.771]	11,282			615		11,896
50002540	**Fab/Set Timber Bents**		**Quan: 6.99 EA**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		559.20	CH	**Prod: 80.0000 HU**	Lab Pcs:			6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	559.20	HR	29.277				16,372		16,372
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	559.20	MH	64.070	56,017					56,017
CJM	CARPENTER J/M	5.00	2,796.00	MH	53.700	244,396					244,396
$316,785.33	480.0000 MH/EA		3,355.20	MH	[26605.599]	300,414			16,372		316,785
50002572	**Strip Falsework**		**Quan: 2,520.00 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		112.00	CH	**Prod: 3.7500 UM**	Lab Pcs:			6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	112.00	HR	29.277				3,279		3,279
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	112.00	MH	64.070	11,219					11,219
CJM	CARPENTER J/M	5.00	560.00	MH	53.700	48,949					48,949
$63,447.70	0.2666 MH/SF		672.00	MH	[14.781]	60,169			3,279		63,448
=====> Item Totals:	**302000 - Temp Support for Superstructure Demo**										
$617,247.09	4,409.6000 MH/LS		4,409.60	MH	[244819.86]	396,410		186,000	34,837		**617,247**
617,247.090	1 LS					396,409.62		186,000.00	34,837.47		617,247.09
BID ITEM = 303000											
Description =	Bridge Demo			Unit = SF		Takeoff Quan:		25,000.000	Engr Quan:		0.000
20000501	**Dev Demo Plan**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
1OEALL	OUTSIDE Engineering	1.00	160.00	HR	200.000			32,000			32,000
20000502	**Dev Lead/Haz Matl Plan**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
1OEALL	OUTSIDE Engineering	1.00	80.00	HR	200.000			16,000			16,000

Cost Report

BID ITEM = 303000
Description = Bridge Demo | Unit = SF | Takeoff Quan: 25,000.000 | Engr Quan: 0.000

20000503 Test Haz Matl | **Quan: 1.00 LS** | **Hrs/Shft: 8.00** | **Cal: 508** | **WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	176.00	HR	200.000			35,200			35,200

20000530 Sup Demo Sub | **Quan: 220.00 HR** | **Hrs/Shft: 8.00** | **Cal: 508** | **WC: WA0201**

**Unreviewed

SUPTDS Drill Support 220.00 CH **Prod: 1.0000 HU** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	220.00	HR	65.800				14,476		14,476
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	220.00	MH	44.530	15,249					15,249
OFELL	OP ENG LOADER	1.00	220.00	MH	57.470	21,188					21,188
$50,912.80	2.0000 MH/HR		440.00	MH	[102]	36,437			14,476		50,913

20000580 Haz Matl Abatement | **Quan: 1.00 LS** | **Hrs/Shft: 8.00** | **Cal: 508** | **WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4ABAT	HAZ MAT REMOVAL &	1.00	1.00	LS	0.000						

20001030 L/H Concrete Demo | **Quan: 1,797.24 CY** | **Hrs/Shft: 8.00** | **Cal: 508** | **WC: WA0201**

**Unreviewed

20D2SM Small Demolition Crew 224.65 CH **Prod: 4.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3DDB	Dump Fee Concrete w/ Reb	1.00	1,797.24	TCY	10.000			17,972			17,972
7LD010.1	Offhaul Conc w/Rebar 6 C	1.00	299.43	LD	400.000			119,772			119,772
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DMHB1500	HYD BREAK 1500 FTLB (	1.00	224.66	HR	22.375				5,027		5,027
8EX312	EXCAV CAT 312 (25K LB	1.00	224.66	HR	69.932				15,711		15,711
8LDSKID	SKIDSTEER	1.00	224.66	HR	30.773				6,913		6,913
8TRPU450	FLATRACK, BAREBED	1.00	224.66	HR	29.277				6,577		6,577
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	224.66	MH	44.530	15,572					15,572
OBHL	OP ENG BACKHOE/L<75	1.00	224.66	MH	57.740	21,712					21,712
$209,256.14	0.2500 MH/CY		449.32	MH	[12.784]	37,283		137,744	34,228		209,256

20001032 Hand Demo EOD | **Quan: 332.03 LF** | **Hrs/Shft: 8.00** | **Cal: 508** | **WC: WA0214**

**Unreviewed

20D2HA Demo Hand Work 166.01 CH **Prod: 1.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	166.02	HR	17.692				2,937		2,937
8GEL2	Light Tower-4kW to 20k	1.00	166.02	HR	14.500				2,407		2,407
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	166.02	HR	9.682				1,607		1,607
8TRPU450	FLATRACK, BAREBED	1.00	166.02	HR	29.277				4,861		4,861
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	332.03	MH	45.610	23,455					23,455
$35,267.46	1.0000 MH/LF		332.03	MH	[45.61]	23,455			11,812		35,267

20001040 Protect Existing Surface | **Quan: 1.00 LS** | **Hrs/Shft: 8.00** | **Cal: 508** | **WC: WA0201**

**Unreviewed

8 spans & 3 days per span

20D2SM Small Demolition Crew 192.00 CH **Prod: 24.0000 SU** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DMHB1500	HYD BREAK 1500 FTLB (	1.00	192.00	HR	22.375				4,296		4,296
8EX312	EXCAV CAT 312 (25K LB	1.00	192.00	HR	69.932				13,427		13,427
8LDSKID	SKIDSTEER	1.00	192.00	HR	30.773				5,908		5,908
8TRPU450	FLATRACK, BAREBED	1.00	192.00	HR	29.277				5,621		5,621
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	192.00	MH	44.530	13,308					13,308
OBHL	OP ENG BACKHOE/L<75	1.00	192.00	MH	57.740	18,555					18,555
$61,115.72	384.0000 MH/LS		384.00	MH	[19635.84]	31,863			29,253		61,116

Cost Report

BID ITEM = 303000
Description = Bridge Demo | Unit = SF | Takeoff Quan: 25,000.000 | Engr Quan: 0.000

20001045 Expose Existing Footing — **Quan: 33.01 EA** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
25E2E1	Structure Ex - Small		132.04	CH	**Prod: 2.0000 US**	Lab Pcs: 2.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX312	EXCAV CAT 312 (25K LB	1.00	132.04	HR	69.932				9,234		9,234
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	132.04	MH	44.530	9,152					9,152
OBHL	OP ENG BACKHOE/L<75	1.00	132.04	MH	57.740	12,761					12,761
$31,146.41	8.0000 MH/EA		264.08	MH	[409.08]	21,913			9,234		31,146

20001080 Bridge Demo — **Quan: 25,000.00 SF** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4DEMOBRSFO	DEMO BRIDGE - SF (OV	1.00	25,000.00	SF	30.000					750,000	750,000

20001085 Remove Existing Elec — **Quan: 1.00 LS** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	100,000.000					100,000	100,000

20001086 Remove OCS — **Quan: 1.00 LS** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4DEMO	DEMOLITION	1.00	1.00	LS	150,000.000					150,000	150,000

20001090 Sawcut EOD — **Quan: 340.00 LF** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

`Not part of work, but add in.`

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5SAWFW0612	SAW FLAT CONC UP TO	1.00	4,080.00	INFT	1.000			4,080			4,080

20007030 Demo/Load Concrete Barrier — **Quan: 666.02 LF** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0214** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
20D2SM	Small Demolition Crew		48.00	CH	**Prod: 13.8751 UH**	Lab Pcs: 2.00			Eqp Pcs: 4.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DMHB1500	HYD BREAK 1500 FTLB (	1.00	48.00	HR	22.375				1,074		1,074
8EX312	EXCAV CAT 312 (25K LB	1.00	48.00	HR	69.932				3,357		3,357
8LDSKID	SKIDSTEER	1.00	48.00	HR	30.773				1,477		1,477
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	48.00	MH	44.530	3,327					3,327
OBHL	OP ENG BACKHOE/L<75	1.00	48.00	MH	57.740	4,639					4,639
$15,278.92	0.1441 MH/LF		96.00	MH	[7.371]	7,966			7,313		15,279

20007096 Sawcut Barrier — **Quan: 666.02 LF** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5SAWCG	SAW CONC CURB & GU	1.00	85.04	EA	150.000			12,756			12,756

50000817 Buy Bullrail/Handrail — **Quan: 340.00 LF** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CR01NUT	1" COIL ROD NUT	1.00	340.00	LF	2.000		680				680
2CR01ROD	1" COIL ROD	1.00	340.00	LF	7.000		2,380				2,380
2CR01WASH	1" COIL ROD WASHER	1.00	340.00	LF	1.500		510				510
2CR1	1" COIL ROD	1.00	340.00	LF	2.000		680				680
3LMLG	LUMBER > 6x	1.00	340.00	BF	1.250			425			425
$4,675.00					[ ]		4,250	425			4,675

50000849 Set Bullrail/Handrail — **Quan: 340.00 LF** — **Hrs/Shft: 8.00** — **Cal: 508** — **WC: WA0201** — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
PB4	4 MAN PB CREW		16.00	CH	**Prod: 21.2500 UH**	Lab Pcs: 6.00			Eqp Pcs: 4.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CRCR175	CRAWLER CR 4000 175T	1.00	16.00	HR	0.000						

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM	**= 303000**										
Description =	Bridge Demo			Unit =	SF	Takeoff Quan:		25,000.000	Engr Quan:		0.000
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
8WELD400D	WELDER 400 AMP	1.00	16.00	HR	9.420				151		151
8WELDLN25	lLN25 WIRE FEED	1.00	16.00	HR	2.500				40		40
A	~~~~~LABOR~~~		0.00	MH	0.000						
OCHH	OP ENG CR 200-300T G#1	1.00	16.00	MH	60.460	1,600					1,600
OOILH	OILER/DR >100 TON G#2	1.00	16.00	MH	58.090	1,553					1,553
PILE	PB Journeyman	3.00	48.00	MH	54.100	4,219					4,219
PILE4M	PB Foreman	1.00	16.00	MH	64.510	1,611					1,611
$9,642.87	0.2823 MH/LF		96.00	MH	[16.252]	8,984			659		9,643
50000870	**Rem Bullrail/Handrail**		**Quan: 340.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
PB4	4 MAN PB CREW		8.00	CH	**Prod: 7.0833 UM**	Lab Pcs: 6.00			Eqp Pcs: 4.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CRCR175	CRAWLER CR 4000 175T	1.00	8.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	8.00	HR	29.277				234		234
8WELD400D	WELDER 400 AMP	1.00	8.00	HR	9.420				75		75
8WELDLN25	lLN25 WIRE FEED	1.00	8.00	HR	2.500				20		20
A	~~~~~LABOR~~~		0.00	MH	0.000						
OCHH	OP ENG CR 200-300T G#1	1.00	8.00	MH	60.460	800					800
OOILH	OILER/DR >100 TON G#2	1.00	8.00	MH	58.090	777					777
PILE	PB Journeyman	3.00	24.00	MH	54.100	2,110					2,110
PILE4M	PB Foreman	1.00	8.00	MH	64.510	806					806
$4,821.43	0.1411 MH/LF		48.00	MH	[8.126]	4,492			330		4,821
=====> **Item Totals:**	**303000 - Bridge Demo**										
$1,522,152.75	0.0843 MH/SF		2,109.43	MH	[4.276]	172,392	4,250	238,205	107,305	1,000,000	**1,522,153**
60.886	25000 SF					6.90	0.17	9.53	4.29	40.00	60.89
					Total of Above Sub-Biditems						
=====> **Item Totals:**	**300000 - Bridge Demo with Temp Support**										
$3,580,294.93	**0.3135 MH/SF**		**7,839.03**	**MH**	**[16.761]**	**678,112**	**4,250**	**811,378**	**185,571**	**1,900,984**	**3,580,295**
143.212	**25000 SF**					**27.12**	**0.17**	**32.46**	**7.42**	**76.04**	**143.21**
BID ITEM	**= 350000**										
Description =	North Abut Fascia Wall			Unit =	SF	Takeoff Quan:		3,075.000	Engr Quan:		3,075.000
25005082	**Structure BF Class A**		**Quan: 1,064.27 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW4025	GRAVEL BACKFILL FOR	1.00	1,064.27	CY	47.000					50,021	50,021
50000135	**RENT & OPER RT CRANES**		**Quan: 2.00 MO**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8A	==> ~~~~~EQUIPMENT~	1.00	0.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	1.00	352.00	HR	171.695				60,437		60,437
A	==> ~~~~~LABOR~~~	1.00	0.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	1.00	352.00	MH	58.800	34,477					34,477
$94,913.95	176.0000 MH/MO		352.00	MH	[10348.8]	34,477			60,437		94,914
50000150	**RENT FORKLIFT**		**Quan: 2.00 MO**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed

Cost Report

BID ITEM = 350000
Description = North Abut Fascia Wall Unit = SF Takeoff Quan: 3,075.000 Engr Quan: 3,075.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9K	==> FORKLIFT VR 9K#	1.00	352.00	HR	49.580				17,452		17,452
50000155	**RENT MANLIFT**				**Quan: 2.00 MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
8ML60	==> JLG 60' MANLIFT	1.00	352.00	HR	45.891				16,154		16,154
50000170	**CONC PUMP TRUCK**				**Quan: 170.00 CY**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
5COPUSM	SM QTY CON PUMPING	1.00	170.00	CY	35.000			5,950			5,950
65001001	**Buy Concrete**				**Quan: 170.00 CY**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	187.00	CY	6.000		1,122				1,122
2CONADFUEL	FUEL SURCHARGE	1.10	187.00	CY	2.000		374				374
2CONADHW	CONCRETE-HOT WATE	1.10	187.00	CY	8.000		1,496				1,496
2CONADSL	SHORT LOAD <9CY PER	1.10	93.50	CY	40.000		3,740				3,740
2CONC4	CONCRETE CL 4000	1.10	187.00	CY	145.000		27,115				27,115
$33,847.00					[ ]		33,847				33,847
65001011	**Buy Lumber/Plywood**				**Quan: 1,853.00 SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
15%											
3LMBR	FORM LUMBER	1.00	6,022.25	BF	1.200			7,227			7,227
3PLY34MDO	3/4" MDO PLYWOOD	1.00	1,853.00	SF	2.000			3,706			3,706
$10,932.70					[ ]			10,933			10,933
65001013	**Buy Misc Matl**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3XCUR	CONC CURE/FIN MAT	1.00	10,490.00	SF	0.070			734			734
3XFMPREFAB	PREFAB OIL, NAIL, ETC	1.00	1,917.00	SF	0.200			383			383
3XGCS	GEN CONC SUPPLIES	1.00	417.00	CY	1.100			459			459
3XPAT	DRY FINISH MAT	1.00	10,490.00	SF	0.100			1,049			1,049
3XS/S	SET/STRIP FORM MATE	1.00	10,490.00	SF	0.300			3,147			3,147
$5,772.40					[ ]			5,772			5,772
65001015	**Buy Wall Sleeves**				**Quan: 15.00 EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
2DPIPV03P80	3"PVC PIPE SCH 80	1.00	15.00	LF	4.000		60				60
65001019	**Buy Prefab Drainage Mat**				**Quan: 184.72 SY**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
2GEOTPFDMT	PREFAB DR MAT-MIRA	1.00	184.72	SY	4.500		831				831
65001033	**Prefab Wall Forms**				**Quan: 1,853.00 SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB			38.61 CH	**Prod:**	**11.9962 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	38.62	HR	29.277				1,131		1,131
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	38.62	MH	64.070	3,869					3,869
CJM	CARPENTER J/M	3.00	115.85	MH	53.700	10,126					10,126
$15,125.72	0.0833 MH/SF		154.47	MH	[4.693]	13,995			1,131		15,126
65001035	**S/S Fascia Forms**				**Quan: 3,075.00 SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
CARP6	Carpenter 6 - S/S			102.50 CH	**Prod:**	**5.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	102.50	HR	29.277				3,001		3,001
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

BID ITEM = 350000
Description = North Abut Fascia Wall Unit = SF Takeoff Quan: 3,075.000 Engr Quan: 3,075.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CFM	CARPENTER F/M	1.00	102.50	MH	64.070	10,268					10,268
CJM	CARPENTER J/M	5.00	512.50	MH	53.700	44,797					44,797
$58,065.96	0.2000 MH/SF		615.00	MH	[11.086]	55,065			3,001		58,066
65001036	**S/S End Bulkheads**		**Quan:**	**4.00 EA**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
CARP6	Carpenter 6 - S/S		16.00	CH	**Prod:**	**0.5000 SU**	Lab Pcs:	6.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	16.00	MH	64.070	1,603					1,603
CJM	CARPENTER J/M	5.00	80.00	MH	53.700	6,993					6,993
$9,063.95	24.0000 MH/EA		96.00	MH	[1330.28]	8,596			468		9,064
65001039	**Place Wall Concrete**		**Quan:**	**170.00 CY**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
PLWALL	P/F WALLS		28.33	CH	**Prod:**	**1.5000 UM**	Lab Pcs:	4.00	Eqp Pcs:		3.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	28.33	HR	17.692				501		501
8ML40	JLG 40' MANLIFT	1.00	28.33	HR	34.727				984		984
8TRPU450	FLATRACK, BAREBED	1.00	28.33	HR	29.277				829		829
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	28.33	MH	52.600	2,408					2,408
LATO	LABORER, AIR TOOL O	2.00	56.67	MH	45.610	4,003					4,003
LGFM	Laborer-General Foreman	1.00	28.33	MH	55.170	2,335					2,335
$11,060.77	0.6666 MH/CY		113.33	MH	[33.164]	8,746			2,314		11,061
65001040	**Cure Wall Concrete**		**Quan:**	**3,075.00 SF**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
CURE	MISC CONC Cure		30.75	CH	**Prod:**	**50.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	30.75	HR	10.382				319		319
8TRPU450	FLATRACK, BAREBED	1.00	30.75	HR	29.277				900		900
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	30.75	MH	44.530	2,131					2,131
LGFM	Laborer-General Foreman	1.00	30.75	MH	55.170	2,534					2,534
$5,884.91	0.0200 MH/SF		61.50	MH	[0.997]	4,665			1,219		5,885
65001042	**Surface Finish Wall**		**Quan:**	**3,075.00 SF**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
FINWAL	Finish Walls		38.43	CH	**Prod:**	**40.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	38.44	HR	17.692				680		680
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	38.44	HR	9.682				372		372
8ML40	JLG 40' MANLIFT	1.00	38.44	HR	34.727				1,335		1,335
8TRPU450	FLATRACK, BAREBED	1.00	38.44	HR	29.277				1,125		1,125
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	38.44	MH	62.860	3,753					3,753
CMJM	CEMENT MASON J/M	1.00	38.44	MH	52.600	3,268					3,268
$10,533.93	0.0250 MH/SF		76.88	MH	[1.443]	7,021			3,513		10,534
65001062	**Surface Finish Coping**		**Quan:**	**3,075.00 SF**	**Hrs/Shft:**	**8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
FINWAL	Finish Walls		25.62	CH	**Prod:**	**59.9998 UM**	Lab Pcs:	2.00	Eqp Pcs:		4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	25.63	HR	17.692				453		453
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	25.63	HR	9.682				248		248
8ML40	JLG 40' MANLIFT	1.00	25.63	HR	34.727				890		890
8TRPU450	FLATRACK, BAREBED	1.00	25.63	HR	29.277				750		750

Cost Report

BID ITEM = 350000
Description = North Abut Fascia Wall — Unit = SF — Takeoff Quan: 3,075.000 — Engr Quan: 3,075.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	25.63	MH	62.860	2,503					2,503
CMJM	CEMENT MASON J/M	1.00	25.63	MH	52.600	2,179					2,179
$7,023.50	0.0166 MH/SF		51.26	MH	[0.962]	4,682			2,342		7,024
65001098	**Rebar**		**Quan: 35,000.00**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	35,000.00	LB	0.035			1,225			1,225
4REBNA	SOIL NAIL WALL REBAR	1.00	35,000.00	LB	1.250					43,750	43,750
$44,975.00					[ ]			1,225		43,750	44,975
=====> **Item Totals:**	**350000 - North Abut Fascia Wall**										
$397,667.51	0.4944 MH/SF		1,520.44	MH	[27.611]	137,248	34,738	23,880	108,031	93,771	**397,668**
129.323	3075 SF					44.63	11.30	7.77	35.13	30.49	129.32

BID ITEM = 390000
Description = Temp Shoring for New Foundation — Unit = SF — Takeoff Quan: 13,080.000 — Engr Quan: 13,080.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
60001005	**Buy Soldier Piles**		**Quan: 801,617.13**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3SHTEMPPILES	TEMPORARY SHORING	1.00	801,617.12	LB	0.350			280,566			280,566
60001079	**Support Equipment**		**Quan: 2.00**	**MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
SUPTDS	Drill Support		440.00	CH	Prod: 0.0000			Lab Pcs: 2.00		Eqp Pcs: 1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	440.00	HR	65.800				28,952		28,952
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	440.00	MH	44.530	30,497					30,497
OFELL	OP ENG LOADER	1.00	440.00	MH	57.470	42,376					42,376
$101,825.59	440.0000 MH/MO		880.00	MH	[22440]	72,874			28,952		101,826
60001080	**Driller Mobilization**		**Quan: 2.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPIDRMOB	MOB DRILL SUB	1.00	2.00	EA	15,000.000					30,000	30,000
60001081	**Soldier Pile Drilling**		**Quan: 5,709.52**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	5,709.52	LF	100.000					570,952	570,952
60001087	**Haul Drill Spoils**		**Quan: 1,505.24**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EWHSP	HAUL DRILL SPOILS	1.00	1,505.24	CY	40.000					60,210	60,210
=====> **Item Totals:**	**390000 - Temp Shoring for New Foundation**										
$1,043,553.18	0.0672 MH/SF		880.00	MH	[3.431]	72,874		280,566	28,952	661,162	**1,043,553**
79.782	13080 SF					5.57		21.45	2.21	50.55	79.78

BID ITEM = 400000
Description = 36" Dia Drill Shaft — Unit = LF — Takeoff Quan: 2,160.000 — Engr Quan: 2,160.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50001005	**Buy CSL Tube Matls**		**Quan: 8,640.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2DPISTCS	CSL 1.5" DI STEEL PI & C	1.10	9,504.00	LF	2.500		23,760				23,760

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 400000
Description = 36" Dia Drill Shaft Unit = LF Takeoff Quan: 2,160.000 Engr Quan: 2,160.000

50001010 Rent Baker Tank Quan: 3.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

11 shafts Pier 1 at 1ea/day = 11 days Piers 2-4 7 shafts @ 5 days= 35 days => 42 days drilling 2 months rental. Rent 4 tanks for 2 months cleaning will be charged to pier 5

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3WTBTCLEAN	BAKER TANK CLEAN C	1.00	0.08	EA	250.000			20			20
3WTBTMOB	DEL / RET BAKER TANK	1.00	3.00	HR	250.000			750			750
3WTBTRENT	BAKER TANK RENTAL	1.00	6.00	MO	2,000.000			12,000			12,000
$12,770.00					[ ]			12,770			12,770

50001016 Buy Water Quan: 114.00 MGA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

(1CY is 202 gallons of water).

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3WATERDR	WATER FOR DRILL SHA	1.00	126.54	MG	20.000			2,531			2,531

50001017 Buy Water Permits Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3WATERPM	WATER HYDRANT PER	1.00	1.00	EA	400.000			400			400

50001030 I/R Discharge Piping Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 16.00 CH **Prod: 1.0000 SU** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	16.00	HR	17.692				283		283
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	32.00	MH	45.610	2,261					2,261
LGFM	Laborer-General Foreman	1.00	16.00	MH	55.170	1,319					1,319
$4,330.56	24.0000 MH/EA		48.00	MH	[1171.12]	3,579			751		4,331

50001032 Clean Tanks Quan: 6.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 48.00 CH **Prod: 1.0000 US** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	48.00	HR	17.692				849		849
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	96.00	MH	45.610	6,782					6,782
LGFM	Laborer-General Foreman	1.00	48.00	MH	55.170	3,956					3,956
$12,991.68	24.0000 MH/EA		144.00	MH	[1171.12]	10,737			2,254		12,992

50001040 Hndl/Stockpile Shaft Spoils Quan: 566.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SHFTMK Shaft Muck Handling 47.14 CH **Prod: 12.0048 UH** Lab Pcs: 1.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	47.15	HR	65.800				3,102		3,102
A	~~~~~LABOR~~~		0.00	MH	0.000						
OFELL	OP ENG LOADER	1.00	47.15	MH	57.470	4,541					4,541
$7,643.46	0.0833 MH/CY		47.15	MH	[4.787]	4,541			3,102		7,643

50001041 Load Shaft Spoils Quan: 566.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SHFTMK Shaft Muck Handling 23.60 CH **Prod: 23.9808 UH** Lab Pcs: 1.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	23.60	HR	65.800				1,553		1,553
A	~~~~~LABOR~~~		0.00	MH	0.000						
OFELL	OP ENG LOADER	1.00	23.60	MH	57.470	2,273					2,273
$3,825.78	0.0416 MH/CY		23.60	MH	[2.396]	2,273			1,553		3,826

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 400000
Description = 36" Dia Drill Shaft Unit = LF Takeoff Quan: 2,160.000 Engr Quan: 2,160.000

50001042 Haul Shaft Spoils Quan: 566.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Assumed all clean shaft spoil.

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EWHSP	HAUL DRILL SPOILS	1.00	566.00	CY	40.000					22,640	22,640

50001050 Inst CSL Tubes Quan: 8,640.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 95.90 CH **Prod: 30.0300 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	95.90	HR	17.692				1,697		1,697
8TRPU450	FLATRACK, BAREBED	1.00	95.90	HR	29.277				2,808		2,808
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	191.81	MH	45.610	13,550					13,550
LGFM	Laborer-General Foreman	1.00	95.90	MH	55.170	7,903					7,903
$25,957.00	0.0332 MH/LF		287.71	MH	[1.625]	21,453			4,504		25,957

50001052 I/R Shaft Handrails Quan: 582.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP2 Carpenter 2 - SMALL WORK 48.48 CH **Prod: 6.0024 UM** Lab Pcs: 2.00 Eqp Pcs: 0.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	48.48	MH	64.070	4,856					4,856
CJM	CARPENTER J/M	1.00	48.48	MH	53.700	4,238					4,238
$9,094.03	0.1665 MH/LF		96.96	MH	[9.81]	9,094					9,094

50001054 Grout CSL Tubes Quan: 8,640.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 57.88 CH **Prod: 49.7512 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	57.89	HR	17.692				1,024		1,024
8TRPU450	FLATRACK, BAREBED	1.00	57.89	HR	29.277				1,695		1,695
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	115.78	MH	45.610	8,179					8,179
LGFM	Laborer-General Foreman	1.00	57.89	MH	55.170	4,771					4,771
$15,668.50	0.0201 MH/LF		173.67	MH	[0.981]	12,950			2,719		15,669

50001056 Chip Top of Shaft Quan: 36.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SHTTOP Clean Shaft Tops 288.00 CH **Prod: 16.0000 MU** Lab Pcs: 2.00 Eqp Pcs: 2.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	288.00	HR	17.692				5,095		5,095
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	288.00	HR	9.682				2,788		2,788
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	576.00	MH	45.610	40,689					40,689
$48,573.10	16.0000 MH/EA		576.00	MH	[729.76]	40,689			7,884		48,573

50001076 I/R Shaft Rebar Beds Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTBM Boom Truck 16.00 CH **Prod: 8.0000 HU** Lab Pcs: 1.00 Eqp Pcs: 1.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CRBM20	BOOM TRUCK LG, 20T	1.00	16.00	HR	39.173				627		627
A	~~~~~LABOR~~~		0.00	MH	0.000						
OCL	OP ENG CR 20-44 TON G	1.00	16.00	MH	58.090	1,553					1,553
$2,179.93	8.0000 MH/EA		16.00	MH	[464.72]	1,553			627		2,180

50001077 Sup Shaft Rebar Assem Oper Quan: 288.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

11 - 3' Dia 5 days
3 - 10' Dia 6 days

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 400000
Description = 36" Dia Drill Shaft Unit = LF Takeoff Quan: 2,160.000 Engr Quan: 2,160.000

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4 - 11' Dia 8 days ==> 19 Shifts x 10 hrs = 190 hrs
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
SUPTRC	REBAR CAGE Support Crew		288.00	CH	**Prod:**	**36.0000 S**		Lab Pcs: 1.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CRRT65	RT HYD CRANE 65 TON	1.00	288.00	HR	171.695				49,448		49,448
A	~~~~~LABOR~~~		0.00	MH	0.000						
OC	OP ENG CRANE 45-99T G	1.00	288.00	MH	58.800	28,209					28,209
$77,656.88	1.0000 MH/HR		288.00	MH	[58.8]	28,209			49,448		77,657

50001081 Drilled Shaft Subcontractor Quan: 2,160.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4DRSHCSL	Drilled Shaft CSL Testing	1.00	36.00	EA	1,500.000					54,000	54,000
4XSHALL4	SHAFT - 4' DIAM - OSC A	1.00	2,160.00	LF	600.000					1,296,000	1,296,000
$1,350,000.00					[ ]					1,350,000	1,350,000

50001095 Rebar Shaft Centrailizers Quan: 432.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

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18 shafts (+- 20' centers)==> 356 ea
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4REEXECC	EPOXY COATED CENTR	1.00	432.00	EA	15.000					6,480	6,480

50001098 Rebar for Shaft Quan: 198,100.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

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10/3 Rev by Designer.
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4REBSH	SHAFT REBAR F&I	1.00	198,099.99	LB	0.800					158,480	158,480

=====> **Item Totals: 400000 - 36" Dia Drill Shaft**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$1,784,981.71	0.7875 MH/LF		1,701.09	MH	[39.719]	135,078	23,760	15,701	72,843	1,537,600	**1,784,982**
826.380	2160 LF					62.54	11.00	7.27	33.72	711.85	826.38

BID ITEM = 500000
Description = Shaft Cap Foundation Unit = CY Takeoff Quan: 685.000 Engr Quan: 685.000

50000130 MOB BRIDGE SUP EQUIPMENT Quan: 10.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

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MOBE EQUIPMENT FROM YARD.
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
SUPTEQ	Move Equipment		80.00	CH	**Prod:**	**8.0000 HU**		Lab Pcs: 1.00		Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	80.00	HR	6.538				523		523
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	80.00	HR	38.395				3,072		3,072
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	80.00	MH	57.740	7,731					7,731
$11,326.02	8.0000 MH/EA		80.00	MH	[461.92]	7,731			3,595		11,326

50000135 RENT & OPER RT CRANES Quan: 3.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	==> ~~~~~EQUIPMENT~	1.00	3.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	1.00	528.00	HR	171.695				90,655		90,655
A	==> ~~~~~LABOR~~~	1.00	3.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	1.00	528.00	MH	58.800	51,716					51,716
$142,370.94	177.0000 MH/MO		531.00	MH	[10348.8]	51,716			90,655		142,371

50000150 RENT FORKLIFT Quan: 3.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9K	==> FORKLIFT VR 9K#	1.00	528.00	HR	49.580				26,178		26,178

50000170 CONC PUMP TRUCK Quan: 685.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5COPULA	LARAGE QTY CON PUM	1.00	511.19	CY	25.000			12,780			12,780

Cost Report

BID ITEM = 500000
Description = Shaft Cap Foundation Unit = CY Takeoff Quan: 685.000 Engr Quan: 685.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5COPUSM	SM QTY CON PUMPING	1.00	173.81	CY	35.000			6,083			6,083
$18,863.10					[ ]			18,863			18,863
50002001	**Buy Concrete**				**Quan: 685.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.05	719.25	CY	6.000		4,316				4,316
2CONADFUEL	FUEL SURCHARGE	1.05	719.25	CY	2.000		1,439				1,439
2CONADHW	CONCRETE-HOT WATE	1.05	719.25	CY	8.000		5,754				5,754
2CONC4	CONCRETE CL 4000	1.05	719.25	CY	145.000		104,291				104,291
$115,799.25					[ ]		115,799				115,799
50002011	**Buy Lumber/Plywood**				**Quan: 736.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3LMBR	FORM LUMBER	1.10	2,509.77	BF	1.200			3,012			3,012
3PLY34MDO	3/4" MDO PLYWOOD	1.10	809.59	SF	2.000			1,619			1,619
$4,630.90					[ ]			4,631			4,631
50002030	**F/G Footing**				**Quan: 4,620.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0214**			
											**Unreviewed
25E4FG	Str Exc - FINEGRADE			92.40 CH	**Prod:**	**25.0000 UM**		Lab Pcs:	2.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	92.40	HR	34.582				3,195		3,195
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	92.40	MH	44.530	6,404					6,404
ODL	OP ENG DOZER D9 & <	1.00	92.40	MH	57.470	8,899					8,899
$18,498.82	0.0400 MH/SF		184.80	MH	[2.04]	15,303			3,195		18,499
50002032	**Fab Footing Form**				**Quan: 736.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
L7											
CARP4	Carpenter 4 - Med & PREFAB			15.33 CH	**Prod:**	**11.9999 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	15.33	HR	29.277				449		449
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	15.33	MH	64.070	1,536					1,536
CJM	CARPENTER J/M	3.00	46.00	MH	53.700	4,021					4,021
$6,005.28	0.0833 MH/SF		61.33	MH	[4.691]	5,556			449		6,005
50002033	**S/S Footing Form**				**Quan: 2,208.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
CARP6	Carpenter 6 - S/S			73.60 CH	**Prod:**	**5.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	73.60	HR	29.277				2,155		2,155
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	73.60	MH	64.070	7,373					7,373
CJM	CARPENTER J/M	5.00	368.00	MH	53.700	32,167					32,167
$41,694.20	0.2000 MH/SF		441.60	MH	[11.086]	39,539			2,155		41,694
50002034	**Plc/Fin Footing Conc**				**Quan: 685.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
PLSOGK	P/F SLAB ON GRADE			85.62 CH	**Prod:**	**2.0000 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	85.63	HR	29.277				2,507		2,507
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	85.63	MH	52.600	7,280					7,280
LATO	LABORER, AIR TOOL O	2.00	171.25	MH	45.610	12,097					12,097
LGFM	Laborer-General Foreman	1.00	85.63	MH	55.170	7,057					7,057
$28,940.82	0.5000 MH/CY		342.51	MH	[24.875]	26,434			2,507		28,941

Cost Report

BID ITEM = 500000
Description = Shaft Cap Foundation — Unit = CY — Takeoff Quan: 685.000 — Engr Quan: 685.000

50002053 Cut Shaft Casing — Quan: 36.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

PB4 — 4 MAN PB CREW — 81.00 CH — **Prod: 9.0000 MU** — Lab Pcs: 4.00 — Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	81.00	HR	29.277				2,371		2,371
8WELD400D	WELDER 400 AMP	1.00	81.00	HR	9.420				763		763
8WELDLN25	lLN25 WIRE FEED	1.00	81.00	HR	2.500				203		203
A	~~~~~LABOR~~~		0.00	MH	0.000						
PILE	PB Journeyman	3.00	243.00	MH	54.100	21,360					21,360
PILE4M	PB Foreman	1.00	81.00	MH	64.510	8,158					8,158
$32,854.99	9.0000 MH/EA		324.00	MH	[510.323]	29,518			3,337		32,855

50002075 Cure Substructure Conc — Quan: 2,208.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

CURE — MISC CONC Cure — 22.08 CH — **Prod: 50.0000 UM** — Lab Pcs: 2.00 — Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	22.08	HR	10.382				229		229
8TRPU450	FLATRACK, BAREBED	1.00	22.08	HR	29.277				646		646
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	22.08	MH	44.530	1,530					1,530
LGFM	Laborer-General Foreman	1.00	22.08	MH	55.170	1,820					1,820
$4,225.62	0.0200 MH/SF		44.16	MH	[0.997]	3,350			876		4,226

50002076 Point/Patch — Quan: 2,208.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

FINCAP — Finish Caps — 11.04 CH — **Prod: 100.0000 UM** — Lab Pcs: 2.00 — Eqp Pcs: 3.50

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	5.52	HR	17.692				98		98
8GEL2	Light Tower-4kW to 20k	1.00	11.04	HR	14.500				160		160
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	11.04	HR	9.682				107		107
8TRPU450	FLATRACK, BAREBED	1.00	11.04	HR	29.277				323		323
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	11.04	MH	62.860	1,078					1,078
CMJM	CEMENT MASON J/M	1.00	11.04	MH	52.600	939					939
$2,704.32	0.0100 MH/SF		22.08	MH	[0.577]	2,017			688		2,704

50002098 Rebar Bridge Substructure — Quan: 205,500.00 LB — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3RE-H	REBAR HOISTING SUPP	1.00	205,499.53	LB	0.035			7,192			7,192
4REBSUB	SUBSTRUCTURE REBAR	1.00	205,499.53	LB	1.000					205,500	205,500
$212,692.01					[ ]			7,192		205,500	212,692

=====> Item Totals: 500000 - Shaft Cap Foundation

$666,784.51	2.9656 MH/CY		2,031.48	MH	[163.367]	181,165	115,799	30,686	133,634	205,500	**666,785**
973.408	685 CY					264.47	169.05	44.80	195.09	300.00	973.41

BID ITEM = 600000
Description = Columns Conc — Unit = CY — Takeoff Quan: 462.000 — Engr Quan: 462.000

50000130 MOB BRIDGE SUP EQUIPMENT — Quan: 10.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

MOBE EQUIPMENT FROM YARD.

SUPTEQ — Move Equipment — 80.00 CH — **Prod: 8.0000 HU** — Lab Pcs: 1.00 — Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	80.00	HR	6.538				523		523

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 600000											
Description =	Columns Conc				Unit = CY	Takeoff Quan:		462.000	Engr Quan:		462.000
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	80.00	HR	38.395				3,072		3,072
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	80.00	MH	57.740	7,731					7,731
$11,326.02	8.0000 MH/EA		80.00	MH	[461.92]	7,731			3,595		11,326
50000135	**RENT & OPER RT CRANES**		**Quan: 2.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
8A	==> ~~~~~EQUIPMENT~	1.00	2.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	0.50	176.00	HR	171.695				30,218		30,218
A	==> ~~~~~LABOR~~~	1.00	2.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	0.50	176.00	MH	58.800	17,239					17,239
$47,456.98	89.0000 MH/MO		178.00	MH	[5174.4]	17,239			30,218		47,457
50000150	**RENT FORKLIFT**		**Quan: 2.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	352.00	HR	49.580				17,452		17,452
50000155	**RENT MANLIFT**		**Quan: 2.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
8ML40	==> JLG 40' MANLIFT	1.00	352.00	HR	34.727				12,224		12,224
8ML60	==> JLG 60' MANLIFT	1.00	352.00	HR	45.891				16,154		16,154
$28,377.53					[ ]				28,378		28,378
50000170	**CONC PUMP TRUCK**		**Quan: 462.00 CY**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
5COPUSM	SM QTY CON PUMPING	1.00	462.00	CY	35.000			16,170			16,170
50002001	**Buy Concrete**		**Quan: 462.00 CY**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.05	485.10	CY	6.000		2,911				2,911
2CONADFUEL	FUEL SURCHARGE	1.05	485.10	CY	2.000		970				970
2CONADHW	CONCRETE-HOT WATE	1.05	485.10	CY	8.000		3,881				3,881
2CONC4	CONCRETE CL 4000	1.05	485.10	CY	145.000		70,340				70,340
$78,101.10					[ ]		78,101				78,101
50002011	**Buy Lumber/Plywood**		**Quan: 3,200.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
3LMBR	FORM LUMBER	1.10	10,911.93	BF	1.200			13,094			13,094
3PLY34MDO	3/4" MDO PLYWOOD	1.10	3,520.00	SF	2.000			7,040			7,040
$20,134.32					[ ]			20,134			20,134
50002014	**Rent Column Form**		**Quan: 2,632.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
2 ea 4' and 2 each 6' columns 3 months rent.											
3FMEFCO	EFCO PLATE GIRDER FO	1.00	7,896.00	SFMO	4.500			35,532			35,532
50002050	**Fab/Assem Col Form**		**Quan: 2,632.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		43.86	CH	**Prod:**	**15.0001 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	43.87	HR	29.277				1,284		1,284
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	43.87	MH	64.070	4,395					4,395
CJM	CARPENTER J/M	3.00	131.60	MH	53.700	11,503					11,503
$17,182.04	0.0666 MH/SF		175.47	MH	[3.753]	15,898			1,284		17,182
50002052	**Mod Col Form**		**Quan: 6,232.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**		**WC: WA0201**		
											**Unreviewed
CARP6	Carpenter 6 - S/S		86.55	CH	**Prod:**	**12.0002 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00

Cost Report

BID ITEM = 600000
Description = Columns Conc Unit = CY Takeoff Quan: 462.000 Engr Quan: 462.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	86.55	HR	29.277				2,534		2,534
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	86.55	MH	64.070	8,670					8,670
CJM	CARPENTER J/M	5.00	432.77	MH	53.700	37,828					37,828
$49,032.09	0.0833 MH/SF		519.32	MH	[4.619]	46,498			2,534		49,032

50002054 Set Column Rebar Cage Quan: 12.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP4 Carpenter 4 - Med & PREFAB 48.00 CH **Prod: 4.0000 HU** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	48.00	MH	64.070	4,808					4,808
CJM	CARPENTER J/M	3.00	144.00	MH	53.700	12,587					12,587
$18,800.56	16.0000 MH/EA		192.00	MH	[900.68]	17,395			1,405		18,801

50002055 S/S Column Form Quan: 8,864.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 211.04 CH **Prod: 7.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	211.05	HR	29.277				6,179		6,179
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	211.05	MH	64.070	21,142					21,142
CJM	CARPENTER J/M	5.00	1,055.24	MH	53.700	92,238					92,238
$119,558.37	0.1428 MH/SF		1,266.29	MH	[7.918]	113,379			6,179		119,558

50002056 Column Recess Detail Quan: 12.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 12.00 CH **Prod: 6.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	12.00	HR	29.277				351		351
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	12.00	MH	64.070	1,202					1,202
CJM	CARPENTER J/M	5.00	60.00	MH	53.700	5,245					5,245
$6,797.96	6.0000 MH/EA		72.00	MH	[332.57]	6,447			351		6,798

50002057 Clean Column CJ Quan: 12.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 32.00 CH **Prod: 8.0000 MU** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	32.00	HR	17.692				566		566
8TRPU450	FLATRACK, BAREBED	1.00	32.00	HR	29.277				937		937
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	64.00	MH	45.610	4,521					4,521
LGFM	Laborer-General Foreman	1.00	32.00	MH	55.170	2,637					2,637
$8,661.11	8.0000 MH/EA		96.00	MH	[390.373]	7,158			1,503		8,661

50002058 Place Column Conc Quan: 462.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLCOL P/F Columns 57.75 CH **Prod: 2.0000 UM** Lab Pcs: 4.00 Eqp Pcs: 6.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	2.00	115.50	HR	17.692				2,043		2,043
8GEN6	ENG DRIVEN GEN 6.5 K	2.00	115.50	HR	9.682				1,118		1,118
8ML80	JLG 80' MANLIFT	1.00	57.75	HR	67.911				3,922		3,922
8TRPU450	FLATRACK, BAREBED	1.00	57.75	HR	29.277				1,691		1,691
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	0.50	28.88	MH	53.700	2,524					2,524
CMJM	CEMENT MASON J/M	0.50	28.88	MH	52.600	2,455					2,455

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM =	**600000**										
Description =	Columns Conc			Unit =	CY	Takeoff Quan:		462.000	Engr Quan:		462.000
LATO	LABORER, AIR TOOL O	2.00	115.50	MH	45.610	8,159					8,159
LGFM	Laborer-General Foreman	1.00	57.75	MH	55.170	4,759					4,759
$26,672.07	0.5000 MH/CY		231.01	MH	[24.944]	17,898			8,774		26,672
50002059	**Rem Recess Detail**		**Quan: 12.00 EA**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
LAB3	Laborer 3		24.00	CH	**Prod:**	**6.0000 MU**	Lab Pcs:	3.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	24.00	HR	17.692				425		425
8TRPU450	FLATRACK, BAREBED	1.00	24.00	HR	29.277				703		703
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	48.00	MH	45.610	3,391					3,391
LGFM	Laborer-General Foreman	1.00	24.00	MH	55.170	1,978					1,978
$6,495.83	6.0000 MH/EA		72.00	MH	[292.78]	5,369			1,127		6,496
50002060	**B/O for Cap Falsework**		**Quan: 12.00 EA**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		24.00	CH	**Prod:**	**8.0000 MU**	Lab Pcs:	4.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	24.00	HR	29.277				703		703
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	24.00	MH	64.070	2,404					2,404
CJM	CARPENTER J/M	3.00	72.00	MH	53.700	6,293					6,293
$9,400.28	8.0000 MH/EA		96.00	MH	[450.34]	8,698			703		9,400
50002075	**Cure Substructure Conc**		**Quan: 8,864.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
CURE	MISC CONC Cure		88.64	CH	**Prod:**	**50.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	88.64	HR	10.382				920		920
8TRPU450	FLATRACK, BAREBED	1.00	88.64	HR	29.277				2,595		2,595
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	88.64	MH	44.530	6,144					6,144
LGFM	Laborer-General Foreman	1.00	88.64	MH	55.170	7,305					7,305
$16,963.87	0.0200 MH/SF		177.28	MH	[0.997]	13,449			3,515		16,964
50002077	**Surface Finish**		**Quan: 8,864.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
FINCAP	Finish Caps		88.64	CH	**Prod:**	**50.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		3.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	44.32	HR	17.692				784		784
8GEL2	Light Tower-4kW to 20k	1.00	88.64	HR	14.500				1,285		1,285
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	88.64	HR	9.682				858		858
8TRPU450	FLATRACK, BAREBED	1.00	88.64	HR	29.277				2,595		2,595
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	88.64	MH	62.860	8,655					8,655
CMJM	CEMENT MASON J/M	1.00	88.64	MH	52.600	7,536					7,536
$21,713.60	0.0200 MH/SF		177.28	MH	[1.155]	16,191			5,523		21,714
50002078	**I/R Cold Weather Protection**		**Quan: 8,864.00 SF**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
SUPTCO	COLD WEATHER SUPPORT		59.09	CH	**Prod:**	**50.0008 UM**	Lab Pcs:	3.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	59.09	HR	9.682				572		572
8TRPU450	FLATRACK, BAREBED	1.00	59.09	HR	29.277				1,730		1,730
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	118.18	MH	44.530	8,191					8,191
LGFM	Laborer-General Foreman	1.00	59.09	MH	55.170	4,870					4,870
$15,362.86	0.0199 MH/SF		177.27	MH	[0.961]	13,061			2,302		15,363

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 600000											
Description =	Columns Conc				Unit = CY	Takeoff Quan: 462.000			Engr Quan: 462.000		
50002089	**Pigseal BR Substructure**		**Quan: 8,864.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	8,864.00	SF	0.750					6,648	6,648
50002098	**Rebar Bridge Substructure**		**Quan: 207,900.00**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	207,899.52	LB	0.035			7,276			7,276
4REBSUB	SUBSTRUCTURE REBAR	1.00	207,899.52	LB	1.000					207,900	207,900
$215,176.00					[ ]			7,276		207,900	215,176
=====> Item Totals: 600000	**- Columns Conc**										
$793,014.75	7.5972 MH/CY		3,509.92	MH	[414.152]	306,410	78,101	79,113	114,844	214,548	**793,015**
1,716.482	462 CY					663.22	169.05	171.24	248.58	464.39	1,716.48
BID ITEM = 700000											
Description =	Conc. Pier Cap				Unit = CY	Takeoff Quan: 333.000			Engr Quan: 333.000		
50000130	**MOB BRIDGE SUP EQUIPMENT**		**Quan: 4.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
MOBE EQUIPMENT FROM YARD.											
SUPTEQ	Move Equipment		32.00	CH	Prod: 8.0000 HU	Lab Pcs: 1.00			Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	32.00	HR	6.538				209		209
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	32.00	HR	38.395				1,229		1,229
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	32.00	MH	57.740	3,093					3,093
$4,530.38	8.0000 MH/EA		32.00	MH	[461.92]	3,093			1,438		4,530
50000135	**RENT & OPER RT CRANES**		**Quan: 2.00**	**MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8A	==> ~~~~~EQUIPMENT~	1.00	2.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	0.50	176.00	HR	171.695				30,218		30,218
A	==> ~~~~~LABOR~~~	1.00	2.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	0.50	176.00	MH	58.800	17,239					17,239
$47,456.98	89.0000 MH/MO		178.00	MH	[5174.4]	17,239			30,218		47,457
50000150	**RENT FORKLIFT**		**Quan: 2.00**	**MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	352.00	HR	49.580				17,452		17,452
50000155	**RENT MANLIFT**		**Quan: 2.00**	**MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8ML40	==> JLG 40' MANLIFT	1.00	352.00	HR	34.727				12,224		12,224
8ML60	==> JLG 60' MANLIFT	1.00	352.00	HR	45.891				16,154		16,154
$28,377.53					[ ]				28,378		28,378
50000170	**CONC PUMP TRUCK**		**Quan: 333.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5COPUSM	SM QTY CON PUMPING	1.00	333.00	CY	35.000			11,655			11,655
50002001	**Buy Concrete**		**Quan: 333.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.05	349.67	CY	6.000		2,098				2,098
2CONADFUEL	FUEL SURCHARGE	1.05	349.67	CY	2.000		699				699
2CONADHW	CONCRETE-HOT WATE	1.05	349.67	CY	8.000		2,797				2,797
2CONC4	CONCRETE CL 4000	1.05	349.65	CY	145.000		50,699				50,699

Cost Report

BID ITEM = 700000
Description = Conc. Pier Cap | Unit = CY | Takeoff Quan: 333.000 | Engr Quan: 333.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$56,293.97					[ ]		56,294				56,294

50002011 Buy Lumber/Plywood — Quan: 4,590.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

3 sets

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.10	15,651.93	BF	1.200			18,782			18,782
3PLY34MDO	3/4" MDO PLYWOOD	1.10	5,049.01	SF	2.000			10,098			10,098
$28,880.34					[ ]			28,880			28,880

50002015 Rent Falsework Matl — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Rental price for brackets and beams.

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FM$CAPFW	PIER CAP FALSEWORK -	1.00	799.00	SF	18.000			14,382			14,382

50002065 Fab Cap Sideform — Quan: 830.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

CARP4 — Carpenter 4 - Med & PREFAB — 17.29 CH — **Prod: 12.0000 UM** — Lab Pcs: 4.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	17.29	HR	29.277				506		506
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	17.29	MH	64.070	1,732					1,732
CJM	CARPENTER J/M	3.00	51.88	MH	53.700	4,535					4,535
$6,772.97	0.0833 MH/SF		69.17	MH	[4.691]	6,267			506		6,773

50002066 S/S Cap Falsework — Quan: 3.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

CARP6 — Carpenter 6 - S/S — 90.00 CH — **Prod: 180.0000 MU** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	90.00	HR	29.277				2,635		2,635
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	90.00	MH	64.070	9,016					9,016
CJM	CARPENTER J/M	5.00	450.00	MH	53.700	39,334					39,334
$50,984.77	180.0000 MH/EA		540.00	MH	[9977.1]	48,350			2,635		50,985

50002067 S/S Cap Soffit — Quan: 1,800.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

CARP6 — Carpenter 6 - S/S — 100.00 CH — **Prod: 3.0000 UM** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	100.00	HR	29.277				2,928		2,928
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	100.00	MH	64.070	10,017					10,017
CJM	CARPENTER J/M	5.00	500.00	MH	53.700	43,705					43,705
$56,649.75	0.3333 MH/SF		600.00	MH	[18.476]	53,722			2,928		56,650

50002068 S/S Cap Sideform — Quan: 2,490.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

CARP6 — Carpenter 6 - S/S — 138.33 CH — **Prod: 3.0000 UM** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	138.33	HR	29.277				4,050		4,050
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	138.33	MH	64.070	13,857					13,857
CJM	CARPENTER J/M	5.00	691.67	MH	53.700	60,458					60,458
$78,365.29	0.3333 MH/SF		830.00	MH	[18.476]	74,315			4,050		78,365

50002070 Cap Recess Detail — Quan: 3.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

CARP6 — Carpenter 6 - S/S — 3.00 CH — **Prod: 6.0000 MU** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	3.00	HR	29.277				88		88

Cost Report

BID ITEM = 700000

Description = Conc. Pier Cap Unit = CY Takeoff Quan: 333.000 Engr Quan: 333.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	3.00	MH	64.070	301					301
CJM	CARPENTER J/M	5.00	15.00	MH	53.700	1,311					1,311
$1,699.48	6.0000 MH/EA		18.00	MH	[332.57]	1,612			88		1,699

50002071 Clean Cap CJ Quan: 1,800.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 30.00 CH **Prod: 19.9998 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	30.00	HR	17.692				531		531
8TRPU450	FLATRACK, BAREBED	1.00	30.00	HR	29.277				878		878
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	60.00	MH	45.610	4,238					4,238
LGFM	Laborer-General Foreman	1.00	30.00	MH	55.170	2,472					2,472
$8,119.81	0.0500 MH/SF		90.00	MH	[2.44]	6,711			1,409		8,120

50002072 Plc/Fin Cap Conc Quan: 333.30 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLCAP P/F Cap Concrete 49.37 CH **Prod: 1.5000 UM** Lab Pcs: 4.50 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	49.38	HR	17.692				874		874
8ML60	JLG 60' MANLIFT	1.00	49.38	HR	45.891				2,266		2,266
8TRPU450	FLATRACK, BAREBED	1.00	49.38	HR	29.277				1,446		1,446
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	0.50	24.69	MH	52.600	2,099					2,099
LATO	LABORER, AIR TOOL O	3.00	148.13	MH	45.610	10,464					10,464
LGFM	Laborer-General Foreman	1.00	49.38	MH	55.170	4,069					4,069
$21,217.85	0.6666 MH/CY		222.20	MH	[32.341]	16,632			4,585		21,218

50002075 Cure Substructure Conc Quan: 2,490.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CURE MISC CONC Cure 24.90 CH **Prod: 50.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	24.90	HR	10.382				259		259
8TRPU450	FLATRACK, BAREBED	1.00	24.90	HR	29.277				729		729
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	24.90	MH	44.530	1,726					1,726
LGFM	Laborer-General Foreman	1.00	24.90	MH	55.170	2,052					2,052
$4,765.34	0.0200 MH/SF		49.80	MH	[0.997]	3,778			987		4,765

50002077 Surface Finish Quan: 2,490.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINCAP Finish Caps 24.90 CH **Prod: 50.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 3.50

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	12.45	HR	17.692				220		220
8GEL2	Light Tower-4kW to 20k	1.00	24.90	HR	14.500				361		361
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	24.90	HR	9.682				241		241
8TRPU450	FLATRACK, BAREBED	1.00	24.90	HR	29.277				729		729
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	24.90	MH	62.860	2,431					2,431
CMJM	CEMENT MASON J/M	1.00	24.90	MH	52.600	2,117					2,117
$6,099.55	0.0200 MH/SF		49.80	MH	[1.155]	4,548			1,551		6,100

50002078 I/R Cold Weather Protection Quan: 2,490.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTCO COLD WEATHER SUPPORT 16.60 CH **Prod: 49.9997 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	16.60	HR	9.682				161		161
8TRPU450	FLATRACK, BAREBED	1.00	16.60	HR	29.277				486		486

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 700000											
Description =	Conc. Pier Cap				Unit = CY	Takeoff Quan:		333.000	Engr Quan:		333.000
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	33.20	MH	44.530	2,301					2,301
LGFM	Laborer-General Foreman	1.00	16.60	MH	55.170	1,368					1,368
$4,315.83	0.0200 MH/SF		49.80	MH	[0.962]	3,669			647		4,316
50002089	**Pigseal BR Substructure**		**Quan: 2,490.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	2,490.00	SF	0.750					1,868	1,868
50002098	**Rebar Bridge Substructure**		**Quan: 149,850.00**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	149,849.65	LB	0.035			5,245			5,245
4REBSUB	SUBSTRUCTURE REBAR	1.00	149,849.65	LB	1.000					149,850	149,850
$155,094.39					[ ]			5,245		149,850	155,094
=====> Item Totals:	**700000 - Conc. Pier Cap**										
$604,980.89	8.1945 MH/CY		2,728.77	MH	[448.061]	239,935	56,294	60,162	96,872	151,717	**604,981**
1,816.759	333 CY					720.53	169.05	180.67	290.91	455.61	1,816.76

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 800000											
Description =	PC Conc. Girder				Unit = LF	Takeoff Quan:		2,568.000	Engr Quan:		2,568.000
50004025	**Buy Precast Girders**		**Quan: 2,568.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2PCGHOLES	BOLT HOLES IN PC CON	1.00	333.00	EA	16.000		5,328				5,328
2PCGWF58G	WF58G PRECAST GIRDE	1.00	2,568.00	LF	480.000		1,232,640				1,232,640
$1,237,968.00					[ ]		1,237,968				1,237,968
50004026	**Haul PC Girder**		**Quan: 2,568.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2PCGTRWF	PC WF GIRDER TRUCKI	1.00	2,568.00	LF	55.000		141,240				141,240
50004037	**Erect/Brace Girders**		**Quan: 32.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP8	Carpenter 8 - GIRDER SET		80.00	CH	**Prod:**	**3.2000 US**	Lab Pcs:	8.00	Eqp Pcs:		6.00
5CR175	175 TON CRANE RENTA	2.00	160.00	HR	550.000			88,000			88,000
5CR175MOB	175 TON CRANE MOB IN	2.00	4.00	EA	4,375.000			17,500			17,500
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	2.00	160.00	HR	9.682				1,549		1,549
8GENLI	ENG DRIVEN LITE TOW	2.00	160.00	HR	10.382				1,661		1,661
8TRPU450	FLATRACK, BAREBED	2.00	160.00	HR	29.277				4,684		4,684
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	80.00	MH	64.070	8,014					8,014
CJM	CARPENTER J/M	7.00	560.00	MH	53.700	48,949					48,949
$170,357.68	20.0000 MH/EA		640.00	MH	[1099.925]	56,963		105,500	7,895		170,358
50004038	**Cut/Patch Girder Ship Strand**		**Quan: 32.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		5.33	CH	**Prod:**	**1.0000 UM**	Lab Pcs:	6.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	5.33	HR	29.277				156		156
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	5.33	MH	64.070	534					534
CJM	CARPENTER J/M	5.00	26.67	MH	53.700	2,331					2,331
$3,021.15	1.0000 MH/EA		32.00	MH	[55.427]	2,865			156		3,021

Cost Report

BID ITEM = 800000
Description = PC Conc. Girder | Unit = LF | Takeoff Quan: 2,568.000 | Engr Quan: 2,568.000

=====> Item Totals: 800000 - PC Conc. Girder

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$1,552,586.83	0.2616 MH/LF		672.00	MH	[14.397]	59,828	1,379,208	105,500	8,051		**1,552,587**
604.590	2568 LF					23.30	537.07	41.08	3.13		604.59

BID ITEM = 900000
Description = Conc Deck | Unit = SF | Takeoff Quan: 25,000.000 | Engr Quan: 25,000.000

50000130 MOB BRIDGE SUP EQUIPMENT Quan: 4.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

MOBE EQUIPMENT FROM YARD.
SUPTEQ Move Equipment 32.00 CH **Prod: 8.0000 HU** Lab Pcs: 1.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	32.00	HR	6.538				209		209
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	32.00	HR	38.395				1,229		1,229
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	32.00	MH	57.740	3,093					3,093
$4,530.38	8.0000 MH/EA		32.00	MH	[461.92]	3,093			1,438		4,530

50000135 RENT & OPER RT CRANES Quan: 4.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	==> ~~~~~EQUIPMENT~	1.00	4.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	0.50	352.00	HR	171.695				60,437		60,437
A	==> ~~~~~LABOR~~~	1.00	4.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	0.50	352.00	MH	58.800	34,477					34,477
$94,913.95	89.0000 MH/MO		356.00	MH	[5174.4]	34,477			60,437		94,914

50000145 RENT & OPER BOOM TRUCK Quan: 4.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	==> ~~~~~EQUIPMENT~	1.00	4.00	HR	0.000						
8CRRT22	==> RT HYD CRANE 22	1.00	704.00	HR	47.305				33,303		33,303
A	==> ~~~~~LABOR~~~	1.00	4.00	MH	0.000						
OCL	==> OP ENG CR 20-44 TO	1.00	352.00	MH	58.090	34,170					34,170
$67,472.41	89.0000 MH/MO		356.00	MH	[5111.92]	34,170			33,303		67,472

50000150 RENT FORKLIFT Quan: 4.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9K	==> FORKLIFT VR 9K#	1.00	704.00	HR	49.580				34,904		34,904

50000155 RENT MANLIFT Quan: 4.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8ML40	==> JLG 40' MANLIFT	1.00	704.00	HR	34.727				24,448		24,448
8ML60	==> JLG 60' MANLIFT	1.00	704.00	HR	45.891				32,307		32,307
$56,755.06					[ ]				56,755		56,755

50000160 RENT BIDWELL Quan: 2.00 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8CFBID	==> BIDWELL BRIDGE FI	1.00	352.00	HR	36.182				12,736		12,736

50000170 CONC PUMP TRUCK Quan: 695.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5COPUSM	SM QTY CON PUMPING	1.00	695.00	CY	35.000			24,325			24,325

50003098 Bridge Rebar Complete Quan: 300,000.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3RE-H	REBAR HOISTING SUPP	1.00	300,000.00	LB	0.035			10,500			10,500
4REBSUP	SUPERSTRUCTURE REB	1.00	300,000.00	LB	1.150					345,000	345,000
$355,500.00					[ ]			10,500		345,000	355,500

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 900000
Description = Conc Deck Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 25,000.000

50004001 Buy Concrete Quan: 695.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CONADEC	CONCRETE-ENVIRO CH	1.05	719.41	CY	6.000		4,316				4,316
2CONADESC2N	ESCALATOR 2ND YEAR	1.05	719.41	CY	5.000		3,597				3,597
2CONADESC3R	ESCALATOR 3RD YEAR	1.05	719.41	CY	10.000		7,194				7,194
2CONADFUEL	FUEL SURCHARGE	1.05	719.41	CY	2.000		1,439				1,439
2CONADHW	CONCRETE-HOT WATE	1.05	719.41	CY	8.000		5,755				5,755
2CONC4D	CONCRETE CL 4000-D	1.05	729.75	CY	138.000		100,706				100,706
$123,007.21					[ ]		123,007				123,007

50004002 Buy Grout Quan: 32.00 BAG Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2GRBNS	GROUT NS .42CF/B	1.10	35.20	BAG	10.000		352				352

50004011 Buy Lumber/Plywood Quan: 51,170.30 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.05	120,889.83	BF	1.200			145,068			145,068
3PLY34CDX	3/4" CDX PLYWOOD	1.05	16,824.83	SF	0.700			11,777			11,777
3PLY34MDO	3/4" MDO PLYWOOD	1.05	36,903.99	SF	2.000			73,808			73,808
$230,653.16					[ ]			230,653			230,653

50004015 Rent Cap Access Mat Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

`EAMO RENT. 6 months rent and 271 ea.`

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3OHWA	WALKWAY BRACKET -	1.00	1,094.00	MO	6.000			6,564			6,564

50004016 Buy/Rent Overhang Bracket Quan: 333.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

`EAMO RENT PRICE.`

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3OH8	8,000 PSI BRACKET - RE	1.00	2,014.21	MO	20.000			40,284			40,284

50004030 S/S Cap/Abut Access Quan: 2,851.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S			79.19 CH	**Prod:**	**6.0000 UM**		Lab Pcs: 6.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	79.19	HR	29.277				2,318		2,318
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	79.19	MH	64.070	7,933					7,933
CJM	CARPENTER J/M	5.00	395.97	MH	53.700	34,611					34,611
$44,862.64	0.1666 MH/SF		475.16	MH	[9.238]	42,544			2,318		44,863

50004031 S/S Grout Pad Quan: 32.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S			26.66 CH	**Prod:**	**5.0000 MU**		Lab Pcs: 6.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	26.67	HR	29.277				781		781
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	26.67	MH	64.070	2,672					2,672
CJM	CARPENTER J/M	5.00	133.33	MH	53.700	11,654					11,654
$15,106.71	5.0000 MH/EA		160.00	MH	[277.143]	14,326			781		15,107

50004032 Place Grout Pad Quan: 23.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LAB3	Laborer 3			23.00 CH	**Prod:**	**3.0000 MU**		Lab Pcs: 3.00		Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	23.00	HR	17.692				407		407
8TRPU450	FLATRACK, BAREBED	1.00	23.00	HR	29.277				673		673
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

BID ITEM = 900000
Description = Conc Deck Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 25,000.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LATO	LABORER, AIR TOOL O	2.00	46.00	MH	45.610	3,250					3,250
LGFM	Laborer-General Foreman	1.00	23.00	MH	55.170	1,895					1,895
$6,225.18	3.0000 MH/EA		69.00	MH	[146.39]	5,145			1,080		6,225

50004041 S/S False Deck Quan: 18,700.07 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 77.91 CH **Prod: 40.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	77.92	HR	29.277				2,281		2,281
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	77.92	MH	64.070	7,806					7,806
CJM	CARPENTER J/M	5.00	389.59	MH	53.700	34,054					34,054
$44,140.59	0.0250 MH/SF		467.51	MH	[1.386]	41,859			2,281		44,141

50004042 S/S Girder Stops Quan: 513.50 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 42.79 CH **Prod: 2.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	42.79	HR	29.277				1,253		1,253
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	42.79	MH	64.070	4,286					4,286
CJM	CARPENTER J/M	5.00	213.96	MH	53.700	18,702					18,702
$24,241.28	0.5000 MH/SF		256.75	MH	[27.714]	22,989			1,253		24,241

50004043 Place Girder Stops Quan: 17.71 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLWGU P/F WALL GUTTER 5.90 CH **Prod: 1.0000 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	5.90	HR	17.692				104		104
8TRPU450	FLATRACK, BAREBED	1.00	5.90	HR	29.277				173		173
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	2.00	11.81	MH	52.600	1,004					1,004
LATO	LABORER, AIR TOOL O	1.00	5.90	MH	45.610	417					417
$1,697.91	1.0000 MH/CY		17.71	MH	[50.272]	1,421			277		1,698

50004052 S/S Deck Soffit Quan: 9,990.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 333.00 CH **Prod: 5.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	333.00	HR	29.277				9,749		9,749
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	333.00	MH	64.070	33,358					33,358
CJM	CARPENTER J/M	5.00	1,665.00	MH	53.700	145,537					145,537
$188,643.64	0.2000 MH/SF		1,998.00	MH	[11.086]	178,894			9,749		188,644

50004055 Set Overhang Brackets Quan: 333.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 55.50 CH **Prod: 1.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	55.50	HR	29.277				1,625		1,625
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	55.50	MH	64.070	5,560					5,560
CJM	CARPENTER J/M	5.00	277.50	MH	53.700	24,256					24,256
$31,440.60	1.0000 MH/EA		333.00	MH	[55.428]	29,816			1,625		31,441

50004056 S/S Overhang Soffit Quan: 1,332.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 110.99 CH **Prod: 2.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						

Cost Report

BID ITEM = 900000
Description = Conc Deck Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 25,000.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8TRPU450	FLATRACK, BAREBED	1.00	111.00	HR	29.277				3,250		3,250
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	111.00	MH	64.070	11,119					11,119
CJM	CARPENTER J/M	5.00	555.00	MH	53.700	48,512					48,512
$62,881.20		0.5000 MH/LF	666.00	MH	[27.714]	59,631			3,250		62,881

50004059 Fab Edge-of-Deck Form **Quan: 333.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP4	Carpenter 4 - Med & PREFAB		6.93	CH	**Prod:**	**12.0000 UM**	Lab Pcs:	4.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	6.94	HR	29.277				203		203
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	6.94	MH	64.070	695					695
CJM	CARPENTER J/M	3.00	20.81	MH	53.700	1,819					1,819
$2,717.35		0.0833 MH/LF	27.75	MH	[4.691]	2,514			203		2,717

50004060 S/S Edge-of-Deck Form **Quan: 1,332.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		37.00	CH	**Prod:**	**6.0000 UM**	Lab Pcs:	6.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	37.00	HR	29.277				1,083		1,083
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	37.00	MH	64.070	3,706					3,706
CJM	CARPENTER J/M	5.00	185.00	MH	53.700	16,171					16,171
$20,960.39		0.1666 MH/LF	222.00	MH	[9.238]	19,877			1,083		20,960

50004061 S/S End Bulkhead Form **Quan: 273.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		22.74	CH	**Prod:**	**2.0001 UM**	Lab Pcs:	6.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	22.75	HR	29.277				666		666
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	22.75	MH	64.070	2,279					2,279
CJM	CARPENTER J/M	5.00	113.74	MH	53.700	9,942					9,942
$12,886.92		0.4999 MH/LF	136.49	MH	[27.712]	12,221			666		12,887

50004062 S/S Thru-Rebar Bulkhead **Quan: 150.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		25.00	CH	**Prod:**	**1.0000 UM**	Lab Pcs:	6.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	25.00	HR	29.277				732		732
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	25.00	MH	64.070	2,504					2,504
CJM	CARPENTER J/M	5.00	125.00	MH	53.700	10,926					10,926
$14,162.43		1.0000 MH/LF	150.00	MH	[55.428]	13,431			732		14,162

50004064 Cln/Prep Deck Pour **Quan: 25,000.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LABAT4	LABORER 4 - DECK PREP		62.50	CH	**Prod:**	**100.0000 UM**	Lab Pcs:	4.00	Eqp Pcs:	3.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	62.50	HR	17.692				1,106		1,106
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	62.50	HR	9.682				605		605
8TRPU450	FLATRACK, BAREBED	1.00	62.50	HR	29.277				1,830		1,830
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	3.00	187.50	MH	45.610	13,245					13,245
LGFM	Laborer-General Foreman	1.00	62.50	MH	55.170	5,151					5,151
$21,936.43		0.0100 MH/SF	250.00	MH	[0.48]	18,396			3,541		21,936

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 900000
Description = Conc Deck Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 25,000.000

50004065 Set/Grade Bidwell Rail Quan: 1,332.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

BDSET	SET/MOVE BIDWELL		41.62	CH	Prod:	8.0000 UM	Lab Pcs:	4.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CFBID	BIDWELL BRIDGE FINIS	1.00	41.63	HR	36.182				1,506		1,506
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	1.00	41.63	MH	53.700	3,639					3,639
OC	OP ENG CRANE 45-99T G	1.00	41.63	MH	58.800	4,078					4,078
OCLL	OP ENG CR<20 TON G#3	1.00	41.63	MH	57.470	4,009					4,009
OEMECH	EQ MECHANIC G#1A	1.00	41.63	MH	59.640	4,121					4,121
$17,352.59	0.1250 MH/LF		166.52	MH	[7.176]	15,846			1,506		17,353

50004066 Setup Bidwell Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

BDSET	SET/MOVE BIDWELL		50.00	CH	Prod:	3.1250 SU	Lab Pcs:	4.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CFBID	BIDWELL BRIDGE FINIS	1.00	50.00	HR	36.182				1,809		1,809
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	1.00	50.00	MH	53.700	4,370					4,370
OC	OP ENG CRANE 45-99T G	1.00	50.00	MH	58.800	4,897					4,897
OCLL	OP ENG CR<20 TON G#3	1.00	50.00	MH	57.470	4,816					4,816
OEMECH	EQ MECHANIC G#1A	1.00	50.00	MH	59.640	4,949					4,949
$20,841.46	100.0000 MH/EA		200.00	MH	[5740.25]	19,032			1,809		20,841

50004067 Dryrun Bidwell Quan: 4.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

BDWDRY	DRY RUN BIDWELL		75.00	CH	Prod:	2.3438 SU	Lab Pcs:	3.00	Eqp Pcs:	0.00	
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	75.00	MH	64.070	7,513					7,513
CJM	CARPENTER J/M	1.00	75.00	MH	53.700	6,556					6,556
OC	OP ENG CRANE 45-99T G	1.00	75.00	MH	58.800	7,346					7,346
$21,414.75	56.2500 MH/EA		225.00	MH	[3310.688]	21,415					21,415

50004068 P/F Deck Conc Bidwell Quan: 695.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLDECK	P/F DECK - BIDWELL		31.59	CH	Prod:	2.0000 UM	Lab Pcs:	11.00	Eqp Pcs:	5.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	31.59	HR	17.692				559		559
8CFBID	BIDWELL BRIDGE FINIS	1.00	31.59	HR	36.182				1,143		1,143
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	31.59	HR	9.682				306		306
8GENLI	ENG DRIVEN LITE TOW	1.00	31.59	HR	10.382				328		328
8TRPU450	FLATRACK, BAREBED	1.00	31.59	HR	29.277				925		925
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	31.59	MH	62.860	3,085					3,085
CMJM	CEMENT MASON J/M	3.00	94.77	MH	52.600	8,057					8,057
LATO	LABORER, AIR TOOL O	5.00	157.95	MH	45.610	11,158					11,158
LGFM	Laborer-General Foreman	1.00	31.59	MH	55.170	2,603					2,603
OC	OP ENG CRANE 45-99T G	1.00	31.59	MH	58.800	3,094					3,094
$31,257.21	0.4999 MH/CY		347.49	MH	[25.576]	27,997			3,260		31,257

50004078 Surface Finish Quan: 2,746.06 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINDCK	Finish Deck Soffit		18.30	CH	Prod:	49.9999 UM	Lab Pcs:	3.00	Eqp Pcs:	3.50	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	9.15	HR	17.692				162		162
8GENLI	ENG DRIVEN LITE TOW	1.00	18.31	HR	10.382				190		190
8ML60	JLG 60' MANLIFT	1.00	18.31	HR	45.891				840		840
8TRPU450	FLATRACK, BAREBED	1.00	18.31	HR	29.277				536		536

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 900000
Description = Conc Deck — Unit = SF — Takeoff Quan: 25,000.000 — Engr Quan: 25,000.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	18.31	MH	62.860	1,788					1,788
CMJM	CEMENT MASON J/M	2.00	36.61	MH	52.600	3,112					3,112
$6,628.51	0.0199 MH/SF		54.92	MH	[1.12]	4,900			1,728		6,629

50004079 Wet Cure Deck — Quan: 25,000.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

CURDCK — Cure Deck — 83.33 CH — **Prod: 99.9999 UM** — Lab Pcs: 3.00 — Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	83.33	HR	10.382				865		865
8TRPU450	FLATRACK, BAREBED	1.00	83.33	HR	29.277				2,440		2,440
8TRWA4	WATER TRUCK 4000 GA	1.00	83.33	HR	50.119				4,176		4,176
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	1.00	83.33	MH	45.610	5,887					5,887
LGFM	Laborer-General Foreman	1.00	83.33	MH	55.170	6,867					6,867
OBHL	OP ENG BACKHOE/L<75	1.00	83.33	MH	57.740	8,053					8,053
$28,288.02	0.0099 MH/SF		249.99	MH	[0.528]	20,807			7,481		28,288

50004089 Pigseal BR Superstructure — Quan: 779.11 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4PNTSEAL	PIGMENTED SEALER	1.00	779.11	SF	0.750					584	584

50009001 Buy Deck Drain Inlets — Quan: 16.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2DSCR39	NEENAH R-39XX SERIES	1.00	16.00	EA	1,800.000		28,800				28,800

50009030 Set Deck Drain Inlets — Quan: 16.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

LAB3 — Laborer 3 — 80.00 CH — **Prod: 5.0000 HU** — Lab Pcs: 3.00 — Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	80.00	HR	17.692				1,415		1,415
8TRPU450	FLATRACK, BAREBED	1.00	80.00	HR	29.277				2,342		2,342
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	160.00	MH	45.610	11,303					11,303
LGFM	Laborer-General Foreman	1.00	80.00	MH	55.170	6,593					6,593
$21,652.83	15.0000 MH/EA		240.00	MH	[731.95]	17,895			3,758		21,653

=====> Item Totals: 900000 - Conc Deck

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$1,720,720.72	0.2982 MH/SF		7,457.29	MH	[16.421]	662,696	152,159	312,326	247,955	345,584	**1,720,721**
68.829	25000 SF					26.51	6.09	12.49	9.92	13.82	68.83

BID ITEM = 1000000
Description = Bridge Barrier — Unit = LF — Takeoff Quan: 682.000 — Engr Quan: 682.000

50007501 Buy Concrete — Quan: 88.96 CY — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CONADEC	CONCRETE-ENVIRO CH	1.10	95.34	CY	6.000		572				572
2CONADESC3R	ESCALATOR 3RD YEAR	1.10	95.34	CY	10.000		953				953
2CONADFUEL	FUEL SURCHARGE	1.10	95.34	CY	2.000		191				191
2CONADHW	CONCRETE-HOT WATE	1.10	95.34	CY	8.000		763				763
2CONC4	CONCRETE CL 4000	1.10	95.34	CY	145.000		13,824				13,824
$16,303.14					[ ]		16,303				16,303

50007511 Buy Lumber/Plywood — Quan: 2,387.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.00	4,774.00	BF	1.200			5,729			5,729

Cost Report

BID ITEM = 1000000
Description = Bridge Barrier Unit = LF Takeoff Quan: 682.000 Engr Quan: 682.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3PLY34MDO	3/4" MDO PLYWOOD	1.00	2,387.00	SF	2.000			4,774			4,774
$10,502.80					[ ]			10,503			10,503

50007552 Prefab Barrier Forms Quan: 2,387.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP4	Carpenter 4 - Med & PREFAB		49.71	CH	**Prod:**	**12.0029 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	49.72	HR	29.277				1,456		1,456
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	49.72	MH	64.070	4,981					4,981
CJM	CARPENTER J/M	3.00	149.15	MH	53.700	13,037					13,037
$19,473.39	0.0833 MH/SF		198.87	MH	[4.69]	18,018			1,456		19,473

50007554 S/S Barrier Quan: 4,774.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		79.54	CH	**Prod:**	**10.0028 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	79.54	HR	29.277				2,329		2,329
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	79.54	MH	64.070	7,968					7,968
CJM	CARPENTER J/M	5.00	397.72	MH	53.700	34,764					34,764
$45,060.91	0.0999 MH/SF		477.26	MH	[5.541]	42,732			2,329		45,061

50007555 Place Barrier Concrete Quan: 88.96 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
PLBARR	(Mod) P/F Barrier		17.79	CH	**Prod:**	**5.0000 UH**		Lab Pcs:	3.00	Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	17.79	HR	17.692				315		315
8TRPU450	FLATRACK, BAREBED	1.00	17.79	HR	29.277				521		521
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	17.79	MH	52.600	1,512					1,512
LATO	LABORER, AIR TOOL O	1.00	17.79	MH	45.610	1,257					1,257
LGFM	Laborer-General Foreman	1.00	17.79	MH	55.170	1,466					1,466
$5,070.72	0.5999 MH/CY		53.37	MH	[30.672]	4,235			836		5,071

50007556 Cure Barrier Concrete Quan: 533.74 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CURE	MISC CONC Cure		13.37	CH	**Prod:**	**19.9490 UM**		Lab Pcs:	2.00	Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	13.38	HR	10.382				139		139
8TRPU450	FLATRACK, BAREBED	1.00	13.38	HR	29.277				392		392
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	13.38	MH	44.530	927					927
LGFM	Laborer-General Foreman	1.00	13.38	MH	55.170	1,103					1,103
$2,560.62	0.0501 MH/SF		26.76	MH	[2.499]	2,030			531		2,561

50007557 Point / Patch Barrier Quan: 4,774.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
FINWAL	Finish Walls		39.82	CH	**Prod:**	**59.9338 UM**		Lab Pcs:	2.00	Eqp Pcs:	4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	39.83	HR	17.692				705		705
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	39.83	HR	9.682				386		386
8ML40	JLG 40' MANLIFT	1.00	39.83	HR	34.727				1,383		1,383
8TRPU450	FLATRACK, BAREBED	1.00	39.83	HR	29.277				1,166		1,166
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	39.83	MH	62.860	3,889					3,889
CMJM	CEMENT MASON J/M	1.00	39.83	MH	52.600	3,386					3,386
$10,914.82	0.0166 MH/SF		79.66	MH	[0.963]	7,275			3,640		10,915

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM	**= 1000000**										
Description =	Bridge Barrier			Unit = LF		Takeoff Quan:		682.000	Engr Quan:		682.000
50007558	**Surface Finish Barrier**		**Quan: 4,791.49**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
FINWAL	Finish Walls		79.85	CH	**Prod: 29.9999 UM**		Lab Pcs: 2.00		Eqp Pcs: 4.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	79.86	HR	17.692				1,413		1,413
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	79.86	HR	9.682				773		773
8ML40	JLG 40' MANLIFT	1.00	79.86	HR	34.727				2,773		2,773
8TRPU450	FLATRACK, BAREBED	1.00	79.86	HR	29.277				2,338		2,338
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	79.86	MH	62.860	7,798					7,798
CMJM	CEMENT MASON J/M	1.00	79.86	MH	52.600	6,789					6,789
$21,884.59	0.0333 MH/SF		159.72	MH	[1.924]	14,587			7,297		21,885
50007560	**S/S Lum/Traf Blister**		**Quan: 12.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		15.99	CH	**Prod: 7.9999 MU**		Lab Pcs: 6.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	16.00	MH	64.070	1,603					1,603
CJM	CARPENTER J/M	5.00	80.00	MH	53.700	6,993					6,993
$9,063.95	8.0000 MH/EA		96.00	MH	[443.427]	8,596			468		9,064
50007589	**Pigseal Bridge Barrier**		**Quan: 5,285.50**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	5,285.50	SF	0.750					3,964	3,964
50007597	**Rebar Barrier - Hand**		**Quan: 682.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	682.00	LB	0.035			24			24
4REBSUPBA	BRIDGE BARRIER	1.00	682.00	LF	45.000					30,690	30,690
$30,713.87					[ ]			24		30,690	30,714
=====> Item Totals:	**1000000 - Bridge Barrier**										
$175,512.94	1.6006 MH/LF		1,091.64	MH	[89.225]	97,473	16,303	10,527	16,556	34,654	**175,513**
257.350	682 LF					142.92	23.90	15.44	24.28	50.81	257.35
BID ITEM	**= 1100000**										
Description =	Bridge Curb			Unit = LF		Takeoff Quan:		682.000	Engr Quan:		682.000
45007081	**Ped Curb**		**Quan: 682.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4CF6707	CONC PEDESTRIAN CU	1.00	682.00	LF	50.000					34,100	34,100
BID ITEM	**= 1200000**										
Description =	Temporary OCS			Unit = LS		Takeoff Quan:		1.000	Engr Quan:		1.000
A	**Temporary OCS**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
4EL	ELECTRICAL	1.00	1.00	LS	200,000.000					200,000	200,000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 1300000
Description = Permanent OCS — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 1.000

A — Permanent OCS — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	1,000,000.000					1,000,000	1,000,000

BID ITEM = 1400000
Description = Temp Illumination — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 1.000

A — Temp Illumination — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	60,000.000					60,000	60,000

BID ITEM = 1500000
Description = Permanent Illumination — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 1.000

A — Permanent Illumination — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4ELE014	2 INCH PVC CONDUIT S	1.00	1,332.00	LF	25.000					33,300	33,300
4ELIL	ILLUMINATION - LIGHT	1.00	12.00	EA	25,000.000					300,000	300,000
$333,300.00					[ ]					333,300	333,300

=====> Item Totals: 1500000 - Permanent Illumination

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$333,300.00					[ ]					333,300	**333,300**
333,300.000			1 LS							333,300.00	333,300.00

PARENT ITEM = 9000000
Description = General Conditions — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 9000000:

BID ITEM = 9000010
Description = Salaried Staff and Admin — Unit = MO — Takeoff Quan: 36.000 — Engr Quan: 0.000

A — Salaried and Admin — Quan: 37.00 MO — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
ZBUS1	==> CLERICAL OFFICE H	1.00	37.00	MO	9,000.000	362,970					362,970
ZENG1H	==> PROJECT ENGINEER	1.00	37.00	MO	20,000.000	806,600					806,600
ZENG3H	==> FIELD ENGINEER	1.00	37.00	MO	12,500.000	504,125					504,125
ZPM	==> PROJECT MANAGE	1.00	18.50	MO	25,000.000	504,125					504,125
ZSUP1H	==> PROJECT SUPERINT	1.00	37.00	MO	22,000.000	887,260					887,260
$3,065,080.00					[ ]	3,065,080					3,065,080

=====> Item Totals: 9000010 - Salaried Staff and Admin

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$3,065,080.00					[ ]	3,065,080					**3,065,080**
85,141.111			36 MO			85,141.11					85,141.11

Cost Report

BID ITEM = 9000040
Description = Construction Support | Unit = MO | Takeoff Quan: 36.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Project Signs**	**Quan: 20.00 EA**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3PROJECTSIGN	Project Sign	1.00	20.00	EA	500.000			10,000			10,000
B	**Photographs**	**Quan: 20.00 WK**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	20.00	WK	1,000.000			20,000			20,000
C	**Insurance Deductable**	**Quan: 1.00 LS**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	50,000.000			50,000			50,000
=====> **Item Totals:**	**9000040 - Construction Support**										
$80,000.00					[ ]			80,000			**80,000**
2,222.222			36 MO					2,222.22			2,222.22

BID ITEM = 9000050
Description = Safety | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**First Aid Station**	**Quan: 3.00 EA**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	3.00	EA	10,000.000			30,000			30,000
B	**First Aid Kits, Supplies**	**Quan: 156.00 WK**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	156.00	WK	250.000			39,000			39,000
D	**Sbstance Abuse Testing**	**Quan: 30.00 EA**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	30.00	EA	250.000			7,500			7,500
=====> **Item Totals:**	**9000050 - Safety**										
$76,500.00					[ ]			76,500			**76,500**
76,500.000			1 LS					76,500.00			76,500.00

BID ITEM = 9000060
Description = Tools and Equipment | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Staff Pickups**	**Quan: 1.00 LS**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
8TRPU150M	==> C.P.O. VEHICLES -	1.00	129.50	MO	1,600.000				207,200		207,200
B	**Forklift**	**Quan: 18.50 MO**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	3,700.00	HR	49.580				183,446		183,446
OBH	==> OP ENG BACKHOE	1.00	3,700.00	MH	58.090	383,692					383,692
$567,137.74	200.0000 MH/MO		3,700.00	MH	[12779.8]	383,692			183,446		567,138
C	**Small Tools**	**Quan: 10,000.00 HR**			**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3SMALLTOOLS	Small Tools	1.00	10,000.00	HR	2.500			25,000			25,000

=====> **Item Totals:** **9000060 - Tools and Equipment**

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 9000060
Description = Tools and Equipment — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$799,337.74	3,700.0000 MH/LS		3,700.00	MH	[236426.3]	383,692		25,000	390,646		**799,338**
799,337.740	1 LS					383,691.74		25,000.00	390,646.00		799,337.74

BID ITEM = 9000070
Description = Misc.Overtime — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

A — Misc.Overtime — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3	SUPPLIES & CONSUMA	1.00	1.00	LS	250,000.000			250,000			250,000

=====> Item Totals: 9000070 - Misc.Overtime

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$250,000.00					[ ]			250,000			**250,000**
250,000.000	1 LS							250,000.00			250,000.00

BID ITEM = 9000080
Description = Contingency — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

A — Contingency — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3	SUPPLIES & CONSUMA	1.00	1.00	LS	500,000.000			500,000			500,000

=====> Item Totals: 9000080 - Contingency

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$500,000.00					[ ]			500,000			**500,000**
500,000.000	1 LS							500,000.00			500,000.00

BID ITEM = 9090000
Description = Bond/Insurance/Tax — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

A — Bond, Insurance — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1BIBR	Builder's Risk Insurance	1.00	34,200,000.00	DLR	0.004			136,800			136,800
1BICG	Contractor's General Liabili	1.00	34,200,000.00	DLR	0.009			307,800			307,800
1BIPP	P&P Bond	1.00	34,200,000.00	DLR	0.007			239,400			239,400
1BISUB	SUBCONTRCTOR BOND	1.00	14,000,000.00	DLR	0.015			210,000			210,000
$894,000.00					[ ]			894,000			894,000

=====> Item Totals: 9090000 - Bond/Insurance/Tax

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$894,000.00					[ ]			894,000			**894,000**
894,000.000	1 LS							894,000.00			894,000.00

BID ITEM = 9100000
Description = Escalation — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

A — Labor Escalation — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1	GEN CONDITION/INDIR	1.00	6,500,000.00	LS	0.040			260,000			260,000

B — Equipment Escalation — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Cost Report

Activity / Resource	Desc	Quantity Pcs	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 9100000										
Description =	Escalation		Unit = LS		Takeoff Quan: 1.000			Engr Quan: 0.000		
1	GEN CONDITION/INDIR	1.00	1,500,000.00 LS	0.060			90,000			90,000
C	**Subcontractor-Labor Escalation**	**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**					**Unreviewed
1	GEN CONDITION/INDIR	1.00	14,000,000.00 LS	0.040			560,000			560,000
D	**Subcontractor-Equipment Escalation**	**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**					**Unreviewed
1	GEN CONDITION/INDIR	1.00	1,000,000.00 LS	0.040			40,000			40,000
=====> **Item Totals: 9100000 - Escalation**										
$950,000.00				[ ]			950,000			**950,000**
950,000.000		1 LS					950,000.00			950,000.00

Total of Above Sub-Biditems

=====> **Item Totals: 9000000 - General Conditions**										
$6,614,917.74	**3,700.0000 MH/LS**	**3,700.00**	**MH**	**[236426.3]**	**3,448,772**		**2,775,500**	**390,646**		**6,614,918**
6,614,917.740		**1 LS**			**3,448,771.74**		**2,775,500.00**	**390,646.00**		**6,614,917.74**
$28,474,463.57	***** Report Totals *****	39,441.67	MH		6,523,855	1,881,092	4,977,029	1,773,469	13,319,018	**28,474,464**

>>> indicates Non Additive Activity
------Report Notes:------
The estimate was prepared with TAKEOFF Quantities.
This report shows TAKEOFF Quantities with the resources.

'Unreviewed' Activities are marked.

Bid Date: 04/01/24 Owner: Engineering Firm:
Estimator-In-Charge:

JOB NOTES

```
Estimate created on: 06/13/2023 by User#: 5 - Bing Ma
Source estimate used: L:\HEAVYBID\EST\COS-UBR-A1

************Estimate created on: 06/14/2023 by User#: 5 - Bing Ma
Source estimate used: L:\HEAVYBID\EST\COS-UBR-A3
```

* on units of MH indicate average labor unit cost was used rather than base rate.
[ ] in the Unit Cost Column = Labor Unit Cost Without Labor Burdens
In equipment resources, rent % and EOE % not = 100% are represented as XXX%YYY where XXX=Rent% and YYY=EOE%
------Calendar Codes------

508	**5x8 Hr - Single Shift (Default Calendar)**
510	5x10 Single Shift
WEK	12 Weekend Closure

Cost Report

BID ITEM = 1000 CLIENT# = 104001
Description = MINOR CHANGE Unit = CALC Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
80001000	**~~OWNER FORCE ACCOUNT**				**Quan: 1.00 CAL**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
6FA	STATE ESTIMATE - FA	1.00	1.00	CALC	1.000			1			1
=====> **Item Totals:**	**1000 - MINOR CHANGE**										
$1.00					[ ]			1			**1**
1.000	1 CALC							1.00			1.00

BID ITEM = 2000 CLIENT# = 107105
Description = FIELD OFFICE FOR ENGINEERS'S STAFF Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
99003040	**Temp Toilets**				**Quan: 31.00 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1UTPT	Portable Toilets	2.00	62.00	EAMO	200.000			12,400			12,400
99004010	**Dumpster Service**				**Quan: 31.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1CUMO	Debris Box/Monthly Trash	2.00	62.00	MO	1,000.000			62,000			62,000
A	**Field Office**				**Quan: 31.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1OFTRRT	Field Office Trailer Rent	1.00	31.00	MO	2,500.000			77,500			77,500
B	**Office Furniture**				**Quan: 31.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1ITINAC	Internet Air Cards	1.00	31.00	MO	70.000			2,170			2,170
1SPCPMT	Copier/Printer Supplies	1.00	31.00	MO	100.000			3,100			3,100
1SPMO	Monthly Office/Engineering	1.00	62.00	MMO	135.000			8,370			8,370
$13,640.00					[ ]			13,640			13,640
D	**Sheds/Storage Facilities**				**Quan: 31.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1YDSH	Yard/Job Shacks and Sheds	1.00	8.00	EA	3,000.000			24,000			24,000
E	**Drinking Water**				**Quan: 31.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1SPH2	Drinking Water	1.00	31.00	MO	350.000			10,850			10,850
F	**Final Cleanup**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
ZZZZZZ	(Mod) general		40.00	CH	**Prod:**	**40.0000 CH**	Lab Pcs:	5.00	Eqp Pcs:		1.00
8LB426	LDR-BCKHOE CAT 426	1.00	40.00	HR	52.568				2,103		2,103
CJM	CARPENTER J/M	1.00	40.00	MH	53.700	3,496					3,496
LCOM	LABORER, COMMON G#	3.00	120.00	MH	44.530	8,317					8,317
OP4	OPER 4 (EX/BLADE/DOZ	1.00	40.00	MH	53.980	3,681					3,681
$17,597.08	200.0000 MH/LS		200.00	MH	[9650.8]	15,494			2,103		17,597
G	**Temp Fence**				**Quan: 1,000.00 FT**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1YDFN	Temporary Fencing	1.00	1,000.00	LF	15.000			15,000			15,000
J	**Computer Connect**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			
											**Unreviewed
1ITINWF	Pt to Pt Wifi Connection	1.00	31.00	MO	500.000			15,500			15,500

Cost Report

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 2000 CLIENT# = 107105
Description = FIELD OFFICE FOR ENGINEERS'S STAFF Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

=====> **Item Totals: 2000 - FIELD OFFICE FOR ENGINEERS'S STAFF**

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$248,487.08	200.0000 MH/LS		200.00 MH	[9650.8]	15,494		230,890	2,103		**248,487**
248,487.080	1 LS				15,494.36		230,890.00	2,102.72		248,487.08

BID ITEM = 3000 CLIENT# = 108005
Description = SCHEDULE UPDATE, MIN. BID ($1500/EA) Unit = EA Takeoff Quan: 31.000 Engr Quan: 31.000

99001050 Outside Engineering Quan: 31.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	248.00 HR	200.000			49,600			49,600

=====> **Item Totals: 3000 - SCHEDULE UPDATE, MIN. BID ($1500/EA)**

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$49,600.00				[ ]			49,600			**49,600**
1,600.000	31 EA						1,600.00			1,600.00

BID ITEM = 4000 CLIENT# = 109005
Description = MOBILIZATION Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

99004020 Final Project Clean-Up Quan: 50.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 80.00 CH **Prod: 10.0000 S** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00 HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	80.00 HR	17.692				1,415		1,415
8TRPU450	FLATRACK, BAREBED	1.00	80.00 HR	29.277				2,342		2,342
A	~~~~~LABOR~~~		0.00 MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	160.00 MH	45.610	11,303					11,303
LGFM	Laborer-General Foreman	1.00	80.00 MH	55.170	6,593					6,593
$21,652.83	4.8000 MH/HR		240.00 MH	[234.224]	17,895			3,758		21,653

99008030 Equipment In & Out Quan: 60.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0214

**Unreviewed

SUPTEQ Move Equipment 240.00 CH **Prod: 4.0000 HU** Lab Pcs: 1.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00 HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	240.00 HR	6.538				1,569		1,569
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	240.00 HR	38.395				9,215		9,215
A	~~~~~LABOR~~~		0.00 MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	240.00 MH	57.740	23,194					23,194
$33,978.04	4.0000 MH/EA		240.00 MH	[230.96]	23,194			10,784		33,978

C Yard Set-up Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

ZZZZZZ (Mod) general 80.00 CH **Prod: 80.0000 CH** Lab Pcs: 5.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8LB426	LDR-BCKHOE CAT 426	1.00	80.00 HR	52.568				4,205		4,205
CJM	CARPENTER J/M	1.00	80.00 MH	53.700	6,993					6,993
LCOM	LABORER, COMMON G#	3.00	240.00 MH	44.530	16,635					16,635
OP4	OPER 4 (EX/BLADE/DOZ	1.00	80.00 MH	53.980	7,361					7,361
$35,194.19	400.0000 MH/LS		400.00 MH	[19301.6]	30,989			4,205		35,194

=====> **Item Totals: 4000 - MOBILIZATION**

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$90,825.06	880.0000 MH/LS		880.00 MH	[44870.4]	72,078			18,747		**90,825**
90,825.060	1 LS				72,078.18			18,746.88		90,825.06

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 5000 CLIENT# = 110005
Description = MAINT AND PROTECTION OF TRAFFIC CONTROL Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

13001000 ~~TRAFFIC CONTROL Quan: 660.00 DAY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

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Subcontract out to DBE traffic control.

30 months of work. Flagger onsite the whole time.
Traffic Closure 4 months.
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Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC	TRAFFIC CONTROL	1.00	660.00	DAY	250.000					165,000	165,000
4TC6956	SEQUENTIAL ARROW SI	2.00	1,760.00	HR	4.000					7,040	7,040
4TC6968	TRAFFIC CTL VEHICAL	1.00	660.00	DAY	100.000					66,000	66,000
4TC6972DT	TRAFFIC CTL SUPV. DT	1.00	0.00	HR	110.000						
4TC6972OT	TRAFFIC CTL SUPV. OT	1.00	6,600.00	HR	88.000					580,800	580,800
4TC6979DT	TRAFFIC CTL LABOR - D	1.00	0.00	HR	120.000						
4TC6979OT	TRAFFIC CTL LABOR - O	1.00	6,600.00	HR	100.000					660,000	660,000
4TC7449	OP TRK MTD IMP ATTE	1.00	880.00	HR	30.000					26,400	26,400
$1,505,240.00					[ ]					1,505,240	1,505,240

13003080 Inst Temp Barrier Quan: 400.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4BARPT6781	TEMP CONC. BARRIER	1.00	400.00	LF	17.000					6,800	6,800

13003083 Pin Temp Barrier Quan: 333.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4BARPTPIN	PIN TEMP BARRIER	1.00	333.00	LF	5.000					1,665	1,665

13003091 Crash Cushion Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4GRAMA7440	TEMP IMPACT ATTENU	1.00	2.00	EA	6,250.000					12,500	12,500

13003096 Pedestrian/Water Barrier Quan: 400.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3	SUPPLIES & CONSUMA	1.00	400.00	LF	0.000						

13004081 Temp Stripe (Paint) Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4STP6888	TEMP PVMT MARKING	1.00	2,000.00	LF	0.387					775	775

13004095 Refr Markings Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4STP6806	PAINT LINE	1.00	2,000.00	LF	0.250					500	500

=====> **Item Totals: 5000 - MAINT AND PROTECTION OF TRAFFIC CONTROL**

$1,527,480.00					[ ]					1,527,480	**1,527,480**
1,527,480.000			1 LS							1,527,480.00	1,527,480.00

BID ITEM = 6000 CLIENT# = 110020
Description = TRAFFIC CONTROL PEACE OFFICERS Unit = HR Takeoff Quan: 1,340.000 Engr Quan: 1,340.000

13001095 Uniformed Police Officers Quan: 1,340.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4POLT	POLICE TRAFFIC CONT	1.00	1,340.00	HR	125.000					167,500	167,500

Cost Report

BID ITEM = 7000 CLIENT# = 110025
Description = PORTABLE CHANGEABLE MESSAGE SIGN Unit = WK Takeoff Quan: 134.000 Engr Quan: 134.000

13001083 PCMS Boards Quan: 645.00 SH Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

2 each.

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC6995	OP P/CH MESSAGE SIGN	2.00	12,900.00	HR	10.000					129,000	129,000

BID ITEM = 8000 CLIENT# = 801001
Description = TESC Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Part of Field Engineer duty.

16000501 Dev SWPP Plan Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	40.00	HR	200.000			8,000			8,000

16002001 Buy ESA/HV Fence Quan: 1,210.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECFNSLTNW	SILT FENCE NO WIRE	1.05	1,270.50	LF	1.500			1,906			1,906
3ECPOSTSTLT	STEEL "T" POST	1.05	212.17	EA	4.500			955			955
$2,860.52					[ ]			2,861			2,861

16002006 Buy Drain Inlet Protection Quan: 30.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECCBIN	CATCH BASIN INSERT	1.00	30.00	EA	30.000			900			900

16002030 I/R ESA/HV Fence Quan: 1,210.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E2HV (Mod) HIGH VIS FENCE 10.08 CH **Prod: 40.0001 UM** Lab Pcs: 3.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	10.08	HR	29.277				295		295
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	20.17	MH	44.530	1,398					1,398
LGFM	Laborer-General Foreman	1.00	10.08	MH	55.170	831					831
$2,523.80	0.0250 MH/LF		30.25	MH	[1.202]	2,229			295		2,524

16002035 I/R DI Protection Quan: 30.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E01O MISC TESC CREW 15.00 CH **Prod: 1.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	15.00	HR	29.277				439		439
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	15.00	MH	44.530	1,040					1,040
LGFM	Laborer-General Foreman	1.00	15.00	MH	55.170	1,236					1,236
$2,714.95	1.0000 MH/EA		30.00	MH	[49.85]	2,276			439		2,715

16003003 Buy Matting/Netting Quan: 3,000.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECJUTEMAT	JUTE MATTING	1.05	349.97	SY	0.400			140			140
3ECPOSTWD	WOOD POST - 2'	1.00	150.00	EA	0.750			113			113
$252.49					[ ]			252			252

16003030 I/R Slope Covering Quan: 3,000.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E01O MISC TESC CREW 5.00 CH **Prod: 300.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	5.00	HR	29.277				146		146
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 8000	CLIENT# = 801001										
Description =	TESC			Unit = LS		Takeoff Quan:		1.000	Engr Quan:		1.000
LCOM	LABORER, COMMON G#	1.00	5.00	MH	44.530	347					347
LGFM	Laborer-General Foreman	1.00	5.00	MH	55.170	412					412
$904.98	0.0033 MH/SF		10.00	MH	[0.166]	759			146		905
16005001	**Buy Quarry Spalls**				**Quan: 123.00 TN**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
2AGGRQS	QUARRY SPALLS	1.05	129.15	TON	30.000		3,875				3,875
16005002	**Buy Fabric**				**Quan: 1,800.00 SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
2GEOTEXSS	GEOTEX SOIL STABILIZ	1.20	240.00	SY	0.950		228				228
16005030	**Inst Constr Entrance**				**Quan: 2.00 EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
16E5CE	CONST ENTRANCE		16.00	CH	**Prod:**	**1.0000 SU**	Lab Pcs:	2.50		Eqp Pcs:	1.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	16.00	HR	103.977				1,664		1,664
8TRDU5	JOB HAUL DUMP TRUC	0.50	8.00	HR	32.200				258		258
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	16.00	MH	44.530	1,109					1,109
OBH	OP ENG BACKHOE <3CY	1.00	16.00	MH	58.090	1,553					1,553
OBHL	OP ENG BACKHOE/L<75	0.50	8.00	MH	57.740	773					773
$5,356.52	20.0000 MH/EA		40.00	MH	[1051.92]	3,435			1,921		5,357
16005031	**Rem Constr Entrance**				**Quan: 2.00 EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
16E5CE	CONST ENTRANCE		12.00	CH	**Prod:**	**0.7500 SU**	Lab Pcs:	2.50		Eqp Pcs:	1.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	12.00	HR	103.977				1,248		1,248
8TRDU5	JOB HAUL DUMP TRUC	0.50	6.00	HR	32.200				193		193
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	12.00	MH	44.530	832					832
OBH	OP ENG BACKHOE <3CY	1.00	12.00	MH	58.090	1,165					1,165
OBHL	OP ENG BACKHOE/L<75	0.50	6.00	MH	57.740	580					580
$4,017.39	15.0000 MH/EA		30.00	MH	[788.94]	2,576			1,441		4,017
16007030	**Maint TESC**				**Quan: 1,364.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
2 hours per day											
16E01O	MISC TESC CREW		1,364.00	CH	**Prod:**	**1.0000 HU**	Lab Pcs:	2.00		Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	1,364.00	HR	29.277				39,934		39,934
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	1,364.00	MH	44.530	94,542					94,542
LGFM	Laborer-General Foreman	1.00	1,364.00	MH	55.170	112,406					112,406
$246,880.88	2.0000 MH/HR		2,728.00	MH	[99.7]	206,947			39,934		246,881
16007080	**Street Sweeping**				**Quan: 2,728.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
4EROS6470	STREET CLEANING	1.00	2,728.00	HR	200.000					545,600	545,600
90001090	**Water truck**				**Quan: 30.00 UM**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
8TRWA4	==> WATER TRUCK 4000	1.00	5,200.00	HR	50.119				260,619		260,619
=====> **Item Totals: 8000**	**- TESC**										
$1,084,732.83	2,868.2500 MH/LS		2,868.25	MH	[143120.8]	218,222	4,103	12,013	304,795	545,600	**1,084,733**
1,084,732.830	1 LS					218,221.96	4,102.50	12,013.01	304,795.36	545,600.00	1,084,732.83

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 9000 CLIENT# = 801002
Description = TREE, VEGETATION & SOIL PROTECTIO Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

16002001 Buy ESA/HV Fence Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECFNSLTNW	SILT FENCE NO WIRE	1.05	2,100.00	LF	1.500			3,150			3,150
3ECPOSTSTLT	STEEL "T" POST	1.05	350.70	EA	4.500			1,578			1,578
$4,728.15					[ ]			4,728			4,728

16002030 I/R ESA/HV Fence Quan: 2,000.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E2HV (Mod) HIGH VIS FENCE 16.66 CH **Prod: 40.0002 UM** Lab Pcs: 3.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.67	HR	29.277				488		488
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	33.33	MH	44.530	2,310					2,310
LGFM	Laborer-General Foreman	1.00	16.67	MH	55.170	1,374					1,374
$4,171.94	0.0250 MH/LF		50.00	MH	[1.202]	3,684			488		4,172

A Clear and Grub Quan: 0.50 AC Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

3CLR32 Clear and Grub 320 EXC 40.00 CH **Prod: 80.0000 HU** Lab Pcs: 5.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX320	EXCAV CAT 320 (50K LB	1.00	40.00	HR	103.977				4,159		4,159
8LD950	WHL LOADER CAT 950	1.00	40.00	HR	65.800				2,632		2,632
8TRDU5	JOB HAUL DUMP TRUC	1.00	40.00	HR	32.200				1,288		1,288
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	80.00	MH	45.610	5,651					5,651
LGFM	Laborer-General Foreman	1.00	40.00	MH	55.170	3,296					3,296
OBHL	OP ENG BACKHOE/L<75	1.00	40.00	MH	57.740	3,866					3,866
OFELL	OP ENG LOADER	1.00	40.00	MH	57.470	3,852					3,852
$25,915.89	400.0000 MH/AC		200.00	MH	[20928]	16,666			9,250		25,916

B Haul and Dispose of Waste Quan: 10.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRECYTTUNS	EXPORT T&T - UNSUITA	1.00	100.00	TKYD	45.000			4,500			4,500

=====> **Item Totals: 9000 - TREE, VEGETATION & SOIL PROTECTIO**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$39,315.98	250.0000 MH/LS		250.00	MH	[12867.86]	20,350		9,228	9,738		**39,316**
39,315.980	1 LS					20,349.65		9,228.15	9,738.18		39,315.98

BID ITEM = 10000 CLIENT# = 801003
Description = SPILL PLAN (SP) Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

16000503 Dev Spill Prevention Plan Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OE	OUTSIDE ENGINEERING	1.00	24.00	HR	200.000			4,800			4,800

=====> **Item Totals: 10000 - SPILL PLAN (SP)**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$4,800.00					[ ]			4,800			**4,800**
4,800.000	1 LS							4,800.00			4,800.00

BID ITEM = 11000
Description = Misc Civil Items Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Cost Report

BID ITEM = 11000
Description = Misc Civil Items | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 1.000

50000 Misc. Civil Items — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

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15% of direct cost.
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4	SUBCONTRACTORS	1.00	1.00	LS	2,700,000.000					2,700,000	2,700,000

BID ITEM = 12000
Description = Ex Stair Modification | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 1.000

A Ex Stair Modification — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4	SUBCONTRACTORS	1.00	1.00	LS	500,000.000					500,000	500,000

BID ITEM = 13000
Description = AC - Graind and Overlay | Unit = SY | Takeoff Quan: 2,146.000 | Engr Quan: 2,146.000

40002080 HMA milling/plane-SY — Quan: 2,146.00 SY — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4GRHMA5711	PLAN'G BITUMINOUS P	1.00	2,146.00	SY	13.500					28,971	28,971
4GRHMA5711M	MOB FOR AC GRINDING	1.00	1.00	EA	5,000.000					5,000	5,000
$33,971.00					[ ]					33,971	33,971

40002082 Haul/Disp grindings — Quan: 24.00 LD — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRECYGR	EXPORT T&T - GRINDIN	1.00	178.80	TKYD	50.000			8,940			8,940

40002091 HMA Machine — Quan: 402.30 TN — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

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small qty
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Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4HMA5739	HMA PAVEMENT	1.00	402.30	TON	180.000					72,414	72,414

=====> Item Totals: 13000 - AC - Graind and Overlay

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$115,325.00					[ ]			8,940		106,385	**115,325**
53.740			2146	SY				4.17		49.57	53.74

PARENT ITEM = 200000
Description = Pier 10 Diaphragm Enlargement | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 200000:

BID ITEM = 200010
Description = Crossbeam Prep | Unit = SF | Takeoff Quan: 300.000 | Engr Quan: 0.000

50002015 Rent Falsework Matl — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FM$CAPFW	PIER CAP FALSEWORK -	1.00	3,360.00	SF	25.000			84,000			84,000

50002036 Roughen Surface — Quan: 300.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

LAB3 | Laborer 3 | 12.50 CH | **Prod: 8.0000 UM** | Lab Pcs: 3.00 | Eqp Pcs: 2.00
8A | ~~~~~EQUIPMENT~~~ | 0.00 HR | 0.000

Cost Report

BID ITEM = 200010
Description = Crossbeam Prep Unit = SF Takeoff Quan: 300.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8AC185	COMPRESSOR PORT 185	1.00	12.50	HR	17.692				221		221
8TRPU450	FLATRACK, BAREBED	1.00	12.50	HR	29.277				366		366
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	25.00	MH	45.610	1,766					1,766
LGFM	Laborer-General Foreman	1.00	12.50	MH	55.170	1,030					1,030
$3,383.22	0.1250 MH/SF		37.50	MH	[6.1]	2,796			587		3,383

50002066 S/S Cap Falsework Quan: 3.41 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CARP6 Carpenter 6 - S/S 68.20 CH **Prod: 120.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	68.20	HR	29.277				1,997		1,997
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	68.20	MH	64.070	6,832					6,832
CJM	CARPENTER J/M	5.00	341.00	MH	53.700	29,807					29,807
$38,635.11	120.0000 MH/EA		409.20	MH	[6651.399]	36,638			1,997		38,635

=====> **Item Totals: 200010 - Crossbeam Prep**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$126,018.33	1.4890 MH/SF		446.70	MH	[81.704]	39,435		84,000	2,584		**126,018**
420.061	300 SF					131.45		280.00	8.61		420.06

BID ITEM = 200020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 88.000 Engr Quan: 0.000

50002001 Buy Concrete Quan: 88.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CONADEC	CONCRETE-ENVIRO CH	1.10	96.80	CY	6.000		581				581
2CONADFUEL	FUEL SURCHARGE	1.10	96.80	CY	2.000		194				194
2CONADHW	CONCRETE-HOT WATE	1.10	96.80	CY	8.000		774				774
2CONC4	CONCRETE CL 4000	1.10	96.80	CY	145.000		14,036				14,036
5COPUSM	SM QTY CON PUMPING	1.10	96.80	CY	35.000			3,388			3,388
$18,972.80					[ ]		15,585	3,388			18,973

50002003 Buy Dowels & Epoxy Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	6.60	EA	90.000		594				594
2REB-EP	REINF STEEL-EPOXY-C	1.10	220.00	LB	2.000		440				440
$1,034.00					[ ]		1,034				1,034

50002011 Buy Lumber/Plywood Quan: 2,160.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.10	7,365.60	BF	1.200			8,839			8,839
3PLY34MDO	3/4" MDO PLYWOOD	1.10	2,376.00	SF	2.000			4,752			4,752
$13,590.72					[ ]			13,591			13,591

50002035 D/B Dowel to Existing Quan: 100.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

LAB3 Laborer 3 25.00 CH **Prod: 4.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	25.00	HR	17.692				442		442
8TRPU450	FLATRACK, BAREBED	1.00	25.00	HR	29.277				732		732
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	50.00	MH	45.610	3,532					3,532
LGFM	Laborer-General Foreman	1.00	25.00	MH	55.170	2,060					2,060
$6,766.49	0.7500 MH/EA		75.00	MH	[36.598]	5,592			1,174		6,766

Cost Report

BID ITEM = 200020
Description = Crossbeam Retrofit   Unit = CY   Takeoff Quan: 88.000   Engr Quan: 0.000

50002065 Fab Cap Sideform **Quan: 1,600.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

CARP4 Carpenter 4 - Med & PREFAB 40.00 CH **Prod: 10.0000 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	40.00	MH	64.070	4,007					4,007
CJM	CARPENTER J/M	3.00	120.00	MH	53.700	10,489					10,489
$15,667.15	0.1000 MH/SF		160.00	MH	[5.629]	14,496			1,171		15,667

50002068 S/S Cap Sideform **Quan: 1,600.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

CARP6 Carpenter 6 - S/S 66.66 CH **Prod: 4.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	66.67	HR	29.277				1,952		1,952
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	66.67	MH	64.070	6,679					6,679
CJM	CARPENTER J/M	5.00	333.33	MH	53.700	29,136					29,136
$37,766.60	0.2500 MH/SF		400.00	MH	[13.857]	35,815			1,952		37,767

50002072 Plc/Fin Cap Conc **Quan: 88.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

PLCAP P/F Cap Concrete 22.00 CH **Prod: 0.8889 UM** Lab Pcs: 4.50 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	22.00	HR	17.692				389		389
8ML60	JLG 60' MANLIFT	1.00	22.00	HR	45.891				1,010		1,010
8TRPU450	FLATRACK, BAREBED	1.00	22.00	HR	29.277				644		644
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	0.50	11.00	MH	52.600	935					935
LATO	LABORER, AIR TOOL O	3.00	66.00	MH	45.610	4,662					4,662
LGFM	Laborer-General Foreman	1.00	22.00	MH	55.170	1,813					1,813
$9,453.39	1.1250 MH/CY		99.00	MH	[54.575]	7,410			2,043		9,453

50002075 Cure Substructure Conc **Quan: 8,140.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

CURE MISC CONC Cure 102.77 CH **Prod: 39.6000 UM** Lab Pcs: 2.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	102.78	HR	10.382				1,067		1,067
8TRPU450	FLATRACK, BAREBED	1.00	102.78	HR	29.277				3,009		3,009
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	102.78	MH	44.530	7,124					7,124
LGFM	Laborer-General Foreman	1.00	102.78	MH	55.170	8,470					8,470
$19,669.96	0.0252 MH/SF		205.56	MH	[1.259]	15,594			4,076		19,670

50002077 Surface Finish **Quan: 8,140.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201**

**Unreviewed

FINCAP Finish Caps 101.75 CH **Prod: 40.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 3.50

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	50.88	HR	17.692				900		900
8GEL2	Light Tower-4kW to 20k	1.00	101.75	HR	14.500				1,475		1,475
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	101.75	HR	9.682				985		985
8TRPU450	FLATRACK, BAREBED	1.00	101.75	HR	29.277				2,979		2,979
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	101.75	MH	62.860	9,935					9,935
CMJM	CEMENT MASON J/M	1.00	101.75	MH	52.600	8,650					8,650
$24,925.18	0.0250 MH/SF		203.50	MH	[1.443]	18,586			6,340		24,925

Cost Report

BID ITEM = 200020
Description = Crossbeam Retrofit Unit = CY Takeoff Quan: 88.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002078	**I/R Cold Weather Protection**				**Quan: 8,140.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
SUPTCO	COLD WEATHER SUPPORT		44.00	CH	**Prod:**	**61.6667 UM**	Lab Pcs:	3.00	Eqp Pcs:	2.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	44.00	HR	9.682				426		426
8TRPU450	FLATRACK, BAREBED	1.00	44.00	HR	29.277				1,288		1,288
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	2.00	88.00	MH	44.530	6,099					6,099
LGFM	Laborer-General Foreman	1.00	44.00	MH	55.170	3,626					3,626
$11,439.59	0.0162 MH/SF		132.00	MH	[0.78]	9,725			1,714		11,440
50002089	**Pigseal BR Substructure**				**Quan: 8,140.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
4PNTSEAL	PIGMENTED SEALER	1.00	8,140.00	SF	0.750					6,105	6,105
50002098	**Rebar Bridge Substructure**				**Quan: 44,000.00 LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
3RE-H	REBAR HOISTING SUPP	1.00	44,000.00	LB	0.035			1,540			1,540
4REBSUB	SUBSTRUCTURE REBAR	1.00	44,000.00	LB	1.250					55,000	55,000
$56,540.00					[ ]			1,540		55,000	56,540
50004030	**S/S Cap/Abut Access**				**Quan: 560.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
CARP6	Carpenter 6 - S/S		23.33	CH	**Prod:**	**4.0000 UM**	Lab Pcs:	6.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	23.33	HR	29.277				683		683
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	23.33	MH	64.070	2,337					2,337
CJM	CARPENTER J/M	5.00	116.67	MH	53.700	10,198					10,198
$13,218.10	0.2500 MH/SF		140.00	MH	[13.857]	12,535			683		13,218
90001030	**Forklift**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
8FK9KM	==> FORKLIFT 9K - MO	1.00	0.50	MO	2,576.000				1,288		1,288
90001040	**Manlift**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
Additional manlift from activity.											
8ML60	==> JLG 60' MANLIFT	1.00	110.00	HR	45.891				5,048		5,048
90001060	**Generator**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
8GEN6	==> ENG DRIVEN GEN 6.	1.00	110.00	HR	9.682				1,065		1,065
90001080	**Light towers**				**Quan: 0.50 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	110.00	HR	14.500				1,595		1,595
=====> **Item Totals:**	**200020 - Crossbeam Retrofit**										
$244,145.01	16.0802 MH/CY		1,415.06	MH	[860.702]	119,754	16,619	18,519	28,149	61,105	**244,145**
2,774.375	88 CY					1,360.84	188.85	210.44	319.87	694.38	2,774.38

Total of Above Sub-Biditems

=====> **Item Totals:**	**200000 - Pier 10 Diaphragm Enlargement**										
$370,163.34	**1,861.7600 MH/LS**		**1,861.76**	**MH**	**[100252.94]**	**159,188**	**16,619**	**102,519**	**30,733**	**61,105**	**370,163**

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 200020
Description = Crossbeam Retrofit — Unit = CY — Takeoff Quan: 88.000 — Engr Quan: 0.000

370,163.340	**1 LS**					**159,188.16**	**16,618.80**	**102,518.72**	**30,732.66**	**61,105.00**	**370,163.34**

PARENT ITEM = 300000
Description = Superstructure Demo with Falsework — Unit = SF — Takeoff Quan: 25,000.000 — Engr Quan: 25,000.000

Listing of Sub-Biditems of Parent Item 300000:

BID ITEM = 301000
Description = Temp Support for Superstructure Demo — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

50002505 — Buy/Rent FW Beams — Quan: 100,000.00 LB — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

3FWBM	STEEL BEAM	1.00	100,000.00	LB	0.880			88,000			88,000

50002510 — Buy FW Timber — Quan: 70.00 MBF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

3LMLG	LUMBER > 6x	1.00	70,000.00	BF	1.250			87,500			87,500

50002530 — Haul Falsework Matl — Quan: 20.00 LD — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

SUPTEQ	Move Equipment		80.00	CH	**Prod:**	**4.0000 HU**	Lab Pcs:	1.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	80.00	HR	6.538				523		523
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	80.00	HR	38.395				3,072		3,072
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	80.00	MH	57.740	7,731					7,731
$11,326.02	4.0000 MH/LD		80.00	MH	[230.96]	7,731			3,595		11,326

50002531 — Build FW Pads — Quan: 2,520.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

25E4GR	Grading Crew		12.60	CH	**Prod:**	**50.0000 UM**	Lab Pcs:	4.00	Eqp Pcs:		5.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CO563	COMPACT CAT CP563	1.00	12.60	HR	43.020				542		542
8DO5	D5 DOZER (25k)	1.00	12.60	HR	34.582				436		436
8EX312	EXCAV CAT 312 (25K LB	1.00	12.60	HR	69.932				881		881
8GR140	BLADE - 12G & 140G	1.00	12.60	HR	72.110				909		909
8TRPU450	FLATRACK, BAREBED	1.00	12.60	HR	29.277				369		369
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	12.60	MH	57.740	1,218					1,218
ODL	OP ENG DOZER D9 & <	1.00	12.60	MH	57.470	1,214					1,214
OP4	OPER 4 (EX/BLADE/DOZ	1.00	12.60	MH	53.980	1,159					1,159
OPAKH	OP ENG COMPACTOR H	1.00	12.60	MH	57.470	1,214					1,214
$7,940.44	0.0200 MH/SF		50.40	MH	[1.133]	4,804			3,136		7,940

50002532 — F/G FW Pads — Quan: 2,520.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

25E4GR	Grading Crew		31.50	CH	**Prod:**	**20.0000 UM**	Lab Pcs:	4.00	Eqp Pcs:		5.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CO563	COMPACT CAT CP563	1.00	31.50	HR	43.020				1,355		1,355
8DO5	D5 DOZER (25k)	1.00	31.50	HR	34.582				1,089		1,089
8EX312	EXCAV CAT 312 (25K LB	1.00	31.50	HR	69.932				2,203		2,203
8GR140	BLADE - 12G & 140G	1.00	31.50	HR	72.110				2,271		2,271
8TRPU450	FLATRACK, BAREBED	1.00	31.50	HR	29.277				922		922
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

BID ITEM = 301000
Description = Temp Support for Superstructure Demo — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
OBHL	OP ENG BACKHOE/L<75	1.00	31.50	MH	57.740	3,044					3,044
ODL	OP ENG DOZER D9 & <	1.00	31.50	MH	57.470	3,034					3,034
OP4	OPER 4 (EX/BLADE/DOZ	1.00	31.50	MH	53.980	2,898					2,898
OPAKH	OP ENG COMPACTOR H	1.00	31.50	MH	57.470	3,034					3,034
$19,851.17	0.0500 MH/SF		126.00	MH	[2.833]	12,010			7,841		19,851

50002533 — Set FW Pads — Quan: 2,520.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CARP6 — Carpenter 6 - S/S — 21.00 CH — **Prod: 20.0000 UM** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	21.00	HR	29.277				615		615
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	21.00	MH	64.070	2,104					2,104
CJM	CARPENTER J/M	5.00	105.00	MH	53.700	9,178					9,178
$11,896.43	0.0500 MH/SF		126.00	MH	[2.771]	11,282			615		11,896

50002540 — Fab/Set Timber Bents — Quan: 6.99 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CARP6 — Carpenter 6 - S/S — 559.20 CH — **Prod: 80.0000 HU** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	559.20	HR	29.277				16,372		16,372
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	559.20	MH	64.070	56,017					56,017
CJM	CARPENTER J/M	5.00	2,796.00	MH	53.700	244,396					244,396
$316,785.33	480.0000 MH/EA		3,355.20	MH	[26605.599]	300,414			16,372		316,785

50002572 — Strip Falsework — Quan: 2,520.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

CARP6 — Carpenter 6 - S/S — 112.00 CH — **Prod: 3.7500 UM** — Lab Pcs: 6.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	112.00	HR	29.277				3,279		3,279
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	112.00	MH	64.070	11,219					11,219
CJM	CARPENTER J/M	5.00	560.00	MH	53.700	48,949					48,949
$63,447.70	0.2666 MH/SF		672.00	MH	[14.781]	60,169			3,279		63,448

=====> Item Totals: 301000 - Temp Support for Superstructure Demo

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$606,747.09	4,409.6000 MH/LS		4,409.60	MH	[244819.86]	396,410		175,500	34,837		**606,747**
606,747.090	1 LS					396,409.62		175,500.00	34,837.47		606,747.09

BID ITEM = 302000
Description = Superstructure Demo — Unit = SF — Takeoff Quan: 25,000.000 — Engr Quan: 0.000

20000501 — Dev Demo Plan — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	160.00	HR	200.000			32,000			32,000

20000502 — Dev Lead/Haz Matl Plan — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	80.00	HR	200.000			16,000			16,000

20000503 — Test Haz Matl — Quan: 1.00 LS — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	176.00	HR	200.000			35,200			35,200

Cost Report

BID ITEM = 302000
Description = Superstructure Demo Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

20000530 Sup Demo Sub Quan: 220.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTDS Drill Support 220.00 CH **Prod: 1.0000 HU** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	220.00	HR	65.800				14,476		14,476
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	220.00	MH	44.530	15,249					15,249
OFELL	OP ENG LOADER	1.00	220.00	MH	57.470	21,188					21,188
$50,912.80	2.0000 MH/HR		440.00	MH	[102]	36,437			14,476		50,913

20000580 Haz Matl Abatement Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4ABAT	HAZ MAT REMOVAL &	1.00	1.00	LS	0.000						

20001030 L/H Concrete Demo Quan: 1,797.24 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

20D2SM Small Demolition Crew 224.65 CH **Prod: 4.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3DDB	Dump Fee Concrete w/ Reb	1.00	1,797.24	TCY	0.000						
7LD010.1	Offhaul Conc w/Rebar 6 C	1.00	299.43	LD	0.000						
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DMHB1500	HYD BREAK 1500 FTLB (	1.00	224.66	HR	22.375				5,027		5,027
8EX312	EXCAV CAT 312 (25K LB	1.00	224.66	HR	69.932				15,711		15,711
8LDSKID	SKIDSTEER	1.00	224.66	HR	30.773				6,913		6,913
8TRPU450	FLATRACK, BAREBED	1.00	224.66	HR	29.277				6,577		6,577
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	224.66	MH	44.530	15,572					15,572
OBHL	OP ENG BACKHOE/L<75	1.00	224.66	MH	57.740	21,712					21,712
$71,511.74	0.2500 MH/CY		449.32	MH	[12.784]	37,283			34,228		71,512

20001032 Hand Demo EOD Quan: 332.03 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

20D2HA Demo Hand Work 166.01 CH **Prod: 1.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	166.02	HR	17.692				2,937		2,937
8GEL2	Light Tower-4kW to 20k	1.00	166.02	HR	14.500				2,407		2,407
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	166.02	HR	9.682				1,607		1,607
8TRPU450	FLATRACK, BAREBED	1.00	166.02	HR	29.277				4,861		4,861
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	332.03	MH	45.610	23,455					23,455
$35,267.46	1.0000 MH/LF		332.03	MH	[45.61]	23,455			11,812		35,267

20001040 Protect Existing Surface Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

8 spans & 3 days per span

20D2SM Small Demolition Crew 192.00 CH **Prod: 24.0000 SU** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DMHB1500	HYD BREAK 1500 FTLB (	1.00	192.00	HR	22.375				4,296		4,296
8EX312	EXCAV CAT 312 (25K LB	1.00	192.00	HR	69.932				13,427		13,427
8LDSKID	SKIDSTEER	1.00	192.00	HR	30.773				5,908		5,908
8TRPU450	FLATRACK, BAREBED	1.00	192.00	HR	29.277				5,621		5,621
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	192.00	MH	44.530	13,308					13,308
OBHL	OP ENG BACKHOE/L<75	1.00	192.00	MH	57.740	18,555					18,555
$61,115.72	384.0000 MH/LS		384.00	MH	[19635.84]	31,863			29,253		61,116

20001045 Expose Existing Footing Quan: 33.01 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

25E2E1 Structure Ex - Small 132.04 CH **Prod: 2.0000 US** Lab Pcs: 2.00 Eqp Pcs: 1.00

Cost Report

BID ITEM = 302000
Description = Superstructure Demo Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8EX312	EXCAV CAT 312 (25K LB	1.00	132.04	HR	69.932				9,234		9,234
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	132.04	MH	44.530	9,152					9,152
OBHL	OP ENG BACKHOE/L<75	1.00	132.04	MH	57.740	12,761					12,761
$31,146.41	8.0000 MH/EA		264.08	MH	[409.08]	21,913			9,234		31,146
20001080	**Bridge Demo**		**Quan: 25,000.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4DEMOBRSFO	DEMO BRIDGE - SF (OV	1.00	25,000.00	SF	33.000					825,000	825,000
20001085	**Remove Existing Elec**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EL	ELECTRICAL	1.00	1.00	LS	0.000						
20001086	**Remove OCS**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4DEMO	DEMOLITION	1.00	1.00	LS	0.000						
20001090	**Sawcut EOD**		**Quan: 340.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
Not part of work, but add in.											
5SAWFW0612	SAW FLAT CONC UP TO	1.00	4,080.00	INFT	0.650			2,652			2,652
20007030	**Demo/Load Concrete Barrier**		**Quan: 666.02**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
20D2SM	Small Demolition Crew		48.00	CH	**Prod: 13.8751 UH**	Lab Pcs:	2.00		Eqp Pcs:		4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DMHB1500	HYD BREAK 1500 FTLB (	1.00	48.00	HR	22.375				1,074		1,074
8EX312	EXCAV CAT 312 (25K LB	1.00	48.00	HR	69.932				3,357		3,357
8LDSKID	SKIDSTEER	1.00	48.00	HR	30.773				1,477		1,477
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	48.00	MH	44.530	3,327					3,327
OBHL	OP ENG BACKHOE/L<75	1.00	48.00	MH	57.740	4,639					4,639
$15,278.92	0.1441 MH/LF		96.00	MH	[7.371]	7,966			7,313		15,279
20007096	**Sawcut Barrier**		**Quan: 666.02**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5SAWCG	SAW CONC CURB & GU	1.00	85.04	EA	38.000			3,232			3,232
50000817	**Buy Bullrail/Handrail**		**Quan: 340.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CR01NUT	1" COIL ROD NUT	1.00	340.00	LF	2.000		680				680
2CR01ROD	1" COIL ROD	1.00	340.00	LF	7.000		2,380				2,380
2CR01WASH	1" COIL ROD WASHER	1.00	340.00	LF	1.500		510				510
2CR1	1" COIL ROD	1.00	340.00	LF	0.000						
3LMLG	LUMBER > 6x	1.00	340.00	BF	1.250			425			425
$3,995.00					[ ]		3,570	425			3,995
50000849	**Set Bullrail/Handrail**		**Quan: 340.00**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
PB4	4 MAN PB CREW		16.00	CH	**Prod: 21.2500 UH**	Lab Pcs:	6.00		Eqp Pcs:		4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CRCR175	CRAWLER CR 4000 175T	1.00	16.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
8WELD400D	WELDER 400 AMP	1.00	16.00	HR	9.420				151		151
8WELDLN25	lLN25 WIRE FEED	1.00	16.00	HR	2.500				40		40
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 302000
Description = Superstructure Demo Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
OCHH	OP ENG CR 200-300T G#1	1.00	16.00	MH	60.460	1,600					1,600
OOILH	OILER/DR >100 TON G#2	1.00	16.00	MH	58.090	1,553					1,553
PILE	PB Journeyman	3.00	48.00	MH	54.100	4,219					4,219
PILE4M	PB Foreman	1.00	16.00	MH	64.510	1,611					1,611
$9,642.87	0.2823 MH/LF		96.00	MH	[16.252]	8,984			659		9,643

50000870 Rem Bullrail/Handrail Quan: 340.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

PB4 4 MAN PB CREW 8.00 CH **Prod: 7.0833 UM** Lab Pcs: 6.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CRCR175	CRAWLER CR 4000 175T	1.00	8.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	8.00	HR	29.277				234		234
8WELD400D	WELDER 400 AMP	1.00	8.00	HR	9.420				75		75
8WELDLN25	lLN25 WIRE FEED	1.00	8.00	HR	2.500				20		20
A	~~~~~LABOR~~~		0.00	MH	0.000						
OCHH	OP ENG CR 200-300T G#1	1.00	8.00	MH	60.460	800					800
OOILH	OILER/DR >100 TON G#2	1.00	8.00	MH	58.090	777					777
PILE	PB Journeyman	3.00	24.00	MH	54.100	2,110					2,110
PILE4M	PB Foreman	1.00	8.00	MH	64.510	806					806
$4,821.43	0.1411 MH/LF		48.00	MH	[8.126]	4,492			330		4,821

=====> Item Totals: 302000 - Superstructure Demo

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$1,197,775.87	0.0843 MH/SF		2,109.43	MH	[4.276]	172,392	3,570	89,509	107,305	825,000	**1,197,776**
47.911	25000 SF					6.90	0.14	3.58	4.29	33.00	47.91

Total of Above Sub-Biditems

=====> Item Totals: 300000 - Superstructure Demo with Falsework

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$1,804,522.96	**0.2607 MH/SF**		**6,519.03**	**MH**	**[14.069]**	**568,802**	**3,570**	**265,009**	**142,143**	**825,000**	**1,804,523**
72.181	**25000 SF**					**22.75**	**0.14**	**10.60**	**5.69**	**33.00**	**72.18**

PARENT ITEM = 400000
Description = CIP Superstructure Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 25,000.000

Listing of Sub-Biditems of Parent Item 400000:

BID ITEM = 401000
Description = Falsework Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

50002505 Buy/Rent FW Beams Quan: 907,770.52 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

`Company own beams`

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FWHBE	H BEAM - PER LB	1.00	907,770.52	LB	0.450			408,497			408,497

50002506 Buy/Rent FW Pipe Posts Quan: 453,885.26 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3FWPISS	PIPE PILE - STRAIGHT S	1.00	453,885.26	LB	0.550			249,637			249,637

50002510 Buy FW Timber Quan: 54.47 MBF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMLG	LUMBER > 6x	1.00	54,446.40	BF	0.600			32,668			32,668

Cost Report

BID ITEM = 401000
Description = Falsework Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50002512	**Buy Soffit Matls**		**Quan: 45,388.53 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMBR	FORM LUMBER	1.00	206,311.57	BF	1.200			247,574			247,574
3PLY34MDO	3/4" MDO PLYWOOD	1.00	45,388.53	SF	2.000			90,777			90,777
$338,350.94					[ ]			338,351			338,351
50002530	**Haul Falsework Matl**		**Quan: 40.00 LD**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
SUPTEQ	Move Equipment		160.00	CH	**Prod:**	**4.0000 HU**		Lab Pcs:	1.00	Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRSEMI	SEMI TRLR 40' HIBED	1.00	160.00	HR	6.538				1,046		1,046
8TRSEMI2	SEMI TRACTOR HIGHW	1.00	160.00	HR	38.395				6,143		6,143
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	160.00	MH	57.740	15,463					15,463
$22,652.03	4.0000 MH/LD		160.00	MH	[230.96]	15,463			7,189		22,652
50002531	**Build FW Pads**		**Quan: 9,077.71 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
25E4GR	Grading Crew		189.11	CH	**Prod:**	**12.0000 UM**		Lab Pcs:	4.00	Eqp Pcs:	5.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CO563	COMPACT CAT CP563	1.00	189.12	HR	43.020				8,136		8,136
8DO5	D5 DOZER (25k)	1.00	189.12	HR	34.582				6,540		6,540
8EX312	EXCAV CAT 312 (25K LB	1.00	189.12	HR	69.932				13,226		13,226
8GR140	BLADE - 12G & 140G	1.00	189.12	HR	72.110				13,637		13,637
8TRPU450	FLATRACK, BAREBED	1.00	189.12	HR	29.277				5,537		5,537
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	189.12	MH	57.740	18,277					18,277
ODL	OP ENG DOZER D9 & <	1.00	189.12	MH	57.470	18,214					18,214
OP4	OPER 4 (EX/BLADE/DOZ	1.00	189.12	MH	53.980	17,402					17,402
OPAKH	OP ENG COMPACTOR H	1.00	189.12	MH	57.470	18,214					18,214
$119,182.81	0.0833 MH/SF		756.48	MH	[4.722]	72,107			47,076		119,183
50002532	**F/G FW Pads**		**Quan: 9,077.71 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
25E4GR	Grading Crew		72.62	CH	**Prod:**	**31.2500 UM**		Lab Pcs:	4.00	Eqp Pcs:	5.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CO563	COMPACT CAT CP563	1.00	72.62	HR	43.020				3,124		3,124
8DO5	D5 DOZER (25k)	1.00	72.62	HR	34.582				2,511		2,511
8EX312	EXCAV CAT 312 (25K LB	1.00	72.62	HR	69.932				5,078		5,078
8GR140	BLADE - 12G & 140G	1.00	72.62	HR	72.110				5,237		5,237
8TRPU450	FLATRACK, BAREBED	1.00	72.62	HR	29.277				2,126		2,126
A	~~~~~LABOR~~~		0.00	MH	0.000						
OBHL	OP ENG BACKHOE/L<75	1.00	72.62	MH	57.740	7,018					7,018
ODL	OP ENG DOZER D9 & <	1.00	72.62	MH	57.470	6,994					6,994
OP4	OPER 4 (EX/BLADE/DOZ	1.00	72.62	MH	53.980	6,682					6,682
OPAKH	OP ENG COMPACTOR H	1.00	72.62	MH	57.470	6,994					6,994
$45,764.82	0.0319 MH/SF		290.48	MH	[1.813]	27,688			18,077		45,765
50002533	**Set FW Pads**		**Quan: 9,077.71 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		189.11	CH	**Prod:**	**8.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	189.12	HR	29.277				5,537		5,537
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	189.12	MH	64.070	18,945					18,945
CJM	CARPENTER J/M	5.00	945.60	MH	53.700	82,654					82,654
$107,135.97	0.1250 MH/SF		1,134.72	MH	[6.929]	101,599			5,537		107,136

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 401000
Description = Falsework Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

50002541 Fab/Set Steel Bents Quan: 14.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 112.00 CH **Prod: 8.0000 HU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	112.00	HR	29.277				3,279		3,279
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	112.00	MH	64.070	11,219					11,219
CJM	CARPENTER J/M	5.00	560.00	MH	53.700	48,949					48,949
$63,447.70	48.0000 MH/EA		672.00	MH	[2660.56]	60,169			3,279		63,448

50002542 Fab/Set Straddle Bents Quan: 14.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 28.00 CH **Prod: 2.0000 HU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	28.00	HR	29.277				820		820
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	28.00	MH	64.070	2,805					2,805
CJM	CARPENTER J/M	5.00	140.00	MH	53.700	12,237					12,237
$15,861.92	12.0000 MH/EA		168.00	MH	[665.14]	15,042			820		15,862

50002551 Fab/Set Offline Stringers Quan: 145.24 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 145.24 CH **Prod: 6.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	145.24	HR	29.277				4,252		4,252
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	145.24	MH	64.070	14,549					14,549
CJM	CARPENTER J/M	5.00	726.20	MH	53.700	63,477					63,477
$82,278.06	6.0000 MH/EA		871.44	MH	[332.57]	78,026			4,252		82,278

50002561 Set Displace Monitors Quan: 14.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 28.00 CH **Prod: 12.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	28.00	HR	29.277				820		820
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	28.00	MH	64.070	2,805					2,805
CJM	CARPENTER J/M	5.00	140.00	MH	53.700	12,237					12,237
$15,861.92	12.0000 MH/EA		168.00	MH	[665.14]	15,042			820		15,862

50002562 Cut Camber Quan: 996.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 29.40 CH **Prod: 5.6458 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	29.40	HR	29.277				861		861
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	29.40	MH	64.070	2,945					2,945
CJM	CARPENTER J/M	5.00	147.01	MH	53.700	12,850					12,850
$16,655.89	0.1771 MH/LF		176.41	MH	[9.817]	15,795			861		16,656

50002563 Set Soffit Quan: 25,000.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 435.72 CH **Prod: 9.5625 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	435.73	HR	29.277				12,757		12,757
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	435.73	MH	64.070	43,649					43,649
CJM	CARPENTER J/M	5.00	2,178.65	MH	53.700	190,434					190,434

Cost Report

BID ITEM = 401000
Description = Falsework — Unit = SF — Takeoff Quan: 25,000.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$246,839.89	0.1045 MH/SF		2,614.38	MH	[5.796]	234,083			12,757		246,840
50002572	**Strip Falsework**		**Quan: 25,000.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
CARP6	Carpenter 6 - S/S		347.22	CH	Prod: 12.0000 UM	Lab Pcs: 6.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	347.22	HR	29.277				10,166		10,166
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	347.22	MH	64.070	34,782					34,782
CJM	CARPENTER J/M	5.00	1,736.11	MH	53.700	151,752					151,752
$196,700.08	0.0833 MH/SF		2,083.33	MH	[4.619]	186,535			10,166		196,700

=====> Item Totals: 401000 - Falsework

$1,961,533.49	0.3638 MH/SF	9,095.24 MH	[20.232]	821,549		1,029,152	110,832		**1,961,533**
78.461	25000 SF			32.86		41.17	4.43		78.46

BID ITEM = 402000
Description = Superstructure — Unit = SF — Takeoff Quan: 25,000.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000135	**RENT & OPER RT CRANES**		**Quan: 4.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
8A	==> ~~~~~EQUIPMENT~	1.00	4.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	1.00	704.00	HR	171.695				120,873		120,873
A	==> ~~~~~LABOR~~~	1.00	4.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	1.00	704.00	MH	58.800	68,955					68,955
$189,827.91	177.0000 MH/MO		708.00	MH	[10348.8]	68,955			120,873		189,828
50000150	**RENT FORKLIFT**		**Quan: 4.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	704.00	HR	49.580				34,904		34,904
50000155	**RENT MANLIFT**		**Quan: 4.00 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
8ML60	==> JLG 60' MANLIFT	1.00	704.00	HR	45.891				32,307		32,307
50000160	**RENT BIDWELL**		**Quan: 0.50 MO**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
8CFBID	==> BIDWELL BRIDGE FI	1.00	88.00	HR	36.182				3,184		3,184
50000170	**CONC PUMP TRUCK**		**Quan: 1,142.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
5COPUSM	SM QTY CON PUMPING	1.00	1,142.00	CY	35.000			39,970			39,970
50000311	**Buy S/S Oil & Nail**		**Quan: 25,000.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
3XFMPREFAB	PREFAB OIL, NAIL, ETC	1.00	25,000.00	SF	0.200			5,000			5,000
3XS/S	SET/STRIP FORM MATE	1.00	25,000.00	SF	0.300			7,500			7,500
$12,500.00					[ ]			12,500			12,500
50000312	**Buy Dry Finish Mateial**		**Quan: 25,000.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
3XPAT	DRY FINISH MAT	1.00	25,000.00	SF	0.100			2,500			2,500
50000313	**Buy Concrete Pour Supply**		**Quan: 500.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**					**Unreviewed
3XGCS	GEN CONC SUPPLIES	1.00	500.00	CY	1.100			550			550

Cost Report

BID ITEM = 402000
Description = Superstructure Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000314	**Buy Cold Weather Material**		**Quan: 25,000.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
3XCONBL	CONCRETE BLANKETS	1.00	25,000.00	SF	0.400			10,000			10,000
50003001	**Buy Concrete**		**Quan: 1,142.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	1,256.07	CY	6.000		7,536				7,536
2CONADESC3R	ESCALATOR 3RD YEAR	1.10	1,256.07	CY	10.000		12,561				12,561
2CONADFUEL	FUEL SURCHARGE	1.10	1,256.07	CY	2.000		2,512				2,512
2CONADHW	CONCRETE-HOT WATE	1.10	1,256.07	CY	8.000		10,049				10,049
2CONC4	CONCRETE CL 4000	1.10	407.00	CY	145.000		59,015				59,015
2CONC4D	CONCRETE CL 4000-D	1.10	849.20	CY	138.000		117,190				117,190
$208,862.42					[ ]		208,862				208,862
50003002	**Buy Grout**		**Quan: 36.31**	**BAG**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
2GRBNS	GROUT NS .42CF/B	1.00	36.31	BAG	10.000		363				363
50003003	**Buy Bearing Pads**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
2BRGBEAS	FABRIC BEARING ASSE	1.00	2.00	EA	2,500.000		5,000				5,000
2BRGTRANSS	TRANS STOP PADS	1.00	4.00	EA	120.000		480				480
$5,480.00					[ ]		5,480				5,480
50003004	**Buy Expansion Joint Matls**		**Quan: 580.97**	**LF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
2EJSSSCM2	DSB SSCM2-400	1.00	580.97	LF	100.000		58,097				58,097
50003009	**Buy Misc Plates**		**Quan: 47,912.13**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
3STMCRN2G	MISC IRON-MED FAB G	1.00	47,912.13	LB	3.500			167,692			167,692
50003011	**Buy Lumber/Plywood**		**Quan: 25,000.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
3LMBR	FORM LUMBER	1.00	81,250.00	BF	1.200			97,500			97,500
3PLY34MDO	3/4" MDO PLYWOOD	1.00	25,000.00	SF	2.000			50,000			50,000
$147,500.00					[ ]			147,500			147,500
50003035	**Fab Stem Forms**		**Quan: 8,000.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		166.66	CH	**Prod:**	**12.0000 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	166.67	HR	29.277				4,880		4,880
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	166.67	MH	64.070	16,696					16,696
CJM	CARPENTER J/M	3.00	500.00	MH	53.700	43,705					43,705
$65,280.21	0.0833 MH/SF		666.67	MH	[4.691]	60,401			4,880		65,280
50003041	**S/S Ext & Overhang >3 ft**		**Quan: 8,000.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
SF included girder and overhang.											
CARP6	Carpenter 6 - S/S		666.66	CH	**Prod:**	**2.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	666.67	HR	29.277				19,518		19,518
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	666.67	MH	64.070	66,783					66,783
CJM	CARPENTER J/M	5.00	3,333.33	MH	53.700	291,364					291,364
$377,665.05	0.5000 MH/SF		4,000.00	MH	[27.714]	358,147			19,518		377,665

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 402000
Description = Superstructure Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

50003049 Place Stem/Diaph Concrete Quan: 370.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

PLDIA P/F Diaphrams 86.65 CH **Prod: 2.1350 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	86.65	HR	17.692				1,533		1,533
8GENLI	ENG DRIVEN LITE TOW	1.00	86.65	HR	10.382				900		900
8ML60	JLG 60' MANLIFT	1.00	86.65	HR	45.891				3,976		3,976
8TRPU450	FLATRACK, BAREBED	1.00	86.65	HR	29.277				2,537		2,537
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	1.00	86.65	MH	45.610	6,121					6,121
LGFM	Laborer-General Foreman	1.00	86.65	MH	55.170	7,141					7,141
$22,207.66	0.4683 MH/CY		173.30	MH	[23.602]	13,262			8,946		22,208

50003058 Form Edge of Deck Quan: 1,332.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CARP6 Carpenter 6 - S/S 73.99 CH **Prod: 3.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	74.00	HR	29.277				2,166		2,166
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	74.00	MH	64.070	7,413					7,413
CJM	CARPENTER J/M	5.00	370.00	MH	53.700	32,341					32,341
$41,920.79	0.3333 MH/LF		444.00	MH	[18.476]	39,754			2,166		41,921

50003060 Set/Grade Bidwell Rail Quan: 1,332.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

BDSET SET/MOVE BIDWELL 54.09 CH **Prod: 6.1562 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CFBID	BIDWELL BRIDGE FINIS	1.00	54.09	HR	36.182				1,957		1,957
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	1.00	54.09	MH	53.700	4,728					4,728
OC	OP ENG CRANE 45-99T G	1.00	54.09	MH	58.800	5,298					5,298
OCLL	OP ENG CR<20 TON G#3	1.00	54.09	MH	57.470	5,209					5,209
OEMECH	EQ MECHANIC G#1A	1.00	54.09	MH	59.640	5,354					5,354
$22,546.26	0.1624 MH/LF		216.36	MH	[9.324]	20,589			1,957		22,546

50003061 Setup Bidwell Quan: 2.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

BDSET SET/MOVE BIDWELL 32.00 CH **Prod: 2.0000 SU** Lab Pcs: 4.00 Eqp Pcs: 1.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8CFBID	BIDWELL BRIDGE FINIS	1.00	32.00	HR	36.182				1,158		1,158
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	1.00	32.00	MH	53.700	2,797					2,797
OC	OP ENG CRANE 45-99T G	1.00	32.00	MH	58.800	3,134					3,134
OCLL	OP ENG CR<20 TON G#3	1.00	32.00	MH	57.470	3,082					3,082
OEMECH	EQ MECHANIC G#1A	1.00	32.00	MH	59.640	3,167					3,167
$13,338.51	64.0000 MH/EA		128.00	MH	[3673.76]	12,181			1,158		13,339

50003062 Dryrun Bidwell Quan: 4.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

BDWDRY DRY RUN BIDWELL 64.00 CH **Prod: 2.0000 SU** Lab Pcs: 3.00 Eqp Pcs: 0.00

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	64.00	MH	64.070	6,411					6,411
CJM	CARPENTER J/M	1.00	64.00	MH	53.700	5,594					5,594
OC	OP ENG CRANE 45-99T G	1.00	64.00	MH	58.800	6,269					6,269
$18,273.92	48.0000 MH/EA		192.00	MH	[2825.12]	18,274					18,274

50003063 P/F Deck Conc Bidwell Quan: 772.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Cost Report

BID ITEM = 402000
Description = Superstructure Unit = SF Takeoff Quan: 25,000.000 Engr Quan: 0.000

PLDECK P/F DECK - BIDWELL 98.97 CH **Prod: 0.7091 UM** Lab Pcs: 11.00 Eqp Pcs: 5.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	98.97	HR	17.692				1,751		1,751
8CFBID	BIDWELL BRIDGE FINIS	1.00	98.97	HR	36.182				3,581		3,581
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	98.97	HR	9.682				958		958
8GENLI	ENG DRIVEN LITE TOW	1.00	98.97	HR	10.382				1,027		1,027
8TRPU450	FLATRACK, BAREBED	1.00	98.97	HR	29.277				2,898		2,898
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	98.97	MH	62.860	9,664					9,664
CMJM	CEMENT MASON J/M	3.00	296.92	MH	52.600	25,243					25,243
LATO	LABORER, AIR TOOL O	5.00	494.87	MH	45.610	34,958					34,958
LGFM	Laborer-General Foreman	1.00	98.97	MH	55.170	8,156					8,156
OC	OP ENG CRANE 45-99T G	1.00	98.97	MH	58.800	9,694					9,694
$97,929.80	1.4102 MH/CY		1,088.70	MH	[72.137]	87,715			10,215		97,930

50003066 Wet Cure Deck Quan: 25,000.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CURDCK Cure Deck 80.00 CH **Prod: 104.1667 UM** Lab Pcs: 3.00 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	80.00	HR	10.382				831		831
8TRPU450	FLATRACK, BAREBED	1.00	80.00	HR	29.277				2,342		2,342
8TRWA4	WATER TRUCK 4000 GA	1.00	80.00	HR	50.119				4,010		4,010
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	1.00	80.00	MH	45.610	5,651					5,651
LGFM	Laborer-General Foreman	1.00	80.00	MH	55.170	6,593					6,593
OBHL	OP ENG BACKHOE/L<75	1.00	80.00	MH	57.740	7,731					7,731
$27,157.63	0.0096 MH/SF		240.00	MH	[0.507]	19,975			7,182		27,158

50003070 S/S Hinge Quan: 254.18 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CARP6 Carpenter 6 - S/S 145.24 CH **Prod: 0.2917 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	145.25	HR	29.277				4,252		4,252
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	145.25	MH	64.070	14,550					14,550
CJM	CARPENTER J/M	5.00	726.23	MH	53.700	63,479					63,479
$82,281.99	3.4285 MH/SF		871.48	MH	[190.041]	78,030			4,252		82,282

50003071 Place Hinge Concrete Quan: 20.15 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

PLDIA P/F Diaphrams 36.30 CH **Prod: 0.2775 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	36.31	HR	17.692				642		642
8GENLI	ENG DRIVEN LITE TOW	1.00	36.31	HR	10.382				377		377
8ML60	JLG 60' MANLIFT	1.00	36.31	HR	45.891				1,666		1,666
8TRPU450	FLATRACK, BAREBED	1.00	36.31	HR	29.277				1,063		1,063
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	1.00	36.31	MH	45.610	2,565					2,565
LGFM	Laborer-General Foreman	1.00	36.31	MH	55.170	2,992					2,992
$9,305.89	3.6039 MH/CY		72.62	MH	[181.604]	5,557			3,749		9,306

50003074 F/P/S Exp Joint Blockout Quan: 198.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

CARP6 Carpenter 6 - S/S 61.87 CH **Prod: 0.5333 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	61.88	HR	29.277				1,812		1,812
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	61.88	MH	64.070	6,199					6,199
CJM	CARPENTER J/M	5.00	309.38	MH	53.700	27,043					27,043

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 402000
Description = Superstructure — Unit = SF — Takeoff Quan: 25,000.000 — Engr Quan: 0.000

$35,053.09	1.8750 MH/LF		371.26	MH	[103.931]	33,241			1,812		35,053

50003076 Inst Compression Seal — Quan: 198.00 LF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

CARP6	Carpenter 6 - S/S		24.75	CH	Prod: 1.3333 UM	Lab Pcs: 6.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	24.75	HR	29.277				725		725
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	24.75	MH	64.070	2,479					2,479
CJM	CARPENTER J/M	5.00	123.75	MH	53.700	10,817					10,817
$14,020.79	0.7500 MH/LF		148.50	MH	[41.571]	13,296			725		14,021

50003078 Surface Finish — Quan: 28,667.39 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

FINDCK	Finish Deck Soffit		318.52	CH	Prod: 30.0001 UM	Lab Pcs: 3.00			Eqp Pcs: 3.50		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	159.26	HR	17.692				2,818		2,818
8GENLI	ENG DRIVEN LITE TOW	1.00	318.53	HR	10.382				3,307		3,307
8ML60	JLG 60' MANLIFT	1.00	318.53	HR	45.891				14,618		14,618
8TRPU450	FLATRACK, BAREBED	1.00	318.53	HR	29.277				9,326		9,326
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	318.53	MH	62.860	31,103					31,103
CMJM	CEMENT MASON J/M	2.00	637.05	MH	52.600	54,159					54,159
$115,329.46	0.0333 MH/SF		955.58	MH	[1.867]	85,262			30,068		115,329

50003089 Pigseal BR Superstructure — Quan: 25,000.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

4PNTSEAL	PIGMENTED SEALER	1.00	25,000.00	SF	0.750					18,750	18,750

50003098 Bridge Rebar Complete — Quan: 350,000.00 LB — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

3RE-H	REBAR HOISTING SUPP	1.00	349,999.99	LB	0.035			12,250			12,250
4REBSUP	SUPERSTRUCTURE REB	1.00	349,999.99	LB	1.150					402,500	402,500
$414,749.99					[ ]			12,250		402,500	414,750

=====> Item Totals: 402000 - Superstructure

$2,289,549.52	0.4110 MH/SF		10,276.47	MH	[22.709]	914,638	272,803	392,962	287,896	421,250	**2,289,550**
91.582	25000 SF					36.59	10.91	15.72	11.52	16.85	91.58

Total of Above Sub-Biditems

=====> Item Totals: 400000 - CIP Superstructure

$4,251,083.01	**0.7748 MH/SF**		**19,371.71**	**MH**	**[42.941]**	**1,736,187**	**272,803**	**1,422,115**	**398,729**	**421,250**	**4,251,083**
170.043	**25000 SF**					**69.45**	**10.91**	**56.88**	**15.95**	**16.85**	**170.04**

BID ITEM = 500000
Description = Column Jackets — Unit = EA — Takeoff Quan: 25.000 — Engr Quan: 25.000

20001080 Bridge Demo - Ex Strut — Quan: 6.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

4DEMO	DEMOLITION	1.00	6.00	EA	8,000.000					48,000	48,000

Cost Report

BID ITEM = 500000
Description = Column Jackets Unit = EA Takeoff Quan: 25.000 Engr Quan: 25.000

50008002 Buy Grout Quan: 71.88 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2CONADEC	CONCRETE-ENVIRO CH	1.10	79.07	CY	6.000		474				474
2CONADFUEL	FUEL SURCHARGE	1.10	79.07	CY	2.000		158				158
2CONADHW	CONCRETE-HOT WATE	1.10	79.07	CY	8.000		633				633
2CONADPRIME	2CY GROUT TO PRIME P	1.00	12.50	EA	325.000		4,063				4,063
2CONADSL	SHORT LOAD <9CY PER	1.10	79.07	CY	40.000		3,163				3,163
2CONCLM	CONC-COLUMN JACKET	1.10	79.07	CY	180.000		14,233				14,233
$22,723.02					[ ]		22,723				22,723

50008003 Buy Column Casing Quan: 125,000.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2SSFCOLB	STEEL COL JACKET - 1/2	1.00	125,000.00	LB	3.900		487,500				487,500

50008032 Asbuilt Column Height Quan: 25.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP2 Carpenter 2 - SMALL WORK 31.25 CH **Prod:** **2.5000 MU** Lab Pcs: 2.00 Eqp Pcs: 0.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	31.25	MH	64.070	3,130					3,130
CJM	CARPENTER J/M	1.00	31.25	MH	53.700	2,732					2,732
$5,861.99	2.5000 MH/EA		62.50	MH	[147.213]	5,862					5,862

50008033 Prep Ex Column Quan: 2,500.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 62.50 CH **Prod:** **40.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	62.50	HR	17.692				1,106		1,106
8TRPU450	FLATRACK, BAREBED	1.00	62.50	HR	29.277				1,830		1,830
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	125.00	MH	45.610	8,830					8,830
LGFM	Laborer-General Foreman	1.00	62.50	MH	55.170	5,151					5,151
$16,916.24	0.0750 MH/SF		187.50	MH	[3.66]	13,981			2,936		16,916

50008034 Set Column Casing Quan: 25.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 187.50 CH **Prod:** **45.0000 MU** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	187.50	HR	29.277				5,489		5,489
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	187.50	MH	64.070	18,783					18,783
CJM	CARPENTER J/M	5.00	937.50	MH	53.700	81,946					81,946
$106,218.26	45.0000 MH/EA		1,125.00	MH	[2494.275]	100,729			5,489		106,218

50008035 Weld Column Casing Quan: 471.88 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PB4 4 MAN PB CREW 125.00 CH **Prod:** **0.9438 UM** Lab Pcs: 4.00 Eqp Pcs: 3.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	125.00	HR	29.277				3,660		3,660
8WELD400D	WELDER 400 AMP	1.00	125.00	HR	9.420				1,177		1,177
8WELDLN25	lLN25 WIRE FEED	1.00	125.00	HR	2.500				313		313
A	~~~~~LABOR~~~		0.00	MH	0.000						
PILE	PB Journeyman	3.00	375.00	MH	54.100	32,963					32,963
PILE4M	PB Foreman	1.00	125.00	MH	64.510	12,589					12,589
$50,702.16	1.0595 MH/LF		500.00	MH	[60.081]	45,553			5,150		50,702

50008036 Grout Column Casing Quan: 71.88 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLCOL P/F Columns 143.76 CH **Prod:** **8.0000 MU** Lab Pcs: 4.00 Eqp Pcs: 6.00

Cost Report

BID ITEM = 500000
Description = Column Jackets — Unit = EA — Takeoff Quan: 25.000 — Engr Quan: 25.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	2.00	287.52	HR	17.692				5,087		5,087
8GEN6	ENG DRIVEN GEN 6.5 K	2.00	287.52	HR	9.682				2,784		2,784
8ML80	JLG 80' MANLIFT	1.00	143.76	HR	67.911				9,763		9,763
8TRPU450	FLATRACK, BAREBED	1.00	143.76	HR	29.277				4,209		4,209
A	~~~~~LABOR~~~		0.00	MH	0.000						
CJM	CARPENTER J/M	0.50	71.88	MH	53.700	6,283					6,283
CMJM	CEMENT MASON J/M	0.50	71.88	MH	52.600	6,111					6,111
LATO	LABORER, AIR TOOL O	2.00	287.52	MH	45.610	20,311					20,311
LGFM	Laborer-General Foreman	1.00	143.76	MH	55.170	11,847					11,847
$66,394.02	8.0000 MH/CY		575.04	MH	[399.08]	44,552			21,842		66,394

50008037 — Drill Weld Relief Holes — Quan: 200.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
PB4	4 MAN PB CREW		100.00	CH	Prod:	2.0000 UH	Lab Pcs:	4.00	Eqp Pcs:		3.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	100.00	HR	29.277				2,928		2,928
8WELD400D	WELDER 400 AMP	1.00	100.00	HR	9.420				942		942
8WELDLN25	lLN25 WIRE FEED	1.00	100.00	HR	2.500				250		250
A	~~~~~LABOR~~~		0.00	MH	0.000						
PILE	PB Journeyman	3.00	300.00	MH	54.100	26,371					26,371
PILE4M	PB Foreman	1.00	100.00	MH	64.510	10,072					10,072
$40,561.75	2.0000 MH/EA		400.00	MH	[113.405]	36,442			4,120		40,562

50008054 — Roughen Surface — Quan: 2,500.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
LAB3	Laborer 3		83.33	CH	Prod:	10.0000 UM	Lab Pcs:	3.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	83.33	HR	17.692				1,474		1,474
8TRPU450	FLATRACK, BAREBED	1.00	83.33	HR	29.277				2,440		2,440
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	166.67	MH	45.610	11,774					11,774
LGFM	Laborer-General Foreman	1.00	83.33	MH	55.170	6,867					6,867
$22,554.80	0.1000 MH/SF		250.00	MH	[4.88]	18,641			3,914		22,555

50008081 — Paint Column Casing — Quan: 2,500.00 SF — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4PNT4468CJ	2 PAINT COL JCKTS,2FI	1.00	2,500.00	SF	10.000					25,000	25,000

90001030 — Forklift — Quan: 2.00 UM — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9KM	==> FORKLIFT 9K - MO	1.00	2.00	MO	2,576.000				5,152		5,152

90001040 — Manlift — Quan: 2.00 UM — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Additional manlift from activity.

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8ML60	==> JLG 60' MANLIFT	1.00	440.00	HR	45.891				20,192		20,192

90001060 — Generator — Quan: 2.00 UM — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEN6	==> ENG DRIVEN GEN 6.	1.00	440.00	HR	9.682				4,260		4,260

90001080 — Light towers — Quan: 2.00 UM — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEL2	==> Light Tower-4kW to 2	2.00	440.00	HR	14.500				6,380		6,380

=====> **Item Totals: 500000 - Column Jackets**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$928,416.36	124.0016 MH/EA		3,100.04	MH	[6684.154]	265,759	510,223		79,434	73,000	**928,416**
37,136.654	25 EA					10,630.35	20,408.92		3,177.38	2,920.00	37,136.65

Cost Report

PARENT ITEM = 550000
Description = Footing Strengthening Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 550000:

BID ITEM = 550010
Description = Temp Shoring Unit = SF Takeoff Quan: 18,050.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
60001005	**Buy Soldier Piles**		**Quan: 1,106,207.14**	**LB**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3SHTEMPPILES	TEMPORARY SHORING	1.00	1,106,207.14	LB	0.450			497,793			497,793
60001079	**Support Equipment**		**Quan: 3.00**	**MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
SUPTDS	Drill Support		660.00	CH	**Prod:**	**0.0000**		Lab Pcs:	2.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	660.00	HR	65.800				43,428		43,428
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	660.00	MH	44.530	45,746					45,746
OFELL	OP ENG LOADER	1.00	660.00	MH	57.470	63,564					63,564
$152,738.39	440.0000 MH/MO		1,320.00	MH	[22440]	109,310			43,428		152,738
60001080	**Driller Mobilization**		**Quan: 2.00**	**EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4XPIDRMOB	MOB DRILL SUB	1.00	2.00	EA	15,000.000					30,000	30,000
60001081	**Soldier Pile Drilling**		**Quan: 7,878.97**	**LF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	7,878.97	LF	85.000					669,712	669,712
60001087	**Haul Drill Spoils**		**Quan: 2,077.18**	**CY**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
4EWHSP	HAUL DRILL SPOILS	1.00	2,077.18	CY	40.000					83,087	83,087
=====> **Item Totals:**	**550010 - Temp Shoring**										
$1,433,331.25	0.0731 MH/SF		1,320.00	MH	[3.73]	109,310		497,793	43,428	782,800	**1,433,331**
79.409	18050 SF					6.06		27.58	2.41	43.37	79.41

BID ITEM = 550020
Description = Footing Excavation Unit = CY Takeoff Quan: 5,277.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16003001	**Buy Plastic**		**Quan: 11,559.69**	**SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3ECPOLYVB6M	6 MIL POLY SHEETING	1.05	1,348.50	SY	0.280			378			378
16003002	**Buy Sand Bags**		**Quan: 288.99**	**EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
3ECSB	SANDBAGS	1.05	303.44	EA	3.000			910			910
16003030	**I/R Slope Covering**		**Quan: 34,679.08**	**SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			
											**Unreviewed
16E01O	MISC TESC CREW		57.79	CH	**Prod:**	**299.9998 UM**		Lab Pcs:	2.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	57.80	HR	29.277				1,692		1,692
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	57.80	MH	44.530	4,006					4,006
LGFM	Laborer-General Foreman	1.00	57.80	MH	55.170	4,763					4,763
$10,461.66	0.0033 MH/SF		115.60	MH	[0.166]	8,769			1,692		10,462

BID ITEM = 550020
Description = Footing Excavation | Unit = CY | Takeoff Quan: 5,277.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
25005080	**Structure Exc Class A**	**Quan:**	**5,277.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW4006	STR EXC CL A W/HAUL	1.00	5,277.00	CY	45.000					237,465	237,465
=====> Item Totals:	550020 - Footing Excavation										
$249,214.56	0.0219 MH/CY		115.60	MH	[1.092]	8,769		1,288	1,692	237,465	**249,215**
47.227	5277 CY					1.66		0.24	0.32	45.00	47.23

BID ITEM = 550030
Description = Micropiles - 12" dia | Unit = EA | Takeoff Quan: 24.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1030	**Micropiles**	**Quan:**	**24.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4XPGMP	MICROPILE	1.00	24.00	EA	10,000.000					240,000	240,000
4XPGMPT	MICROPILE - PROOF TE	1.00	2.00	EA	5,000.000					10,000	10,000
4XPGMVT	MICROPILE - VERTIFICA	1.00	4.00	EA	2,500.000					10,000	10,000
$260,000.00					[ ]					260,000	260,000
=====> Item Totals:	550030 - Micropiles - 12" dia										
$260,000.00					[ ]					260,000	**260,000**
10,833.333	24 EA									10,833.33	10,833.33

BID ITEM = 550040
Description = Footing Retrofit | Unit = CY | Takeoff Quan: 469.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000170	**CONC PUMP TRUCK**	**Quan:**	**469.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5COPULA	LARAGE QTY CON PUM	1.00	422.10	CY	25.000			10,553			10,553
5COPUSM	SM QTY CON PUMPING	1.00	46.90	CY	35.000			1,642			1,642
$12,194.00					[ ]			12,194			12,194
50002001	**Buy Concrete**	**Quan:**	**469.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	515.98	CY	6.000		3,096				3,096
2CONADFUEL	FUEL SURCHARGE	1.10	515.98	CY	2.000		1,032				1,032
2CONADHW	CONCRETE-HOT WATE	1.10	515.98	CY	8.000		4,128				4,128
2CONC4	CONCRETE CL 4000	1.10	515.90	CY	145.000		74,806				74,806
$83,061.18					[ ]		83,061				83,061
50002003	**Buy Dowels & Epoxy**	**Quan:**	**1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	44.00	EA	90.000		3,960				3,960
2REB-EP	REINF STEEL-EPOXY-C	1.10	1,034.00	LB	2.000		2,068				2,068
$6,028.00					[ ]		6,028				6,028
50002011	**Buy Lumber/Plywood**	**Quan:**	**751.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMBR	FORM LUMBER	1.10	2,560.91	BF	1.200			3,073			3,073
3PLY34MDO	3/4" MDO PLYWOOD	1.10	826.10	SF	2.000			1,652			1,652
$4,725.29					[ ]			4,725			4,725
50002013	**Rent Ftg/Abutment Form**	**Quan:**	**751.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 550040											
Description =	Footing Retrofit				Unit = CY	Takeoff Quan:		469.000	Engr Quan:		0.000
3FMEFCO	EFCO PLATE GIRDER FO	1.00	751.00	SFMO	3.500			2,629			2,629
50002030	**F/G Footing**		**Quan: 2,760.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
25E4FG	Str Exc - FINEGRADE		69.00	CH	**Prod: 20.0000 UM**	Lab Pcs: 2.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	69.00	HR	34.582				2,386		2,386
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	69.00	MH	44.530	4,783					4,783
ODL	OP ENG DOZER D9 & <	1.00	69.00	MH	57.470	6,645					6,645
$13,814.06	0.0500 MH/SF		138.00	MH	[2.55]	11,428			2,386		13,814
50002032	**Fab Footing Form**		**Quan: 751.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		15.64	CH	**Prod: 12.0000 UM**	Lab Pcs: 4.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	15.65	HR	29.277				458		458
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	15.65	MH	64.070	1,568					1,568
CJM	CARPENTER J/M	3.00	46.94	MH	53.700	4,103					4,103
$6,128.87	0.0833 MH/SF		62.59	MH	[4.692]	5,671			458		6,129
50002033	**S/S Footing Form**		**Quan: 3,005.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		100.16	CH	**Prod: 5.0000 UM**	Lab Pcs: 6.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	100.17	HR	29.277				2,933		2,933
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	100.17	MH	64.070	10,034					10,034
CJM	CARPENTER J/M	5.00	500.83	MH	53.700	43,777					43,777
$56,744.26	0.2000 MH/SF		601.00	MH	[11.086]	53,812			2,933		56,744
50002034	**Plc/Fin Footing Conc**		**Quan: 469.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
PLSOGK	P/F SLAB ON GRADE		48.00	CH	**Prod: 2.4427 UM**	Lab Pcs: 4.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	48.00	MH	52.600	4,081					4,081
LATO	LABORER, AIR TOOL O	2.00	96.00	MH	45.610	6,782					6,782
LGFM	Laborer-General Foreman	1.00	48.00	MH	55.170	3,956					3,956
$16,223.20	0.4093 MH/CY		192.00	MH	[20.366]	14,818			1,405		16,223
50002035	**D/B Dowel to Existing**		**Quan: 470.00**	**EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
LAB3	Laborer 3		78.33	CH	**Prod: 6.0000 UH**	Lab Pcs: 3.00			Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	78.33	HR	17.692				1,386		1,386
8TRPU450	FLATRACK, BAREBED	1.00	78.33	HR	29.277				2,293		2,293
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	156.67	MH	45.610	11,067					11,067
LGFM	Laborer-General Foreman	1.00	78.33	MH	55.170	6,455					6,455
$21,201.49	0.5000 MH/EA		235.00	MH	[24.398]	17,522			3,679		21,201
50002036	**Roughen Surface**		**Quan: 2,000.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
LAB3	Laborer 3		24.00	CH	**Prod: 27.7778 UM**	Lab Pcs: 3.00			Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	24.00	HR	17.692				425		425

Cost Report

BID ITEM = 550040
Description = Footing Retrofit Unit = CY Takeoff Quan: 469.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8TRPU450	FLATRACK, BAREBED	1.00	24.00	HR	29.277				703		703
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	48.00	MH	45.610	3,391					3,391
LGFM	Laborer-General Foreman	1.00	24.00	MH	55.170	1,978					1,978
$6,495.83	0.0360 MH/SF		72.00	MH	[1.757]	5,369			1,127		6,496
50002043	**S/S Thru Rebar Bulkhead**				**Quan: 72.00 LF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
CARP6	Carpenter 6 - S/S		12.00	CH	**Prod: 1.0000 UM**	Lab Pcs: 6.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	12.00	HR	29.277				351		351
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	12.00	MH	64.070	1,202					1,202
CJM	CARPENTER J/M	5.00	60.00	MH	53.700	5,245					5,245
$6,797.96	1.0000 MH/LF		72.00	MH	[55.428]	6,447			351		6,798
50002075	**Cure Substructure Conc**				**Quan: 2,760.00 SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
CURE	MISC CONC Cure		27.60	CH	**Prod: 50.0000 UM**	Lab Pcs: 2.00			Eqp Pcs: 2.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	27.60	HR	10.382				287		287
8TRPU450	FLATRACK, BAREBED	1.00	27.60	HR	29.277				808		808
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	27.60	MH	44.530	1,913					1,913
LGFM	Laborer-General Foreman	1.00	27.60	MH	55.170	2,274					2,274
$5,282.06	0.0200 MH/SF		55.20	MH	[0.997]	4,187			1,095		5,282
50002076	**Point/Patch**				**Quan: 3,005.00 SF**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
FINCAP	Finish Caps		15.02	CH	**Prod: 100.0000 UM**	Lab Pcs: 2.00			Eqp Pcs: 3.50		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	7.51	HR	17.692				133		133
8GEL2	Light Tower-4kW to 20k	1.00	15.03	HR	14.500				218		218
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	15.03	HR	9.682				145		145
8TRPU450	FLATRACK, BAREBED	1.00	15.03	HR	29.277				440		440
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	15.03	MH	62.860	1,468					1,468
CMJM	CEMENT MASON J/M	1.00	15.03	MH	52.600	1,278					1,278
$3,681.65	0.0100 MH/SF		30.06	MH	[0.577]	2,745			936		3,682
50002098	**Rebar Bridge Substructure**				**Quan: 117,250.00 LB**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
use 250 lb/cy											
3RE-H	REBAR HOISTING SUPP	1.10	128,975.00	LB	0.035			4,514			4,514
4REBSUB	SUBSTRUCTURE REBAR	1.10	128,975.00	LB	1.250					161,219	161,219
$165,732.88					[ ]			4,514		161,219	165,733
90001080	**Light towers**				**Quan: 2.00 UM**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	440.00	HR	14.500				6,380		6,380

=====> Item Totals: 550040 - Footing Retrofit

$417,119.23	3.1084 MH/CY		1,457.85	MH	[163.931]	121,999	89,089	24,062	20,751	161,219	**417,119**
889.380	469 CY					260.13	189.96	51.30	44.24	343.75	889.38

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 550060
Description = Footing Backfill Unit = CY Takeoff Quan: 4,808.000 Engr Quan: 0.000

25005082 Structure BF Class A Quan: 4,808.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EW7011	GBF-FOUNDATION CL A	1.00	4,808.00	CY	37.000					177,896	177,896

PARENT ITEM = 550070
Description = Pier 10 Footing Strengthening Unit = CY Takeoff Quan: 135.000 Engr Quan: 135.000

Listing of Sub-Biditems of Parent Item 550070:

BID ITEM = 550071
Description = Temp Shoring Unit = SF Takeoff Quan: 1,166.000 Engr Quan: 0.000

30001090 Utility Locating Service Quan: 40.00 HR Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
5TRTHRVTRK	VACUUM TRUCK RENT	1.00	40.00	HR	300.000			12,000			12,000

60001005 Buy Soldier Piles Quan: 91,260.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3SHTEMPPILES	TEMPORARY SHORING	1.00	91,260.00	LB	0.450			41,067			41,067

60001079 Support Equipment Quan: 0.50 MO Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

SUPTDS Drill Support 110.00 CH **Prod:** **0.0000** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	110.00	HR	65.800				7,238		7,238
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	110.00	MH	44.530	7,624					7,624
OFELL	OP ENG LOADER	1.00	110.00	MH	57.470	10,594					10,594
$25,456.40	440.0000 MH/MO		220.00	MH	[22440]	18,218			7,238		25,456

60001080 Driller Mobilization Quan: 0.50 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4XPIDRMOB	MOB DRILL SUB	1.00	0.50	EA	15,000.000					7,500	7,500

60001081 Soldier Pile Drilling Quan: 780.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4XPIDR24A	DRILL 24" SET PILE/CON	1.00	780.00	LF	100.000					78,000	78,000

60001087 Haul Drill Spoils Quan: 91.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EWHSP	HAUL DRILL SPOILS	1.00	91.00	CY	40.000					3,640	3,640

=====> **Item Totals: 550071 - Temp Shoring**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$167,663.40	0.1886 MH/SF		220.00	MH	[9.623]	18,218		53,067	7,238	89,140	**167,663**
143.794	1166 SF					15.62		45.51	6.21	76.45	143.79

BID ITEM = 550072
Description = Footing Excavation Unit = CY Takeoff Quan: 684.000 Engr Quan: 0.000

16003001 Buy Plastic Quan: 1,498.36 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3ECPOLYVB6M	6 MIL POLY SHEETING	1.05	174.79	SY	0.280			49			49

Cost Report

BID ITEM = 550072
Description = Footing Excavation | Unit = CY | Takeoff Quan: 684.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16003002	**Buy Sand Bags**				**Quan: 37.46 EA**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
3ECSB	SANDBAGS	1.05	39.33	EA	3.000			118			118
16003030	**I/R Slope Covering**				**Quan: 4,495.07 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
16E01O	MISC TESC CREW		7.49	CH	**Prod: 299.9993 UM**	Lab Pcs: 2.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	7.49	HR	29.277				219		219
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	7.49	MH	44.530	519					519
LGFM	Laborer-General Foreman	1.00	7.49	MH	55.170	617					617
$1,355.65	0.0033 MH/SF		14.98	MH	[0.166]	1,136			219		1,356
25005080	**Structure Exc Class A**				**Quan: 684.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
4EW4006	STR EXC CL A W/HAUL	1.00	684.00	CY	45.000					30,780	30,780
=====> **Item Totals:**	**550072 - Footing Excavation**										
$32,302.58	0.0219 MH/CY		14.98	MH	[1.092]	1,136		167	219	30,780	**32,303**
47.226	684 CY					1.66		0.24	0.32	45.00	47.23

BID ITEM = 550073
Description = Footing Retrofit | Unit = CY | Takeoff Quan: 135.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000170	**CONC PUMP TRUCK**				**Quan: 135.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
5COPULA	LARAGE QTY CON PUM	1.00	121.50	CY	25.000			3,038			3,038
5COPUSM	SM QTY CON PUMPING	1.00	13.50	CY	35.000			473			473
$3,510.00					[ ]			3,510			3,510
50002001	**Buy Concrete**				**Quan: 135.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	148.52	CY	6.000		891				891
2CONADFUEL	FUEL SURCHARGE	1.10	148.52	CY	2.000		297				297
2CONADHW	CONCRETE-HOT WATE	1.10	148.52	CY	8.000		1,188				1,188
2CONC4	CONCRETE CL 4000	1.10	148.50	CY	145.000		21,533				21,533
$23,908.82					[ ]		23,909				23,909
50002003	**Buy Dowels & Epoxy**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	44.00	EA	90.000		3,960				3,960
2REB-EP	REINF STEEL-EPOXY-C	1.10	1,034.00	LB	2.000		2,068				2,068
$6,028.00					[ ]		6,028				6,028
50002011	**Buy Lumber/Plywood**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
3LMBR	FORM LUMBER	1.10	3,273.60	BF	1.200			3,928			3,928
3PLY34MDO	3/4" MDO PLYWOOD	1.10	1,056.00	SF	2.000			2,112			2,112
$6,040.32					[ ]			6,040			6,040
50002013	**Rent Ftg/Abutment Form**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
3FMEFCO	EFCO PLATE GIRDER FO	1.00	960.00	SFMO	3.500			3,360			3,360

Cost Report

BID ITEM = 550073
Description = Footing Retrofit Unit = CY Takeoff Quan: 135.000 Engr Quan: 0.000

50002030 F/G Footing Quan: 640.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

25E4FG Str Exc - FINEGRADE 16.00 CH **Prod: 20.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	16.00	HR	34.582				553		553
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	16.00	MH	44.530	1,109					1,109
ODL	OP ENG DOZER D9 & <	1.00	16.00	MH	57.470	1,541					1,541
$3,203.26	0.0500 MH/SF		32.00	MH	[2.55]	2,650			553		3,203

50002032 Fab Footing Form Quan: 960.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP4 Carpenter 4 - Med & PREFAB 20.00 CH **Prod: 12.0000 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	20.00	HR	29.277				586		586
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	20.00	MH	64.070	2,003					2,003
CJM	CARPENTER J/M	3.00	60.00	MH	53.700	5,245					5,245
$7,833.58	0.0833 MH/SF		80.00	MH	[4.691]	7,248			586		7,834

50002033 S/S Footing Form Quan: 960.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 40.00 CH **Prod: 4.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	40.00	MH	64.070	4,007					4,007
CJM	CARPENTER J/M	5.00	200.00	MH	53.700	17,482					17,482
$22,659.90	0.2500 MH/SF		240.00	MH	[13.857]	21,489			1,171		22,660

50002034 Plc/Fin Footing Conc Quan: 135.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLSOGK P/F SLAB ON GRADE 13.81 CH **Prod: 2.4427 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	13.82	HR	29.277				405		405
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	13.82	MH	52.600	1,175					1,175
LATO	LABORER, AIR TOOL O	2.00	27.63	MH	45.610	1,952					1,952
LGFM	Laborer-General Foreman	1.00	13.82	MH	55.170	1,139					1,139
$4,670.19	0.4094 MH/CY		55.27	MH	[20.367]	4,266			405		4,670

50002035 D/B Dowel to Existing Quan: 272.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 45.33 CH **Prod: 6.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	45.33	HR	17.692				802		802
8TRPU450	FLATRACK, BAREBED	1.00	45.33	HR	29.277				1,327		1,327
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	90.67	MH	45.610	6,405					6,405
LGFM	Laborer-General Foreman	1.00	45.33	MH	55.170	3,736					3,736
$12,269.72	0.5000 MH/EA		136.00	MH	[24.398]	10,141			2,129		12,270

50002036 Roughen Surface Quan: 576.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 6.91 CH **Prod: 27.7778 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	6.91	HR	17.692				122		122
8TRPU450	FLATRACK, BAREBED	1.00	6.91	HR	29.277				202		202

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 550073											
Description =	Footing Retrofit				Unit = CY	Takeoff Quan:	135.000		Engr Quan:		0.000
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	13.82	MH	45.610	976					976
LGFM	Laborer-General Foreman	1.00	6.91	MH	55.170	569					569
$1,870.21	0.0359 MH/SF		20.73	MH	[1.756]	1,546			325		1,870
50002075	**Cure Substructure Conc**				**Quan: 1,152.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
CURE	MISC CONC Cure			11.52 CH	**Prod:**	**50.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	11.52	HR	10.382				120		120
8TRPU450	FLATRACK, BAREBED	1.00	11.52	HR	29.277				337		337
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	11.52	MH	44.530	798					798
LGFM	Laborer-General Foreman	1.00	11.52	MH	55.170	949					949
$2,204.68	0.0200 MH/SF		23.04	MH	[0.997]	1,748			457		2,205
50002076	**Point/Patch**				**Quan: 960.00 SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
FINCAP	Finish Caps			4.80 CH	**Prod:**	**100.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:		3.50
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	2.40	HR	17.692				42		42
8GEL2	Light Tower-4kW to 20k	1.00	4.80	HR	14.500				70		70
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	4.80	HR	9.682				46		46
8TRPU450	FLATRACK, BAREBED	1.00	4.80	HR	29.277				141		141
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	4.80	MH	62.860	469					469
CMJM	CEMENT MASON J/M	1.00	4.80	MH	52.600	408					408
$1,175.78	0.0100 MH/SF		9.60	MH	[0.577]	877			299		1,176
50002098	**Rebar Bridge Substructure**				**Quan: 15,000.00 LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
use 250 lb/cy											
3RE-H	REBAR HOISTING SUPP	1.10	16,500.00	LB	0.035			578			578
4REBSUB	SUBSTRUCTURE REBAR	1.10	16,500.00	LB	1.250					20,625	20,625
$21,202.50					[ ]			578		20,625	21,203
90001080	**Light towers**				**Quan: 2.00 UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	440.00	HR	14.500				6,380		6,380
=====> Item Totals: 550073	**- Footing Retrofit**										
$126,316.96	4.4195 MH/CY		596.64	MH	[233.618]	49,963	29,937	13,488	12,304	20,625	**126,317**
935.681	135 CY					370.10	221.75	99.91	91.14	152.78	935.68
BID ITEM = 550074											
Description =	Footing Backfill				Unit = CY	Takeoff Quan:	549.000		Engr Quan:		0.000
25005082	**Structure BF Class A**				**Quan: 549.00 CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**			**Unreviewed
4EW7011	GBF-FOUNDATION CL A	1.00	549.00	CY	37.000					20,313	20,313

Total of Above Sub-Biditems

=====> Item Totals: 550070 - Pier 10 Footing Strengthening

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 550074
Description = Footing Backfill   Unit = CY   Takeoff Quan: 549.000   Engr Quan: 0.000

$346,595.94	**6.1601 MH/CY**		**831.62**	**MH**	**[322.26]**	**69,318**	**29,937**	**66,722**	**19,761**	**160,858**	**346,596**
2,567.377	**135 CY**					**513.47**	**221.75**	**494.24**	**146.38**	**1,191.54**	**2,567.38**

Total of Above Sub-Biditems

=====> Item Totals: 550000 - Footing Strengthening

$2,884,156.98	**3,725.0700 MH/LS**		**3,725.07**	**MH**	**[193471.66]**	**309,397**	**119,026**	**589,865**	**85,632**	**1,780,237**	**2,884,157**
2,884,156.980	**1 LS**					**309,396.76**	**119,026.00**	**589,864.78**	**85,632.04**	**1,780,237.40**	**2,884,156.98**

BID ITEM = 600000
Description = Seat Bolster At Rocker Bearing   Unit = LS   Takeoff Quan: 1.000   Engr Quan: 1.000

A   Seat Bolster At Rocker Bearing   Quan: 1.00 LS   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

4	SUBCONTRACTORS	1.00	1.00	LS	50,000.000					50,000	50,000

PARENT ITEM = 700000
Description = North Abut Footing Strengthening   Unit = LS   Takeoff Quan: 1.000   Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 700000:

BID ITEM = 700010
Description = Temp Shoring   Unit = SF   Takeoff Quan: 1,001.000   Engr Quan: 0.000

60001005   Buy Soldier Piles   Quan: 61,347.00 LB   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

3SHTEMPPILES	TEMPORARY SHORING	1.00	61,347.00	LB	0.450			27,606			27,606

60001079   Support Equipment   Quan: 0.25 MO   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

SUPTDS   Drill Support   55.00 CH   **Prod:** **0.0000**   Lab Pcs: 2.00   Eqp Pcs: 1.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8LD950	WHL LOADER CAT 950	1.00	55.00	HR	65.800				3,619		3,619
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	55.00	MH	44.530	3,812					3,812
OFELL	OP ENG LOADER	1.00	55.00	MH	57.470	5,297					5,297
$12,728.20	440.0000 MH/MO		110.00	MH	[22440]	9,109			3,619		12,728

60001080   Driller Mobilization   Quan: 1.00 EA   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

4XPIDRMOB	MOB DRILL SUB	1.00	1.00	EA	15,000.000					15,000	15,000

60001081   Soldier Pile Drilling   Quan: 436.94 LF   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

4XPIDR24A	DRILL 24" SET PILE/CON	1.00	436.94	LF	85.000					37,140	37,140

60001087   Haul Drill Spoils   Quan: 115.19 CY   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 700010
Description = Temp Shoring Unit = SF Takeoff Quan: 1,001.000 Engr Quan: 0.000

4EWHSP	HAUL DRILL SPOILS	1.00	115.19	CY	40.000					4,608	4,608

=====> Item Totals: 700010 - Temp Shoring

$97,081.85	0.1098 MH/SF		110.00	MH	[5.604]	9,109		27,606	3,619	56,748	**97,082**
96.985	1001 SF					9.10		27.58	3.62	56.69	96.98

BID ITEM = 700020
Description = Footing Excavation Unit = CY Takeoff Quan: 320.000 Engr Quan: 0.000

16003001 Buy Plastic Quan: 700.99 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

3ECPOLYVB6M	6 MIL POLY SHEETING	1.05	81.77	SY	0.280			23			23

16003002 Buy Sand Bags Quan: 17.52 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

3ECSB	SANDBAGS	1.05	18.40	EA	3.000			55			55

16003030 I/R Slope Covering Quan: 2,102.96 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

16E01O MISC TESC CREW 3.50 CH **Prod: 300.0029 UM** Lab Pcs: 2.00 Eqp Pcs: 1.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	3.50	HR	29.277				102		102
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	3.50	MH	44.530	243					243
LGFM	Laborer-General Foreman	1.00	3.50	MH	55.170	288					288
$633.48	0.0033 MH/SF		7.00	MH	[0.166]	531			102		633

25005080 Structure Exc Class A Quan: 320.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

4EW4006	STR EXC CL A W/HAUL	1.00	320.00	CY	45.000					14,400	14,400

=====> Item Totals: 700020 - Footing Excavation

$15,111.58	0.0218 MH/CY		7.00	MH	[1.091]	531		78	102	14,400	**15,112**
47.224	320 CY					1.66		0.24	0.32	45.00	47.22

BID ITEM = 700030
Description = Micropiles - 12" dia Unit = EA Takeoff Quan: 12.000 Engr Quan: 0.000

1030 Micropiles Quan: 12.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

4XPGMP	MICROPILE	1.00	12.00	EA	10,000.000					120,000	120,000
4XPGMPT	MICROPILE - PROOF TE	1.00	0.75	EA	5,000.000					3,750	3,750
4XPGMVT	MICROPILE - VERTIFICA	1.00	0.75	EA	2,500.000					1,875	1,875
$125,625.00					[ ]					125,625	125,625

=====> Item Totals: 700030 - Micropiles - 12" dia

$125,625.00					[ ]					125,625	**125,625**
10,468.750	12 EA									10,468.75	10,468.75

BID ITEM = 700040
Description = Footing Retrofit Unit = CY Takeoff Quan: 143.000 Engr Quan: 0.000

Cost Report

BID ITEM = 700040
Description = Footing Retrofit Unit = CY Takeoff Quan: 143.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000170	**CONC PUMP TRUCK**		**Quan: 143.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5COPULA	LARAGE QTY CON PUM	1.00	128.70	CY	25.000			3,218			3,218
5COPUSM	SM QTY CON PUMPING	1.00	14.30	CY	35.000			501			501
$3,718.00					[ ]			3,718			3,718
50002001	**Buy Concrete**		**Quan: 143.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	157.32	CY	6.000		944				944
2CONADFUEL	FUEL SURCHARGE	1.10	157.32	CY	2.000		315				315
2CONADHW	CONCRETE-HOT WATE	1.10	157.32	CY	8.000		1,259				1,259
2CONC4	CONCRETE CL 4000	1.10	157.30	CY	145.000		22,809				22,809
$25,325.62					[ ]		25,326				25,326
50002003	**Buy Dowels & Epoxy**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.10	3.30	EA	90.000		297				297
2REB-EP	REINF STEEL-EPOXY-C	1.10	92.40	LB	2.000		185				185
$481.80					[ ]		482				482
50002011	**Buy Lumber/Plywood**		**Quan: 370.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMBR	FORM LUMBER	1.10	1,261.70	BF	1.200			1,514			1,514
3PLY34MDO	3/4" MDO PLYWOOD	1.10	407.00	SF	2.000			814			814
$2,328.04					[ ]			2,328			2,328
50002013	**Rent Ftg/Abutment Form**		**Quan: 370.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3FMEFCO	EFCO PLATE GIRDER FO	1.00	370.00	SFMO	3.500			1,295			1,295
50002030	**F/G Footing**		**Quan: 369.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
25E4FG	Str Exc - FINEGRADE		9.22	CH	**Prod:**	**20.0000 UM**		Lab Pcs:	2.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8DO5	D5 DOZER (25k)	1.00	9.23	HR	34.582				319		319
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	9.23	MH	44.530	640					640
ODL	OP ENG DOZER D9 & <	1.00	9.23	MH	57.470	889					889
$1,847.87	0.0500 MH/SF		18.46	MH	[2.551]	1,529			319		1,848
50002032	**Fab Footing Form**		**Quan: 370.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		7.70	CH	**Prod:**	**12.0001 UM**		Lab Pcs:	4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	7.71	HR	29.277				226		226
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	7.71	MH	64.070	772					772
CJM	CARPENTER J/M	3.00	23.12	MH	53.700	2,021					2,021
$3,018.95	0.0833 MH/SF		30.83	MH	[4.691]	2,793			226		3,019
50002033	**S/S Footing Form**		**Quan: 740.00**	**SF**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP6	Carpenter 6 - S/S		24.66	CH	**Prod:**	**5.0000 UM**		Lab Pcs:	6.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	24.67	HR	29.277				722		722
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	24.67	MH	64.070	2,471					2,471
CJM	CARPENTER J/M	5.00	123.33	MH	53.700	10,780					10,780

Cost Report

BID ITEM = 700040
Description = Footing Retrofit Unit = CY Takeoff Quan: 143.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$13,973.72	0.2000 MH/SF		148.00	MH	[11.086]	13,251			722		13,974

50002034 Plc/Fin Footing Conc Quan: 143.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLSOGK P/F SLAB ON GRADE 14.63 CH **Prod: 2.4427 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	14.64	HR	29.277				429		429
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	14.64	MH	52.600	1,245					1,245
LATO	LABORER, AIR TOOL O	2.00	29.27	MH	45.610	2,068					2,068
LGFM	Laborer-General Foreman	1.00	14.64	MH	55.170	1,206					1,206
$4,947.35	0.4094 MH/CY		58.55	MH	[20.369]	4,519			429		4,947

50002035 D/B Dowel to Existing Quan: 41.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 6.83 CH **Prod: 6.0000 UH** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	6.83	HR	17.692				121		121
8TRPU450	FLATRACK, BAREBED	1.00	6.83	HR	29.277				200		200
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	13.67	MH	45.610	966					966
LGFM	Laborer-General Foreman	1.00	6.83	MH	55.170	563					563
$1,849.27	0.5000 MH/EA		20.50	MH	[24.398]	1,529			321		1,849

50002036 Roughen Surface Quan: 250.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

LAB3 Laborer 3 3.00 CH **Prod: 27.7778 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	3.00	HR	17.692				53		53
8TRPU450	FLATRACK, BAREBED	1.00	3.00	HR	29.277				88		88
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	6.00	MH	45.610	424					424
LGFM	Laborer-General Foreman	1.00	3.00	MH	55.170	247					247
$811.97	0.0360 MH/SF		9.00	MH	[1.757]	671			141		812

50002043 S/S Thru Rebar Bulkhead Quan: 9.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 1.50 CH **Prod: 1.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	1.50	HR	29.277				44		44
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	1.50	MH	64.070	150					150
CJM	CARPENTER J/M	5.00	7.50	MH	53.700	656					656
$849.74	1.0000 MH/LF		9.00	MH	[55.429]	806			44		850

50002075 Cure Substructure Conc Quan: 1,107.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CURE MISC CONC Cure 11.07 CH **Prod: 50.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	11.07	HR	10.382				115		115
8TRPU450	FLATRACK, BAREBED	1.00	11.07	HR	29.277				324		324
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	11.07	MH	44.530	767					767
LGFM	Laborer-General Foreman	1.00	11.07	MH	55.170	912					912
$2,118.56	0.0200 MH/SF		22.14	MH	[0.997]	1,680			439		2,119

50002076 Point/Patch Quan: 740.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINCAP Finish Caps 3.70 CH **Prod: 100.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 3.50

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 700040											
Description =	Footing Retrofit			Unit = CY		Takeoff Quan:		143.000	Engr Quan:		0.000
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	1.85	HR	17.692				33		33
8GEL2	Light Tower-4kW to 20k	1.00	3.70	HR	14.500				54		54
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	3.70	HR	9.682				36		36
8TRPU450	FLATRACK, BAREBED	1.00	3.70	HR	29.277				108		108
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	3.70	MH	62.860	361					361
CMJM	CEMENT MASON J/M	1.00	3.70	MH	52.600	315					315
$906.30	0.0100 MH/SF		7.40	MH	[0.577]	676			230		906
50002098	**Rebar Bridge Substructure**		**Quan: 35,750.00**	**LB**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
use 250 lb/cy											
3RE-H	REBAR HOISTING SUPP	1.10	39,325.00	LB	0.035			1,376			1,376
4REBSUB	SUBSTRUCTURE REBAR	1.10	39,325.00	LB	1.250					49,156	49,156
$50,532.63					[ ]			1,376		49,156	50,533
90001080	**Light towers**		**Quan: 0.50**	**UM**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	110.00	HR	14.500				1,595		1,595
=====> Item Totals: 700040	**- Footing Retrofit**										
$115,599.82	2.2648 MH/CY		323.88	MH	[120.716]	27,453	25,807	8,717	4,466	49,156	**115,600**
808.390	143 CY					191.98	180.47	60.96	31.23	343.75	808.39
BID ITEM = 700060											
Description =	Footing Backfill			Unit = CY		Takeoff Quan:		178.000	Engr Quan:		0.000
25005082	**Structure BF Class A**		**Quan: 178.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW7011	GBF-FOUNDATION CL A	1.00	178.00	CY	37.000					6,586	6,586

Total of Above Sub-Biditems

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
=====> Item Totals: 700000	**- North Abut Footing Strengthening**										
$360,004.25	**440.8800 MH/LS**		**440.88**	**MH**	**[23221.33]**	**37,093**	**25,807**	**36,402**	**8,187**	**252,515**	**360,004**
360,004.250	**1 LS**					**37,093.26**	**25,807.42**	**36,401.67**	**8,187.15**	**252,514.75**	**360,004.25**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 1000000											
Description =	Bridge Barrier			Unit = LF		Takeoff Quan:		682.000	Engr Quan:		682.000
50007501	**Buy Concrete**		**Quan: 88.96**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.10	95.34	CY	6.000		572				572
2CONADESC3R	ESCALATOR 3RD YEAR	1.10	95.34	CY	10.000		953				953
2CONADFUEL	FUEL SURCHARGE	1.10	95.34	CY	2.000		191				191
2CONADHW	CONCRETE-HOT WATE	1.10	95.34	CY	8.000		763				763
2CONC4	CONCRETE CL 4000	1.10	95.34	CY	145.000		13,824				13,824
$16,303.14					[ ]		16,303				16,303

Cost Report

BID ITEM = 1000000
Description = Bridge Barrier Unit = LF Takeoff Quan: 682.000 Engr Quan: 682.000

50007511 Buy Lumber/Plywood Quan: 2,387.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3LMBR	FORM LUMBER	1.00	4,774.00	BF	1.200			5,729			5,729
3PLY34MDO	3/4" MDO PLYWOOD	1.00	2,387.00	SF	2.000			4,774			4,774
$10,502.80					[ ]			10,503			10,503

50007552 Prefab Barrier Forms Quan: 2,387.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP4	Carpenter 4 - Med & PREFAB		49.71	CH	**Prod:**	**12.0029 UM**	Lab Pcs:	4.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	49.72	HR	29.277				1,456		1,456
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	49.72	MH	64.070	4,981					4,981
CJM	CARPENTER J/M	3.00	149.15	MH	53.700	13,037					13,037
$19,473.39	0.0833 MH/SF		198.87	MH	[4.69]	18,018			1,456		19,473

50007554 S/S Barrier Quan: 4,774.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		79.54	CH	**Prod:**	**10.0028 UM**	Lab Pcs:	6.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	79.54	HR	29.277				2,329		2,329
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	79.54	MH	64.070	7,968					7,968
CJM	CARPENTER J/M	5.00	397.72	MH	53.700	34,764					34,764
$45,060.91	0.0999 MH/SF		477.26	MH	[5.541]	42,732			2,329		45,061

50007555 Place Barrier Concrete Quan: 88.96 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
PLBARR	(Mod) P/F Barrier		17.79	CH	**Prod:**	**5.0000 UH**	Lab Pcs:	3.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	17.79	HR	17.692				315		315
8TRPU450	FLATRACK, BAREBED	1.00	17.79	HR	29.277				521		521
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	17.79	MH	52.600	1,512					1,512
LATO	LABORER, AIR TOOL O	1.00	17.79	MH	45.610	1,257					1,257
LGFM	Laborer-General Foreman	1.00	17.79	MH	55.170	1,466					1,466
$5,070.72	0.5999 MH/CY		53.37	MH	[30.672]	4,235			836		5,071

50007556 Cure Barrier Concrete Quan: 533.74 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CURE	MISC CONC Cure		13.37	CH	**Prod:**	**19.9490 UM**	Lab Pcs:	2.00	Eqp Pcs:		2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	13.38	HR	10.382				139		139
8TRPU450	FLATRACK, BAREBED	1.00	13.38	HR	29.277				392		392
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	13.38	MH	44.530	927					927
LGFM	Laborer-General Foreman	1.00	13.38	MH	55.170	1,103					1,103
$2,560.62	0.0501 MH/SF		26.76	MH	[2.499]	2,030			531		2,561

50007557 Point / Patch Barrier Quan: 4,774.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
FINWAL	Finish Walls		39.82	CH	**Prod:**	**59.9338 UM**	Lab Pcs:	2.00	Eqp Pcs:		4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	39.83	HR	17.692				705		705
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	39.83	HR	9.682				386		386
8ML40	JLG 40' MANLIFT	1.00	39.83	HR	34.727				1,383		1,383
8TRPU450	FLATRACK, BAREBED	1.00	39.83	HR	29.277				1,166		1,166
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 1000000
Description = Bridge Barrier Unit = LF Takeoff Quan: 682.000 Engr Quan: 682.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CMFM	CEMENT MASON F/M	1.00	39.83	MH	62.860	3,889					3,889
CMJM	CEMENT MASON J/M	1.00	39.83	MH	52.600	3,386					3,386
$10,914.82	0.0166 MH/SF		79.66	MH	[0.963]	7,275			3,640		10,915

50007558 Surface Finish Barrier Quan: 4,791.49 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
FINWAL	Finish Walls		79.85	CH	**Prod: 29.9999 UM**	Lab Pcs: 2.00			Eqp Pcs: 4.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	79.86	HR	17.692				1,413		1,413
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	79.86	HR	9.682				773		773
8ML40	JLG 40' MANLIFT	1.00	79.86	HR	34.727				2,773		2,773
8TRPU450	FLATRACK, BAREBED	1.00	79.86	HR	29.277				2,338		2,338
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	79.86	MH	62.860	7,798					7,798
CMJM	CEMENT MASON J/M	1.00	79.86	MH	52.600	6,789					6,789
$21,884.59	0.0333 MH/SF		159.72	MH	[1.924]	14,587			7,297		21,885

50007560 S/S Lum/Traf Blister Quan: 12.00 EA Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CARP6	Carpenter 6 - S/S		15.99	CH	**Prod: 7.9999 MU**	Lab Pcs: 6.00			Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	16.00	MH	64.070	1,603					1,603
CJM	CARPENTER J/M	5.00	80.00	MH	53.700	6,993					6,993
$9,063.95	8.0000 MH/EA		96.00	MH	[443.427]	8,596			468		9,064

50007589 Pigseal Bridge Barrier Quan: 5,285.50 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4PNTSEAL	PIGMENTED SEALER	1.00	5,285.50	SF	0.750					3,964	3,964

50007597 Rebar Barrier - Hand Quan: 682.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3RE-H	REBAR HOISTING SUPP	1.00	682.00	LB	0.035			24			24
4REBSUPBA	BRIDGE BARRIER	1.00	682.00	LF	55.000					37,510	37,510
$37,533.87					[ ]			24		37,510	37,534

=====> Item Totals: 1000000 - Bridge Barrier

$182,332.94	1.6006 MH/LF		1,091.64	MH	[89.225]	97,473	16,303	10,527	16,556	41,474	**182,333**
267.350	682 LF					142.92	23.90	15.44	24.28	60.81	267.35

BID ITEM = 1100000
Description = Bridge Curb Unit = LF Takeoff Quan: 682.000 Engr Quan: 682.000

45007081 Ped Curb Quan: 682.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4CF6707	CONC PEDESTRIAN CU	1.00	682.00	LF	32.000					21,824	21,824

BID ITEM = 1200000
Description = Temporary OCS Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A Temporary OCS Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	200,000.000					200,000	200,000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 1300000
Description = Permanent OCS Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A Permanent OCS Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	1,000,000.000					1,000,000	1,000,000

BID ITEM = 1400000
Description = Temp Illumination Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A Temp Illumination Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EL	ELECTRICAL	1.00	1.00	LS	60,000.000					60,000	60,000

BID ITEM = 1500000
Description = Permanent Illumination Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

A Permanent Illumination Quan: 1.00 LS Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4ELE014	2 INCH PVC CONDUIT S	1.00	1,332.00	LF	25.000					33,300	33,300
4ELIL	ILLUMINATION - LIGHT	1.00	12.00	EA	25,000.000					300,000	300,000
$333,300.00					[ ]					333,300	333,300

=====> Item Totals: 1500000 - Permanent Illumination

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$333,300.00					[ ]					333,300	**333,300**
333,300.000			1 LS							333,300.00	333,300.00

PARENT ITEM = 9000000
Description = General Conditions Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 9000000:

BID ITEM = 9000010
Description = Salaried Staff and Admin Unit = MO Takeoff Quan: 31.000 Engr Quan: 0.000

A Salaried and Admin Quan: 31.00 MO Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
ZBUS1	==> CLERICAL OFFICE H	1.00	31.00	MO	9,000.000	304,110					304,110
ZENG1H	==> PROJECT ENGINEER	1.00	31.00	MO	20,000.000	675,800					675,800
ZENG3H	==> FIELD ENGINEER	1.00	31.00	MO	12,500.000	422,375					422,375
ZPM	==> PROJECT MANAGE	1.00	16.00	MO	25,000.000	436,000					436,000
ZSUP1H	==> PROJECT SUPERINT	1.00	31.00	MO	22,000.000	743,380					743,380
$2,581,665.00					[ ]	2,581,665					2,581,665

=====> Item Totals: 9000010 - Salaried Staff and Admin

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$2,581,665.00					[ ]	2,581,665					**2,581,665**
83,279.516			31 MO			83,279.52					83,279.52

Cost Report

Activity Resource	Desc	Pcs	Quantity Unit		Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 9000040											
Description =	Construction Support				Unit = MO	Takeoff Quan:		31.000	Engr Quan:		0.000
A	**Project Signs**		**Quan: 20.00 EA**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3PROJECTSIGN	Project Sign	1.00	20.00	EA	500.000			10,000			10,000
B	**Photographs**		**Quan: 20.00 WK**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	20.00	WK	1,000.000			20,000			20,000
C	**Insurance Deductable**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	50,000.000			50,000			50,000
=====> **Item Totals:**	**9000040 - Construction Support**										
$80,000.00					[ ]			80,000			**80,000**
2,580.645			31 MO					2,580.65			2,580.65
BID ITEM = 9000050											
Description =	Safety				Unit = LS	Takeoff Quan:		1.000	Engr Quan:		0.000
99005010	**Job Safety Expenses**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
Z*SA	==> TOTAL HOUR - SAF	1.00	33,000.00	LBHR	1.500	53,955					53,955
$53,955.00					[ ]	53,955					53,955
A	**First Aid Station**		**Quan: 2.00 EA**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	2.00	EA	10,000.000			20,000			20,000
B	**First Aid Kits, Supplies**		**Quan: 133.00 WK**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	133.00	WK	250.000			33,250			33,250
D	**Sbstance Abuse Testing**		**Quan: 30.00 EA**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	30.00	EA	250.000			7,500			7,500
=====> **Item Totals:**	**9000050 - Safety**										
$114,705.00					[ ]	53,955		60,750			**114,705**
114,705.000			1 LS			53,955.00		60,750.00			114,705.00
BID ITEM = 9000060											
Description =	Tools and Equipment				Unit = LS	Takeoff Quan:		1.000	Engr Quan:		0.000
99002040	**Communication (FOH)**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				
											**Unreviewed
1ITCLBY	Cellular Phone Buy	1.00	20.00	EA	1,000.000			20,000			20,000
1ITCP	Computers	1.00	109.00	MMO	120.000			13,080			13,080
$33,080.00					[ ]			33,080			33,080
A	**Staff Pickups**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
8TRPU150M	==> C.P.O. VEHICLES -	1.00	109.00	MO	1,600.000				174,400		174,400

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 9000060
Description = Tools and Equipment Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
B	**Forklift**				**Quan: 16.00 MO Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	3,200.00	HR	49.580				158,656		158,656
OBH	==> OP ENG BACKHOE	1.00	3,200.00	MH	58.090	331,842					331,842
$490,497.50	200.0000 MH/MO		3,200.00	MH	[12779.8]	331,842			158,656		490,498
C	**Small Tools**				**Quan: 33,000.00 HR Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
3SMALLTOOLS	Small Tools	1.00	33,000.00	HR	2.500			82,500			82,500
=====> Item Totals:	**9000060 - Tools and Equipment**										
$780,477.50	3,200.0000 MH/LS		3,200.00	MH	[204476.8]	331,842		115,580	333,056		**780,478**
780,477.500	1 LS					331,841.50		115,580.00	333,056.00		780,477.50

BID ITEM = 9000070
Description = Misc.Overtime Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Misc.Overtime**				**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	100,000.000			100,000			100,000
=====> Item Totals:	**9000070 - Misc.Overtime**										
$100,000.00					[ ]			100,000			**100,000**
100,000.000	1 LS							100,000.00			100,000.00

BID ITEM = 9000080
Description = Contingency Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Contingency**				**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	150,000.000			150,000			150,000
=====> Item Totals:	**9000080 - Contingency**										
$150,000.00					[ ]			150,000			**150,000**
150,000.000	1 LS							150,000.00			150,000.00

BID ITEM = 9090000
Description = Bond/Insurance/Tax Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Bond, Insurance**				**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
1BIBR	Builder's Risk Insurance	1.00	29,400,000.00	DLR	0.004			117,600			117,600
1BICG	Contractor's General Liabili	1.00	29,400,000.00	DLR	0.009			264,600			264,600
1BIPP	P&P Bond	1.00	29,400,000.00	DLR	0.007			205,800			205,800
1BISUB	SUBCONTRCTOR BOND	1.00	11,000,000.00	DLR	0.015			165,000			165,000
$753,000.00					[ ]			753,000			753,000
=====> Item Totals:	**9090000 - Bond/Insurance/Tax**										
$753,000.00					[ ]			753,000			**753,000**
753,000.000	1 LS							753,000.00			753,000.00

Cost Report

Activity / Resource	Desc	Quantity Pcs	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 9100000
Description = Escalation Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Labor Escalation**		**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**							
1	GEN CONDITION/INDIR	1.00	6,500,000.00 LS	0.040			260,000			260,000 **Unreviewed
B	**Equipment Escalation**		**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**							
1	GEN CONDITION/INDIR	1.00	1,000,000.00 LS	0.060			60,000			60,000 **Unreviewed
C	**Subcontractor-Labor Escalation**		**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**							
1	GEN CONDITION/INDIR	1.00	11,000,000.00 LS	0.040			440,000			440,000 **Unreviewed
D	**Subcontractor-Equipment Escalation**		**Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201**							
1	GEN CONDITION/INDIR	1.00	1,000,000.00 LS	0.040			40,000			40,000 **Unreviewed

=====> **Item Totals: 9100000 - Escalation**

$800,000.00		[ ]			800,000			**800,000**
800,000.000	1 LS				800,000.00			800,000.00

Total of Above Sub-Biditems

=====> **Item Totals: 9000000 - General Conditions**

$5,359,847.50	**3,200.0000 MH/LS**	**3,200.00 MH**	**[204476.8]**	**2,967,462**		**2,059,330**	**333,056**		**5,359,848**
5,359,847.500	**1 LS**			**2,967,461.50**		**2,059,330.00**	**333,056.00**		**5,359,847.50**

$24,462,718.29	***** Report Totals *****	43,508.38 MH	6,467,505	968,453	4,801,237	1,429,852	10,795,670	**24,462,718**

>>> **indicates Non Additive Activity**
------Report Notes:------
The estimate was prepared with TAKEOFF Quantities.
This report shows TAKEOFF Quantities with the resources.

'Unreviewed' Activities are marked.

Bid Date: 04/01/24 Owner: Engineering Firm:
Estimator-In-Charge:

JOB NOTES

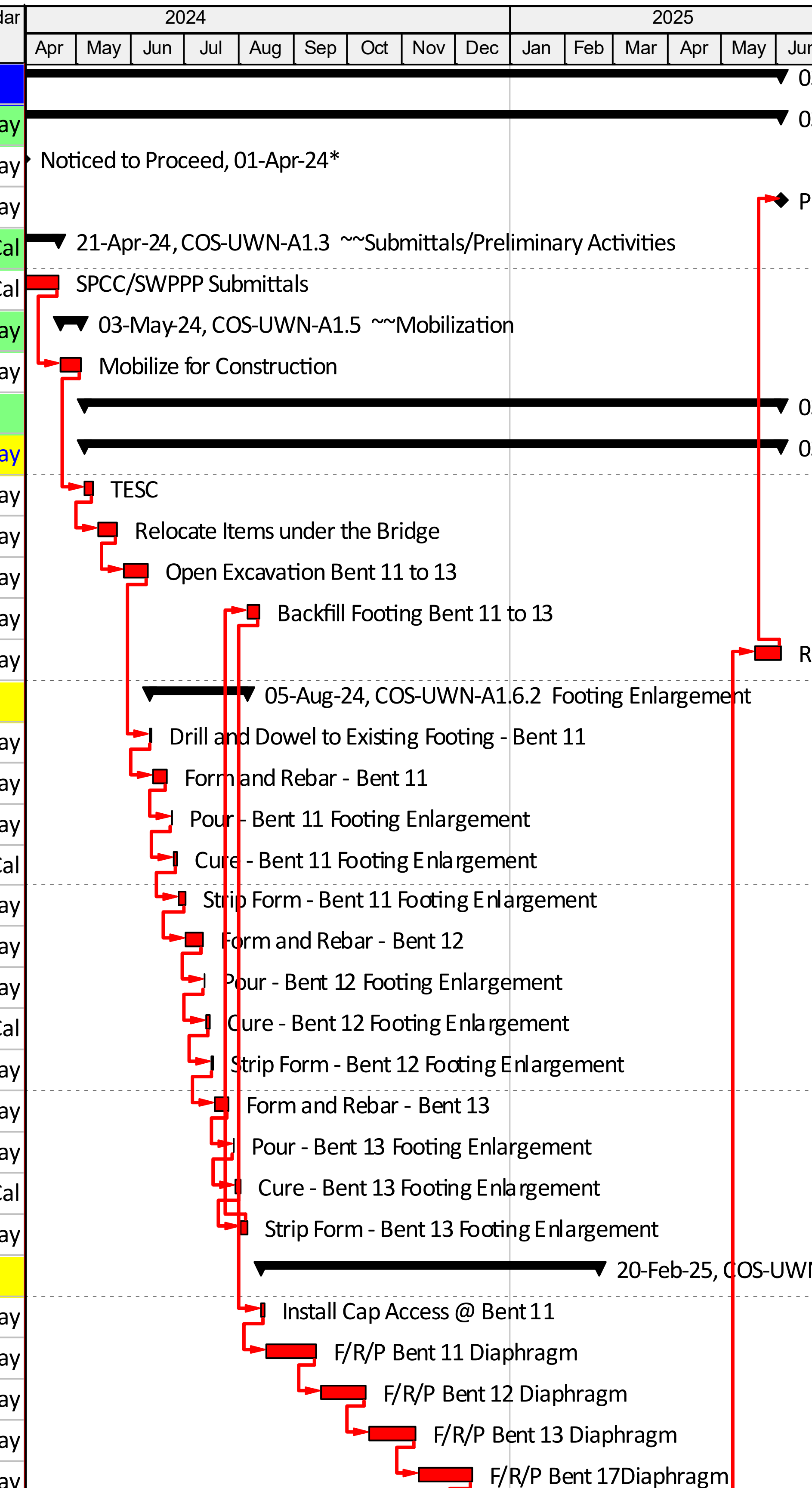
```
Estimate created on: 06/14/2023 by User#: 5 - Bing Ma
Source estimate used: L:\HEAVYBID\EST\COS-UBR-A1
```

* on units of MH indicate average labor unit cost was used rather than base rate.
[ ] in the Unit Cost Column = Labor Unit Cost Without Labor Burdens
In equipment resources, rent % and EOE % not = 100% are represented as XXX%YYY where XXX=Rent% and YYY=EOE%
------Calendar Codes------

508	**5x8 Hr - Single Shift (Default Calendar)**
510	5x10 Single Shift
WEK	12 Weekend Closure

University Bridge North Approach - Alt 1 (Bridge Rehab Retrofit) | Classic Schedule Layout | 17-Oct-23 21:04

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	**COS-UWN-A1**	**University Bridge North Approach - Alt 1 (Bridge Rehab & Retrofi**	299	0	01-Apr-24	03-Jun-25	
2	**COS-UWN-A1.1**	**~~Milestones**	299	0	01-Apr-24	03-Jun-25	5 Day
3	MS-1000	Noticed to Proceed	0	0	01-Apr-24*		5 Day
4	MS-9990	Project Completion	0	0		03-Jun-25	5 Day
5	**COS-UWN-A1.3**	**~~Submittals/Preliminary Activities**	21	0	01-Apr-24	21-Apr-24	7D Cal
6	SU-1000	SPCC/SWPPP Submittals	21	0	01-Apr-24	21-Apr-24	7D Cal
7	**COS-UWN-A1.5**	**~~Mobilization**	10	0	22-Apr-24	03-May-24	5 Day
8	PC-3000	Mobilize for Construction	10	0	22-Apr-24	03-May-24	5 Day
9	**COS-UWN-A1.6**	**~~Construction**	274	0	06-May-24	03-Jun-25	
10	**COS-UWN-A1.6.1**	**SITEWROK**	274	0	06-May-24	03-Jun-25	5 Day
11	SW-1000	TESC	5	0	06-May-24	10-May-24	5 Day
12	SW-1010	Relocate Items under the Bridge	10	0	13-May-24	24-May-24	5 Day
13	SW-1020	Open Excavation Bent 11 to 13	10	0	28-May-24	10-Jun-24	5 Day
14	SW-1100	Backfill Footing Bent 11 to 13	5	0	06-Aug-24	12-Aug-24	5 Day
15	SW-1150	Restore Site	10	0	20-May-25	03-Jun-25	5 Day
16	**COS-UWN-A1.6.2**	**Footing Enlargement**	39	0	11-Jun-24	05-Aug-24	
17	CN-1000	Drill and Dowel to Existing Footing - Bent 11	2	0	11-Jun-24	12-Jun-24	5 Day
18	CN-1010	Form and Rebar - Bent 11	7	0	13-Jun-24	21-Jun-24	5 Day
19	CN-1020	Pour - Bent 11 Footing Enlargement	1	0	24-Jun-24	24-Jun-24	5 Day
20	CN-1030	Cure - Bent 11 Footing Enlargement	3	0	25-Jun-24	27-Jun-24	7D Cal
21	CN-1040	Strip Form - Bent 11 Footing Enlargement	2	0	28-Jun-24	01-Jul-24	5 Day
22	CN-1110	Form and Rebar - Bent 12	7	0	02-Jul-24	11-Jul-24	5 Day
23	CN-1120	Pour - Bent 12 Footing Enlargement	1	0	12-Jul-24	12-Jul-24	5 Day
24	CN-1130	Cure - Bent 12 Footing Enlargement	3	0	13-Jul-24	15-Jul-24	7D Cal
25	CN-1140	Strip Form - Bent 12 Footing Enlargement	2	0	16-Jul-24	17-Jul-24	5 Day
26	CN-1210	Form and Rebar - Bent 13	7	0	18-Jul-24	26-Jul-24	5 Day
27	CN-1220	Pour - Bent 13 Footing Enlargement	1	0	29-Jul-24	29-Jul-24	5 Day
28	CN-1230	Cure - Bent 13 Footing Enlargement	3	0	30-Jul-24	01-Aug-24	7D Cal
29	CN-1240	Strip Form - Bent 13 Footing Enlargement	2	0	02-Aug-24	05-Aug-24	5 Day
30	**COS-UWN-A1.6.3**	**Conc Diaphragm Enlargement**	133	0	13-Aug-24	20-Feb-25	
31	CN-2100	Install Cap Access @ Bent 11	3	0	13-Aug-24	15-Aug-24	5 Day
32	CN-2110	F/R/P Bent 11 Diaphragm	20	0	16-Aug-24	13-Sep-24	5 Day
33	CN-2210	F/R/P Bent 12 Diaphragm	20	0	16-Sep-24	11-Oct-24	5 Day
34	CN-2310	F/R/P Bent 13 Diaphragm	20	0	14-Oct-24	08-Nov-24	5 Day
35	CN-2410	F/R/P Bent 17Diaphragm	20	0	11-Nov-24	10-Dec-24	5 Day

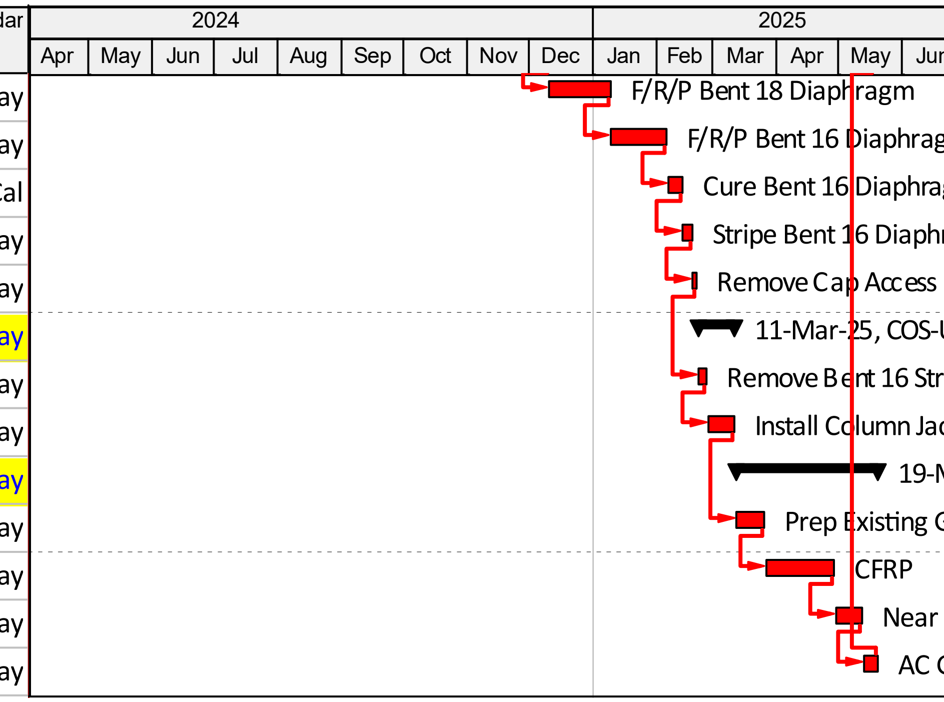


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filters: Critical, Longest Path.

University Bridge North Approach - Alt 1 (Bridge Rehab Retrofit) | Classic Schedule Layout | 17-Oct-23 21:04

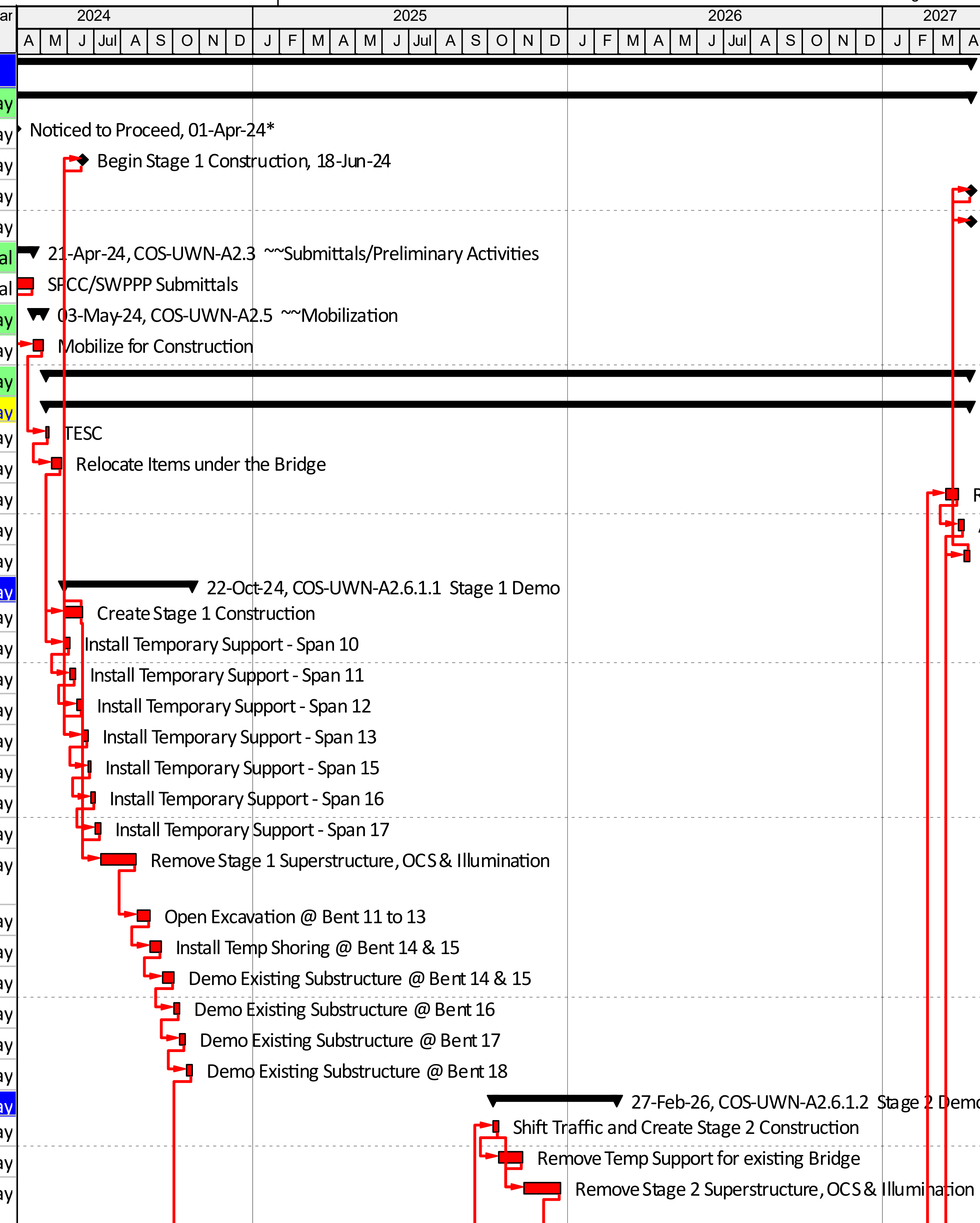
#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
36	CN-2610	F/R/P Bent 18 Diaphragm	20	0	11-Dec-24	09-Jan-25	5 Day
37	CN-2710	F/R/P Bent 16 Diaphragm	20	0	10-Jan-25	06-Feb-25	5 Day
38	CN-2720	Cure Bent 16 Diaphragm	7	0	07-Feb-25	13-Feb-25	7D Cal
39	CN-2730	Stripe Bent 16 Diaphragm Formwork	3	0	14-Feb-25	18-Feb-25	5 Day
40	CN-2740	Remove Cap Access @ Bent 16	2	0	19-Feb-25	20-Feb-25	5 Day
41	**COS-UWN-A1.6.4 Seismic Retrofit - Column Jacket**		13	0	21-Feb-25	11-Mar-25	5 Day
42	CN-3080	Remove Bent 16 Strut	3	0	21-Feb-25	25-Feb-25	5 Day
43	CN-3150	Install Column Jackets - Bent 16 (4 Ea)	10	0	26-Feb-25	11-Mar-25	5 Day
44	**COS-UWN-A1.6.5 CFRP Strengthening & CFRP Bars**		49	0	12-Mar-25	19-May-25	5 Day
45	CN-4000	Prep Existing Girder for CFRP	10	0	12-Mar-25	25-Mar-25	5 Day
46	CN-4010	CFRP	24	0	26-Mar-25	28-Apr-25	5 Day
47	CN-4020	Near Surface Mounted CFRP Bars	10	0	29-Apr-25	12-May-25	5 Day
48	CN-5000	AC Grind and Overlay	5	0	13-May-25	19-May-25	5 Day



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filters: Critical, Longest Path.

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	COS-UWN-A2	University Bridge North Approach - Alt 2 (Br	777	0	01-Apr-24	13-Apr-27	
2	COS-UWN-A2.1	~~Milestones	777	0	01-Apr-24	13-Apr-27	5 Day
3	MS-1000	Noticed to Proceed	0	0	01-Apr-24*		5 Day
4	MS-3000	Begin Stage 1 Construction	0	0	18-Jun-24		5 Day
5	MS-5000	Open New Bridge	0	0	13-Apr-27		5 Day
6	MS-9990	Project Completion	0	0		13-Apr-27	5 Day
7	COS-UWN-A2.3	~~Submittals/Preliminary Activities	21	0	01-Apr-24	21-Apr-24	7D Cal
8	SU-1000	SPCC/SWPPP Submittals	21	0	01-Apr-24	21-Apr-24	7D Cal
9	COS-UWN-A2.5	~~Mobilization	10	0	22-Apr-24	03-May-24	5 Day
10	PC-3000	Mobilize for Construction	10	0	22-Apr-24	03-May-24	5 Day
11	COS-UWN-A2.6	~~Construction	752	0	06-May-24	12-Apr-27	5 Day
12	COS-UWN-A2.6.1	SITEWROK	752	0	06-May-24	12-Apr-27	5 Day
13	SW-1000	TESC	5	0	06-May-24	10-May-24	5 Day
14	SW-1010	Relocate Items under the Bridge	10	0	13-May-24	24-May-24	5 Day
15	SW-1150	Restore Site	10	0	16-Mar-27	29-Mar-27	5 Day
16	SW-1155	AC Grind and Overlay	5	0	30-Mar-27	05-Apr-27	5 Day
17	SW-1160	Open New Bridge to Traffic	5	0	06-Apr-27	12-Apr-27	5 Day
18	COS-UWN-A2.6.1.1	Stage 1 Demo	104	0	28-May-24	22-Oct-24	5 Day
19	CN-1000	Create Stage 1 Construction	15	0	28-May-24	17-Jun-24	5 Day
20	CN-1010	Install Temporary Support - Span 10	5	0	28-May-24	03-Jun-24	5 Day
21	CN-1020	Install Temporary Support - Span 11	5	0	04-Jun-24	10-Jun-24	5 Day
22	CN-1030	Install Temporary Support - Span 12	5	0	11-Jun-24	17-Jun-24	5 Day
23	CN-1040	Install Temporary Support - Span 13	5	0	18-Jun-24	24-Jun-24	5 Day
24	CN-1050	Install Temporary Support - Span 15	3	0	25-Jun-24	27-Jun-24	5 Day
25	CN-1060	Install Temporary Support - Span 16	3	0	28-Jun-24	02-Jul-24	5 Day
26	CN-1070	Install Temporary Support - Span 17	3	0	03-Jul-24	08-Jul-24	5 Day
27	CN-1080	Remove Stage 1 Superstructure, OCS & Illumination	30	0	09-Jul-24	19-Aug-24	5 Day
28	CN-1100	Open Excavation @ Bent 11 to 13	10	0	20-Aug-24	03-Sep-24	5 Day
29	CN-1120	Install Temp Shoring @ Bent 14 & 15	10	0	04-Sep-24	17-Sep-24	5 Day
30	CN-1130	Demo Existing Substructure @ Bent 14 & 15	10	0	18-Sep-24	01-Oct-24	5 Day
31	CN-1150	Demo Existing Substructure @ Bent 16	5	0	02-Oct-24	08-Oct-24	5 Day
32	CN-1170	Demo Existing Substructure @ Bent 17	5	0	09-Oct-24	15-Oct-24	5 Day
33	CN-1190	Demo Existing Substructure @ Bent 18	5	0	16-Oct-24	22-Oct-24	5 Day
34	COS-UWN-A2.6.1.2	Stage 2 Demo	100	0	07-Oct-25	27-Feb-26	5 Day
35	CN-1250	Shift Traffic and Create Stage 2 Construction	5	0	07-Oct-25	13-Oct-25	5 Day
36	CN-1255	Remove Temp Support for existing Bridge	20	0	14-Oct-25	10-Nov-25	5 Day
37	CN-1260	Remove Stage 2 Superstructure, OCS & Illumination	30	0	11-Nov-25	24-Dec-25	5 Day

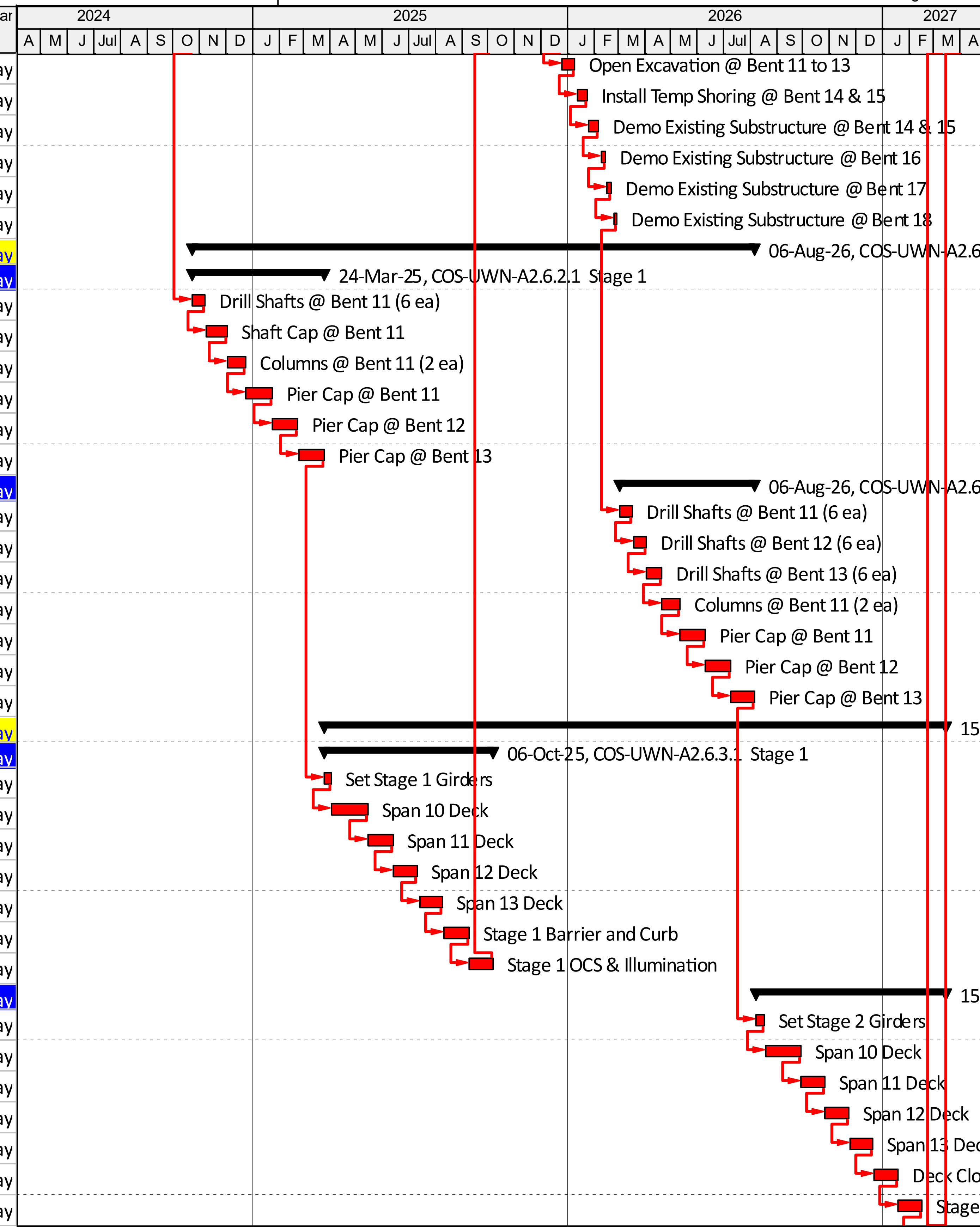


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filters: Critical, Longest Path.

University Bridge North Approach - Alt 2 (Bridge Replacement) | Classic Schedule Layout | 08-Aug-23 22:05

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
38	CN-1300	Open Excavation @ Bent 11 to 13	10	0	26-Dec-25	09-Jan-26	5 Day
39	CN-1320	Install Temp Shoring @ Bent 14 & 15	10	0	12-Jan-26	23-Jan-26	5 Day
40	CN-1330	Demo Existing Substructure @ Bent 14 & 15	10	0	26-Jan-26	06-Feb-26	5 Day
41	CN-1350	Demo Existing Substructure @ Bent 16	5	0	09-Feb-26	13-Feb-26	5 Day
42	CN-1370	Demo Existing Substructure @ Bent 17	5	0	16-Feb-26	20-Feb-26	5 Day
43	CN-1390	Demo Existing Substructure @ Bent 18	5	0	23-Feb-26	27-Feb-26	5 Day
44	COS-UWN-A2.6.2	Substructure	456	0	23-Oct-24	06-Aug-26	5 Day
45	COS-UWN-A2.6.2.1	Stage 1	105	0	23-Oct-24	24-Mar-25	5 Day
46	CN-2000	Drill Shafts @ Bent 11 (6 ea)	12	0	23-Oct-24	07-Nov-24	5 Day
47	CN-2030	Shaft Cap @ Bent 11	15	0	08-Nov-24	02-Dec-24	5 Day
48	CN-2100	Columns @ Bent 11 (2 ea)	15	0	03-Dec-24	23-Dec-24	5 Day
49	CN-2200	Pier Cap @ Bent 11	21	0	24-Dec-24	23-Jan-25	5 Day
50	CN-2210	Pier Cap @ Bent 12	21	0	24-Jan-25	21-Feb-25	5 Day
51	CN-2220	Pier Cap @ Bent 13	21	0	24-Feb-25	24-Mar-25	5 Day
52	COS-UWN-A2.6.2.2	Stage 2	114	0	02-Mar-26	06-Aug-26	5 Day
53	CN-2400	Drill Shafts @ Bent 11 (6 ea)	12	0	02-Mar-26	17-Mar-26	5 Day
54	CN-2410	Drill Shafts @ Bent 12 (6 ea)	12	0	18-Mar-26	02-Apr-26	5 Day
55	CN-2420	Drill Shafts @ Bent 13 (6 ea)	12	0	03-Apr-26	20-Apr-26	5 Day
56	CN-2500	Columns @ Bent 11 (2 ea)	15	0	21-Apr-26	11-May-26	5 Day
57	CN-2600	Pier Cap @ Bent 11	21	0	12-May-26	09-Jun-26	5 Day
58	CN-2610	Pier Cap @ Bent 12	21	0	10-Jun-26	08-Jul-26	5 Day
59	CN-2620	Pier Cap @ Bent 13	21	0	09-Jul-26	06-Aug-26	5 Day
60	COS-UWN-A2.6.3	Superstructure	508	0	25-Mar-25	15-Mar-27	5 Day
61	COS-UWN-A2.6.3.1	Stage 1	137	0	25-Mar-25	06-Oct-25	5 Day
62	CN-3100	Set Stage 1 Girders	7	0	25-Mar-25	02-Apr-25	5 Day
63	CN-3200	Span 10 Deck	30	0	03-Apr-25	14-May-25	5 Day
64	CN-3210	Span 11 Deck	20	0	15-May-25	12-Jun-25	5 Day
65	CN-3220	Span 12 Deck	20	0	13-Jun-25	11-Jul-25	5 Day
66	CN-3230	Span 13 Deck	20	0	14-Jul-25	08-Aug-25	5 Day
67	CN-3300	Stage 1 Barrier and Curb	20	0	11-Aug-25	08-Sep-25	5 Day
68	CN-3400	Stage 1 OCS & Illumination	20	0	09-Sep-25	06-Oct-25	5 Day
69	COS-UWN-A2.6.3.2	Stage 2	157	0	07-Aug-26	15-Mar-27	5 Day
70	CN-4020	Set Stage 2 Girders	7	0	07-Aug-26	17-Aug-26	5 Day
71	CN-4030	Span 10 Deck	30	0	18-Aug-26	28-Sep-26	5 Day
72	CN-4040	Span 11 Deck	20	0	29-Sep-26	26-Oct-26	5 Day
73	CN-4050	Span 12 Deck	20	0	27-Oct-26	23-Nov-26	5 Day
74	CN-4060	Span 13 Deck	20	0	24-Nov-26	21-Dec-26	5 Day
75	CN-4070	Deck Closure Pour	20	0	22-Dec-26	18-Jan-27	5 Day
76	CN-4080	Stage 2 Barrier and Curb	20	0	19-Jan-27	15-Feb-27	5 Day



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ | ◆ Milestone

TASK filters: Critical, Longest Path.

University Bridge North Approach - Alt 2 (Bridge Replacement)	Classic Schedule Layout	08-Aug-23 22:05

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
77	CN-4090	OCS & Illumination	20	0	16-Feb-27	15-Mar-27	5 Day

2024									2025												2026												2027			
A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A

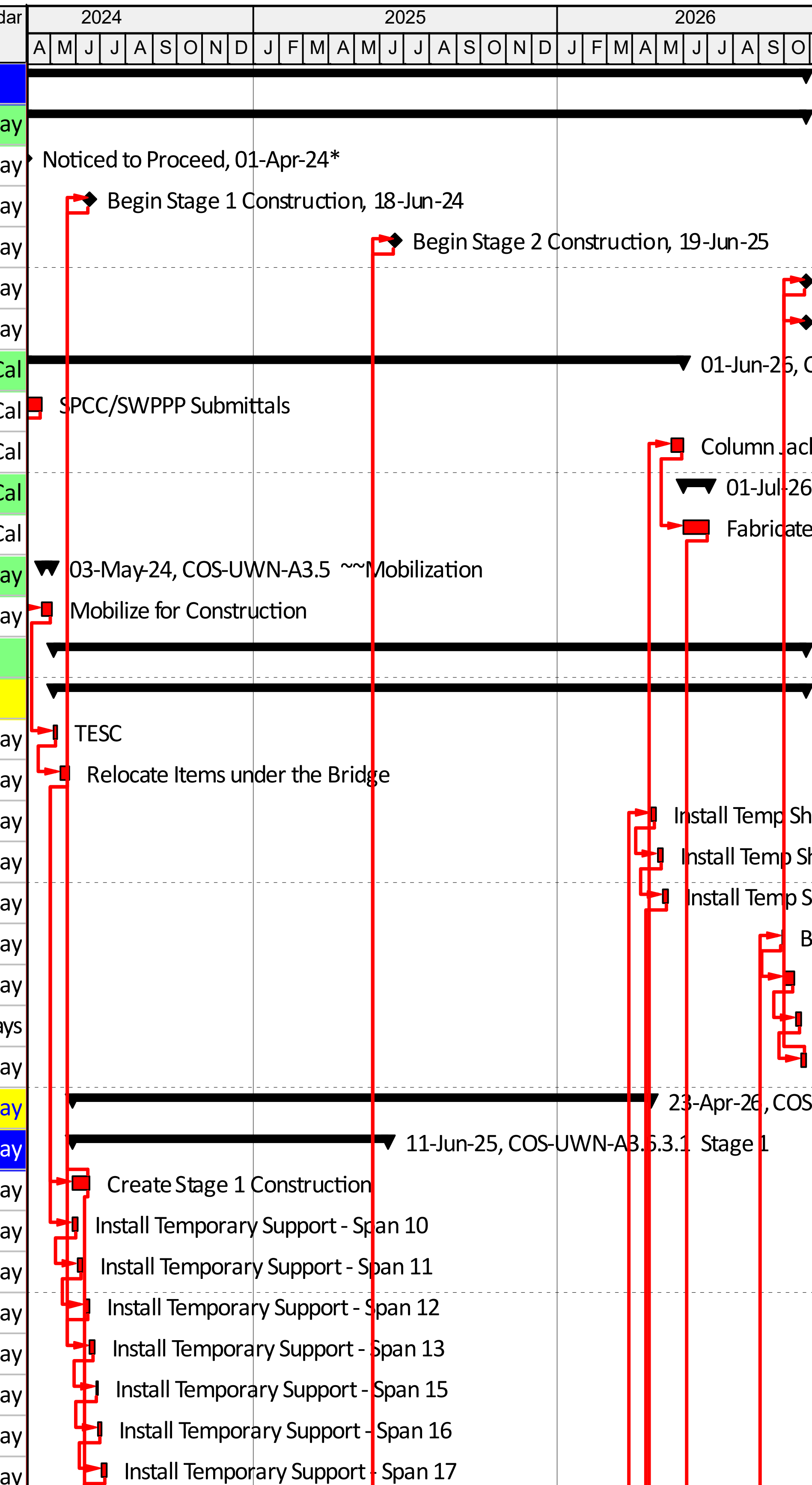
OCS

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filters: Critical, Longest Path.

University Bridge North Approach - Alt 3 (In-kind Superstructure Retrofit)	Classic Schedule Layout	17-Oct-23 21:06

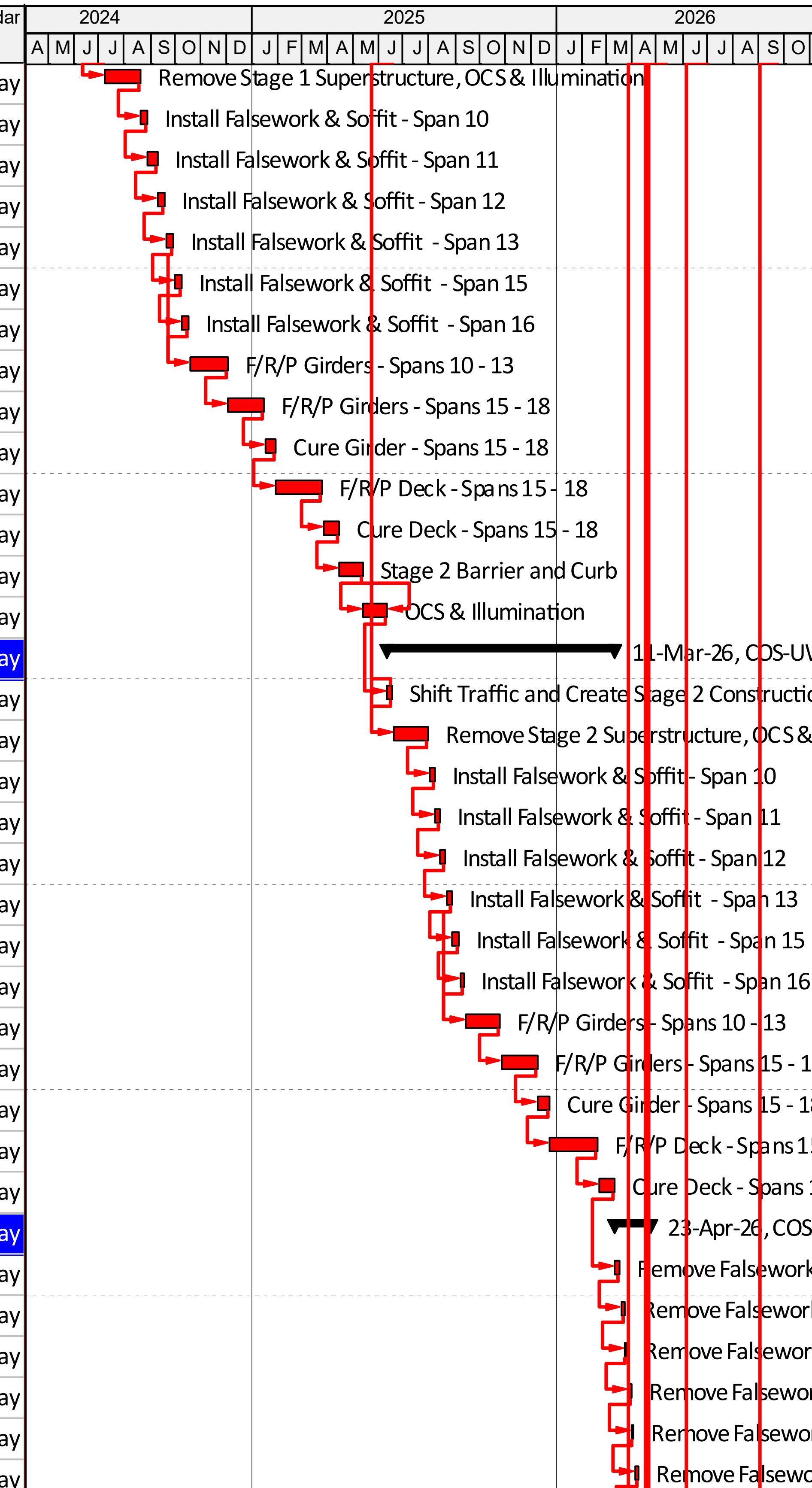
#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	COS-UWN-A3 University Bridge North Approach - Alt 3 (In-kind Superstructure		658	0	01-Apr-24	28-Oct-26	
2	COS-UWN-A3.1 ~~Milestones		658	0	01-Apr-24	28-Oct-26	5 Day
3	MS-1000	Noticed to Proceed	0	0	01-Apr-24*		5 Day
4	MS-3000	Begin Stage 1 Construction	0	0	18-Jun-24		5 Day
5	MS-4000	Begin Stage 2 Construction	0	0	19-Jun-25		5 Day
6	MS-5000	Open New Bridge	0	0	28-Oct-26		5 Day
7	MS-9990	Project Completion	0	0		28-Oct-26	5 Day
8	COS-UWN-A3.3 ~~Submittals/Preliminary Activities		792	0	01-Apr-24	01-Jun-26	7D Cal
9	SU-1000	SPCC/SWPPP Submittals	21	0	01-Apr-24	21-Apr-24	7D Cal
10	SU-1020	Column Jacketing Shop Drawing	14	0	19-May-26	01-Jun-26	7D Cal
11	COS-UWN-A3.4 ~~Procurement		30	0	02-Jun-26	01-Jul-26	7D Cal
12	PR-2000	Fabricate and Delivery Steel Column Jacket	30	0	02-Jun-26	01-Jul-26	7D Cal
13	COS-UWN-A3.5 ~~Mobilization		10	0	22-Apr-24	03-May-24	5 Day
14	PC-3000	Mobilize for Construction	10	0	22-Apr-24	03-May-24	5 Day
15	COS-UWN-A3.6 ~~Construction		633	0	06-May-24	27-Oct-26	
16	COS-UWN-A3.6.1 SITEWROK		633	0	06-May-24	27-Oct-26	
17	SW-1000	TESC	5	0	06-May-24	10-May-24	5 Day
18	SW-1010	Relocate Items under the Bridge	10	0	13-May-24	24-May-24	5 Day
19	SW-1030	Install Temp Shoring @ Bent 16	5	0	24-Apr-26	30-Apr-26	5 Day
20	SW-1040	Install Temp Shoring @ Bent 17	5	0	01-May-26	07-May-26	5 Day
21	SW-1050	Install Temp Shoring @ Bent 18	5	0	08-May-26	14-May-26	5 Day
22	SW-1140	Backfill Bent 16	2	0	28-Sep-26	29-Sep-26	5 Day
23	SW-1150	Restore Site	10	0	30-Sep-26	13-Oct-26	5 Day
24	SW-1155	AC Grind and Overlay	5	0	14-Oct-26	20-Oct-26	5 Day w/ Holidays
25	SW-1160	Open New Bridge to Traffic	5	0	21-Oct-26	27-Oct-26	5 Day
26	COS-UWN-A3.6.3 Superstructure		485	0	28-May-24	23-Apr-26	5 Day
27	COS-UWN-A3.6.3.1 Stage 1		265	0	28-May-24	11-Jun-25	5 Day
28	CN-2000	Create Stage 1 Construction	15	0	28-May-24	17-Jun-24	5 Day
29	CN-2010	Install Temporary Support - Span 10	5	0	28-May-24	03-Jun-24	5 Day
30	CN-2020	Install Temporary Support - Span 11	5	0	04-Jun-24	10-Jun-24	5 Day
31	CN-2030	Install Temporary Support - Span 12	5	0	11-Jun-24	17-Jun-24	5 Day
32	CN-2040	Install Temporary Support - Span 13	5	0	18-Jun-24	24-Jun-24	5 Day
33	CN-2050	Install Temporary Support - Span 15	3	0	25-Jun-24	27-Jun-24	5 Day
34	CN-2060	Install Temporary Support - Span 16	3	0	28-Jun-24	02-Jul-24	5 Day
35	CN-2070	Install Temporary Support - Span 17	3	0	03-Jul-24	08-Jul-24	5 Day



Remaining Level of Effort | Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | ◆ Milestone

TASK filters: Critical, Longest Path.

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
36	CN-2100	Remove Stage 1 Superstructure, OCS & Illumination	30	0	09-Jul-24	19-Aug-24	5 Day
37	CN-2200	Install Falsework & Soffit - Span 10	7	0	20-Aug-24	28-Aug-24	5 Day
38	CN-2210	Install Falsework & Soffit - Span 11	7	0	29-Aug-24	09-Sep-24	5 Day
39	CN-2220	Install Falsework & Soffit - Span 12	7	0	10-Sep-24	18-Sep-24	5 Day
40	CN-2230	Install Falsework & Soffit - Span 13	7	0	19-Sep-24	27-Sep-24	5 Day
41	CN-2240	Install Falsework & Soffit - Span 15	7	0	30-Sep-24	08-Oct-24	5 Day
42	CN-2250	Install Falsework & Soffit - Span 16	7	0	09-Oct-24	17-Oct-24	5 Day
43	CN-2300	F/R/P Girders - Spans 10 - 13	30	0	18-Oct-24	02-Dec-24	5 Day
44	CN-2400	F/R/P Girders - Spans 15 - 18	30	0	03-Dec-24	15-Jan-25	5 Day
45	CN-2410	Cure Girder - Spans 15 - 18	10	0	16-Jan-25	29-Jan-25	5 Day
46	CN-2420	F/R/P Deck - Spans 15 - 18	40	0	30-Jan-25	26-Mar-25	5 Day
47	CN-2430	Cure Deck - Spans 15 - 18	14	0	27-Mar-25	15-Apr-25	5 Day
48	CN-2460	Stage 2 Barrier and Curb	20	0	16-Apr-25	13-May-25	5 Day
49	CN-2470	OCS & Illumination	20	0	14-May-25	11-Jun-25	5 Day
50	COS-UWN-A3.6.3.2 Stage 2		189	0	12-Jun-25	11-Mar-26	5 Day
51	CN-5000	Shift Traffic and Create Stage 2 Construction	5	0	12-Jun-25	18-Jun-25	5 Day
52	CN-5100	Remove Stage 2 Superstructure, OCS & Illumination	30	0	19-Jun-25	31-Jul-25	5 Day
53	CN-5200	Install Falsework & Soffit - Span 10	5	0	01-Aug-25	07-Aug-25	5 Day
54	CN-5210	Install Falsework & Soffit - Span 11	5	0	08-Aug-25	14-Aug-25	5 Day
55	CN-5220	Install Falsework & Soffit - Span 12	5	0	15-Aug-25	21-Aug-25	5 Day
56	CN-5230	Install Falsework & Soffit - Span 13	5	0	22-Aug-25	28-Aug-25	5 Day
57	CN-5240	Install Falsework & Soffit - Span 15	5	0	29-Aug-25	05-Sep-25	5 Day
58	CN-5250	Install Falsework & Soffit - Span 16	5	0	08-Sep-25	12-Sep-25	5 Day
59	CN-5300	F/R/P Girders - Spans 10 - 13	30	0	15-Sep-25	24-Oct-25	5 Day
60	CN-5400	F/R/P Girders - Spans 15 - 18	30	0	27-Oct-25	09-Dec-25	5 Day
61	CN-5410	Cure Girder - Spans 15 - 18	10	0	10-Dec-25	23-Dec-25	5 Day
62	CN-5420	F/R/P Deck - Spans 15 - 18	40	0	24-Dec-25	19-Feb-26	5 Day
63	CN-5430	Cure Deck - Spans 15 - 18	14	0	20-Feb-26	11-Mar-26	5 Day
64	COS-UWN-A3.6.3.3 Remove Falsework		31	0	12-Mar-26	23-Apr-26	5 Day
65	CN-6000	Remove Falsework & Soffit - Span 10	5	0	12-Mar-26	18-Mar-26	5 Day
66	CN-6010	Remove Falsework & Soffit - Span 11	3	0	19-Mar-26	23-Mar-26	5 Day
67	CN-6020	Remove Falsework & Soffit - Span 12	3	0	24-Mar-26	26-Mar-26	5 Day
68	CN-6030	Remove Falsework & Soffit - Span 13	3	0	27-Mar-26	31-Mar-26	5 Day
69	CN-6040	Remove Falsework & Soffit - Span 15	3	0	01-Apr-26	03-Apr-26	5 Day
70	CN-6050	Remove Falsework & Soffit - Span 16	3	0	06-Apr-26	08-Apr-26	5 Day

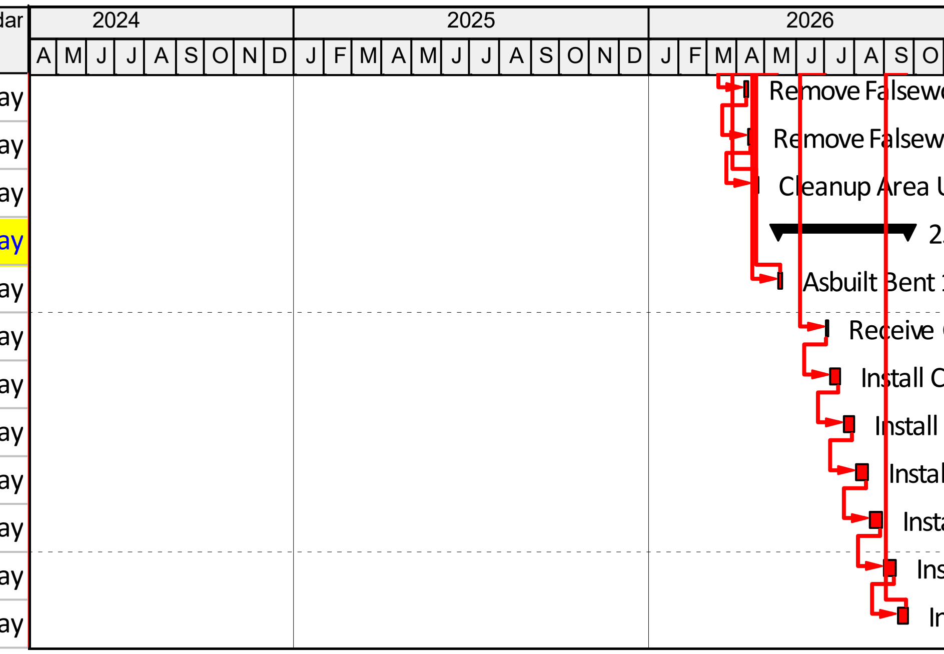


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filters: Critical, Longest Path.

University Bridge North Approach - Alt 3 (In-kind Superstructure Retrofit) | Classic Schedule Layout | 17-Oct-23 21:06

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
71	CN-6060	Remove Falsework & Soffit - Span 17	3	0	09-Apr-26	13-Apr-26	5 Day
72	CN-6070	Remove Falsework & Soffit - Span 18	3	0	14-Apr-26	16-Apr-26	5 Day
73	CN-6080	Cleanup Area Under the Bridge	5	0	17-Apr-26	23-Apr-26	5 Day
74	COS-UWN-A3.6.4 Seismic Retrofit - Column Jacket		96	0	15-May-26	25-Sep-26	5 Day
75	CN-3010	Asbuilt Bent 16 to 18 Height	2	0	15-May-26	18-May-26	5 Day
76	CN-3020	Receive Column Jackets	2	0	02-Jul-26	03-Jul-26	5 Day
77	CN-3100	Install Column Jackets - Bent 11 (4 Ea)	10	0	06-Jul-26	17-Jul-26	5 Day
78	CN-3110	Install Column Jackets - Bent 12 (4 Ea)	10	0	20-Jul-26	31-Jul-26	5 Day
79	CN-3120	Install Column Jackets - Bent 13 (4 Ea)	10	0	03-Aug-26	14-Aug-26	5 Day
80	CN-3130	Install Column Jackets - Bent 17 (4 Ea)	10	0	17-Aug-26	28-Aug-26	5 Day
81	CN-3140	Install Column Jackets - Bent 18 (5 Ea)	10	0	31-Aug-26	11-Sep-26	5 Day
82	CN-3150	Install Column Jackets - Bent 16 (4 Ea)	10	0	14-Sep-26	25-Sep-26	5 Day

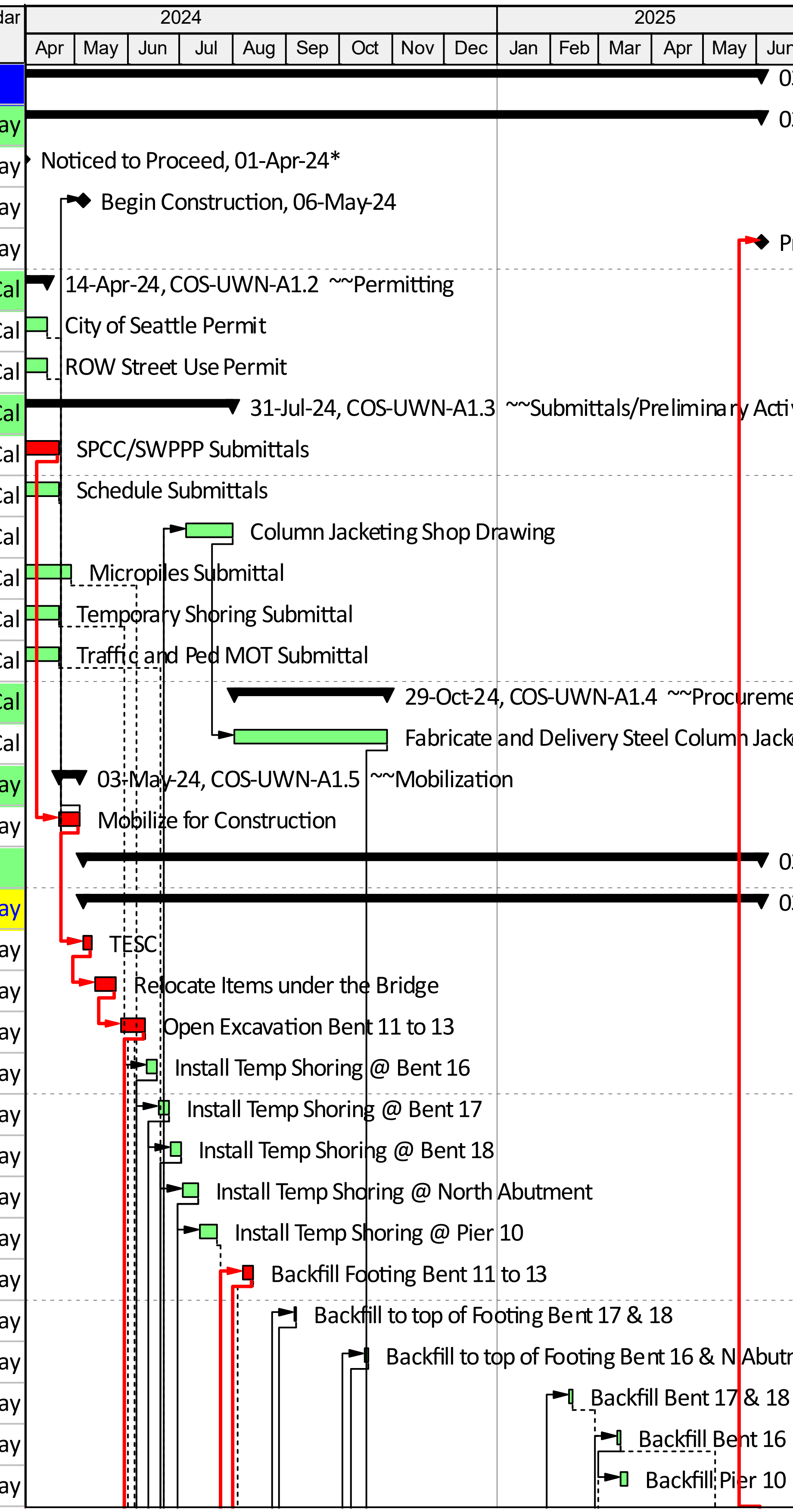


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filters: Critical, Longest Path.

University Bridge North Approach - Alt 1 (Bridge Rehab Retrofit)	Classic Schedule Layout	17-Oct-23 21:03

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	**COS-UWN-A1 University Bridge North Approach - Alt 1 (Bridge Rehab & Retrofi**		299	0	01-Apr-24	03-Jun-25	
2	**COS-UWN-A1.1 ~~Milestones**		299	0	01-Apr-24	03-Jun-25	5 Day
3	MS-1000	Noticed to Proceed	0	0	01-Apr-24*		5 Day
4	MS-2000	Begin Construction	0	274	06-May-24		5 Day
5	MS-9990	Project Completion	0	0		03-Jun-25	5 Day
6	**COS-UWN-A1.2 ~~Permitting**		14	21	01-Apr-24	14-Apr-24	7D Cal
7	PC-1000	City of Seattle Permit	14	21	01-Apr-24	14-Apr-24	7D Cal
8	PC-1010	ROW Street Use Permit	14	21	01-Apr-24	14-Apr-24	7D Cal
9	**COS-UWN-A1.3 ~~Submittals/Preliminary Activities**		122	124	01-Apr-24	31-Jul-24	7D Cal
10	SU-1000	SPCC/SWPPP Submittals	21	0	01-Apr-24	21-Apr-24	7D Cal
11	SU-1010	Schedule Submittals	21	14	01-Apr-24	21-Apr-24	7D Cal
12	SU-1020	Column Jacketing Shop Drawing	28	124	04-Jul-24	31-Jul-24	7D Cal
13	SU-1030	Micropiles Submittal	28	178	01-Apr-24	28-Apr-24	7D Cal
14	SU-1040	Temporary Shoring Submittal	21	144	01-Apr-24	21-Apr-24	7D Cal
15	SU-1050	Traffic and Ped MOT Submittal	21	197	01-Apr-24	21-Apr-24	7D Cal
16	**COS-UWN-A1.4 ~~Procurement**		90	124	01-Aug-24	29-Oct-24	7D Cal
17	PR-2000	Fabricate and Delivery Steel Column Jacket	90	124	01-Aug-24	29-Oct-24	7D Cal
18	**COS-UWN-A1.5 ~~Mobilization**		10	0	22-Apr-24	03-May-24	5 Day
19	PC-3000	Mobilize for Construction	10	0	22-Apr-24	03-May-24	5 Day
20	**COS-UWN-A1.6 ~~Construction**		274	0	06-May-24	03-Jun-25	
21	**COS-UWN-A1.6.1 SITEWROK**		274	0	06-May-24	03-Jun-25	5 Day
22	SW-1000	TESC	5	0	06-May-24	10-May-24	5 Day
23	SW-1010	Relocate Items under the Bridge	10	0	13-May-24	24-May-24	5 Day
24	SW-1020	Open Excavation Bent 11 to 13	10	0	28-May-24	10-Jun-24	5 Day
25	SW-1030	Install Temp Shoring @ Bent 16	5	66	11-Jun-24	17-Jun-24	5 Day
26	SW-1040	Install Temp Shoring @ Bent 17	5	66	18-Jun-24	24-Jun-24	5 Day
27	SW-1050	Install Temp Shoring @ Bent 18	5	72	25-Jun-24	01-Jul-24	5 Day
28	SW-1060	Install Temp Shoring @ North Abutment	7	88	02-Jul-24	11-Jul-24	5 Day
29	SW-1070	Install Temp Shoring @ Pier 10	7	201	12-Jul-24	22-Jul-24	5 Day
30	SW-1100	Backfill Footing Bent 11 to 13	5	0	06-Aug-24	12-Aug-24	5 Day
31	SW-1110	Backfill to top of Footing Bent 17 & 18	2	42	05-Sep-24	06-Sep-24	5 Day
32	SW-1120	Backfill to top of Footing Bent 16 & N Abutment	3	52	16-Oct-24	18-Oct-24	5 Day
33	SW-1130	Backfill Bent 17 & 18	2	65	12-Feb-25	13-Feb-25	5 Day
34	SW-1140	Backfill Bent 16	2	47	12-Mar-25	13-Mar-25	5 Day
35	SW-1145	Backfill Pier 10	2	55	14-Mar-25	17-Mar-25	5 Day

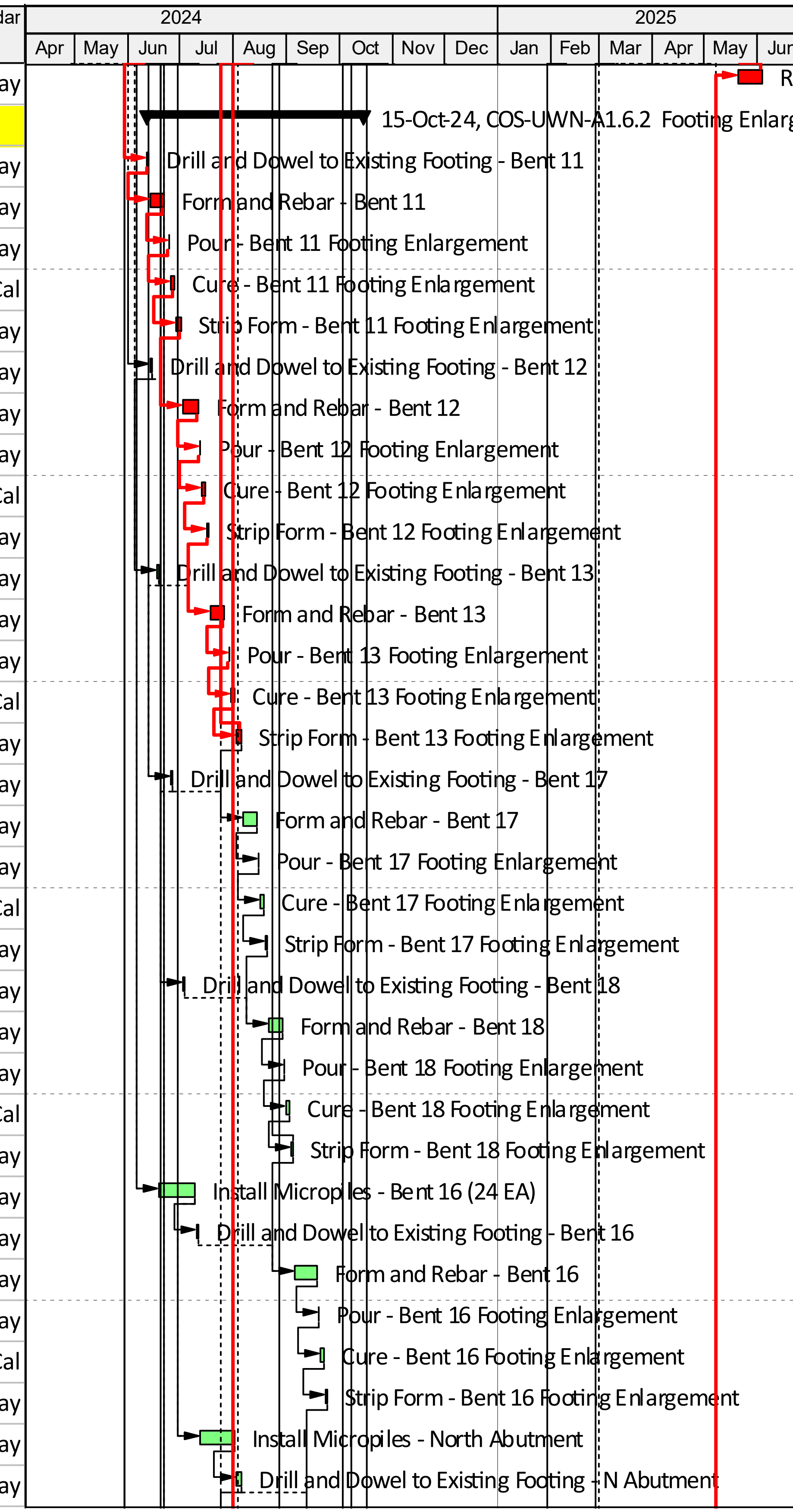


Remaining Level of Effort · Actual Work · Critical Remaining Work
Actual Level of Effort · Remaining Work · ◆ Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 1 (Bridge Rehab Retrofit)	Classic Schedule Layout	17-Oct-23 21:03

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
36	SW-1150	Restore Site	10	0	20-May-25	03-Jun-25	5 Day
37	**COS-UWN-A1.6.2 Footing Enlargement**		89	158	11-Jun-24	15-Oct-24	
38	CN-1000	Drill and Dowel to Existing Footing - Bent 11	2	0	11-Jun-24	12-Jun-24	5 Day
39	CN-1010	Form and Rebar - Bent 11	7	0	13-Jun-24	21-Jun-24	5 Day
40	CN-1020	Pour - Bent 11 Footing Enlargement	1	0	24-Jun-24	24-Jun-24	5 Day
41	CN-1030	Cure - Bent 11 Footing Enlargement	3	0	25-Jun-24	27-Jun-24	7D Cal
42	CN-1040	Strip Form - Bent 11 Footing Enlargement	2	0	28-Jun-24	01-Jul-24	5 Day
43	CN-1100	Drill and Dowel to Existing Footing - Bent 12	2	11	13-Jun-24	14-Jun-24	5 Day
44	CN-1110	Form and Rebar - Bent 12	7	0	02-Jul-24	11-Jul-24	5 Day
45	CN-1120	Pour - Bent 12 Footing Enlargement	1	0	12-Jul-24	12-Jul-24	5 Day
46	CN-1130	Cure - Bent 12 Footing Enlargement	3	0	13-Jul-24	15-Jul-24	7D Cal
47	CN-1140	Strip Form - Bent 12 Footing Enlargement	2	0	16-Jul-24	17-Jul-24	5 Day
48	CN-1200	Drill and Dowel to Existing Footing - Bent 13	2	20	17-Jun-24	18-Jun-24	5 Day
49	CN-1210	Form and Rebar - Bent 13	7	0	18-Jul-24	26-Jul-24	5 Day
50	CN-1220	Pour - Bent 13 Footing Enlargement	1	0	29-Jul-24	29-Jul-24	5 Day
51	CN-1230	Cure - Bent 13 Footing Enlargement	3	0	30-Jul-24	01-Aug-24	7D Cal
52	CN-1240	Strip Form - Bent 13 Footing Enlargement	2	0	02-Aug-24	05-Aug-24	5 Day
53	CN-1300	Drill and Dowel to Existing Footing - Bent 17	2	66	25-Jun-24	26-Jun-24	5 Day
54	CN-1310	Form and Rebar - Bent 17	7	39	06-Aug-24	14-Aug-24	5 Day
55	CN-1320	Pour - Bent 17 Footing Enlargement	1	39	15-Aug-24	15-Aug-24	5 Day
56	CN-1330	Cure - Bent 17 Footing Enlargement	3	56	16-Aug-24	18-Aug-24	7D Cal
57	CN-1340	Strip Form - Bent 17 Footing Enlargement	2	39	19-Aug-24	20-Aug-24	5 Day
58	CN-1400	Drill and Dowel to Existing Footing - Bent 18	2	72	02-Jul-24	03-Jul-24	5 Day
59	CN-1410	Form and Rebar - Bent 18	7	39	21-Aug-24	29-Aug-24	5 Day
60	CN-1420	Pour - Bent 18 Footing Enlargement	1	39	30-Aug-24	30-Aug-24	5 Day
61	CN-1430	Cure - Bent 18 Footing Enlargement	3	58	31-Aug-24	02-Sep-24	7D Cal
62	CN-1440	Strip Form - Bent 18 Footing Enlargement	2	42	03-Sep-24	04-Sep-24	5 Day
63	CN-1500	Install Micropiles - Bent 16 (24 EA)	15	90	18-Jun-24	09-Jul-24	5 Day
64	CN-1510	Drill and Dowel to Existing Footing - Bent 16	2	91	10-Jul-24	11-Jul-24	5 Day
65	CN-1520	Form and Rebar - Bent 16	10	53	05-Sep-24	18-Sep-24	5 Day
66	CN-1530	Pour - Bent 16 Footing Enlargement	1	53	19-Sep-24	19-Sep-24	5 Day
67	CN-1540	Cure - Bent 16 Footing Enlargement	3	77	20-Sep-24	22-Sep-24	7D Cal
68	CN-1550	Strip Form - Bent 16 Footing Enlargement	2	53	23-Sep-24	24-Sep-24	5 Day
69	CN-1600	Install Micropiles - North Abutment	15	88	12-Jul-24	01-Aug-24	5 Day
70	CN-1610	Drill and Dowel to Existing Footing - N Abutment	2	88	02-Aug-24	05-Aug-24	5 Day

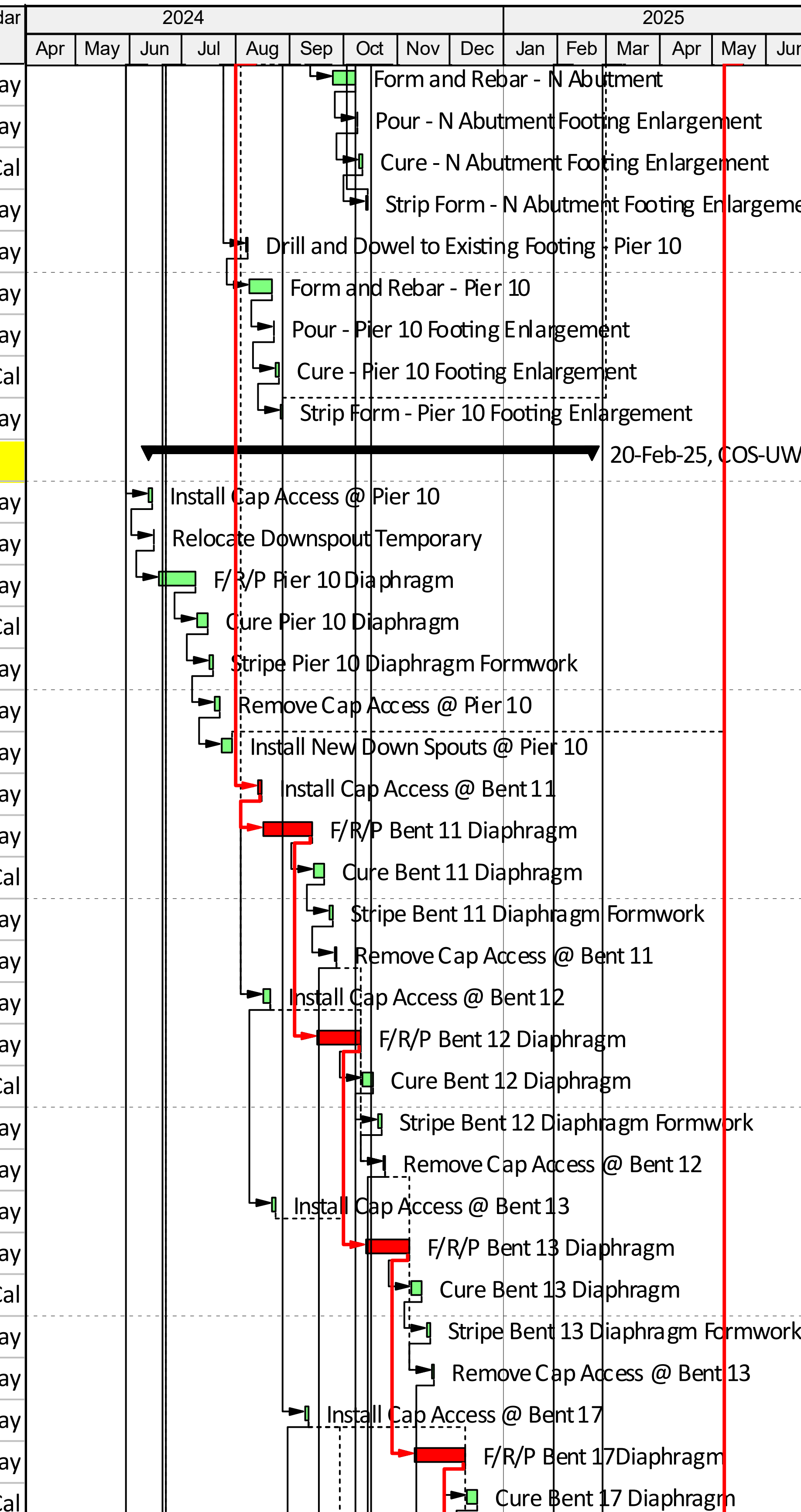


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 1 (Bridge Rehab Retrofit) | Classic Schedule Layout | 17-Oct-23 21:03

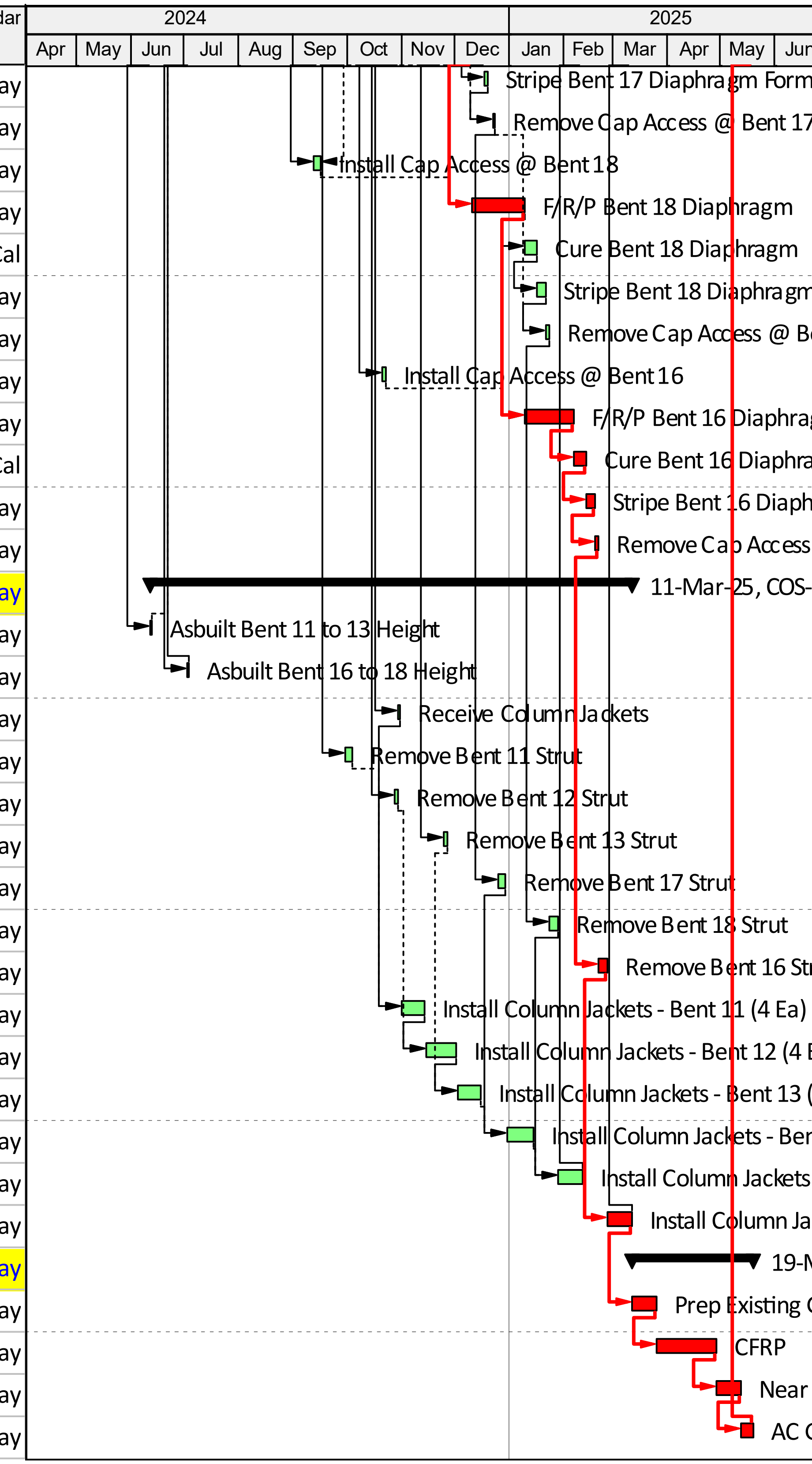
#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
71	CN-1620	Form and Rebar - N Abutment	10	53	25-Sep-24	08-Oct-24	5 Day
72	CN-1630	Pour - N Abutment Footing Enlargement	1	53	09-Oct-24	09-Oct-24	5 Day
73	CN-1640	Cure - N Abutment Footing Enlargement	3	78	10-Oct-24	12-Oct-24	7D Cal
74	CN-1650	Strip Form - N Abutment Footing Enlargement	2	52	14-Oct-24	15-Oct-24	5 Day
75	CN-1710	Drill and Dowel to Existing Footing - Pier 10	2	191	06-Aug-24	07-Aug-24	5 Day
76	CN-1720	Form and Rebar - Pier 10	10	191	08-Aug-24	21-Aug-24	5 Day
77	CN-1730	Pour - Pier 10 Footing Enlargement	1	191	22-Aug-24	22-Aug-24	5 Day
78	CN-1740	Cure - Pier 10 Footing Enlargement	3	276	23-Aug-24	25-Aug-24	7D Cal
79	CN-1750	Strip Form - Pier 10 Footing Enlargement	2	192	26-Aug-24	27-Aug-24	5 Day
80	**COS-UWN-A1.6.3 Conc Diaphragm Enlargement**		177	62	11-Jun-24	20-Feb-25	
81	CN-2000	Install Cap Access @ Pier 10	3	205	11-Jun-24	13-Jun-24	5 Day
82	CN-2010	Relocate Downspout Temporary	1	205	14-Jun-24	14-Jun-24	5 Day
83	CN-2020	F/R/P Pier 10 Diaphragm	15	205	17-Jun-24	08-Jul-24	5 Day
84	CN-2030	Cure Pier 10 Diaphragm	7	294	09-Jul-24	15-Jul-24	7D Cal
85	CN-2040	Stripe Pier 10 Diaphragm Formwork	3	205	16-Jul-24	18-Jul-24	5 Day
86	CN-2050	Remove Cap Access @ Pier 10	2	205	19-Jul-24	22-Jul-24	5 Day
87	CN-2060	Install New Down Spouts @ Pier 10	5	205	23-Jul-24	29-Jul-24	5 Day
88	CN-2100	Install Cap Access @ Bent 11	3	0	13-Aug-24	15-Aug-24	5 Day
89	CN-2110	F/R/P Bent 11 Diaphragm	20	0	16-Aug-24	13-Sep-24	5 Day
90	CN-2120	Cure Bent 11 Diaphragm	7	151	14-Sep-24	20-Sep-24	7D Cal
91	CN-2130	Stripe Bent 11 Diaphragm Formwork	3	103	23-Sep-24	25-Sep-24	5 Day
92	CN-2140	Remove Cap Access @ Bent 11	2	103	26-Sep-24	27-Sep-24	5 Day
93	CN-2200	Install Cap Access @ Bent 12	3	17	16-Aug-24	20-Aug-24	5 Day
94	CN-2210	F/R/P Bent 12 Diaphragm	20	0	16-Sep-24	11-Oct-24	5 Day
95	CN-2220	Cure Bent 12 Diaphragm	7	139	12-Oct-24	18-Oct-24	7D Cal
96	CN-2230	Stripe Bent 12 Diaphragm Formwork	3	95	21-Oct-24	23-Oct-24	5 Day
97	CN-2240	Remove Cap Access @ Bent 12	2	95	24-Oct-24	25-Oct-24	5 Day
98	CN-2300	Install Cap Access @ Bent 13	3	34	21-Aug-24	23-Aug-24	5 Day
99	CN-2310	F/R/P Bent 13 Diaphragm	20	0	14-Oct-24	08-Nov-24	5 Day
100	CN-2320	Cure Bent 13 Diaphragm	7	125	09-Nov-24	15-Nov-24	7D Cal
101	CN-2330	Stripe Bent 13 Diaphragm Formwork	3	85	18-Nov-24	20-Nov-24	5 Day
102	CN-2340	Remove Cap Access @ Bent 13	2	85	21-Nov-24	22-Nov-24	5 Day
103	CN-2400	Install Cap Access @ Bent 17	3	42	09-Sep-24	11-Sep-24	5 Day
104	CN-2410	F/R/P Bent 17Diaphragm	20	0	11-Nov-24	10-Dec-24	5 Day
105	CN-2420	Cure Bent 17 Diaphragm	7	107	11-Dec-24	17-Dec-24	7D Cal



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filter: All Activities

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
106	CN-2430	Stripe Bent 17 Diaphragm Formwork	3	75	18-Dec-24	20-Dec-24	5 Day
107	CN-2440	Remove Cap Access @ Bent 17	2	75	23-Dec-24	24-Dec-24	5 Day
108	CN-2600	Install Cap Access @ Bent 18	3	59	12-Sep-24	16-Sep-24	5 Day
109	CN-2610	F/R/P Bent 18 Diaphragm	20	0	11-Dec-24	09-Jan-25	5 Day
110	CN-2620	Cure Bent 18 Diaphragm	7	91	10-Jan-25	16-Jan-25	7D Cal
111	CN-2630	Stripe Bent 18 Diaphragm Formwork	3	65	17-Jan-25	21-Jan-25	5 Day
112	CN-2640	Remove Cap Access @ Bent 18	2	65	22-Jan-25	23-Jan-25	5 Day
113	CN-2700	Install Cap Access @ Bent 16	3	52	21-Oct-24	23-Oct-24	5 Day
114	CN-2710	F/R/P Bent 16 Diaphragm	20	0	10-Jan-25	06-Feb-25	5 Day
115	CN-2720	Cure Bent 16 Diaphragm	7	0	07-Feb-25	13-Feb-25	7D Cal
116	CN-2730	Stripe Bent 16 Diaphragm Formwork	3	0	14-Feb-25	18-Feb-25	5 Day
117	CN-2740	Remove Cap Access @ Bent 16	2	0	19-Feb-25	20-Feb-25	5 Day
118	**COS-UWN-A1.6.4 Seismic Retrofit - Column Jacket**		190	45	11-Jun-24	11-Mar-25	5 Day
119	CN-3000	Asbuilt Bent 11 to 13 Height	2	101	11-Jun-24	12-Jun-24	5 Day
120	CN-3010	Asbuilt Bent 16 to 18 Height	2	86	02-Jul-24	03-Jul-24	5 Day
121	CN-3020	Receive Column Jackets	2	84	30-Oct-24	31-Oct-24	5 Day
122	CN-3030	Remove Bent 11 Strut	5	103	30-Sep-24	04-Oct-24	5 Day
123	CN-3040	Remove Bent 12 Strut	3	95	28-Oct-24	30-Oct-24	5 Day
124	CN-3050	Remove Bent 13 Strut	3	85	25-Nov-24	27-Nov-24	5 Day
125	CN-3060	Remove Bent 17 Strut	3	75	26-Dec-24	30-Dec-24	5 Day
126	CN-3070	Remove Bent 18 Strut	3	65	24-Jan-25	28-Jan-25	5 Day
127	CN-3080	Remove Bent 16 Strut	3	0	21-Feb-25	25-Feb-25	5 Day
128	CN-3100	Install Column Jackets - Bent 11 (4 Ea)	10	84	01-Nov-24	14-Nov-24	5 Day
129	CN-3110	Install Column Jackets - Bent 12 (4 Ea)	10	84	15-Nov-24	02-Dec-24	5 Day
130	CN-3120	Install Column Jackets - Bent 13 (4 Ea)	10	84	03-Dec-24	16-Dec-24	5 Day
131	CN-3130	Install Column Jackets - Bent 17 (4 Ea)	10	75	31-Dec-24	14-Jan-25	5 Day
132	CN-3140	Install Column Jackets - Bent 18 (5 Ea)	10	65	29-Jan-25	11-Feb-25	5 Day
133	CN-3150	Install Column Jackets - Bent 16 (4 Ea)	10	0	26-Feb-25	11-Mar-25	5 Day
134	**COS-UWN-A1.6.5 CFRP Strengthening & CFRP Bars**		49	0	12-Mar-25	19-May-25	5 Day
135	CN-4000	Prep Existing Girder for CFRP	10	0	12-Mar-25	25-Mar-25	5 Day
136	CN-4010	CFRP	24	0	26-Mar-25	28-Apr-25	5 Day
137	CN-4020	Near Surface Mounted CFRP Bars	10	0	29-Apr-25	12-May-25	5 Day
138	CN-5000	AC Grind and Overlay	5	0	13-May-25	19-May-25	5 Day



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 2 (Bridge Replacement) | Classic Schedule Layout | 08-Aug-23 22:04

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	COS-UWN-A2	University Bridge North Approach - Alt 2 (Br	777	0	01-Apr-24	13-Apr-27	
2	COS-UWN-A2.1	~~Milestones	777	0	01-Apr-24	13-Apr-27	5 Day
3	MS-1000	Noticed to Proceed	0	0	01-Apr-24*		5 Day
4	MS-2000	Begin Construction	0	752	06-May-24		5 Day
5	MS-3000	Begin Stage 1 Construction	0	0	18-Jun-24		5 Day
6	MS-4000	Begin Stage 2 Construction	0	20	14-Oct-25		5 Day
7	MS-5000	Open New Bridge	0	0	13-Apr-27		5 Day
8	MS-9990	Project Completion	0	0		13-Apr-27	5 Day
9	COS-UWN-A2.2	~~Permitting	14	21	01-Apr-24	14-Apr-24	7D Cal
10	PC-1000	City of Seattle Permit	14	21	01-Apr-24	14-Apr-24	7D Cal
11	PC-1010	ROW Street Use Permit	14	21	01-Apr-24	14-Apr-24	7D Cal
12	COS-UWN-A2.3	~~Submittals/Preliminary Activities	49	254	01-Apr-24	19-May-24	7D Cal
13	SU-1000	SPCC/SWPPP Submittals	21	0	01-Apr-24	21-Apr-24	7D Cal
14	SU-1010	Schedule Submittals	21	14	01-Apr-24	21-Apr-24	7D Cal
15	SU-1020	Precast Girder Shop Drawing	28	219	22-Apr-24	19-May-24	7D Cal
16	SU-1030	Drill Shaft Submittal	28	177	01-Apr-24	28-Apr-24	7D Cal
17	SU-1040	Temporary Shoring Submittal	21	156	01-Apr-24	21-Apr-24	7D Cal
18	SU-1050	Traffic and Ped MOT Submittal	21	282	01-Apr-24	21-Apr-24	7D Cal
19	COS-UWN-A2.4	~~Procurement	90	219	20-May-24	17-Aug-24	7D Cal
20	PR-2000	Fabricate and Delivery PC Girders	90	219	20-May-24	17-Aug-24	7D Cal
21	COS-UWN-A2.5	~~Mobilization	10	0	22-Apr-24	03-May-24	5 Day
22	PC-3000	Mobilize for Construction	10	0	22-Apr-24	03-May-24	5 Day
23	COS-UWN-A2.6	~~Construction	752	0	06-May-24	12-Apr-27	5 Day
24	COS-UWN-A2.6.1	SITEWROK	752	0	06-May-24	12-Apr-27	5 Day
25	SW-1000	TESC	5	0	06-May-24	10-May-24	5 Day
26	SW-1010	Relocate Items under the Bridge	10	0	13-May-24	24-May-24	5 Day
27	SW-1100	Backfill Footing Bent 11 to 13	5	205	20-May-26	26-May-26	5 Day
28	SW-1130	Backfill Bent 17 & 18	2	205	27-May-26	28-May-26	5 Day
29	SW-1140	Backfill Bent 16	2	205	29-May-26	01-Jun-26	5 Day
30	SW-1150	Restore Site	10	0	16-Mar-27	29-Mar-27	5 Day
31	SW-1155	AC Grind and Overlay	5	0	30-Mar-27	05-Apr-27	5 Day
32	SW-1160	Open New Bridge to Traffic	5	0	06-Apr-27	12-Apr-27	5 Day
33	COS-UWN-A2.6.1.1	Stage 1 Demo	111	73	28-May-24	31-Oct-24	5 Day
34	CN-1000	Create Stage 1 Construction	15	0	28-May-24	17-Jun-24	5 Day
35	CN-1005	Install Temporary OCS Poles	5	9	18-Jun-24	24-Jun-24	5 Day
36	CN-1010	Install Temporary Support - Span 10	5	0	28-May-24	03-Jun-24	5 Day
37	CN-1020	Install Temporary Support - Span 11	5	0	04-Jun-24	10-Jun-24	5 Day
38	CN-1030	Install Temporary Support - Span 12	5	0	11-Jun-24	17-Jun-24	5 Day

Remaining Level of Effort | Actual Work | Critical Remaining Work
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TASK filter: All Activities

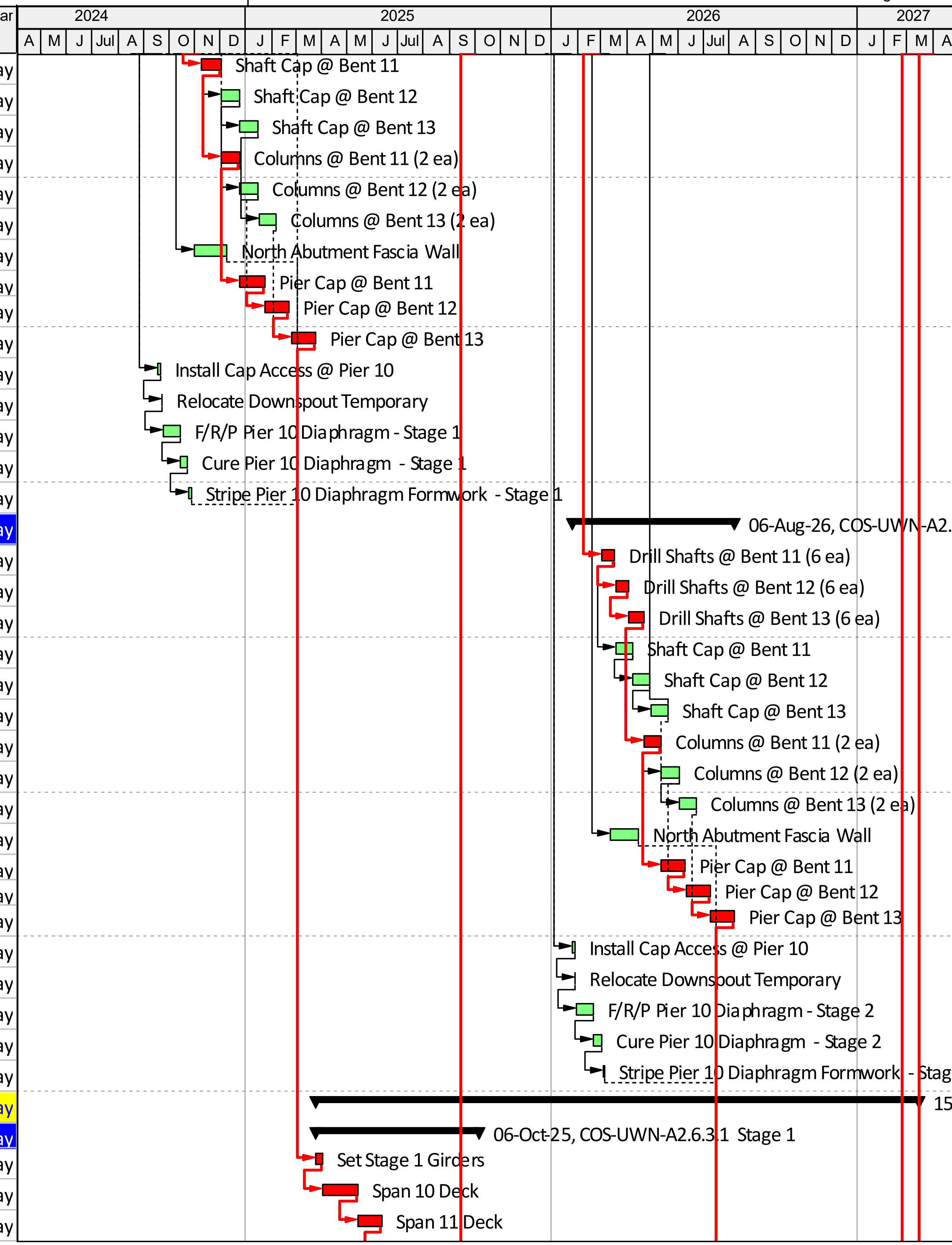
#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
39	CN-1040	Install Temporary Support - Span 13	5	0	18-Jun-24	24-Jun-24	5 Day
40	CN-1050	Install Temporary Support - Span 15	3	0	25-Jun-24	27-Jun-24	5 Day
41	CN-1060	Install Temporary Support - Span 16	3	0	28-Jun-24	02-Jul-24	5 Day
42	CN-1070	Install Temporary Support - Span 17	3	0	03-Jul-24	08-Jul-24	5 Day
43	CN-1080	Remove Stage 1 Superstructure, OCS & Illumination	30	0	09-Jul-24	19-Aug-24	5 Day
44	CN-1100	Open Excavation @ Bent 11 to 13	10	0	20-Aug-24	03-Sep-24	5 Day
45	CN-1110	Demo Existing Substructure @ Bent 11 to 13	10	101	04-Sep-24	17-Sep-24	5 Day
46	CN-1120	Install Temp Shoring @ Bent 14 & 15	10	0	04-Sep-24	17-Sep-24	5 Day
47	CN-1130	Demo Existing Substructure @ Bent 14 & 15	10	0	18-Sep-24	01-Oct-24	5 Day
48	CN-1140	Install Temp Shoring @ Bent 16	5	5	18-Sep-24	24-Sep-24	5 Day
49	CN-1150	Demo Existing Substructure @ Bent 16	5	0	02-Oct-24	08-Oct-24	5 Day
50	CN-1160	Install Temp Shoring @ Bent 17	5	5	25-Sep-24	01-Oct-24	5 Day
51	CN-1170	Demo Existing Substructure @ Bent 17	5	0	09-Oct-24	15-Oct-24	5 Day
52	CN-1180	Install Temp Shoring @ Bent 18	5	5	02-Oct-24	08-Oct-24	5 Day
53	CN-1190	Demo Existing Substructure @ Bent 18	5	0	16-Oct-24	22-Oct-24	5 Day
54	CN-1200	Install Temp Shoring @ North Abutment	7	76	09-Oct-24	17-Oct-24	5 Day
55	CN-1210	Demo Existing Substructure @ North Abutment	7	73	23-Oct-24	31-Oct-24	5 Day
56	**COS-UWN-A2.6.1.2**	**Stage 2 Demo**	107	82	07-Oct-25	10-Mar-26	5 Day
57	CN-1250	Shift Traffic and Create Stage 2 Construction	5	0	07-Oct-25	13-Oct-25	5 Day
58	CN-1255	Remove Temp Support for existing Bridge	20	0	14-Oct-25	10-Nov-25	5 Day
59	CN-1260	Remove Stage 2 Superstructure, OCS & Illumination	30	0	11-Nov-25	24-Dec-25	5 Day
60	CN-1300	Open Excavation @ Bent 11 to 13	10	0	26-Dec-25	09-Jan-26	5 Day
61	CN-1310	Demo Existing Substructure @ Bent 11 to 13	10	110	12-Jan-26	23-Jan-26	5 Day
62	CN-1320	Install Temp Shoring @ Bent 14 & 15	10	0	12-Jan-26	23-Jan-26	5 Day
63	CN-1330	Demo Existing Substructure @ Bent 14 & 15	10	0	26-Jan-26	06-Feb-26	5 Day
64	CN-1340	Install Temp Shoring @ Bent 16	5	5	26-Jan-26	30-Jan-26	5 Day
65	CN-1350	Demo Existing Substructure @ Bent 16	5	0	09-Feb-26	13-Feb-26	5 Day
66	CN-1360	Install Temp Shoring @ Bent 17	5	5	02-Feb-26	06-Feb-26	5 Day
67	CN-1370	Demo Existing Substructure @ Bent 17	5	0	16-Feb-26	20-Feb-26	5 Day
68	CN-1380	Install Temp Shoring @ Bent 18	5	5	09-Feb-26	13-Feb-26	5 Day
69	CN-1390	Demo Existing Substructure @ Bent 18	5	0	23-Feb-26	27-Feb-26	5 Day
70	CN-1400	Install Temp Shoring @ North Abutment	7	85	16-Feb-26	24-Feb-26	5 Day
71	CN-1410	Demo Existing Substructure @ North Abutment	7	82	02-Mar-26	10-Mar-26	5 Day
72	**COS-UWN-A2.6.2**	**Substructure**	481	0	18-Sep-24	06-Aug-26	5 Day
73	**COS-UWN-A2.6.2.1**	**Stage 1**	130	0	18-Sep-24	24-Mar-25	5 Day
74	CN-2000	Drill Shafts @ Bent 11 (6 ea)	12	0	23-Oct-24	07-Nov-24	5 Day
75	CN-2010	Drill Shafts @ Bent 12 (6 ea)	12	18	08-Nov-24	25-Nov-24	5 Day
76	CN-2020	Drill Shafts @ Bent 13 (6 ea)	12	18	26-Nov-24	13-Dec-24	5 Day

Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 2 (Bridge Replacement) | Classic Schedule Layout | 08-Aug-23 22:04

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
77	CN-2030	Shaft Cap @ Bent 11	15	0	08-Nov-24	02-Dec-24	5 Day
78	CN-2040	Shaft Cap @ Bent 12	15	6	03-Dec-24	23-Dec-24	5 Day
79	CN-2050	Shaft Cap @ Bent 13	15	12	24-Dec-24	15-Jan-25	5 Day
80	CN-2100	Columns @ Bent 11 (2 ea)	15	0	03-Dec-24	23-Dec-24	5 Day
81	CN-2110	Columns @ Bent 12 (2 ea)	15	6	24-Dec-24	15-Jan-25	5 Day
82	CN-2120	Columns @ Bent 13 (2 ea)	15	12	16-Jan-25	05-Feb-25	5 Day
83	CN-2130	North Abutment Fascia Wall	25	73	01-Nov-24	09-Dec-24	5 Day
84	CN-2200	Pier Cap @ Bent 11	21	0	24-Dec-24	23-Jan-25	5 Day
85	CN-2210	Pier Cap @ Bent 12	21	0	24-Jan-25	21-Feb-25	5 Day
86	CN-2220	Pier Cap @ Bent 13	21	0	24-Feb-25	24-Mar-25	5 Day
87	CN-2300	Install Cap Access @ Pier 10	3	101	18-Sep-24	20-Sep-24	5 Day
88	CN-2310	Relocate Downspout Temporary	1	101	23-Sep-24	23-Sep-24	5 Day
89	CN-2320	F/R/P Pier 10 Diaphragm - Stage 1	15	101	24-Sep-24	14-Oct-24	5 Day
90	CN-2330	Cure Pier 10 Diaphragm - Stage 1	7	101	15-Oct-24	23-Oct-24	5 Day
91	CN-2340	Stripe Pier 10 Diaphragm Formwork - Stage 1	3	101	24-Oct-24	28-Oct-24	5 Day
92	COS-UWN-A2.6.2.2	Stage 2	139	0	26-Jan-26	06-Aug-26	5 Day
93	CN-2400	Drill Shafts @ Bent 11 (6 ea)	12	0	02-Mar-26	17-Mar-26	5 Day
94	CN-2410	Drill Shafts @ Bent 12 (6 ea)	12	0	18-Mar-26	02-Apr-26	5 Day
95	CN-2420	Drill Shafts @ Bent 13 (6 ea)	12	0	03-Apr-26	20-Apr-26	5 Day
96	CN-2430	Shaft Cap @ Bent 11	15	9	18-Mar-26	07-Apr-26	5 Day
97	CN-2440	Shaft Cap @ Bent 12	15	21	08-Apr-26	28-Apr-26	5 Day
98	CN-2450	Shaft Cap @ Bent 13	15	21	29-Apr-26	19-May-26	5 Day
99	CN-2500	Columns @ Bent 11 (2 ea)	15	0	21-Apr-26	11-May-26	5 Day
100	CN-2510	Columns @ Bent 12 (2 ea)	15	6	12-May-26	01-Jun-26	5 Day
101	CN-2520	Columns @ Bent 13 (2 ea)	15	12	02-Jun-26	22-Jun-26	5 Day
102	CN-2530	North Abutment Fascia Wall	25	82	11-Mar-26	14-Apr-26	5 Day
103	CN-2600	Pier Cap @ Bent 11	21	0	12-May-26	09-Jun-26	5 Day
104	CN-2610	Pier Cap @ Bent 12	21	0	10-Jun-26	08-Jul-26	5 Day
105	CN-2620	Pier Cap @ Bent 13	21	0	09-Jul-26	06-Aug-26	5 Day
106	CN-2700	Install Cap Access @ Pier 10	3	110	26-Jan-26	28-Jan-26	5 Day
107	CN-2710	Relocate Downspout Temporary	1	110	29-Jan-26	29-Jan-26	5 Day
108	CN-2720	F/R/P Pier 10 Diaphragm - Stage 2	15	110	30-Jan-26	19-Feb-26	5 Day
109	CN-2730	Cure Pier 10 Diaphragm - Stage 2	7	110	20-Feb-26	02-Mar-26	5 Day
110	CN-2740	Stripe Pier 10 Diaphragm Formwork - Stage 2	3	110	03-Mar-26	05-Mar-26	5 Day
111	COS-UWN-A2.6.3	Superstructure	508	0	25-Mar-25	15-Mar-27	5 Day
112	COS-UWN-A2.6.3.1	Stage 1	137	0	25-Mar-25	06-Oct-25	5 Day
113	CN-3100	Set Stage 1 Girders	7	0	25-Mar-25	02-Apr-25	5 Day
114	CN-3200	Span 10 Deck	30	0	03-Apr-25	14-May-25	5 Day
115	CN-3210	Span 11 Deck	20	0	15-May-25	12-Jun-25	5 Day

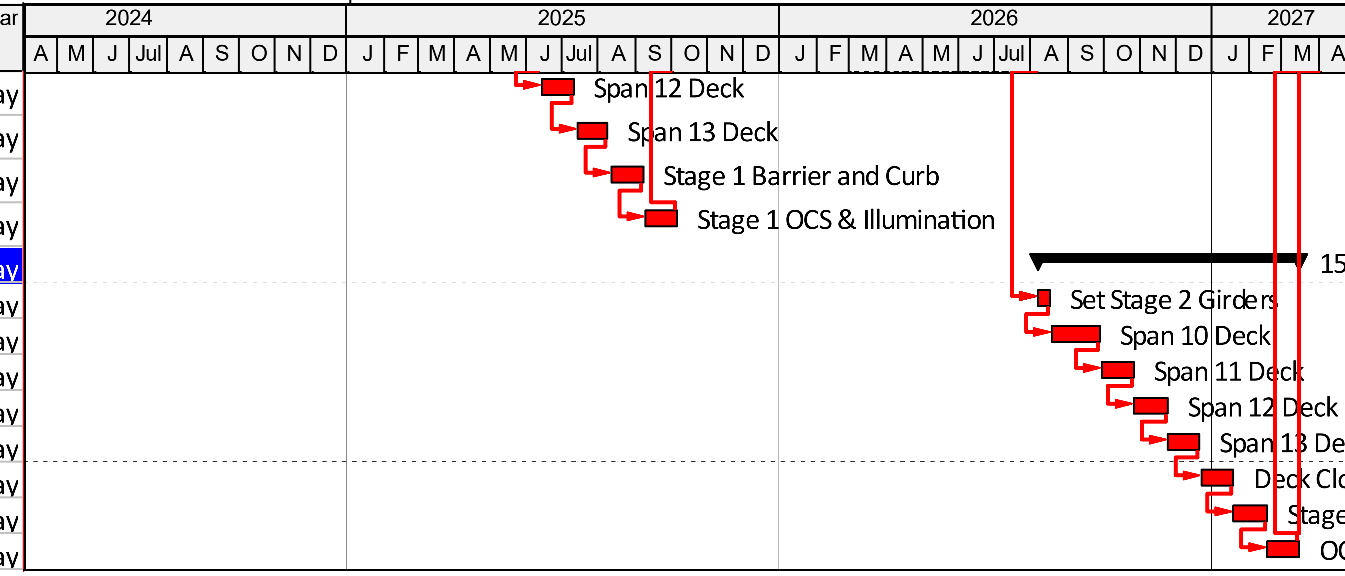


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filter: All Activities

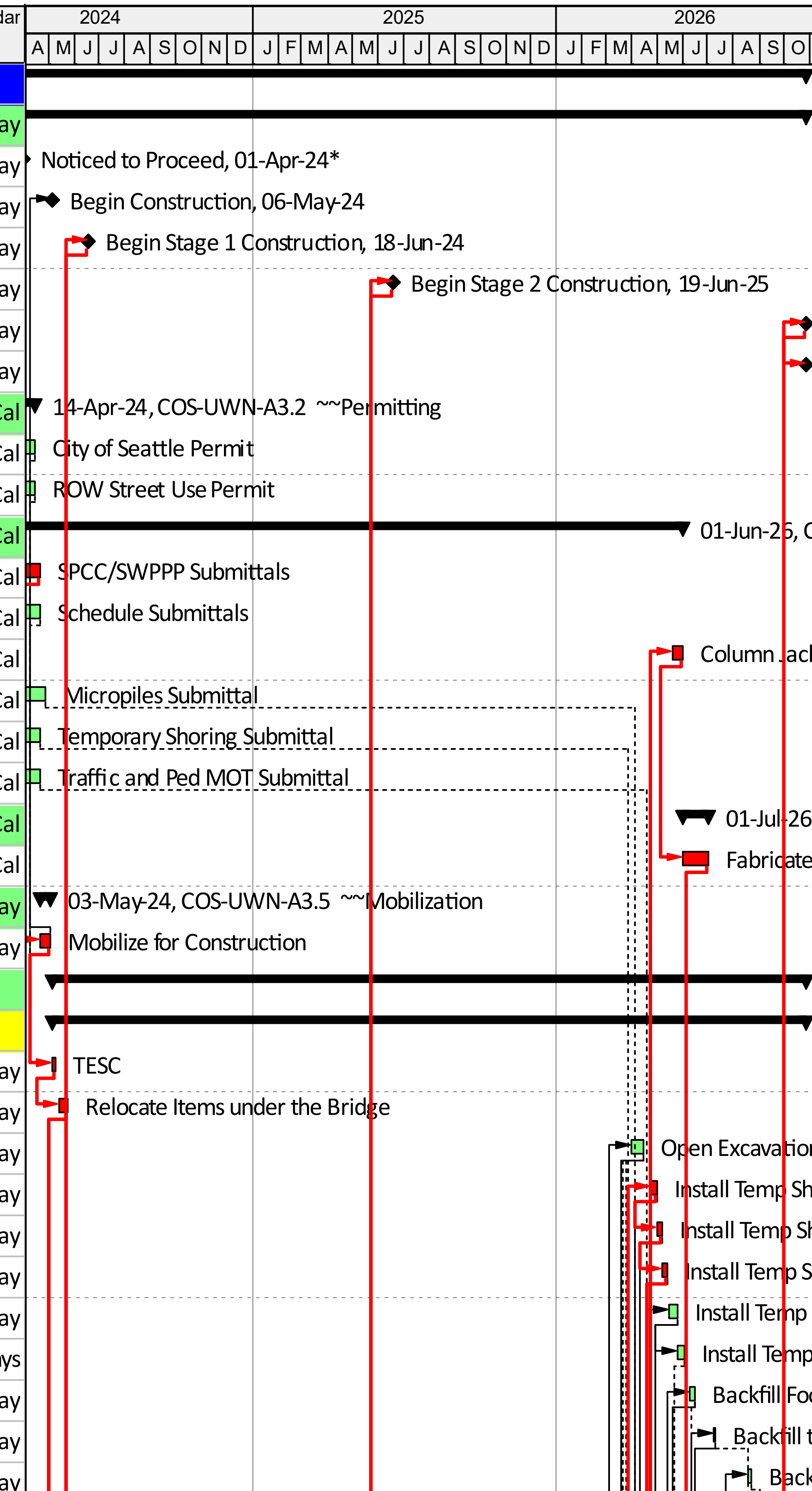
University Bridge North Approach - Alt 2 (Bridge Replacement) | Classic Schedule Layout | 08-Aug-23 22:04

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
116	CN-3220	Span 12 Deck	20	0	13-Jun-25	11-Jul-25	5 Day
117	CN-3230	Span 13 Deck	20	0	14-Jul-25	08-Aug-25	5 Day
118	CN-3300	Stage 1 Barrier and Curb	20	0	11-Aug-25	08-Sep-25	5 Day
119	CN-3400	Stage 1 OCS & Illumination	20	0	09-Sep-25	06-Oct-25	5 Day
120	COS-UWN-A2.6.3.2 Stage 2		157	0	07-Aug-26	15-Mar-27	5 Day
121	CN-4020	Set Stage 2 Girders	7	0	07-Aug-26	17-Aug-26	5 Day
122	CN-4030	Span 10 Deck	30	0	18-Aug-26	28-Sep-26	5 Day
123	CN-4040	Span 11 Deck	20	0	29-Sep-26	26-Oct-26	5 Day
124	CN-4050	Span 12 Deck	20	0	27-Oct-26	23-Nov-26	5 Day
125	CN-4060	Span 13 Deck	20	0	24-Nov-26	21-Dec-26	5 Day
126	CN-4070	Deck Closure Pour	20	0	22-Dec-26	18-Jan-27	5 Day
127	CN-4080	Stage 2 Barrier and Curb	20	0	19-Jan-27	15-Feb-27	5 Day
128	CN-4090	OCS & Illumination	20	0	16-Feb-27	15-Mar-27	5 Day



University Bridge North Approach - Alt 3 (In-kind Superstructure Retrofit) | Classic Schedule Layout | 17-Oct-23 21:06

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	COS-UWN-A3	University Bridge North Approach - Alt 3 (In-kind Superstructure	658	0	01-Apr-24	28-Oct-26	
2	COS-UWN-A3.1	~~Milestones	658	0	01-Apr-24	28-Oct-26	5 Day
3	MS-1000	Noticed to Proceed	0	0	01-Apr-24*		5 Day
4	MS-2000	Begin Construction	0	633	06-May-24		5 Day
5	MS-3000	Begin Stage 1 Construction	0	0	18-Jun-24		5 Day
6	MS-4000	Begin Stage 2 Construction	0	0	19-Jun-25		5 Day
7	MS-5000	Open New Bridge	0	0	28-Oct-26		5 Day
8	MS-9990	Project Completion	0	0		28-Oct-26	5 Day
9	COS-UWN-A3.2	~~Permitting	14	21	01-Apr-24	14-Apr-24	7D Cal
10	PC-1000	City of Seattle Permit	14	21	01-Apr-24	14-Apr-24	7D Cal
11	PC-1010	ROW Street Use Permit	14	21	01-Apr-24	14-Apr-24	7D Cal
12	COS-UWN-A3.3	~~Submittals/Preliminary Activities	792	59	01-Apr-24	01-Jun-26	7D Cal
13	SU-1000	SPCC/SWPPP Submittals	21	0	01-Apr-24	21-Apr-24	7D Cal
14	SU-1010	Schedule Submittals	21	14	01-Apr-24	21-Apr-24	7D Cal
15	SU-1020	Column Jacketing Shop Drawing	14	0	19-May-26	01-Jun-26	7D Cal
16	SU-1030	Micropiles Submittal	28	813	01-Apr-24	28-Apr-24	7D Cal
17	SU-1040	Temporary Shoring Submittal	21	732	01-Apr-24	21-Apr-24	7D Cal
18	SU-1050	Traffic and Ped MOT Submittal	21	830	01-Apr-24	21-Apr-24	7D Cal
19	COS-UWN-A3.4	~~Procurement	30	0	02-Jun-26	01-Jul-26	7D Cal
20	PR-2000	Fabricate and Delivery Steel Column Jacket	30	0	02-Jun-26	01-Jul-26	7D Cal
21	COS-UWN-A3.5	~~Mobilization	10	0	22-Apr-24	03-May-24	5 Day
22	PC-3000	Mobilize for Construction	10	0	22-Apr-24	03-May-24	5 Day
23	COS-UWN-A3.6	~~Construction	633	0	06-May-24	27-Oct-26	
24	COS-UWN-A3.6.1	SITEWROK	633	0	06-May-24	27-Oct-26	
25	SW-1000	TESC	5	0	06-May-24	10-May-24	5 Day
26	SW-1010	Relocate Items under the Bridge	10	0	13-May-24	24-May-24	5 Day
27	SW-1020	Open Excavation Bent 11 to 13	10	7	01-Apr-26	14-Apr-26	5 Day
28	SW-1030	Install Temp Shoring @ Bent 16	5	0	24-Apr-26	30-Apr-26	5 Day
29	SW-1040	Install Temp Shoring @ Bent 17	5	0	01-May-26	07-May-26	5 Day
30	SW-1050	Install Temp Shoring @ Bent 18	5	0	08-May-26	14-May-26	5 Day
31	SW-1060	Install Temp Shoring @ North Abutment	7	55	15-May-26	25-May-26	5 Day
32	SW-1070	Install Temp Shoring @ Pier 10	7	84	26-May-26	03-Jun-26	5 Day w/ Holidays
33	SW-1100	Backfill Footing Bent 11 to 13	5	9	09-Jun-26	15-Jun-26	5 Day
34	SW-1110	Backfill to top of Footing Bent 17 & 18	2	22	09-Jul-26	10-Jul-26	5 Day
35	SW-1120	Backfill to top of Footing Bent 16 & N Abutment	3	25	19-Aug-26	21-Aug-26	5 Day

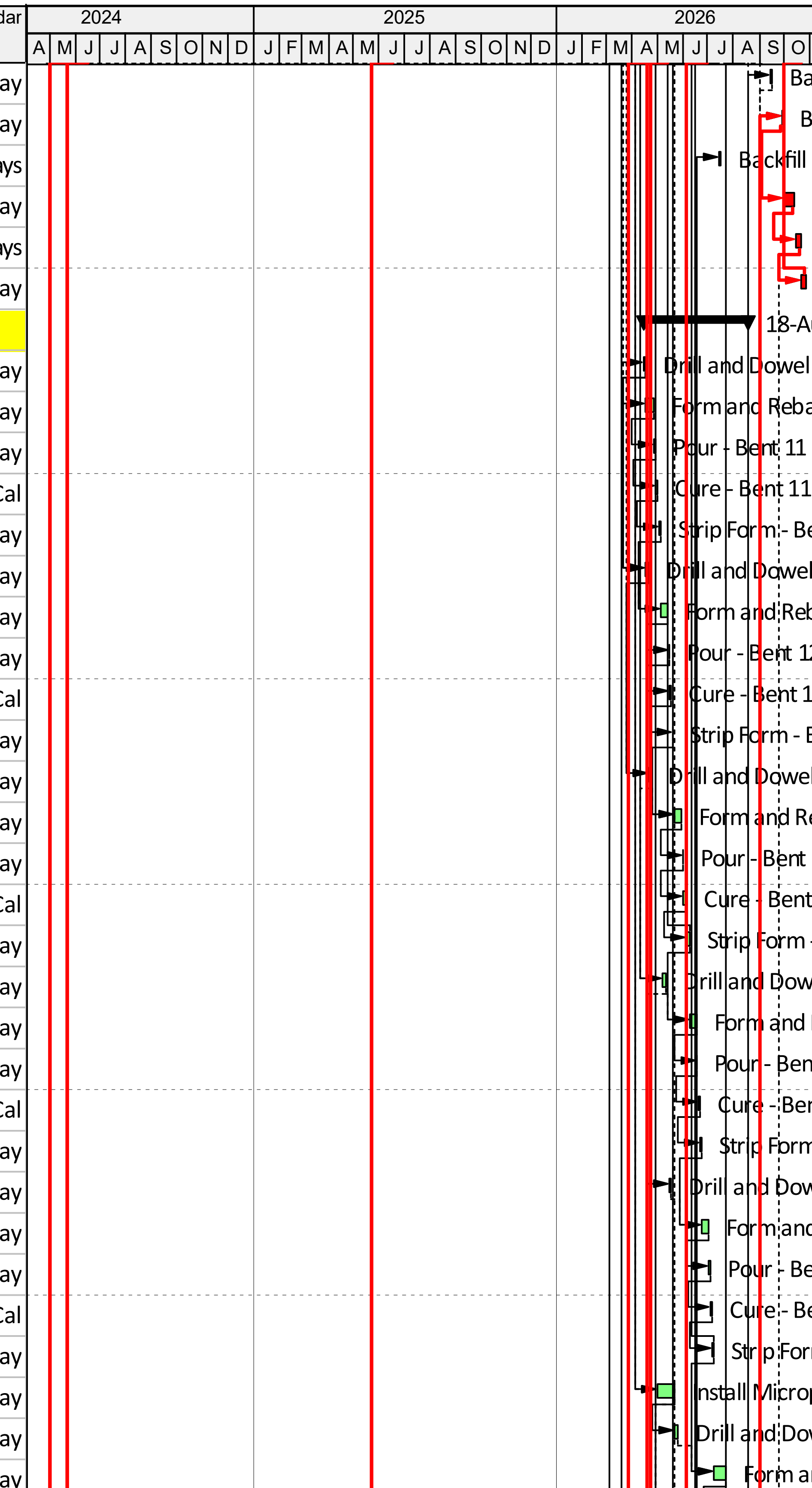


Remaining Level of Effort	Actual Work	Critical Remaining Work
Actual Level of Effort	Remaining Work	◆ Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 3 (In-kind Superstructure Retrofit) | Classic Schedule Layout | 17-Oct-23 21:06

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
36	SW-1130	Backfill Bent 17 & 18	2	8	14-Sep-26	15-Sep-26	5 Day
37	SW-1140	Backfill Bent 16	2	0	28-Sep-26	29-Sep-26	5 Day
38	SW-1145	Backfill Pier 10	2	74	14-Jul-26	15-Jul-26	5 Day w/ Holidays
39	SW-1150	Restore Site	10	0	30-Sep-26	13-Oct-26	5 Day
40	SW-1155	AC Grind and Overlay	5	0	14-Oct-26	20-Oct-26	5 Day w/ Holidays
41	SW-1160	Open New Bridge to Traffic	5	0	21-Oct-26	27-Oct-26	5 Day
42	**COS-UWN-A3.6.2 Footing Enlargement**		90	48	15-Apr-26	18-Aug-26	
43	CN-1000	Drill and Dowel to Existing Footing - Bent 11	2	9	15-Apr-26	16-Apr-26	5 Day
44	CN-1010	Form and Rebar - Bent 11	7	9	17-Apr-26	27-Apr-26	5 Day
45	CN-1020	Pour - Bent 11 Footing Enlargement	1	9	28-Apr-26	28-Apr-26	5 Day
46	CN-1030	Cure - Bent 11 Footing Enlargement	3	13	29-Apr-26	01-May-26	7D Cal
47	CN-1040	Strip Form - Bent 11 Footing Enlargement	2	9	04-May-26	05-May-26	5 Day
48	CN-1100	Drill and Dowel to Existing Footing - Bent 12	2	20	17-Apr-26	20-Apr-26	5 Day
49	CN-1110	Form and Rebar - Bent 12	7	9	06-May-26	14-May-26	5 Day
50	CN-1120	Pour - Bent 12 Footing Enlargement	1	9	15-May-26	15-May-26	5 Day
51	CN-1130	Cure - Bent 12 Footing Enlargement	3	13	16-May-26	18-May-26	7D Cal
52	CN-1140	Strip Form - Bent 12 Footing Enlargement	2	9	19-May-26	20-May-26	5 Day
53	CN-1200	Drill and Dowel to Existing Footing - Bent 13	2	29	21-Apr-26	22-Apr-26	5 Day
54	CN-1210	Form and Rebar - Bent 13	7	9	21-May-26	29-May-26	5 Day
55	CN-1220	Pour - Bent 13 Footing Enlargement	1	9	01-Jun-26	01-Jun-26	5 Day
56	CN-1230	Cure - Bent 13 Footing Enlargement	3	13	02-Jun-26	04-Jun-26	7D Cal
57	CN-1240	Strip Form - Bent 13 Footing Enlargement	2	9	05-Jun-26	08-Jun-26	5 Day
58	CN-1300	Drill and Dowel to Existing Footing - Bent 17	2	40	08-May-26	11-May-26	5 Day
59	CN-1310	Form and Rebar - Bent 17	7	20	09-Jun-26	17-Jun-26	5 Day
60	CN-1320	Pour - Bent 17 Footing Enlargement	1	20	18-Jun-26	18-Jun-26	5 Day
61	CN-1330	Cure - Bent 17 Footing Enlargement	3	28	19-Jun-26	21-Jun-26	7D Cal
62	CN-1340	Strip Form - Bent 17 Footing Enlargement	2	20	22-Jun-26	23-Jun-26	5 Day
63	CN-1400	Drill and Dowel to Existing Footing - Bent 18	2	46	15-May-26	18-May-26	5 Day
64	CN-1410	Form and Rebar - Bent 18	7	20	24-Jun-26	02-Jul-26	5 Day
65	CN-1420	Pour - Bent 18 Footing Enlargement	1	20	03-Jul-26	03-Jul-26	5 Day
66	CN-1430	Cure - Bent 18 Footing Enlargement	3	30	04-Jul-26	06-Jul-26	7D Cal
67	CN-1440	Strip Form - Bent 18 Footing Enlargement	2	22	07-Jul-26	08-Jul-26	5 Day
68	CN-1500	Install Micropiles - Bent 16 (24 EA)	15	57	01-May-26	21-May-26	5 Day
69	CN-1510	Drill and Dowel to Existing Footing - Bent 16	2	58	22-May-26	25-May-26	5 Day
70	CN-1520	Form and Rebar - Bent 16	10	26	09-Jul-26	22-Jul-26	5 Day

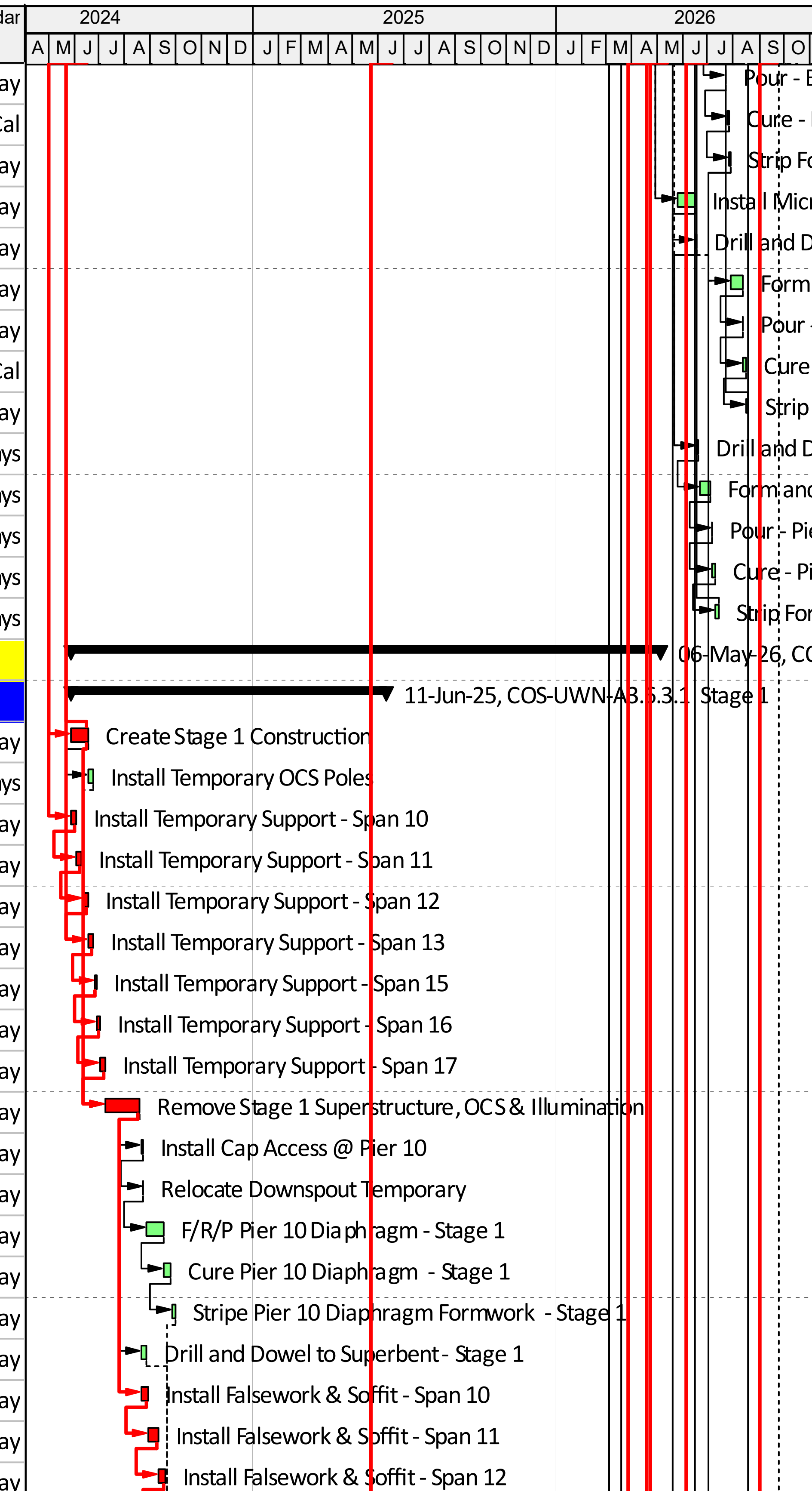


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 3 (In-kind Superstructure Retrofit) | Classic Schedule Layout | 17-Oct-23 21:06

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
71	CN-1530	Pour - Bent 16 Footing Enlargement	1	26	23-Jul-26	23-Jul-26	5 Day
72	CN-1540	Cure - Bent 16 Footing Enlargement	3	36	24-Jul-26	26-Jul-26	7D Cal
73	CN-1550	Strip Form - Bent 16 Footing Enlargement	2	26	27-Jul-26	28-Jul-26	5 Day
74	CN-1600	Install Micropiles - North Abutment	15	55	26-May-26	15-Jun-26	5 Day
75	CN-1610	Drill and Dowel to Existing Footing - N Abutment	2	55	16-Jun-26	17-Jun-26	5 Day
76	CN-1620	Form and Rebar - N Abutment	10	26	29-Jul-26	11-Aug-26	5 Day
77	CN-1630	Pour - N Abutment Footing Enlargement	1	26	12-Aug-26	12-Aug-26	5 Day
78	CN-1640	Cure - N Abutment Footing Enlargement	3	36	13-Aug-26	15-Aug-26	7D Cal
79	CN-1650	Strip Form - N Abutment Footing Enlargement	2	25	17-Aug-26	18-Aug-26	5 Day
80	CN-1710	Drill and Dowel to Existing Footing - Pier 10	2	74	18-Jun-26	19-Jun-26	5 Day w/ Holidays
81	CN-1720	Form and Rebar - Pier 10	10	74	22-Jun-26	03-Jul-26	5 Day w/ Holidays
82	CN-1730	Pour - Pier 10 Footing Enlargement	1	74	06-Jul-26	06-Jul-26	5 Day w/ Holidays
83	CN-1740	Cure - Pier 10 Footing Enlargement	3	74	07-Jul-26	09-Jul-26	5 Day w/ Holidays
84	CN-1750	Strip Form - Pier 10 Footing Enlargement	2	74	10-Jul-26	13-Jul-26	5 Day w/ Holidays
85	**COS-UWN-A3.6.3 Superstructure**		494	119	28-May-24	06-May-26	
86	**COS-UWN-A3.6.3.1 Stage 1**		265	35	28-May-24	11-Jun-25	
87	CN-2000	Create Stage 1 Construction	15	0	28-May-24	17-Jun-24	5 Day
88	CN-2005	Install Temporary OCS Poles	5	10	18-Jun-24	24-Jun-24	5 Day w/ Holidays
89	CN-2010	Install Temporary Support - Span 10	5	0	28-May-24	03-Jun-24	5 Day
90	CN-2020	Install Temporary Support - Span 11	5	0	04-Jun-24	10-Jun-24	5 Day
91	CN-2030	Install Temporary Support - Span 12	5	0	11-Jun-24	17-Jun-24	5 Day
92	CN-2040	Install Temporary Support - Span 13	5	0	18-Jun-24	24-Jun-24	5 Day
93	CN-2050	Install Temporary Support - Span 15	3	0	25-Jun-24	27-Jun-24	5 Day
94	CN-2060	Install Temporary Support - Span 16	3	0	28-Jun-24	02-Jul-24	5 Day
95	CN-2070	Install Temporary Support - Span 17	3	0	03-Jul-24	08-Jul-24	5 Day
96	CN-2100	Remove Stage 1 Superstructure, OCS & Illumination	30	0	09-Jul-24	19-Aug-24	5 Day
97	CN-2110	Install Cap Access @ Pier 10	3	13	20-Aug-24	22-Aug-24	5 Day
98	CN-2120	Relocate Downspout Temporary	1	13	23-Aug-24	23-Aug-24	5 Day
99	CN-2130	F/R/P Pier 10 Diaphragm - Stage 1	15	13	26-Aug-24	16-Sep-24	5 Day
100	CN-2140	Cure Pier 10 Diaphragm - Stage 1	7	13	17-Sep-24	25-Sep-24	5 Day
101	CN-2150	Stripe Pier 10 Diaphragm Formwork - Stage 1	3	13	26-Sep-24	30-Sep-24	5 Day
102	CN-2160	Drill and Dowel to Superbent - Stage 1	5	37	20-Aug-24	26-Aug-24	5 Day
103	CN-2200	Install Falsework & Soffit - Span 10	7	0	20-Aug-24	28-Aug-24	5 Day
104	CN-2210	Install Falsework & Soffit - Span 11	7	0	29-Aug-24	09-Sep-24	5 Day
105	CN-2220	Install Falsework & Soffit - Span 12	7	0	10-Sep-24	18-Sep-24	5 Day

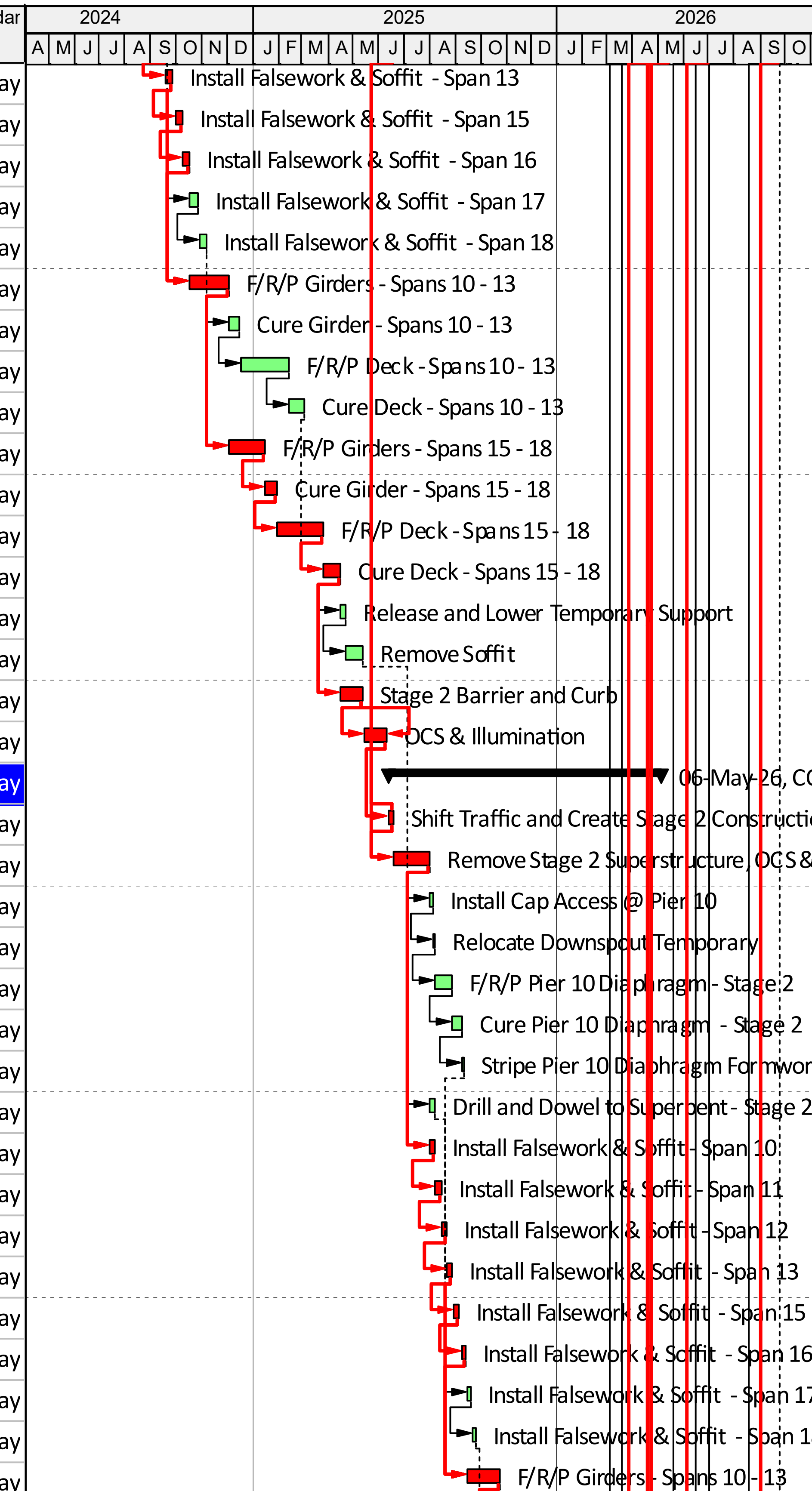


Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | Milestone

TASK filter: All Activities

University Bridge North Approach - Alt 3 (In-kind Superstructure Retrofit)	Classic Schedule Layout	17-Oct-23 21:06

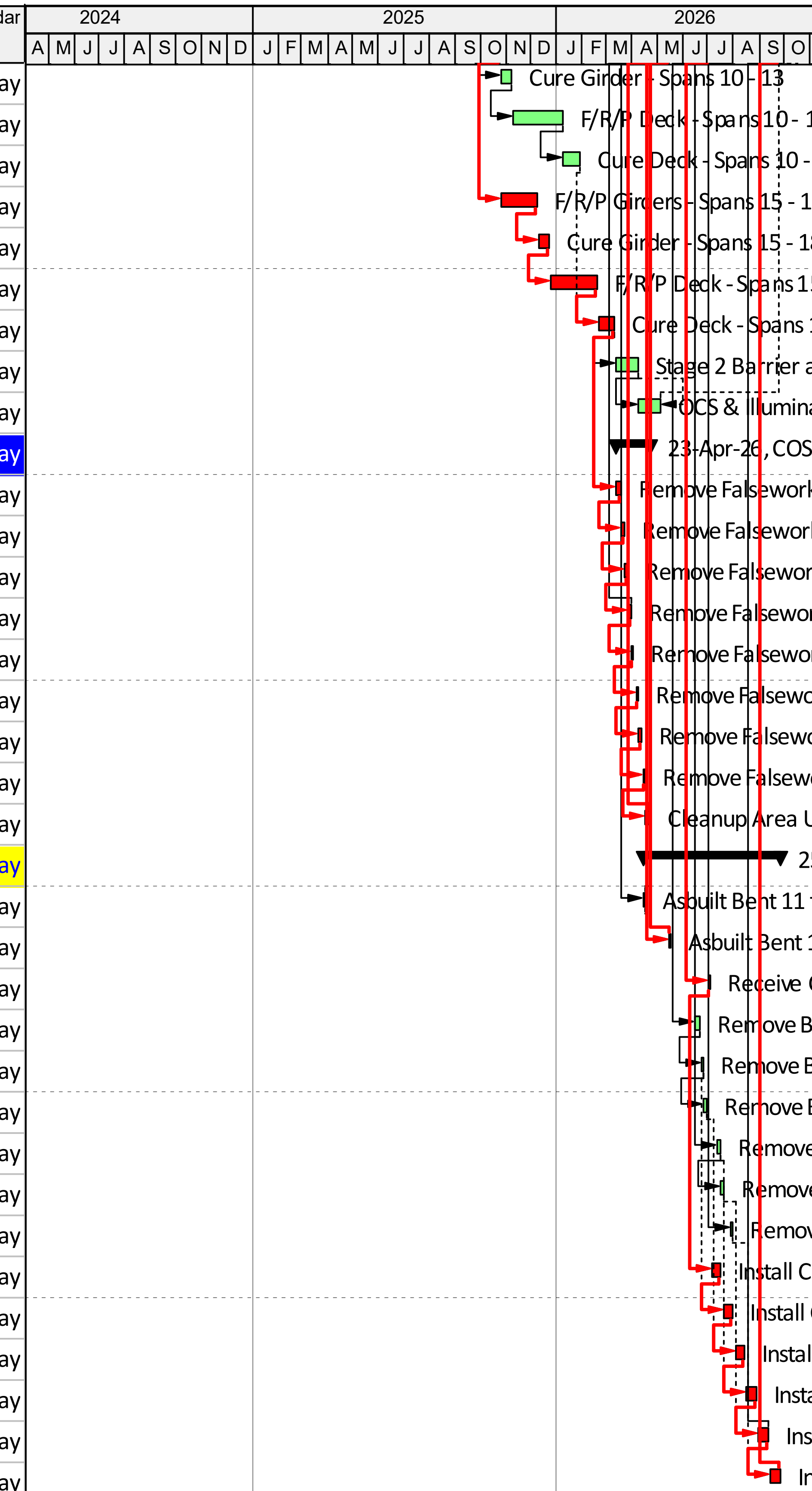
#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
106	CN-2230	Install Falsework & Soffit - Span 13	7	0	19-Sep-24	27-Sep-24	5 Day
107	CN-2240	Install Falsework & Soffit - Span 15	7	0	30-Sep-24	08-Oct-24	5 Day
108	CN-2250	Install Falsework & Soffit - Span 16	7	0	09-Oct-24	17-Oct-24	5 Day
109	CN-2260	Install Falsework & Soffit - Span 17	7	16	18-Oct-24	28-Oct-24	5 Day
110	CN-2270	Install Falsework & Soffit - Span 18	7	16	29-Oct-24	06-Nov-24	5 Day
111	CN-2300	F/R/P Girders - Spans 10 - 13	30	0	18-Oct-24	02-Dec-24	5 Day
112	CN-2310	Cure Girder - Spans 10 - 13	10	16	03-Dec-24	16-Dec-24	5 Day
113	CN-2320	F/R/P Deck - Spans 10 - 13	40	16	17-Dec-24	12-Feb-25	5 Day
114	CN-2330	Cure Deck - Spans 10 - 13	14	16	13-Feb-25	04-Mar-25	5 Day
115	CN-2400	F/R/P Girders - Spans 15 - 18	30	0	03-Dec-24	15-Jan-25	5 Day
116	CN-2410	Cure Girder - Spans 15 - 18	10	0	16-Jan-25	29-Jan-25	5 Day
117	CN-2420	F/R/P Deck - Spans 15 - 18	40	0	30-Jan-25	26-Mar-25	5 Day
118	CN-2430	Cure Deck - Spans 15 - 18	14	0	27-Mar-25	15-Apr-25	5 Day
119	CN-2440	Release and Lower Temporary Support	5	55	16-Apr-25	22-Apr-25	5 Day
120	CN-2450	Remove Soffit	15	55	23-Apr-25	13-May-25	5 Day
121	CN-2460	Stage 2 Barrier and Curb	20	0	16-Apr-25	13-May-25	5 Day
122	CN-2470	OCS & Illumination	20	0	14-May-25	11-Jun-25	5 Day
123	**COS-UWN-A3.6.3.2 Stage 2**		229	119	12-Jun-25	06-May-26	5 Day
124	CN-5000	Shift Traffic and Create Stage 2 Construction	5	0	12-Jun-25	18-Jun-25	5 Day
125	CN-5100	Remove Stage 2 Superstructure, OCS & Illumination	30	0	19-Jun-25	31-Jul-25	5 Day
126	CN-5110	Install Cap Access @ Pier 10	3	1	01-Aug-25	05-Aug-25	5 Day
127	CN-5120	Relocate Downspout Temporary	1	1	06-Aug-25	06-Aug-25	5 Day
128	CN-5130	F/R/P Pier 10 Diaphragm - Stage 2	15	1	07-Aug-25	27-Aug-25	5 Day
129	CN-5140	Cure Pier 10 Diaphragm - Stage 2	7	1	28-Aug-25	08-Sep-25	5 Day
130	CN-5150	Stripe Pier 10 Diaphragm Formwork - Stage 2	3	1	09-Sep-25	11-Sep-25	5 Day
131	CN-5160	Drill and Dowel to Superbent - Stage 2	5	25	01-Aug-25	07-Aug-25	5 Day
132	CN-5200	Install Falsework & Soffit - Span 10	5	0	01-Aug-25	07-Aug-25	5 Day
133	CN-5210	Install Falsework & Soffit - Span 11	5	0	08-Aug-25	14-Aug-25	5 Day
134	CN-5220	Install Falsework & Soffit - Span 12	5	0	15-Aug-25	21-Aug-25	5 Day
135	CN-5230	Install Falsework & Soffit - Span 13	5	0	22-Aug-25	28-Aug-25	5 Day
136	CN-5240	Install Falsework & Soffit - Span 15	5	0	29-Aug-25	05-Sep-25	5 Day
137	CN-5250	Install Falsework & Soffit - Span 16	5	0	08-Sep-25	12-Sep-25	5 Day
138	CN-5260	Install Falsework & Soffit - Span 17	5	20	15-Sep-25	19-Sep-25	5 Day
139	CN-5270	Install Falsework & Soffit - Span 18	5	20	22-Sep-25	26-Sep-25	5 Day
140	CN-5300	F/R/P Girders - Spans 10 - 13	30	0	15-Sep-25	24-Oct-25	5 Day



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: All Activities

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
141	CN-5310	Cure Girder - Spans 10 - 13	10	16	27-Oct-25	07-Nov-25	5 Day
142	CN-5320	F/R/P Deck - Spans 10 - 13	40	16	10-Nov-25	08-Jan-26	5 Day
143	CN-5330	Cure Deck - Spans 10 - 13	14	16	09-Jan-26	28-Jan-26	5 Day
144	CN-5400	F/R/P Girders - Spans 15 - 18	30	0	27-Oct-25	09-Dec-25	5 Day
145	CN-5410	Cure Girder - Spans 15 - 18	10	0	10-Dec-25	23-Dec-25	5 Day
146	CN-5420	F/R/P Deck - Spans 15 - 18	40	0	24-Dec-25	19-Feb-26	5 Day
147	CN-5430	Cure Deck - Spans 15 - 18	14	0	20-Feb-26	11-Mar-26	5 Day
148	CN-5440	Stage 2 Barrier and Curb	20	119	12-Mar-26	08-Apr-26	5 Day
149	CN-5450	OCS & Illumination	20	119	09-Apr-26	06-May-26	5 Day
150	COS-UWN-A3.6.3.3 Remove Falsework		31	0	12-Mar-26	23-Apr-26	5 Day
151	CN-6000	Remove Falsework & Soffit - Span 10	5	0	12-Mar-26	18-Mar-26	5 Day
152	CN-6010	Remove Falsework & Soffit - Span 11	3	0	19-Mar-26	23-Mar-26	5 Day
153	CN-6020	Remove Falsework & Soffit - Span 12	3	0	24-Mar-26	26-Mar-26	5 Day
154	CN-6030	Remove Falsework & Soffit - Span 13	3	0	27-Mar-26	31-Mar-26	5 Day
155	CN-6040	Remove Falsework & Soffit - Span 15	3	0	01-Apr-26	03-Apr-26	5 Day
156	CN-6050	Remove Falsework & Soffit - Span 16	3	0	06-Apr-26	08-Apr-26	5 Day
157	CN-6060	Remove Falsework & Soffit - Span 17	3	0	09-Apr-26	13-Apr-26	5 Day
158	CN-6070	Remove Falsework & Soffit - Span 18	3	0	14-Apr-26	16-Apr-26	5 Day
159	CN-6080	Cleanup Area Under the Bridge	5	0	17-Apr-26	23-Apr-26	5 Day
160	COS-UWN-A3.6.4 Seismic Retrofit - Column Jacket		118	0	15-Apr-26	25-Sep-26	5 Day
161	CN-3000	Asbuilt Bent 11 to 13 Height	2	20	15-Apr-26	16-Apr-26	5 Day
162	CN-3010	Asbuilt Bent 16 to 18 Height	2	0	15-May-26	18-May-26	5 Day
163	CN-3020	Receive Column Jackets	2	0	02-Jul-26	03-Jul-26	5 Day
164	CN-3030	Remove Bent 11 Strut	5	9	16-Jun-26	22-Jun-26	5 Day
165	CN-3040	Remove Bent 12 Strut	3	16	23-Jun-26	25-Jun-26	5 Day
166	CN-3050	Remove Bent 13 Strut	3	23	26-Jun-26	30-Jun-26	5 Day
167	CN-3060	Remove Bent 17 Strut	3	22	13-Jul-26	15-Jul-26	5 Day
168	CN-3070	Remove Bent 18 Strut	3	29	16-Jul-26	20-Jul-26	5 Day
169	CN-3080	Remove Bent 16 Strut	3	30	29-Jul-26	31-Jul-26	5 Day
170	CN-3100	Install Column Jackets - Bent 11 (4 Ea)	10	0	06-Jul-26	17-Jul-26	5 Day
171	CN-3110	Install Column Jackets - Bent 12 (4 Ea)	10	0	20-Jul-26	31-Jul-26	5 Day
172	CN-3120	Install Column Jackets - Bent 13 (4 Ea)	10	0	03-Aug-26	14-Aug-26	5 Day
173	CN-3130	Install Column Jackets - Bent 17 (4 Ea)	10	0	17-Aug-26	28-Aug-26	5 Day
174	CN-3140	Install Column Jackets - Bent 18 (5 Ea)	10	0	31-Aug-26	11-Sep-26	5 Day
175	CN-3150	Install Column Jackets - Bent 16 (4 Ea)	10	0	14-Sep-26	25-Sep-26	5 Day



Remaining Level of Effort | Actual Work | Critical Remaining Work
Actual Level of Effort | Remaining Work | ◆ Milestone

TASK filter: All Activities

Attachment I

Cultural Resources Exhibits

Technical Memorandum

Date:	Tuesday, January 31, 2023
Project:	University Bridge North Approach Replacement Planning Study, Seattle, Washington
To:	Elisabeth Wooton, Seattle Department of Transportation
From:	Sarah Desimone, MAHP, Anna Robison-Mathes, MPA, and Jennifer Ferris, MA, RPA
Subject:	Cultural Resources Desktop Review for the University Bridge North Approach Replacement Planning Study, Seattle, Washington

This technical memorandum describes the results of the cultural resources desktop review completed for the University Bridge North Approach Replacement Planning Study (the Project) in Seattle, Washington. The Project is in Section 17 of Township 25N, Range 04E of the Willamette Meridian. The Project is subject to Section 106 review and is located within an area that is considered sensitive for cultural resources. As a result, HDR Engineering, Inc. (HDR), was retained to conduct a desktop review and field reconnaissance to support planning study.

HDR's review focused on cultural resources archival records pertaining to previously recorded archaeological sites and resources, traditional cultural properties (TCPs), and historic built-environment resources, including those that may be eligible for listing in the National Register of Historic Places (NRHP) and/or the Washington Heritage Register (WHR), that were found within 1.0 mile (1.6 kilometers) of the Study Area. HDR cultural resources specialist Anna Robison-Mathes and HDR architectural historian Sarah Desimone also performed a field reconnaissance in the Study Area. The purpose of this review was to assess the potential for cultural resources to be present within the Study Area and to provide recommendations regarding such cultural resources.

Project Background

Seattle Department of Transportation (SDOT) is undertaking a planning study for the replacement and/or rehabilitation of the University Bridge North Approach (see Attachment A, Figure 1). The University Bridge, originally constructed in 1919 of timber trestle approaches, was replaced with the current concrete and steel structures in the early-1930s. The concrete spans of the north approach to the University Bridge are on the north side of the Lake Washington Ship Canal, approximately between the north side of NE Pacific Street and ends at the north side of NE 40th Street and carry Eastlake Avenue NE over NE 40th Street and the Burke-Gilman trail (the Study Area).

These concrete spans are approaching 100 years old and though they appear to be in fair condition, this portion of the bridge is showing signs of deteriorating concrete and is deemed functionally obsolete. Eastlake Avenue NE is a principal arterial, a minor freight street, and a priority transit corridor for the City of Seattle. SDOT is evaluating alternatives for replacement and/or rehabilitation of these northern concrete spans. The planning study will help to provide a basis for SDOT to plan for future funding and eventually move forward with design and construction of a selected alternative.

The planning study will consider the following three alternatives, culminating in an Alternatives Comparison Report:

- Bridge rehabilitation and retrofit: This alternative will likely involve strengthening the columns, crossbeams, girders, and diaphragms as it pertains to seismic retrofit and increasing the live load capacity of the superstructure to current design standards. Strengthening options might involve steel jacketing of columns, section enlargement of crossbeams (added reinforcement and concrete), fiber reinforced polymer (FRP) strengthening and/or section enlargement of girders and diaphragms. If foundations are inadequate, then footing enlargement may be necessary.
- Replacement: The replacement alternative involves the removal and replacement of the superstructure and substructure of the concrete approach spans. Options would likely be either a 2-span or 3-span replacement bridge. Staged construction would likely require approximately half of the bridge removed and replaced at a time if a full bridge closure with detours is not an option.
- Superstructure replacement and substructure retrofit: This alternative will likely involve combinations of the first two alternatives including enlargement/strengthening of the existing substructure and replacement of the superstructure. Superstructure replacement would be completed in stages.

Cultural Resources Regulations

Seattle Municipal Code (SMC) 25.05.675.H.2.c

A demolition permit from the City of Seattle is required if any part of the north approach is demolished such as proposed under Alternatives 2 and 3. According to Seattle Municipal Code (SMC) 25.05.675.H.2.c, projects involving structures or sites that have not been designated as landmarks, but which appear to meet the criteria for designation, may be referred to the Landmarks Preservation Board for consideration. If the Board approves the site or structure for nomination as an historic landmark, consideration for such designation and application of controls and incentives shall proceed. The criteria for landmark designation are as follows:

Standards for Designation (25.12.350)

An object, site or improvement which is more than twenty-five (25) years old, may be designated for preservation as a landmark site or landmark if it has significant character, interest or value as part of the development, heritage or cultural characteristics of the City, state, or nation, if it has integrity or the ability to convey its significance, and if it falls into one (1) of the following categories:

A. It is the location of, or is associated in a significant way with, an historic event with a significant effect upon the community, City, state, or nation; or

B. It is associated in a significant way with the life of a person important in the history of the City, state, or nation; or
C. It is associated in a significant way with a significant aspect of the cultural, political, or economic heritage of the community, City, state or nation; or
D. It embodies the distinctive visible characteristics of an architectural style, or period, or of a method of construction; or
E. It is an outstanding work of a designer or builder; or
F. Because of its prominence of spatial location, contrasts of siting, age, or scale, it is an easily identifiable visual feature of its neighborhood or the City and contributes to the distinctive quality or identity of such neighborhood or the City.

The University Bridge is significant as one of the earliest double-leaf trunnion bridges in Seattle and would likely be eligible as a Seattle Landmark under Criterion D above. Therefore, it is likely to be referred to the Landmarks Preservation Board for consideration and potentially nomination as an historic landmark.

State Regulations

The Project is required to comply with the State Environmental Policy Act (SEPA) and the Revised Code of Washington (RCW). An environmental review under SEPA is required for all agency actions related to proposed projects, regardless whether the applicant is from the private or public sector. These actions include providing funding, issuing permits, and adopting plans, regulations, or ordinances. The SEPA review process seeks to provide information that will inform agency decision-makers, applicants, and the public to understand how a proposal will affect the environment. Under SEPA, resources on the subject or adjacent property are evaluated for their eligibility at the local, state and/or national register level. The lead agency will review the applicant prepared SEPA checklist and other information about the proposal and will either make a determination of non-significance (DNS) or that an environmental impact statement (EIS) is necessary to further evaluate the impacts. The DNS or EIS, which are prepared by the lead agency, will provide information to all agencies that must approve the proposal.

Precontact and historic archaeological sites are protected by several Washington state regulations on both public and private lands. RCW 27.44 (Indian Graves and Records) and RCW 27.53 (Archaeological Sites and Resources) require that a person obtain a permit from the DAHP before excavating, removing, or altering Native American human remains or archaeological resources in Washington.

Chapter 25-48 of the Washington Administrative Code outlines the requirements of the Archaeological Excavation and Removal Permit. Failure to obtain a permit is punishable by civil fines and penalties under RCW 27.53.095 and criminal prosecution under RCW 27.53.090. If a person(s) violates this statute and knowingly disturbs or alters an archaeological site, the DAHP is allowed to issue civil penalties of up to $5,000 in addition to site restoration costs and investigative costs per RCW 27.53.095.

Restorative and monetary remedies do not prevent concerned Indian tribes from undertaking civil action in state or federal court, or law enforcement agencies from undertaking criminal investigation or prosecution. If human remains and/or burials are disturbed, RCW 27.44.050 allows an affected Indian tribe to undertake civil action. Additionally, the excavation of human remains without a permit is a felony.

Federal Regulations

If the Project requires a federal permit, such as from the U.S. Army Corps of Engineers for work within the navigable waterway, or acquires federal funding, the Project would be subject to Section 106 of the National Historic Preservation Act (NHPA).As provided in 36 Code of Federal Regulations (CFR) 800.16(y), a federal undertaking is defined as “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval.” Section 106 requires federal agencies to consider the effects of their undertakings on historic properties, which are defined as any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the NRHP (36 CFR 800.16[1]).

Under Section 106 of the NHPA, the lead federal agency must consult with the SHPO, interested Indian tribes, representatives of local governments, Federal permit/funding applicants, other individuals and organizations with a demonstrated interest in the project, and the public. Section 106 requires the project’s APE be defined, which is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 CFR §800.16[d]).

Historic properties are any prehistoric or historical district, site, building, structure, or object included in or eligible for inclusion in the NRHP (36 CFR 800.16[1]). As provided in 36 CFR 800.16(y), a federal undertaking is defined as “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval.”

The NRHP (16 USC 470a) was created by the NHPA and is maintained by the National Park Service (NPS) on behalf of the Secretary of the Interior (SOI). It is the federal list of historical, archaeological, and other cultural resources that have been deemed worthy of preservation. These resources include buildings, structures, sites, districts, and objects that are considered significant to American history and prehistory including its architecture, archaeology, engineering, and culture which possess integrity of location, design, setting, material, workmanship, feeling, and association. The Department of Archaeology and Historic Preservation (DAHP) administers the statewide NRHP program under the direction of the SHPO, located in Olympia, Washington.

Environmental Setting

The Study Area is located within the Puget Sound, which was shaped by widespread continental glaciation that extended south from British Columbia to the northern Puget Lowland and along the western flanks of the Cascade Mountains. This low-lying area extends to the

Cowlitz and Chehalis rivers and is known as the Puget Sound Trough (Franklin and Dyrness 1988). The natural topography of the southern Puget Sound region was formed by widespread glaciation during the Pleistocene that scoured the landscape and deposited outwash sediments during several episodes of glacial advances and retreats (Lewarch et al. 1996).

Geologic processes since the end of the last glacial period have included incision of stream channels into the glacial deposits that underlie the upland surfaces, with fluvial processes transporting and redepositing eroded materials. Vast amounts of meltwater, fed by retreating continental glaciers, created north-south-trending ridges and till plains. The northern retreat of glaciers also saw the development of streams and proglacial lakes, and the sea entered the Puget Lowland during the late Vashon Stade period and deposited glacial-marine sediments (approximately 15,000–13,000 years Before Present [BP]) (Thorson 1980). Following the retreat of the Cordilleran ice sheet approximately 16,000 years BP, streams were carved into glacial sediments, lowering valley floors and creating terraces and salmonid habitat (Beechie et al. 2001).

The origin of the northwest-trending ship canal valley in Lake Washington is unknown, but its orientation resembles that of many other northwest-oriented valleys, beach cliffs, and stream beds (Troost and Booth 2008). This northwest-oriented trend is perpendicular to the direction of the subducting Juan de Fuca plate, "[…] consistent with the northwest-trending folds in the Eocene bedrock, and parallel to the Southern Whidbey Island fault zone and other major faults that cross Washington State" (Troost and Booth 2008).

The postglacial conditions of the Study Area were cooler and drier than modern climates and supported a vegetation profile of grassland with scattered lodgepole pine (*Pinus contorta*), sedges (*Cyperaceae*), sage (*Artemesia sp*.), and various herbs (Barnosky et al. 1987; Brubaker 1991; Whitlock 1992). By 12,000 years BP, Douglas-fir (*Pseudotsuga menziesii*) and Western hemlock (*Tsuga heterophylla*) appeared, potentially due to regional climate warming, which would have also caused an increase in summer droughts (Iversen et al. 2000a). Prey species during this time would have included elk (*Cervus elaphus*) and deer (*Odocoileus sp.*), Puget Sound marine species, and freshwater fauna and flora in waterways such as the Duwamish Embayment and nearby kettle lakes, bogs, and marshes.

The regional climate became more moist starting 6,000 years BP with increasing summer precipitation (Brubaker 1991; Whitlock 1992). Vegetation such as Western hemlock and western red cedar (*Thuja plicata*) became more abundant, while Douglas-fir, red alder (*Alnus rubra*), and grasses decreased (Iversen et al. 2000). Forests became denser; however, the diversity and density of understory shrubs and herbs decreased, accompanied by a subsequent decrease in the abundance of elk and deer and other smaller species (Iversen et al. 2000).

The historic period vegetative profile for the Study Area includes cedar, fir, vine maple (*Acer circinatum*), alder, willow (*Salix sp*.), crab apple (*Pyrus fusca*), and salal (*Gaultheria shallon*). The Study Area was developed throughout the twentieth century as roadways, railway lines, and utilities were developed and improved adjacent to residential and commercial properties. The Study Area is also located adjacent to the historic Portage Canal, excavated between 1883 and 1885, and the Montlake Cut, which completed construction in 1916, where modern-day State Route (SR) 520 is located. Following commercial and industrial interest in connecting

Lake Union and Lake Washington, the Portage Canal was constructed wide enough to allow logs and small vessels; and was later widened to create the Montlake Cut (Williams 2017). A set of locks constructed at Salmon Bay contemporaneous to the Montlake Cut lowered the water level of Lake Washington by nine feet (Williams 2017). Artificial fill and excavation during the late 19^{th}- and early 20^{th}-centuries are a significant aspect of the Seattle landscape, including large scale events such as the Denny Regrade and smaller events associated with the development of roadways and railways, utility installation, and building construction and demolition (Troost and Booth 2008).

Archaeological Context

The earliest known occupations in western Washington are evidenced in archaeological sites that date to approximately 12,800 years BP, termed Paleo-Indian. These occupations are characterized by the presence of large, fluted projectile points (Ames and Maschner 1999; Carlson 1990). Sites from this period are rare, as Paleo-Indian populations were small and highly mobile, and much of the land during this time was covered by glaciers. Paleo-Indians were also thought to be maritime-oriented and therefore occupied coastal reaches that are now submerged due to isostatic rebound following glacial retreat (Carlson 2003; Dixon 1993; Fedje and Christensen 1999; Fladmark 1979). Coastal sites that were not submerged have been found above the present shoreline due to various geologic processes (Fedje and Christensen 1999).

Sites from the Archaic period, which dates from 12,500 to 6,400 years BP, are also sparse within the archaeological record (Ames and Maschner 1999; Carlson 1990). Similar to the Paleo-Indians, populations during the Archaic period were small, highly mobile, and generally concentrated along the coast and major waterways. Sea level changes, erosion, and dense vegetation has obscured much of the evidence for coastal occupation during this time; however, as the climate continued to warm, glaciers retreated over larger areas and provided the opportunity for inland expansion (Ames and Maschner 1999). Archaic sites are identifiable by the presence of large, stemmed lanceolate projectile points and bifaces with the addition of microblades in Pacific Northwest Archaic tool assemblages (Ames and Maschner 1999).

The Pacific period dates from 6,400 to 250 years BP and ends with the introduction of smallpox to the region by Euro-American settlers (Ames and Maschner 1999). Early Pacific-period sites (6,400 to 3,800 years BP) show evidence of increased consumption of marine resources and a general diversification of subsistence strategies. The disappearance of microblade technology; increase in bone, antler, and groundstone tools (e.g., groundstone celts and adze blades); and a diversification of flaked stone tool forms and styles are characteristic of sites dating to this early period (Kirk and Daugherty 2007). Early Pacific-period sites also show a marked increase in trade and decorative objects, which appear in human burial sites and cemeteries (Kirk and Daugherty 2007). Sites dating to the Middle Pacific period (3,800 to 1,800/1,500 years BP) are identifiable by the appearance of plank houses, which indicated a shift towards more permanent seasonal settlements. Coupled with more permanent settlement is further diversification of stone tool styles and fishing technologies such as wooden fishing weirs and girdled/drilled net sinkers (Ames and Maschner 1999). Late Pacific-period sites (1,800/1,500 to 250 years BP) show an increase in the use of heavy-duty woodworking tools compared to flaked stone tools, as well as an increase in ritual burial activities (Ames and Maschner 1999). Middle and Late Pacific-period sites are the most visible in the coastal archaeological record due to sea level stabilization during this time period (Ames and Maschner 1999).

Ethnographic Context

The Study Area is located within the traditional territory of the Duwamish Indians, members of the Coast Salish cultural group that spoke Southern Lushootseed (Suttles 1990). The

Duwamish traditionally lived in winter villages on the shores of Elliott Bay, Salmon Bay, Lake Washington, and Lake Union, as well as along the Black, Cedar, and Duwamish Rivers (Ruby and Brown 1992; Stevens 1854; United States Court of Claims 1927). The Duwamish, like other groups, identified themselves in relation to their local geography (Waterman 2001: Hilbert et al. 2001). A group who lived in the vicinity of the Study Area around Lake Union identified themselves as the Xa3tcua'bc, or "people of the small lake" (Waterman 2001). While this distinction is made ethnographically, these groups have historically been grouped into the larger entity of the Duwamish based on shared culture and language.

Ethnographic and archaeological evidence suggests that the Salish Lushootseed-speaking Duwamish, whose name means "inside [the bay] people," practiced their life way of hunting, fishing, and gathering for centuries before contact with white settlers (Hilbert et al. 2001). Duwamish settlement and subsistence were inextricably linked throughout the year.

Like other Coast Salish groups, the Duwamish spent the majority of the winter inside large longhouses made from cedar planks that had "shed" roofs, which were common among tribes around the Puget Sound (Waterman 2001). These houses could be massive, providing room for very large extended families and much of the food they would need for the cold months, and were often arranged into villages of two to five structures. The Duwamish occupied extended family villages and established a flexible system of intermarriage with the surrounding peoples, including the Sammamish and Snohomish (Ruby and Brown 1992). Winter was spent engaged in storytelling and ceremonial performances in these longhouse settlements (Ames 1978).

During spring, fall, and summer, people would disperse from winter villages to hunt, fish, and gather plant foods for seasonal consumption and winter storage (Buerge 1984; Haeberlin and Gunther 1930). Summer camps usually consisted of small, temporary reed or grass-mat structures occupied by a single family, though several families might build a larger mat house together (Haeberlin and Gunther 1930; Suttles 1990; Suttles and Lane 1990). Upland forested environments attracted and supported deer and elk populations for hunting and also likely provided a variety of plant resources such as berries, nuts, and root foods.

Historic Context

The Seattle area was first surveyed in 1792 by British explorers Captain George Vancouver and Lt. Peter Puget, followed by Captain Georg e Wilkes' U.S. Navy Exploration Expedition in 1841 who named Elliot Bay (Blumenthal 2009). The first documented non-native settlers in the Seattle area were those of the Denny party, led by Arthur A. Denny, who landed at Alki on November 13, 1851. The earliest development in the city was concentrated around the current Pioneer Square and downtown neighborhoods (Crowley 2006).

University District

In 1855, the federal land survey program arrived in what was then the Oregon Territory and is known as the University District today. The University District includes a portion of section 16 of Township 25 North, Range 4 East (east of 15th Avenue). The Oregon Territory's Organic Act of 1848 reserved sections 16 and 36 of every township for public schools. The Organic Act greatly influenced the development of the University District neighborhood as it resulted in the eventual establishment of the University of Washington within its borders (Doorpat 2001).

In 1867, the first settlement occurred in the area when Christian and Harriet Brownfield filed a claim for 174 acres surrounding the Project area (Doorpat 2001). Their claim was roughly bounded by Interstate 5 on the west and 15th Avenue on the east, stretching from NE 45th street south to Portage Bay. Calling their land “Pioneer Farm,” they obtained title to it in 1873 alongside Morton Hunter, who arrived in 1870, followed later by Thomas Emerson in 1882, Edgar Bryan in 1883, and Pope and Talbot in 1866 (Tobin & Sodt 2002; Nielsen 1986:2).

Growth in the area was stimulated in the 1870s by the transportation of coal from mines in Newcastle and Renton across Lake Washington to Seattle via the Montlake portage (Tobin & Sodt 2001). In 1885-86, the Lake Washington Improvement Company opened a shallow canal between Lake Union and Lake Washington, which would by followed by the much larger Lake Washington Ship Canal 27 years later in 1917 (Doorpat 2001). In 1887, a section of the Seattle, Lake Shore and Eastern Railroad was completed from Fremont to Union Bay, which is the current route of the Burke-Gilman trail (Tobin & Sodt 2001).

In 1890, James Moore, a prominent developer in Seattle during the 1890s, laid out part of “Pioneer Farm” for a townsite, calling it Brooklyn. The Brooklyn Addition is located on the east edge of the Study Area, stretching east to the west edge of the UW Campus (Nielsen 1984:8). Moore’s promotional materials highlighted the area’s potential for industrial growth due to its proximity to Portage Bay, the railroad, and anticipated larger shipping canal (Doorpat 2001). Brooklyn was annexed to the City of Seattle in 1891 along with Fremont, Wallingford, and Green Lake (Nielsen 1984:8; Tobin & Sodt 2001). That same year, David Denny built the Latona Bridge, eventually replaced by the University Bridge, and his Rainier Power and Railway Company brought the first electric trolley line across that bridge to the University District in 1892 (Doorpat 2001).

In February 1891, the Washington State Legislature voted to move the UW from its downtown location to Section 16, an area known at that time as Interlaken, providing the area’s largest stimulus to growth. When the university opened in the fall of 1895, the University District was still very rural and wooded, consisting of small farms and dairies, and the Brooklyn townsite featured many unpaved streets, small cottage houses, and a cluster of stores (Tobin & Sodt 2001).

In 1909, the UW campus hosted Seattle’s first world’s fair, the Alaska-Yukon-Pacific Exposition. The campus grew from 3 buildings to 20 during that time and many hotels and commercial buildings were constructed to serve the fair’s patrons, including the NRHP/Washington Heritage Register (WHR)-listed Ye College Inn (DAHP Property ID No. 675096) (Doorpat 2001).

With the increase in population growth in the north end, and in anticipation of the formal opening of the Lake Washington Ship Canal, Seattle voters were presented with proposals in 1913 to construct four bridges at Ballard, Fremont, Montlake, and 6th Avenue NE (to replace the Latona Bridge). The Ballard and Fremont bridges were approved in 1914, the Latona replacement was approved one year later and Montlake would eventually be approved in 1924 (Caldbick 2017). The Latona Bridge’s replacement, which would be located to the existing bridge’s east, came to be known as University Bridge. Due to the shift in alignment to the east, the new University

Bridge would connect to Eastlake and 10th avenues over the ship canal as opposed to 6th Avenue. This new alignment would point northeast as opposed to due north, sending traffic into the University District's main commercial area, and establishing 10th Avenue NE (now Roosevelt Way NE) as the main north-south thoroughfare in the district (Ryder 2022; USGS 1909, 1968).

The 1920s were a period of immense construction and population growth within the University District and greater Seattle. A number of new buildings were constructed on campus during that time to replace the aging AYP structures and at least 20 apartment buildings, 2 movie theaters, several schools, and many more commercial buildings, including Sears & Roebuck and Wallin & Nordstrom, were constructed in the district during that time. By 1930, the district was fully developed as a major commercial center and the neighborhoods north of NE 50th Street and west of Roosevelt Way NE were almost entirely built out (Tobin & Sodt 2001).

The district's building boom continued during the first few years of the 1930s, despite setbacks caused by the Great Depression, and public improvements were made in the district using the relief efforts of the Public Works Administration. These included the widening and addition of streetlights to University Way NE, and improvements to the University Bridge in 1932-33 (Tobin & Sodt 2001).

Between the late-1930s and 1945, the physical fabric of the University District remained static; however, the population increased dramatically after World War II as the Servicemen's Readjustment Act, or "G.I. Bill," of 1944 provided tuition stipends to veterans and stimulated enrollment at the UW (Dorpat 2001). During this time, the university expanded, and low-cost housing options were developed in the form of apartment buildings and single-family homes converted to apartments (Tobin & Sodt 2001).

From the 1950s through the 1970s, the University District continued to thrive despite competition from the new Northgate Shopping Center (1950) to the north and University Village (1956) to the east. The Interstate 5 freeway was completed in 1965, and the federally funded Northlake Urban Renewal Project, completed in 1970, provided for the southern expansion of the university campus, which included 42 acres immediately adjacent to the east edge of the Project area (Dorpat 2001; Tobin & Sodt 2001).

Movable Bridges

Typically spanning navigable waterways, moveable bridges are those that open to allow boat traffic to pass beneath. Some of the earliest movable bridges in Washington were swing bridges. Comprised of steel trusses that rotate from a central pier, swing bridges remained the state's most popular type of movable bridge through at least 1916. However, during the 1910s, those bridges started being replaced by bascule-type bridges (Soderberg 1980; Waddell 1916).

The design of the bascule bridge is modeled after the medieval drawbridge; however, its earliest modern example is known to be the Tower Bridge in London, which was completed in 1894. The span, or "leaf," of a bascule bridge opens upward using a counterweight for balance. The earliest examples of bascule bridges in Washington are of the trunnion type. The heel trunnion, single-leaf bascule bridge was patented in Chicago in 1911 by J. B. Strauss of the Strauss Bascule Bridge Company (Soderberg 1980). The first of this type to be used for highway traffic in Washington state was the hand-operated Jack Knife Bridge constructed in 1914 in Everett across Ebey Slough (Belshaw 1973). This bridge type had advantages over swing bridges because it only needed to be lifted to the height required for boat passage, whereas a swing bridge had to be completely opened. In addition, swing bridges require a central pier which proved challenging and dangerous in narrow channels and required more complicated construction techniques (Soderberg 1980).

Bascule Bridges in Seattle

The first bascule bridge in Seattle was the single-leaf bascule Salmon Bay Bridge, completed ca. 1914 for the Great Northern Railroad (Ryder 2022). The first double-leaf bascules were planned in conjunction with the construction of the Lake Washington Ship Canal in 1917. The Fremont, Ballard and University Bridges, the earliest examples of double-leaf trunnion bascule bridges in the state, were all constructed along the Lake Washington Ship Canal between 1915 and 1919. A fourth double-leaf trunnion bascule bridge was constructed at on the Ship Canal at Montlake in 1924-25. In 1931, a Scherzer rolling lift bascule bridge was constructed across the Duwamish River in south Seattle (Soderberg 1980).

University Bridge

Construction of the University Bridge, which replaced the aging timber-frame Latona Bridge, began in 1916, the same year as the Fremont and Ballard bridges; however, it was completed behind schedule in 1919, two years later than the others (Caldbick 2017; USGS 1909, 1968, 1992). Engineering problems slowed progress as the soil at the south end of the bridge was very sandy and unstable, which necessitated the use of deep pilings (Caldbick 2017). The University Bridge opened on July 1, 1919, and the Latona Bridge was demolished soon after (Ryder 2022).

When it was completed, the University Bridge featured concrete piers with four Classical Revival style guard houses, a wood deck, wood trestle approaches, wood railings, and wood trolley poles (Soderberg 1980; See Figures 7-8).

As a response to increasing traffic to the University District, the bridge was substantially altered between 1932 and 1933. At that time the four service buildings were demolished and replaced with two featuring Streamline Modern detailing. The original wood decking was replaced with an open mesh deck, which reduced the weight of the floor and enabled widening of the roadway. Shop-welded cantilevered girders were extended from the steel span to support two additional lanes of traffic. During that time, approaches comprised of concrete piers and steel girders replaced the original wood approaches, and the wood railing was replaced with a concrete balustrade (See Figure 10). New Art Deco inspired gates were also added to the approaches, which retain a high-degree of integrity. Finally, the bridge’s wood trolley poles were replaced with decorative metal poles featuring square bases, acorn finials, and a different style of lighting. The remodeled bridge was dedicated by President Franklin D. Roosevelt on April 7, 1933 (Caldbick 2017; Soderberg 1980).

Since its 1932-33 rebuild, it has been altered on several instances, though it retains overall integrity. Overhead trolley wires replaced the streetcar tracks and taller trolly poles were added sometime prior to the late-1950s. The ca. 1933 steel decking was replaced ca. 1990, and a computerized operating system was added in the 1980s and later upgraded (Caldbick 2017; Ryder 2022). Two massive, non-historic post-and-beam supports were observed beneath the north approach and were added in the mid-1990s as part of a seismic retrofit project, although their date of construction could not be verified through research and previous documentation. In addition, various sections of concrete on the span and the bases of the piers appear to be non-historic and replaced as needed over time.

Sometime between 1933 and 1968, buildings within the setting on the east and west sides of the northern terminus of the north approach were demolished to make way for a circular "trumpet" style off-ramp on the east side, which was added sometime between 1936 and 1968, along with an extension of NE Campus Parkway that crosses beneath Eastlake Avenue North/Roosevelt Way NE. The setting southeast of the north approach between the Burke-Gilman Trail and NE Pacific Street was altered heavily during the Northlake Urban Renewal Project, completed in 1970, at which time smaller domestic and commercial structures were replaced with larger university buildings. The Urban Renewal area now contains 14 residence halls associated with the University of Washington (Tobin & Sodt 2001; NETR 2022).

Cultural Resources Review

HDR Cultural Resources Specialist Anna Robison-Mathes and HDR Architectural Historian Sarah Desimone completed a desktop review in November 2022 using the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database managed by the DAHP. The Study Area is categorized as having very high risk for archaeological materials by the DAHP's predictive model. The University Bridge is located in a dense, urban environment wherein many historic resources are present in the vicinity, it also spans the Lake Washington Ship Canal.

Archival research focused on previously conducted cultural resources surveys, recorded archaeological resources (i.e., sites and isolates), traditional cultural properties (TCPs), and historic built-environment resources within 1.0 mile (1.6 kilometers) of the Study Area, including properties listed or deemed eligible for listing in the NRHP and/or WHR.

Cultural Resources Studies

To date, there have been 38 cultural resources studies previously completed within 1.0 mile (1.6 kilometers) of the Study Area (Table 1). Three cultural resource surveys have been completed within the Study Area, including surveys for SDOT in 2019, the University of Washington in 2014, and for the King County Metro Transit Department in 2022. The cultural resource surveys within 1-mile of the Study Area include 29 cultural resources surveys, 1 monitoring report, and 8 historic structure reports. Three cultural resources reviews have been conducted within the Study Area.

Table 1. Previously Conducted Cultural Resources Studies completed within 1.0 Mile of the Study Area

Count	Year	Author(s)	Report Title	NADB #	Report Type	Proximity to Study Area
1	2022	Alexander Ryder	Cultural Resources Review for the University Bridge Trolley Pole Replacment Project, Seattle, WA, DAHP Project	1696523	Cultural Resources Survey	Within
2	2021	Marcia Montgomery	Rapidride Roosevelt Project Supplemental Cultural Resources Technical Report	1695150	Cultural Resources Survey	0.21-mi N
3	2020	January Tavel	SR 520 Bridge Replacement and HOV Program, SR 520/I-5 Express Lanes Connection Project, Section 106 Historic Built Resource Environmental Re-evaluation for I-5 Haul Routes	1694716	Historic Structures Survey	0.25-mi NW
4	2019	Marcia Montgomery	RapidRide Roosevelt Project Cultural Resources Technical Report	1693358	Historic Structures Survey	Within
5	2017	Connie Walker Gray	Historic Resources Survey and Inventory of the University of Washington Seattle Campus: Historic Resources Report	1689616	Cultural Resources Survey	0.01-mi E
6	2016	Nancy McReynolds	A Visual Effects Report for SEA Stevens Way in Seattle, King County, Washington	1688008	Historic Structures Survey	0.70-mi E
7	2015	Carol Schultze	Draft - Archaeological Inventory for the University of Washington Animal Research and Care Facility Construction Project, City of Seattle	1687351	Cultural Resources Survey	0.34-mi E
8	2015	Katie Wilson	SR 520 to Medina - Union Bay Natural Area Cultural Resources Review	1686018	Cultural Resources Survey	0.98-mi NE
9	2014	Alexander Stevenson	Archaeological Inventory for the University of Washington Burke-Gilman Trail, Brooklyn Avenue NE to 15th Avenue NE (Garden Reach) Segment, City of Seattle	1685157	Cultural Resources Survey	0.24-mi SE
10	2014	Alexander Stevenson	Cultural Resources Inventory for the University of Washington Burke-Gilman Trail, Rainier Vista to Northeast 47th Street (Forest Reach) Segment, City of Seattle	1685156	Cultural Resources Survey	0.78-mi NE
11	2014	Alexander Stevenson	Archaeological Inventory for the University of Washington Burke-Gilman Trail, Pasadena Place NE to University Bridge (Northlake Reach) Segment, City of Seattle	1685155	Cultural Resources Survey	Within
12	2014	Alexander Stevenson	Archaeological Inventory for the University of Washington Burke-Gilman Trail, University Bridge to Brooklyn Avenue NE (Neighborhood Reach) Segment, City of Seattle	1685154	Cultural Resources Survey	0.01-mi E
13	2014	Alexander Stevenson	University of Washington Burke-Gilman Trail, Rainier Vista to 15th Avenue NE Segment, Cultural Resources Inventory Project, Seattle	1684507	Cultural Resources Survey	0.54-mi E
14	2013	Timothy Askin	Historic Properties Survey of Wallingford Telecom Installation 4515 Burke Ave N, Seattle	1683713	Historic Structures Survey	0.78-mi NW
15	2013	Tait Elder	SR 520 Bridge Replacement and HOV Program, I-5 to Medina: Bridge Replacement and HOV Project Corridor Archaeological Landform Sensitivity Assessment	1683661	Cultural Resources Survey	1-mi SE

Count	Year	Author(s)	Report Title	NADB #	Report Type	Proximity to Study Area
16	2011	Tait Elder	Results of Archaeological Monitoring of Geotechnical Borings within the SR 520 Limits of Construction	1682029	Monitoring Report	1-mi SE
17	2011	Stacy Schneyder	Cultural Resources Investigations at the Bryant Building Section 6(f) Replacement Site	1682027	Cultural Resources Survey	0.67 mi NE
18	2011	Connie Walker-Gray	Section 106 Technical Report: Volume 2 Built-Environment, SR 520 Bridge Replacement and HOV Program, I-5 to Medina: Bridge Replacement and HOV Project	1681091	Cultural Resources Survey	1 mi SE
19	2011	Stacey Schneyder	Section 106 Technical Report: Volume 1 Archaeology, SR 520 Bridge Replacement and HOV Program, I-5 to Medina: Bridge Replacement and HOV Project	1681090	Cultural Resources Survey	1 mi SE
20	2011	Tait Elder	Section 106 Technical Report, SR 520 Bridge Replacement and HOV Program, I-5 to Medina: Bridge Replacement and HOV Project (Summary)	1681089	Cultural Resources Survey	1 mi SE
21	2011	Jennifer Gilpin	Archaeological Assessment for the weleb?altx, or Intellectual House Project, University of Washington	1681083	Cultural Resources Survey	0.77 mi NE
22	2011	Kristen Minor	Cultural Resource Inventory for Anderson Hall, University of Washington Campus	1680887	Historic Structures Survey	0.55 mi SE
23	2011	Tait Elder	Section 106 Technical Report (Volume I Archaeology and Volume II Built-Environment) SR 520 Bridge Replacement and HOV Program, I-5 to Medina: Bridge Replacement and HOV Program	1680657	Cultural Resources Survey	1 mi SE
24	2010	Margaret Berger	Archaeological Assessment of the University of Washington West Campus Student Housing Project, Seattle, King County, Washington	1692102	Cultural Resources Survey	0.11 mi NE
25	2011	Kristin Minor	Cultural Resource Inventory for Anderson Hall, University of Washington Campus	1680887	Historic Structures Survey	0.10 mi NE
26	2011	Ann Sharley	Cultural Resource Assessment for the Thomas Burke Memorial Washington State Museum Renovation Project, University of Washington	1680533	Cultural Resources Survey	0.47 mi NE
27	2009	Connie Walker Gray	Cultural Resources Survey Lake Washington Congestion Management Program SR 520/I-90 - Active Traffic Management Project	1353924	Cultural Resources Survey	1 mi SE
28	2010	Sokol Furesz	Husky Union Building Historic Resources Addendum	1353812	Historic Structures Survey	0.45 mi NE
29	2009	Stephen Emerson	Letter to Adam Escalona RE: SE01124A Suzzallo Library	1352800	Cultural Resources Survey	0.44 mi E
30	2009	Stephen Emerson	Letter to Adam Escalona RE: SE01123A Haggett Hall	1352793	Cultural Resources Survey	0.70 mi NE
31	2009	Stephen Emerson	Letter to Adam Escalona RE: SE01126A UW Medical BB Tower	1352771	Historic Structures Survey	0.49 mi SE

Count	Year	Author(s)	Report Title	NADB #	Report Type	Proximity to Study Area
32	2008	Connie Walker Gray	Ship Canal Bridge Survey Office-Lease to Lincoln Towing Company	1352120	Cultural Resources Survey	0.30 mi E
33	2005	Astrida R. Blukis Onat	Preliminary Ethnographic and Geomorphological Study of the SR 520 Bridge Replacement and HOV Project	1680617	Cultural Resources Survey	1 mi SE
34	2003	N/A	Preliminary Report on University of Washington Main Campus, Seattle; Significant Buildings and Features Completed Prior to 1953	1350148	Historic Structures Survey	0.40 mi NE
35	2004	Stephanie E. Trudel	Letter to Merideth Redmon Regarding Final Archaeological Monitoring of Geotechnical Borings for the Proposed University/ Densmore CSO Control System Improvements Project	1343204	Cultural Resources Survey	0.30 mi NE
36	2002	Lara C. Rooke	Letter report describing the procedures and results of a cultural resources survey of Cingular Wireless tower site WA-539 (Cavilier Apartments)	1341144	Cultural Resources Survey	0.38 mi NW
37	1999	Shirley Courtois	Central Link Rail Transit Project Historic and Prehistoric Archaeological Sites Historic Resources Native American Traditional Cultural Properties Paleontological Sites	1339836	Cultural Resources Survey	0.51 mi S
38	1999	Shirley Courtois	Sound Transit Central Link Light Rail EIS Historic and Archaeological Resources Technical Report	1339816	Cultural Resources Survey	0.62 mi S

NADB = National Archaeological Database

Archaeological Resources

There are no previously recorded archaeological resources within the Study Area. Eight previously recorded archaeological resources are within 1.0 mile (1.6 kilometers) of the Study Area including six sites and two isolates (Table 2).

Site 45KI01556 is a deeply-buried historic deposit associated with the “Montlake Ditch”, a former narrow canal between Lake Washington and Lake Union. The ditch is now filled, having been the site of several major construction projects, including the existing SR-520 and its access ramps. The resource has been observed to be approximately 26 to 29 feet below the current ground surface. This site was previously determined eligible for listing in the NRHP.

Site 45KI01362 is the ca. 1919-1941 Seattle Municipal Street Railway and consists primarily of the remaining wooden rail ties, entirely encased in concrete. Two rail spikes were located adjacent to the rails. This site is unevaluated for listing in the NRHP.

Site 45KI00957 is a precontact lithic scatter, including two chipped stones and a projectile point near the University of Washington Botany Greenhouse, and were most likely redeposited during the construction of the railroad where the Burke Gilman trail is currently located. This site was previously determined not eligible for listing in the NRHP by SHPO.

Site 45KI01201 is a historic deposit associated with the University Landfill, which was operated between 1926 and 1966. The landfill was located on 166-acres of reclaimed marshland owned by the University of Washington. Prior to the 1950s, the City of Seattle simultaneously operated a fire dump and a contracted garbage dump at the site. This site is unevaluated for listing in the NRHP.

Isolate 45KI01181 consists of a single basalt flake, located in sediment interpreted as fill, near the contact with glacial sediments. This isolate is unevaluated for listing in the NRHP.

Site 45KI01030 is the Lewis Hall Stone Staircase and was at one time part of the tennis court complex that partially replaced the Denny Field football field, which was demolished in the early 1920s. The tennis courts were in use by the 1940s and removed sometime between the 1980s and 1991. This site is unevaluated for listing in the NRHP.

Site 45KI00955 consists of the remains of an abandoned wood stave pipeline, with an associated but not contemporaneous abandoned metal pipeline. The pipeline is likely a portion of the Seattle sewage system constructed during the early 1990s and would have traveled downhill toward Portage Bay. The metal pipeline would have replaced the wood stave pipeline at a later date. This site is unevaluated for listing in the NRHP.

Isolate 45KI00952 is a complete, amber-colored glass bottle manufactured by an automatic machine and dating from the 1920s or 1930s. This isolate is unevaluated for listing in the NRHP.

Table 2. Previously Recorded Archaeological Resources within 1.0 Mile of the Study Area

Count	Site Number	Site Name/Description	Site Type	NRHP Eligibility (SHPO)	Proximity to Study Area
1	45KI01556	Montlake Ditch	Historic	Eligible	0.97 mi SE
2	45KI01362	Seattle Municipal Street Railway	Historic	Unevaluated (Potentially Eligible)	0.39 mi NNE
3	45KI00957	UW Greenhouse, Pre-contact lithic material	Lithic scatter	Not Eligible	0.41 mi E
4	45KI01201	University Landfill	Historic	Unevaluated (Potentially Eligible)	0.72 mi E
5	45KI01181	Pre-contact basalt flake	Lithic isolate	Not Eligible	0.09 mi NW
6	45KI01030	Lewis Hall Stone Staircase	Historic	Unevaluated (Potentially Eligible)	0.66 mi NE
7	45KI00955	Historic Wood Stave Pipeline	Historic	Unevaluated (Potentially Eligible)	0.84 mi SE
8	45KI00952	Historic Isolate, Amber glass bottle	Historic	Unevaluated	0.90 mi SE

Historic Built-Environment Resources

Based on the results of the desktop review, there are more than 6,000 previously recorded historic built-environment resources located within 1.0 mile (1.6 kilometers) of the Study Area. Of those, 1,752 are within 0.50 mile, 611 within 0.25 mile, and 187 within 0.125 mile. The closest historic built-environment resources to the Study Area are the Northlake Building to its immediate west (DAHP Property ID No. 711742, no previous eligibility determination) and Henderson Hall to its east (DAHP Property ID No. 708607, previously determined not eligible), both of which are owned by the University of Washington.

Twenty-five of those built-environment resources located within 1 mile of the Study Area are individually listed in either the NRHP or the WHR, and two are NRHP-listed historic districts (Table 3). Ten resources are associated with the University of Washington, which is located to the north and east of the Study Area. University of Washington (UW) resources include the following WHR-listed resources: Parrington Hall, Bagley Hall, Lewis Hall, Denny Hall, Clark Hall, the UW Columns, and the Observatory. Listed in both the NRHP and WHR are the Sigma Kappa Mu Chapter House, Naval Military Hangar (ASUW Shell House), and UW Faculty Center (Table 3).

Fifteen additional resources are listed in both the NRHP and WHR (Table 3). These include the University National Bank Building; Ye College Inn; Seattle Carnegie Library – University Branch; University Heights School; and Church of the Blessed Sacrament, Priory and School. The University Methodist Episcopal Church – Seattle is also individually listed in the WHR. In addition, the Roanoke Park NRHP Historic District is located to the southeast of the Study Area and the proposed Wallingford-Meridian Streetcar NRHP Historic District, located west of the Study Area, was recommended for NRHP listing by the Washington State Advisory Council on Historic Preservation in October 2022 (nomination status pending).

In addition, the University Bridge is located within the boundaries of the newly recognized Maritime Washington National Heritage Area (MW-NHA), which encompasses the Lake Washington Ship Canal and adjacent shorelines.

Table 3. NRHP and WHR Listed Properties Located within 1.0 Mile of the Study Area

Count	Property ID	Property Name	Property Type	Address	NRHP / WHR	Date Built	Proximity to Study Area
1	67509	Bagley Hall – University of Washington	Building Education – College	Vicinity of Drumheller Fountain, Seattle	WHR	1909	0.36 mile SE
2	675091	Parrington hall – University of Washington	Building Education – College	4105 George Washington Lane NE, Seattle	WHR	1902	0.39 mile NE
3	675089	Lewis Hall – University of Washington	Building Education – College	4182 West Stevens Way NE, Seattle	WHR	1896	0.63 mile NE
4	675088	Observatory – University of Washington	Building Education – College	4324 Memorial Way NE, Seattle	WHR	1895	0.53 mile NE
5	675093	Denny Hall – University of Washington	Building Education – College	4216 Memorial Way NE, Seattle	WHR	1895	0.47 mile NE

Count	Property ID	Property Name	Property Type	Address	NRHP / WHR	Date Built	Proximity to Study Area
6	675333	Sigma Kappa Mu Chapter House – University of Washington	Building Domestic – Institutional Housing; Social – Clubhouse; Education – College	4510 22nd Ave. NE, Seattle	NR/WHR	1930	0.76 mile NE
7	675359	University of Washington Faculty Center	Building Education – College	4200 E. Stevens Way NE, Seattle	NR/WHR	1960	0.67 mile E
8	675199	University of Washington Columns	Site – Educational	West Stevens Way NE, University of Washington Campus, SE of Drumheller Fountain, Seattle	WHR	1861	0.61 mile E/SE
9	675094	Naval Military Hangar – University of Washington Shell House	Building Defense – Military Facility	3655 Walla Walla Road, Seattle	NR/WHR	1918	1.0 mile SE
10	675092	Clark Hall – University of Washington	Building Educational – College	2103 Skagit Lane, Seattle	WHR	1896	0.65 mile E
11	675184	Seattle Carnegie Library – University Branch	Building Education – Library	5009 Roosevelt Way NE, Seattle	NR/WHR	1910	0.69 mile SW
12	675096	Ye College Inn	Building Domestic - Hotel	4000 University Way NE, Seattle	NR/WHR	1909	0.24 mile W
13	675363	University Heights School	Building Education – School	5031 University Way NE, Seattle	NR/WHR	1902; 1928	0.67 mile N/NE
14	675212	Church of the Blessed Sacrament, Priory, and School	Building Religion – church school, religious facility, church-related residence	5040-5041 Ninth Ave. NE, Seattle	NR/WHR	1925	0.75 mile N
15	675093	University National Bank Building	Building Commerce/Trade – Financial Institution	4500 University Way NE, Seattle	NR/WHR	1913	0.48 mile NE
16	675012	Wallingford Fire and Police Station	Building Government – Fire Station	1629 North 45th Street, Seattle	NR/WHR	1913	1.0 mile NW

Count	Property ID	Property Name	Property Type	Address	NRHP / WHR	Date Built	Proximity to Study Area
17	675307	Shuey, Henry Owen, House	Building Domestic – Single Family House	5218 16th Avenue NE, Seattle	NR/WHR	1908	0.86 mile NE
18	675328	Seattle Yacht Club – Main Station	Building Maritime – Recreation Social – Clubhouse	1807 Hamlin Street, Seattle	NR/WHR	1920	0.83 mile SE
19	675238	Parsons, William, House	Building Domestic – Single Family House	2706 Harvard Avenue East, Seattle	NR/WHR	1903	0.77 mile S
20	675161	Montlake Bridge	Structure Bridge – Bascule Transportation – Road-related	Spans Lake Union Ship Canal	NR/WHR	1925	0.86 mile SE
21	686788	Lewis, Hannah, House	Building Domestic – Single Family House	2317 13th Avenue East, Seattle	NR/WHR	1922	1.0 mile S
22	675016	Interlake Public School	Building Education - School	4416 Wallingford Avenue North, Seattle	NR/WHR	1908	0.91 mile NW
23	675087	Home of the Good Shepherd	Building Education – School Religion – school, church-related residence, religious facility	4649 Sunnyside Avenue North, Seattle	NR/WHR	1906	0.89 mile NW
24	375306	Gas Works Park	Site Recreation and Culture – Outdoor Recreation	2000 North Northlake Way, Seattle	NR/WHR	1973-78	1.0 mile SW
25	675101	Denny-Fuhrman School	Building Education – School	East Louisa, between Franklin East and Boylston East, Seattle	WHR	1893	0.97 mile SW
26	674753	Roanoke Park Historic District	District – Residential	Roughly bounded by Shelby St (N), Roanoke St. (S), Harvard Ave (W), &Tenth Ave. (E).	NR/WHR	1899-1939	0.65 mile S/SW
27	762375	Wallingford-Meridian Streetcar Historic District	District – Residential	Roughly bounded by N & NE 50th St. (N), 5th Ave. NE (E), NE 45th & 46th St. (S), & Interlake Ave. N (W).	NR/WHR (status pending)	1901-41	0.50 mile NW

University Bridge

The University Bridge was listed in the NRHP and WHR in 1982 as part of a multi-property documentation of historic bridges and tunnels in Washington state. It was documented in 2010 (Pinyerd 2010) as part of an antenna collocation project, and subsequently determined eligible by the SHPO on October 26, 2011. The bridge was again documented in January 2022 as part of the City of Seattle's University Bridge Trolley Pole Replacement project. An updated Historic Property Inventory (HPI) form was completed at that time (Ryder 2022); however, a SHPO determination was not provided. According to the DAHP Guidelines for Cultural Resource Reporting (DAHP 2022), HPI forms should be updated every ten years or whenever new information is available. The bridge was last documented in January 2022, does not appear to have been altered since that time, and HDR is not aware of any new information regarding the bridge. Thus, a new HPI form was not created for the bridge as part of this study.

The bridge was nominated for the NRHP/WHR as a representative example of the movable bridge type, the Double-leaf Trunnion Bascule Bridge, and as one of the earliest Bascule Bridges in the state of Washington. The nomination document provides a brief description and history of the bridge, along with photographs; however, it does not include a statement of eligibility criteria or a discussion of character defining features (Soderberg 1980). WISAARD notes that the bridge is listed in the NR/WHR at the local level under Criterion C (DAHP 2022).

Cemeteries

There is one historic cemetery within 1.0 mile (1.6 kilometers) of the Study Area. The Holy Cross Cemetery was the first Catholic cemetery in Seattle, located at the current site of the Seattle Preparatory School on Capitol Hill, and received burials from 1885 until 1905. All Holy Cross burials were moved to the Calvary Cemetery in 1905. The cemetery is located 0.96 mile south-southeast of the Study Area.

Traditional Cultural Properties

HDR is not aware of any previously recorded TCPs located within 1.0 mile (1.6 kilometers) of the Study Area. Waterman (2001) lists two traditional place names within the approximate vicinity of the Study Area:

- Baqwob, "prairie," named for an open area near Lake Union, at the north abutment of the University Bridge in Seattle.
- Waq^{3}e'q^{3}ab, "frog," named for a small creek that entered Lake Union just east of the University Bridge north abutment.

Field Reconnaissance

HDR cultural resources specialist Anna Robison-Mathes and HDR architectural historian, Sarah Desimone, performed a field reconnaissance of the Study Area on November 15, 2022. During the reconnaissance, HDR observed the existing conditions within the Study Area, noting and photographing the University Bridge and its immediate surroundings. No archaeological resources were observed during the reconnaissance. A description of the University Bridge is provided below based on the reconnaissance and supplemented with historic information.

Architectural Description

University Bridge is a double-leaf trunnion Bascule bridge that was completed in 1919 and heavily altered in 1932-33. It features concrete trunnion piers, steel girders, steel leaf arches, and concrete guard houses and railings. The bridge has half-through type trusses with a horizontal top chord and a curved bottom chord. The bridge was originally built to carry a double-track railway in the center lanes and two lanes of vehicular traffic in the outer lanes; however, it now carries four lanes of vehicular traffic.

The bridge’s stylistic features are typical of 1930s bridge design with some elements of the Art Deco style. It was originally designed and built in the Classical Revival style and the original in-river central piers containing the bascule section retain the characteristics of that style including molded concrete quoins. The existing guard houses, built in 1932-33, feature elements of Art Deco design including vertical grooved lines and pilasters, and fluting at the corners. The bridge deck sits 52 feet above the water, which minimizes how often the bridge is opened by allowing small craft to pass beneath the closed bridge.

The north and south approaches were originally constructed of timber with concrete decking and rebuilt during the 1932-33 alterations with reinforced concrete and Art Deco detailing.

North Approach

The north approach is situated at the northeast end of the bridge, roughly between NE Pacific Street and NE Campus Parkway. Beneath the approach and adjacent to the north abutment, NE 40th Street runs westbound. Above the abutment, NE 40th Street runs eastbound, intersecting with Eastlake Avenue NE. Peace Park is located between the eastbound and westbound lanes of NE 40th Street, west of the bridge abutment. The Burke-Gilman Trail runs east-west beneath the north approach just south of NE 40th Street.

The northbound (east) lanes of the approach have a complex “trumpet” style interchange where the center lanes of northbound traffic continue north onto NE Roosevelt Way and the easternmost lane circles around to the right at a downward slope, merging onto westbound NE 40th Street beneath the bridge. Southbound traffic enters the bridge from three directions: directly southbound from Eastlake Avenue NE; from eastbound NE 40th Street; and from westbound NE Campus Parkway, which crosses beneath Eastlake Avenue NE at a perpendicular angle before curving south and intersecting with the NE 40th Street ramp on the west side.

The bridge’s north approach is comprised of a concrete deck supported by concrete piers and abutments. The superstructure of the bridge has been augmented by the addition of two massive, non-historic concrete post-and-beam supports, which are placed at the north end of the deck trusses, on the north side of NE Northlake Way (roughly the south end of the north approach), and south of the Burke-Gilman trail (roughly the center of the north approach).

The north approach exhibits Art Deco inspired ornamentation, including its capped concrete piers, spandrels, and ribbing, as well as decorative concrete gates, all of which feature horizontal grooves and carved or chamfered edges. A concrete balustrade with rounded vertical openings and horizontal grooves in the railing runs the length of the bridge deck, curving to the east and west at the north end following the vehicular access ramps. On the northbound (east) side, the balustrade curves east toward the abutment where it meets a steep sidewalk lined with pipe railing that leads east down to NE 40th Street. On the southbound (west) side, the balustrade curves west toward the abutment. Decorative concrete gates with simple inlay designs mark the bridge entrance on both sides, following the curve of the balustrade. A simple guard rail runs along the northeastern edge of Peace Park and features concrete obelisks with pipe railing.

Stairways on either side of the bridge deck intersect the balustrade just south of the northern abutment, providing access to the Burke-Gilman Trail and NE 40th Street beneath the bridge. Inlaid concrete panels in the Balustrade mark the entrance to each stairway. The stairways have pipe railings and lamp posts, which have bell shaped shades suspended by scroll brackets. The west stairway follows the abutment westward to NE 40th Street along the south edge of Peace Park, and the east stairway is L-shaped, crossing over NE 40th Street toward the Burke-Gilman Trail. Beneath the north approach, the concrete abutment has simple pilasters, horizontal trim, and cantilevered spandrels with carved edges supporting the deck.

Based on historic photographs, the concrete abutment, balustrade, gates, and stairways along the abutments appear to date to the 1932-33 alterations, as do portions of the guardrail wrapping the northeastern edge of Peace Park. The guardrail obelisks are visible in historic photographs; however, the pipe railing appears non-historic (See Figures 9-11. Beneath the bridge, the ribbing and spandrels are visible in historic photographs and appear to date to the period of substantial alteration (See Figures 9-10).

Based on visual inspection during HDR's field reconnaissance, historic photographs, and records provided by the City of Seattle, the bridge deck has likely received regular maintenance including the repair of cracks in piers, arches, beams, and expansion joints with both epoxy injection and concrete patched. According to Seattle Department of Transportation (SDOT) work logs, various sections of curb and sidewalk have been replaced (City of Seattle 2022). In addition, the approaches structural system has been augmented by the ca. 1990s addition of massive post-and-beam supports that were part of a seismic retrofit project. These supports are first visible in historic photographs from 1959-60 (see Figure 9) but appear to have been increased in size since that time (see Figures 14-15).

Recommendations

Archaeological Resources

The Study Area is within an area considered very high risk for containing archaeological materials according to the DAHP's predictive model. This is due to the extensive use of the Lake Union and Lake Washington waterways and shorelines by indigenous peoples prior to non-native settlement of the area and later historic industries and communities that thrived throughout the region. However, there are no previously recorded cultural resources within the Study Area, and the closest resource is one pre-contact lithic isolate approximately 500-feet away, located in likely disturbed sediments. The Study Area is within an area that has been extensively disturbed by previous developments including historic and modern roads and railways, commercial and residential buildings, industrial structures, utilities, and the construction of the University Bridge. Intact archaeological resources are subsequently unlikely to be present within the Study Area.

HDR recommends that no further archaeological resources investigations take place within the Study Area as presently defined; however, the development of an Inadvertent Discovery Plan (IDP) is recommended for implementation ground-disturbing construction activities. HDR recommends that the IDP outline the necessary steps to be taken by SDOT and their contractors in the event of an inadvertent discovery during construction. These steps would serve to avoid or minimize impacts to inadvertently discovered cultural materials, which may include historic or precontact materials that are deeply buried and mixed with fill (e.g., glass bottles, sanitary cans, remnants of historic features, chipped-stone tools, shell, faunal remains, ground stone, human remains, funerary objects, and objects of cultural patrimony).

Steps included in the IDP should outline the cultural history of the area and include examples of cultural material that may be encountered during construction activities. It should list applicable federal laws and regulations and stop-work protocols and guidelines for the inadvertent discovery of archaeological material and/or human remains. It should provide a contact list that includes information for contacting the responding SOI-qualified archaeologist and the local, state, federal, and tribal authorities.

In the event that the Study Area is modified or variation in the alternatives occurs, additional archaeological review and/or archaeological monitoring during construction may be necessary.

Historic Built-Environment Resources

The University Bridge is significant as an example of one of the earliest double-leaf trunnion bascule bridge in Seattle. As a whole, it retains its character-defining features including its double-leaf design, steel frame arches, and bascule piers. As such, it merits continued listing in the NRHP.

The Study Area is limited to the north approach; however, it does consider the NRHP eligibility and significance of the entire bridge as a single historic property as required through Section 106 of the NHPA. The north approach was heavily altered in 1932-33; however, it largely retains integrity to that period with minimal additional alteration since it was rededicated. A recent HPI form suggests that the bridge was listed in the NRHP based solely on its engineering characteristics original to 1919 and lists the character-defining features as the bridge’s original, double-leaf design; bascule piers; and steel-frame leaf arches (Ryder 2022). That analysis did not consider the 1932-33 north approach to be character-defining; however, HDR recommends that due to age, integrity, and stylized Art Deco detailing, the north approach should also be considered a character-defining feature to the University Bridge as it adds to the property’s integrity of setting, feeling, and association.

Character-defining features of the north approach include its overall form, its concrete piers and ribbing, balustrade and paneled gates, abutment, and associated stairways; however, the non-historic pipe railing is not recommended as character-defining. It retains moderate integrity of design, materials, and workmanship in spite of the replacement of its mesh decking and some of its lighting as its remaining character-defining features appear to be intact. Integrity of setting has been slightly compromised as a result of the adjacent Urban Renewal efforts and realignment of the northbound interchange; however, the area surrounding the approach retains the urban character present during the periods of construction and alteration (1916-19 and 1932-33, respectively), the directions of travel remain the same, and the bascule portion of the bridge remains intact. The north approach retains integrity of feeling and association as it is clearly representative of a 1930s bridge approach and the bulk of its character-defining features remain intact.

Based on the information available, and in accordance with the SOI Standards for the Rehabilitation of Historic Properties, HDR recommends that the design, materials, and evidence of workmanship on the north approach be retained under all alternatives (NPS 2017). This would include retention of the steel deck trusses, and ca. 1932-33 concrete piers and ribbing, balustrade, gates, and stairways, as well as additional decorative elements found on the underside of the bridge. The removal of features mentioned above, without in-kind replacement and care taken to minimize the loss of historic material, could result in diminished integrity of design, materials, and workmanship of the north approach; leading ultimately to diminished integrity of design, materials, workmanship, setting, feeling, and association of the bridge as a whole.

HDR recommends that as the Project proceeds with evaluation and selection of alternatives, SDOT consult with the lead federal agency, if applicable, and DAHP regarding the assessment of Project effects for the selected alternative. If a demolition permit is required for any part of the bridge, the Project may be referred to the Seattle Landmarks Preservation Board for review which could result in its nomination and/or designation as a City of Seattle Landmark. If the bridge is designated a City landmark, a Certificate of Approval (COA) from the Seattle Landmarks Preservation Board may be required to pursue any alterations to the bridge. A COA is a written authorization that must be issued before any exterior changes can be made to a City Landmark, or before changes can be made to the external appearance of any building, structure, or site within the City's eight historic districts (City of Seattle 2023).

If Section 106 of the NHPA applies to the Project, the Project's APE may include adjacent parcels to account for potential visual, audible, and atmospheric effects. All historic built environment resources, such as the Northlake Building (DAHP Property ID No. 711742), within the APE would require recordation and evaluation of NRHP eligibility. Assessment of Project effects on all historic properties (i.e., NRHP-eligible and listed cultural resources) would be required. If the Project results in adverse effects on historic properties, such as not retaining the character defining features of the north approach, the lead federal agency will continue consultation and invite the Advisory Council on Historic Preservation (ACHP) to participate to resolve adverse effects. Following review of ACHP comments, the lead federal agency, in consultation with the Section 106 consulting parties, will develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. The resolution of adverse effects is documented through the execution of a Memorandum of Agreement (MOA), which concludes the Section 106 process for the Project. Implementation of the mitigation measures would be completed under the MOA.

References Cited

Ames, Kenneth M., and Herbert D.G. Maschner

1999 *Peoples of the Northwest Coast: Their Archaeology and Prehistory*. London: Thames and Hudson, Ltd.

Amoss, P.

1978 *Coast Salish Spirit Dancing: The Survival of an Ancestral Religion.* University of Washington Press, Seattle.

Barnosky, C.W, P.M. Anderson, and P.J. Bartlein

1987 The Northwestern U.S. During Deglaciation; Vegetational History and Paleoclimatic Implications. In *North America and Adjacent Oceans During the Last Deglaciation.* Geological Society of America, Vol. K-3.

Beechie, T.J., B.D. Collings, G.R. Pess

2001 Holocene and Recent Geomorphic Processes, Land Use, and Salmonid Habitat in two North Puget Sound River Basins. *Geomorphic Processes and Riverine Habitat Water Science and Application* Vol. 4:37-54.

Belshaw, William T.

1973 Jack Knife Bridge: National Register of Historic Places Nomination Form. On file, Department of Archaeology and Historic Preservation, Olympia, WA.

Blumenthal, Richard W.

2009 Charles Wilkes and the Exploration of Inland Washington Waters: Journals from the expedition of 1841. McFarland & Co.:Jefferson, N.C.

Brubaker, Linda B.

1991 Climate Change and the Origin of Old-Growth Douglas-Fir Forests in the Puget Sound Lowland. In Wildlife and Vegetation of Unmanaged Douglas-Fir Forests, edited by Leonard F. Ruggiero, Keith B. Aubry, Andrew B. Carey, and Mark F. Huff, pp. 17–24. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-285. Portland, OR.

Buerge, D.

1984 The Lost Tribes of Lake Washington: Reconstructing the prehistoric world of the Lake People. *Seattle Weekly* (August 1–7):29–33.

Caldbick, John

2017 Latona Bridge and University Bridge (Seattle). Historylink.org Essay 20389. Available at https://www.historylink.org/File/20389. Accessed November 23, 2022.

Carlson, Catherine C.
2003 The Bear Cove Fauna and the Subsistence History of Northwest Coast Maritime Culture. In *Archaeology of Coastal British Columbia: Essays in Honour of Philip M. Hobler*, edited by R.L. Carlson, pp. 65–86. Archaeology Press, Simon Fraser University, Burnaby.

Carlson, Roy L.
1990 Cultural Antecedents. In *Northwest Coast*, edited by Wayne Suttles, pp. 60-69. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Washington, DC: Smithsonian Institution.

City of Seattle
2022a Work Order Log for University Bridge North Approach, 2010-present. Email communication from Kevin Foun, PE SE, SDOT. November 10, 2022.
2022b Photos of University Bridge, ca. 1909-60. On file at Seattle Municipal Archives, Seattle. Viewed November 24, 2022.
2023 What is a Certificate of Approval. Available at https://www.seattle.gov/neighborhoods/programs-and-services/historic-preservation/certificate-of-approval. Accessed January 2023.

Crowley, Walt
2006 Seattle– Thumbnail History. Historylink.org Essay 7934. Available at https://www.historylink.org/File/7934. Accessed November 23, 2022.

Dixon, E. James
1993 *Quest for the Origins of the First Americans*. Albuquerque: University of New Mexico Press.

Doorpat, Paul.
2001 Seattle Neighborhoods: University District– Thumbnail History. Historylink.org Essay 3380. Available at https://www.historylink.org/File/3380. Accessed November 23, 2022.

Fedje, Daryl W., and Tina Christensen
1999 Modeling paleoshorelines and locating early Holocene coastal sites in Haida Gwaii. *American Antiquity* 64:635–652.

Fladmark, K.R.
1979 Routes: Alternate Migration Corridors for Early Man in North America. *American Antiquity* 44:55-69.

Franklin, Jerry F., and C.T. Dyrness
1988 *Natural Vegetation of Oregon and Washington*. U.S. Department of Agriculture Forest Service General Technical Report PNW-8. Portland, OR.

Gurukul of Civil Engineers (GCE)
2020 What is a Highway Interchange and Their Types? 12 Important Points. Available at https://www.gcelab.com/blog/highway-interchange-and-their-types/#Trumpet+Interchange. Accessed November 29, 2022.

Haeberlin, H., and E. Gunther
1930 *The Indians of Puget Sound.* University of Washington Press, Seattle.

Haugerud, R.A, Kathy Goetz Troost, and D.B. Booth
2003 The Geology of Puget Lowland Rivers. In *Restoration of Puget Sound Rivers*, edited by David R. Montgomery, Susan Bolton, Derek B. Booth, and Leslie Wall. Center for Water and Watershed Studies, University of Washington Press, Seattle, WA.

Hilbert, V., J. Miller, and Z. Zahir
2001 Puget Sound Geography: Original Manuscript from T. T. Waterman. Zahir Consulting Services, Federal Way, Washington.

Iversen, D.R., L.A. Forsman, D.A. Lewarch, and L.L. Larson
2000 Port of Seattle, Seattle-Tacoma International Airport Master Plan, Proposed Third Runway Archaeological Resources and Traditional Cultural Places Assessment, King County, Washington. Report prepared by Larson Anthropological Archaeological Services, Ltd., Gig Harbor. Report prepared for Port of Seattle. On file, Department of Archaeology and Historic Preservation, Olympia, WA

Kirk, Ruth, and Richard D. Daugherty
2007 *Archaeology in Washington*. Seattle: University of Washington Press.

Lewarch, Dennis, Lynn Larson, Leonard Forsman, Guy Moura, Eric Bangs, and Paula Johnson
1996 King County Department of Natural Resources Water Pollution Control Division Alki Transfer/CSO Facilities Project, Allentown Site (45KI431) and White Lake Site (45KI438 and 45KI438A) Data Recovery. Report prepared by Larson Anthropological/Archaeological Services, Seattle. On file, Washington State Department of Archaeology and Historic Preservation, Olympia.

National Park Service (NPS)
2017 The Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings. Available at https://www.nps.gov/orgs/1739/upload/treatment-guidelines-2017-part1-preservation-rehabilitation.pdf. Accessed November 29, 2022.

Ruby, R. H., and J. A. Brown
1992 *A Guide to the Indian Tribes of the Pacific Northwest*, Revised Edition. University of Oklahoma Press, Norman, Oklahoma, and London, England.

Ryder, Alexander.
2022 University Bridge – Seattle: Historic Property Inventory (HPI) Form. On file, Department of Archaeology and Historic Preservation, Olympia, WA.

Soderberg, Lisa
1980 University District Historic Survey Report. Available at https://depts.washington.edu/geostory/omeka/files/original/0b0e1fd002e82434ab73a05e18e50614.pdf. Accessed November 21, 2022.

Sodt, Sarah
2004 Survey and Inventory of Historic Resources in the City of Auburn, Washington. On file, Department of Archaeology and Historic Preservation, Olympia, WA.

Stevens, Isaac I.
1854 Report on Tribes between the Head of Navigation of the Mississippi River to the Pacific Ocean: Indian Tribes West of the Cascades. Letter from Isaac I. Stevens, Governor and Superintendent of Indian Affairs, Washington Territory to George W. Maypenny, Commissioner of Indian Affairs, Washington D. C., 16 September. In Message from the President of the United States to the Two Houses of Congress, Part 1, pp. 392-459. A.O.P. Nicholson Printer, Washington, D.C.

Suttles, W.
1990 Environment. In *Northwest Coast*, edited by Wayne Suttles, pp. 16–29. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Suttles, W., and B. Lane
1990 Southern Coast Salish. In *Northwest Coast*, edited by Wayne Suttles, pp. 485–502. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Thorson, R.M.
1980 Ice-Sheet Glaciation of the Puget lowland, Washington, During the Vashon Stade. *Quaternary Research* 13:3, 303-321.

Troost, K., and Derek B. Booth
2008 Geology of Seattle and the Seattle Area, Washington. The Geological Society of America, Reviews in Engineering Geology XX.

Tobin, Caroline, and Sarah Sodt
1980 Historic Bridges and Tunnels of Washington State. On file, Department of Archaeology and Historic Preservation, Olympia, WA.

United States Geological Survey (USGS)
1909 Topographical Quadrangle Map, Seattle Special, 1:62500, Washington.
1968 Topographical Quadrangle Map, Seattle North, 1:24000, Washington.
1992 Topographical Quadrangle Map, Seattle, 1:100000, Washington.

United States Court of Claims
1927 Duwamish et al. vs. United States of America, F-275. Washington DC: US Court of Claims.

Waterman, T.T.
2001 Puget Sound Geography (edited with additional material by Vi Hilbert, Jay Miller, and Zalmai Zahir). Zahir Consulting Services/Lushootseed Press, Federal Way, WA.

Weaver, R.M.
2003 Puyallup River Side Channel Habitat Restoration Project, Cultural Resources Section 106 Assessment. On file, Department of Archaeology and Historic Preservation, Olympia, WA.

Whitlock, Cathy
1992 Vegetational and Climatic History of the Pacific Northwest during the Last 20,000 Years: Implications for Understanding Present-Day Biodiversity. The *Northwest Environmental Journal* 8: 5–28

Williams, David B.
2017 Lake Washington Ship Canal (Seattle). Historylink.org Essay 1444. Available at https://www.historylink.org/file/1444. Accessed November 23, 2022.

Wilma, D.
2006 Seattle Neighborhoods: University District – Thumbnail History. Historylink.org Essay 3380. Available at https://www.historylink.org/File/3380. Accessed November 22, 2022.

Attachment A: Figures

Figure 1. Project Location.

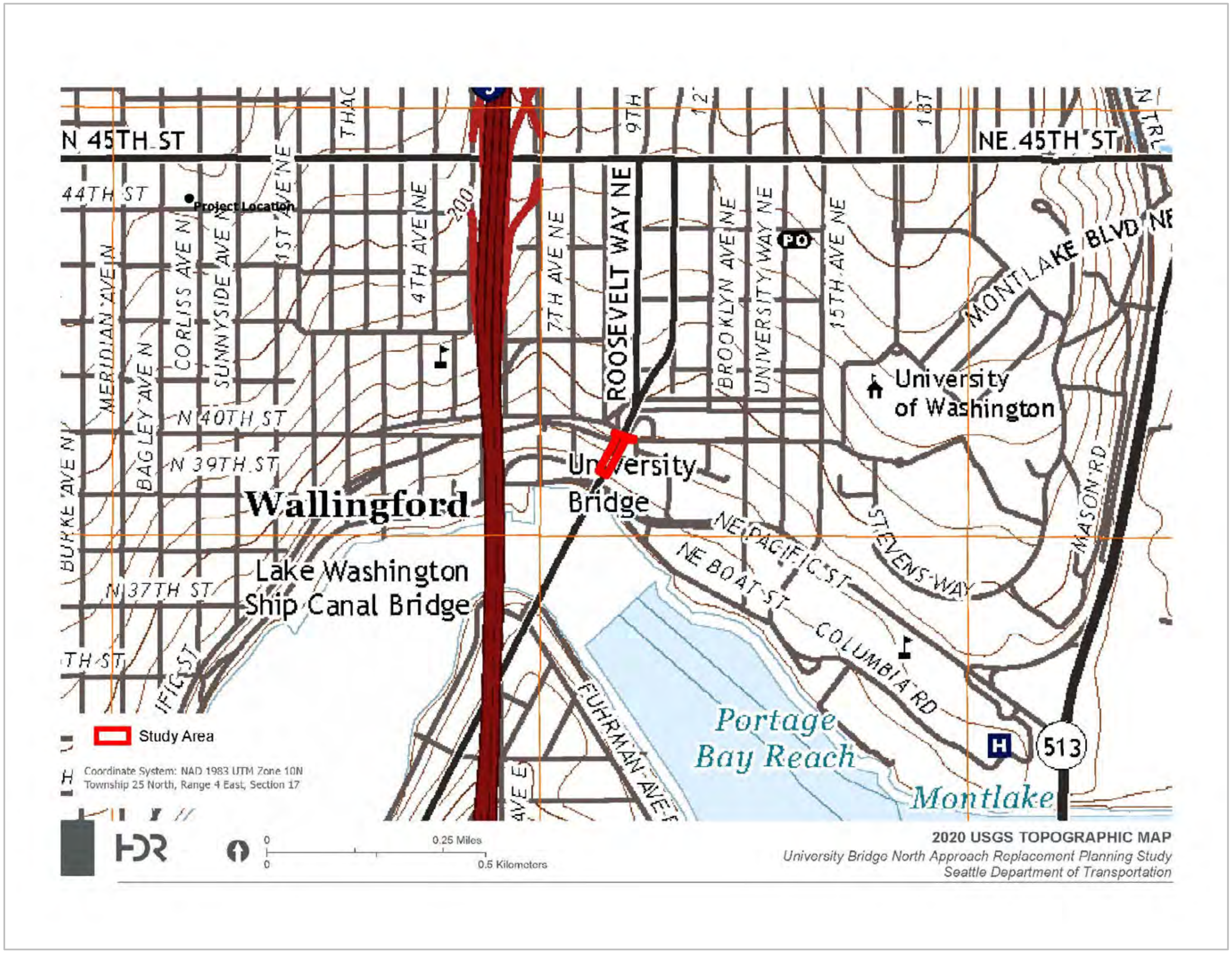


Figure 2. Study Area shown on 2020 USGS Topographic Map, Seattle North, Washington Quadrangle.

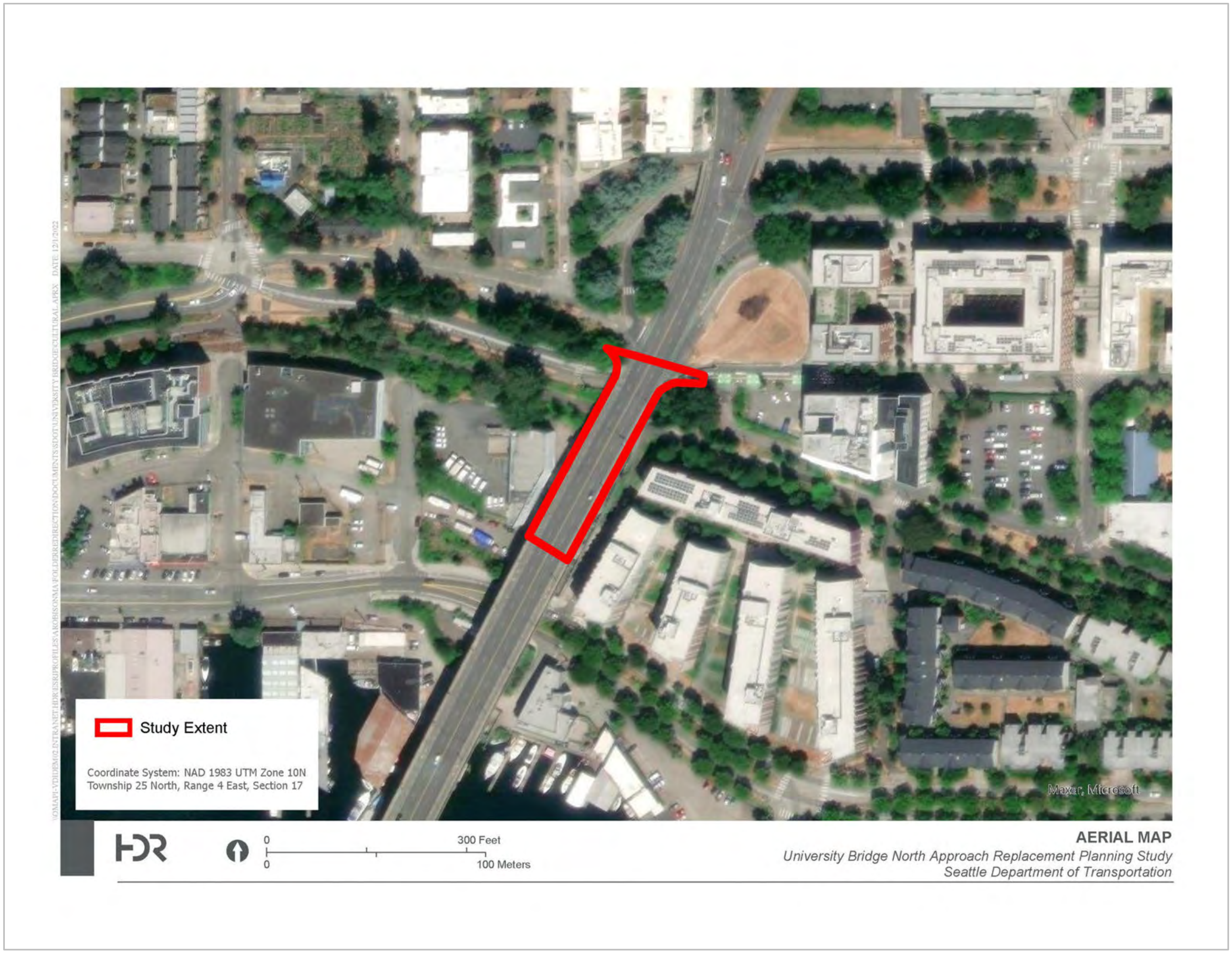


Figure 3. Study Area shown on Aerial Image.

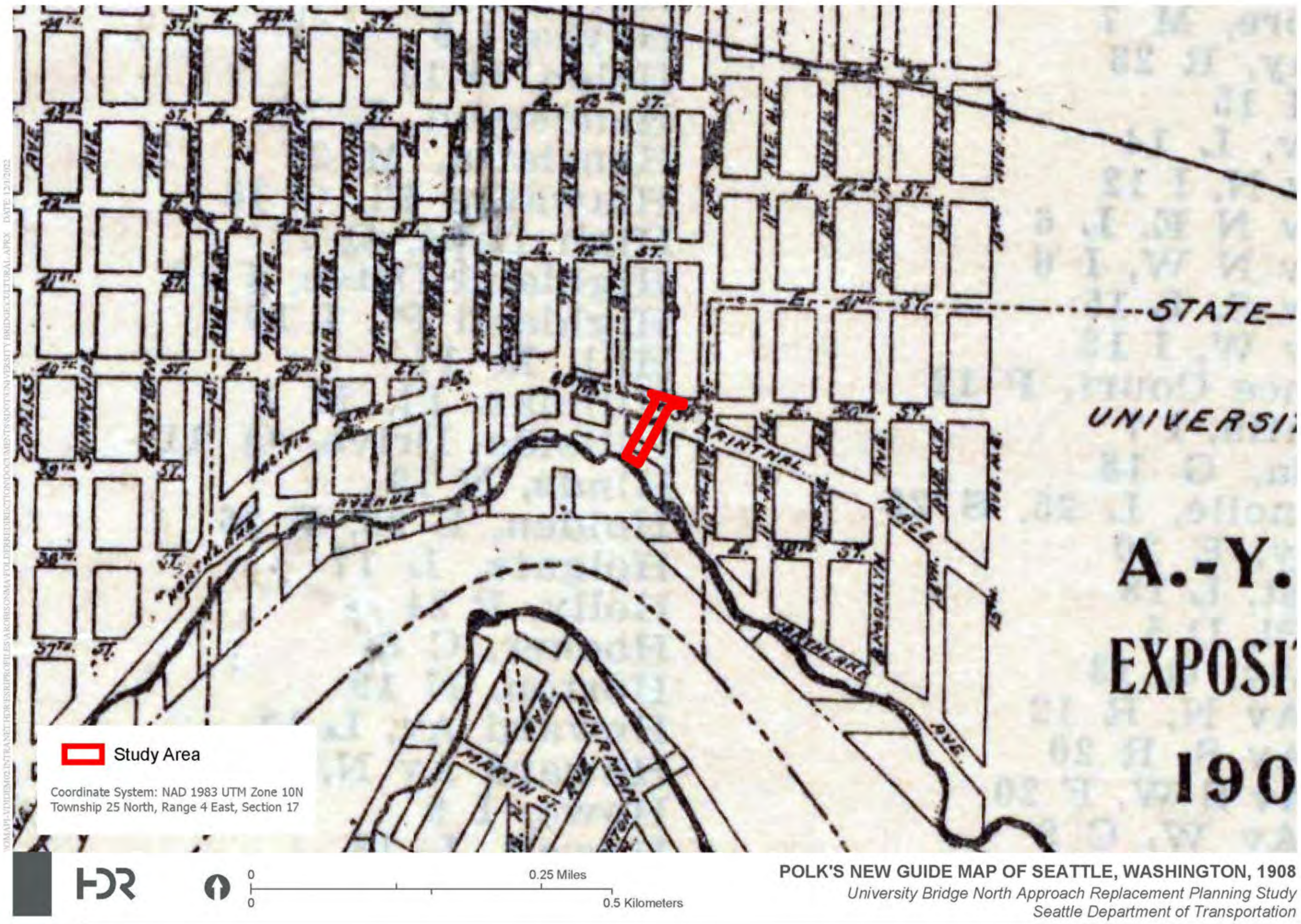


Figure 4. Study Area shown on Historic 1908 Polk's New Guide Map of Seattle, Washington

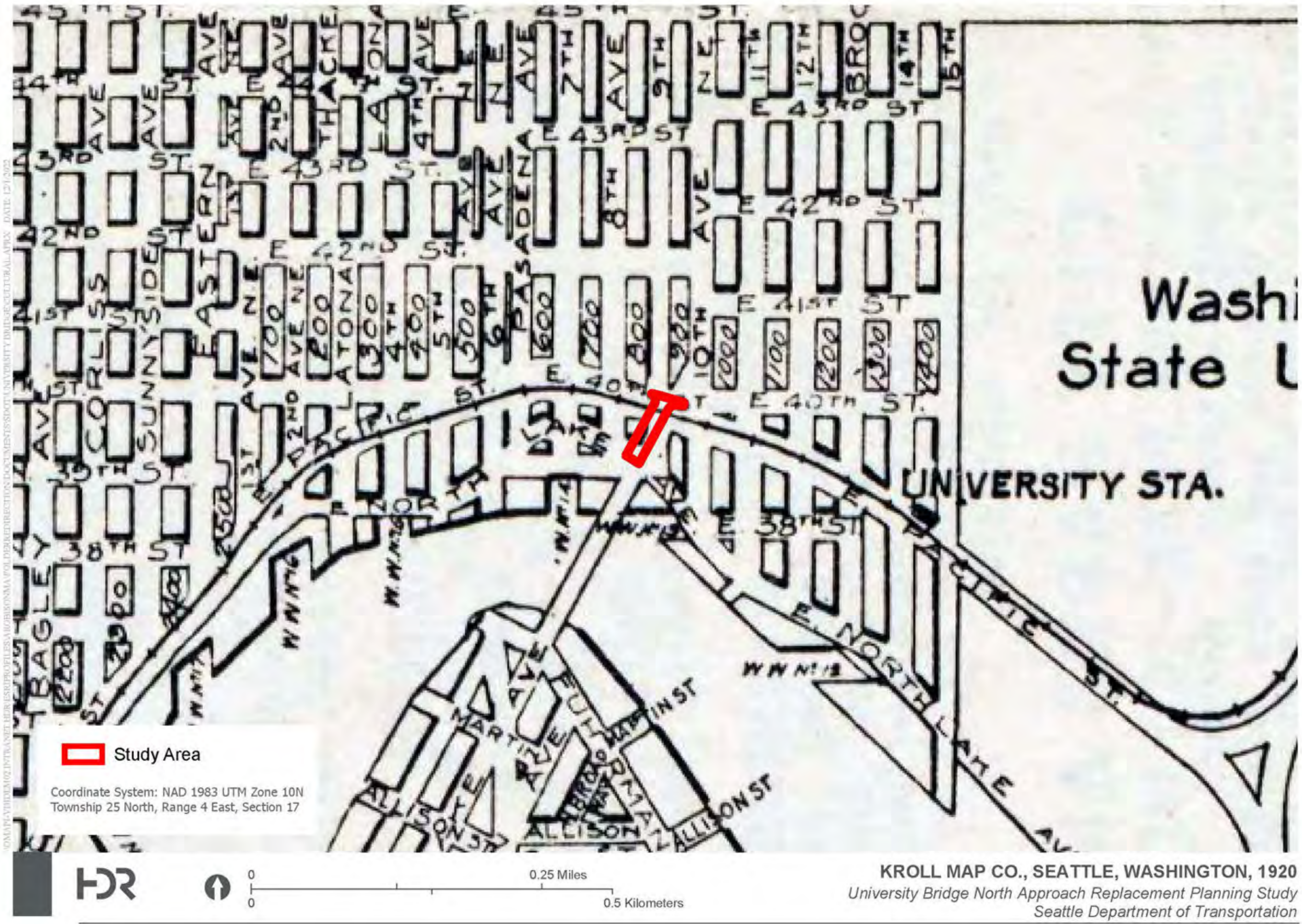


Figure 5. Study Area shown on Historic 1920 Kroll Map Co. map of Seattle, Washington

Figure 6. Study Area shown on Historic 1949 USGS Map, Seattle North.

Figure 7. University Bridge, North Approach, view looking south (City of Seattle 1932).

Figure 8. University Bridge, North Approach, aerial view looking north (City of Seattle 1932).

Figure 9. University Bridge, view looking south from 1035 NE Campus Parkway (Terry Hall) (City of Seattle 1959).

Figure 10. University Bridge, North Approach, view looking southeast (City of Seattle 1933).

Figure 11. University Bridge, North Approach (foreground), view looking west from Terry Hall (Ship Canal Bridge in background) (City of Seattle 1960).

Figure 12. University Bridge, North Approach, abutment, view looking northwest beneath bridge (HDR 2022).

Figure 13. University Bridge, North Approach, west gates and guardrail, view looking southeast from Peace Park (HDR 2022).

Figure 14. University Bridge, North Approach, view looking northwest from east side of approach at NE Pacific Street (HDR 2022).

Figure 15. University Bridge, North Approach, west side of Burke-Gilman Trail, view looking northeast (HDR 2022).

Technical Memorandum

Date:	Thursday, March 23, 2023
Project:	University Bridge North Approach Replacement Planning Study, Seattle, Washington
To:	Ken Jumpawong
From:	Sarah Desimone, MA
Subject:	Follow-up to Cultural Memo: Character-defining features of the University Bridge North Approach

This technical memorandum describes in detail the character-defining features of the University Bridge North Approach as noted in the Cultural Resources Desktop Review memorandum dated January 31, 2023.

Character-defining Features

Historic properties derive their overall historic character from the collection of features that illustrate a period or style of architecture. The qualities of their design, materials, and workmanship are the means through which that character is expressed. These features must be maintained in order for the building to retain its historic significance. In the case of the University Bridge North Approach, the character-defining features are those that reflect both its 1930s Art Deco architectural style and its function as a bridge.

The character-defining features of the north approach include its overall form, its concrete piers and ribbing, balustrade and paneled gates, abutment, and associated stairways. The following table provides specific features and locations keyed to figures for reference.

Table 1. Character-defining features of the University Bridge North Approach

Feature	Location	Description	Figure Reference
Concrete piers	Beneath bridge deck, between abutment wall and bascule section.	Square concrete piers with chamfered (carved) corners and decorative caps located beneath the bridge deck in sets of four and connected by stylized “H” beams.	Figure 1
Ribbing	Underside of bridge deck, between abutment wall and bascule section.	Arched ribs or buttresses that extend from the concrete piers and provide a framework for the deck.	Figure 4; Figure 9
Balustrade	Along east and west edges of bridge deck.	Concrete balustrade comprised of two cast concrete panels, each with 12 rounded openings, set between a solid section with inlay designs.	Figure 3
West gate	Northwestern end of approach, above abutment wall	Cast concrete gate feature with horizontal and vertical components (obelisks), each including carved bases and caps and inlay designs.	Figure 7
East gate	Northeastern end of approach, above abutment wall	Cast concrete gate feature with horizontal and vertical components (obelisks), each including carved bases and caps and inlay designs.	Figure 5
Abutment	North end of bridge where deck meets surface roadway	Concrete abutment wall that runs beneath the north approach on the north side of NE 40th Street. Walking paths/stairways are located above the wall providing passage from Eastlake Ave. NE down to NE 40th Street.	Figure 11

Feature	Location	Description	Figure Reference
East stairway	East side of bridge deck, south of abutment wall and above NE 40th Street.	L-shaped stairway that runs parallel to the bridge deck over NE 40th Steet and crosses beneath the bridge to the west, providing access to the sidewalk on the south side of NE 40th street.	Figure 4; Figure 10
West stairway	West side of bridge deck, descending along the top of the abutment wall to NE 40th Street.	Concrete stairway that extends west from the northwest corner of the north approach at a perpendicular angle along the abutment wall.	Figure 13
Art Deco stylistic details	Present on many aspects of the north approach including ribbing, balustrade, piers, gates, abutments, stairways, etc.	Carvings and inlaid designs; grooves and lines, both vertical and horizontal; pilasters; capped concrete piers; chamfered corners;	Figure 2; Figure 8
Steel deck trusses	Beneath bridge deck beginning at roughly NE Pacific Street.	Steel deck trusses painted green; set atop concrete piers and "H" beams. Visible above NE Pacific Street.	Figure 12

Figure 1. North Approach, underside of bridge deck, looking northeast. Concrete piers and "H" beams highlighted in red (photo by HDR 2023).

Figure 2. North approach, underside of bridge deck, looking northeast. Design details including carvings, brackets and arches highlighted (photo by HDR 2023).

Figure 3. North approach, underside of west side of approach, looking northeast from NE 40th street. Balustrade highlighted (photo by HDR 2023).

Figure 4. North approach, underside of east side of approach, looking west from NE 40th street. Ribbing and arches highlighted. Also note configuration of stairway (photo by HDR 2023).

Figure 5. North approach, looking southwest, east gate highlighted in red. Also note configuration of the sidewalk descending the edge of the abutment (photo by HDR 2023).

Figure 6. North approach, east side looking southwest, balustrade and sidewalk configuration (photo by HDR 2023).

Figure 7. North approach, looking southeast from Peace Park, west gate highlighted in red (photo by HDR 2023).

Figure 8. North approach, underside of bridge deck south of abutment, view looking west, stylistic details highlighted in red (photo by HDR 2023).

Figure 9. North approach, underside of deck looking northeast, overview of ribbing configuration highlighted in red (photo by HDR 2023).

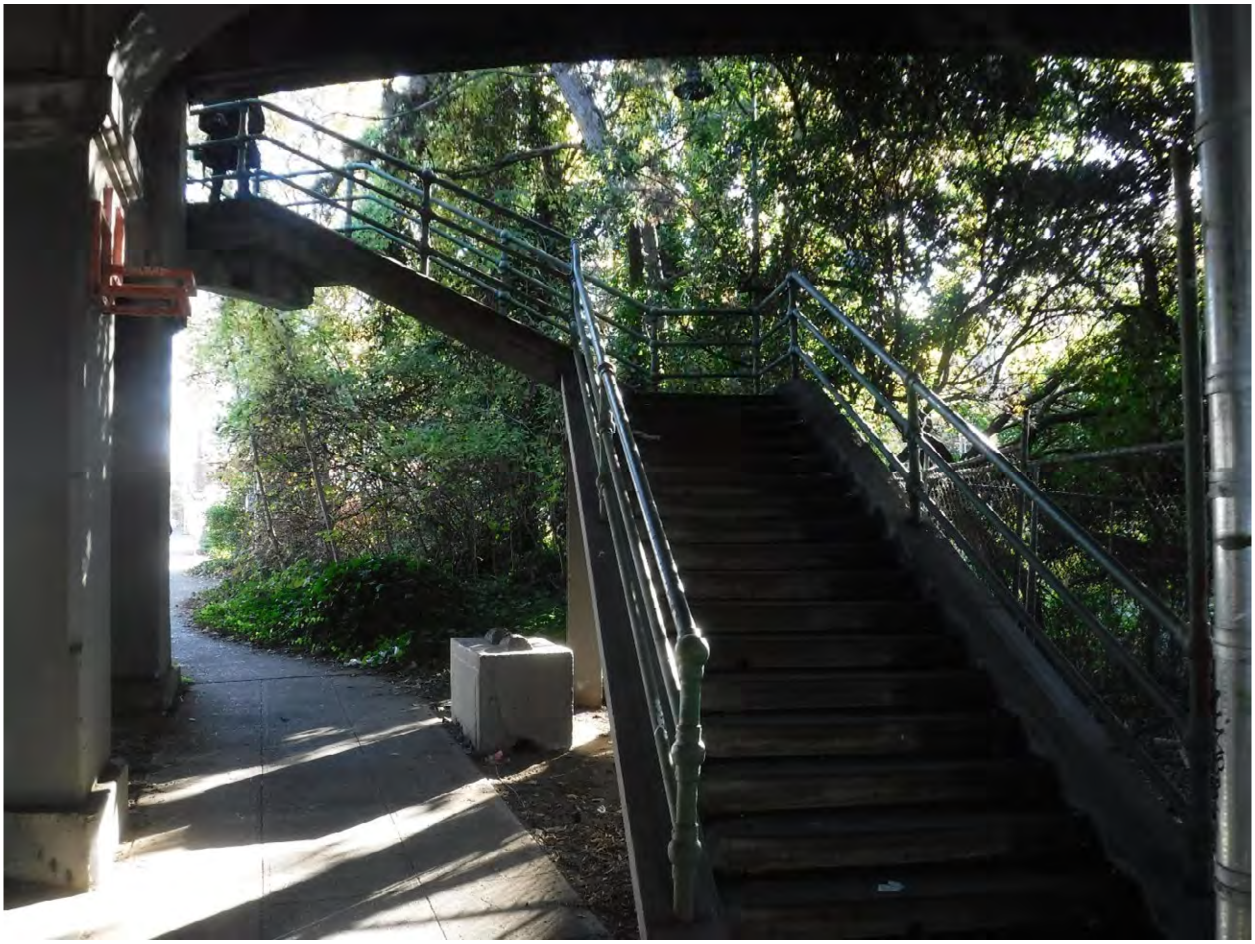


Figure 10. North approach, east stairway looking east from sidewalk on south side of NE 40th Street beneath the bridge deck (HDR 2023).

Figure 11. North approach, abutment looking west from NE 40th Street, configuration of abutment highlighted in red. Note that the sidewalk runs along the east edge of the abutment from the deck of the approach to NE 40th Street (photo by HDR 2023).

Figure 12. North approach looking northwest from NE Pacific Street, steel deck trusses highlighted in red (photo by HDR 2023).

Figure 13. North approach west stairway looking northeast from NE 40th Street (photo by HDR 2023).

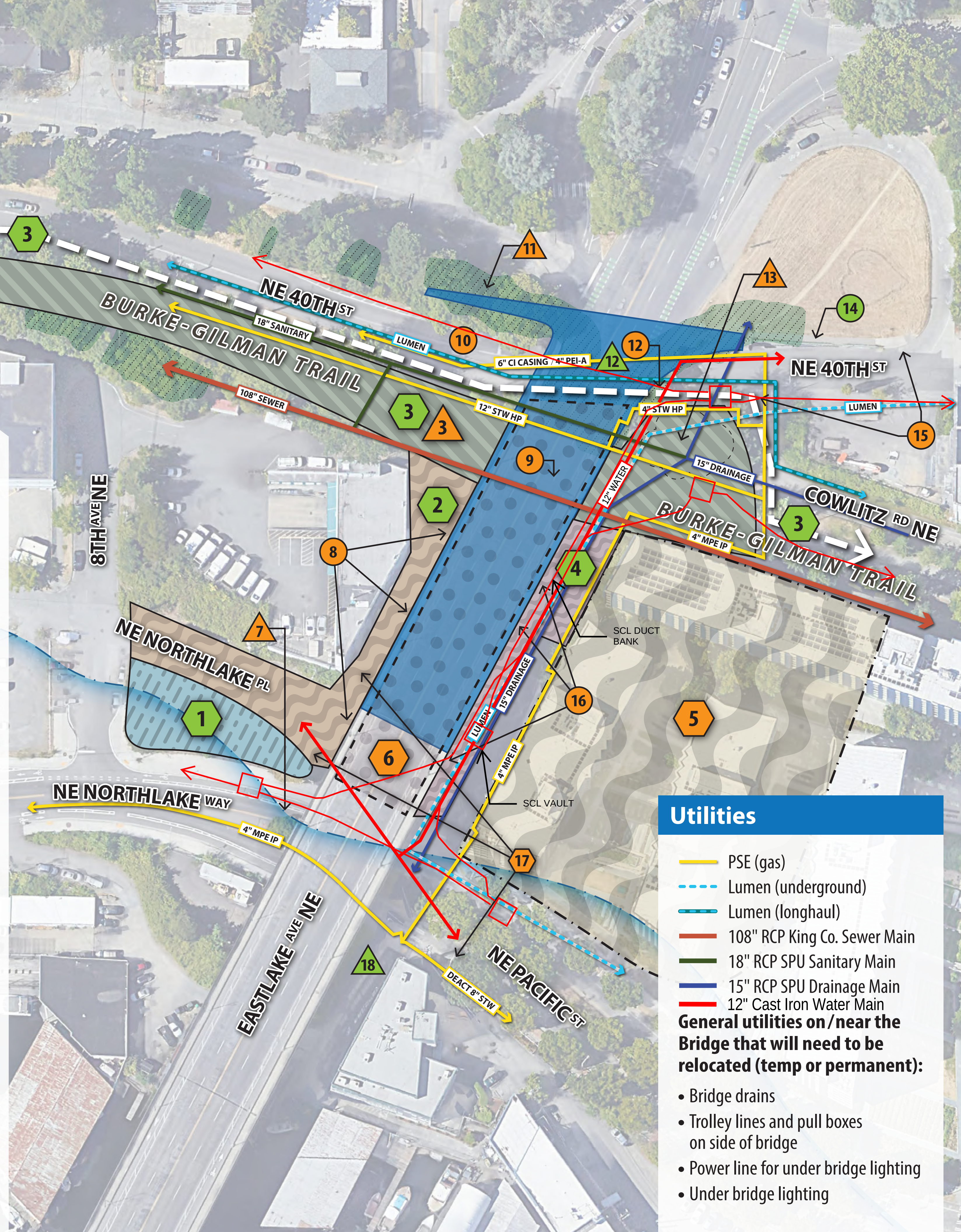
Attachment J

Constraints and Opportunities Map

UNIVERSITY BRIDGE – NORTH APPROACH

Constraints & Opportunities

Construction | Civil | Environmental | CONSTRAINT | OPPORTUNITY



General Structural

CONSTRAINTS

- Existing vertical clearance at NE 40th St. is signed at 12'-3".
- Adjacent streets either side of bridge.
- Fencing around storage areas beneath the bridge.
- Architectural features of existing bridge substructure.
- Performance of existing superbent.
- Age and condition of existing concrete and reinforcement (carbonation and chlorides).
- Subsurface utilities - limits on foundation siting.
- Size/capacity of existing foundations.
- Limited confinement/ductility of existing substructure.
- Overhead Cantenary System (OCS) is under study by KC Metro for modification and proposed dead end pole to be anchored on Bent 14. Maintaining bus service (including future Rapid Ride J Line) during bridge construction. If replace bridge/superstructure, opportunity to upgrade and redesign the OCS.
- Traffic volumes, bike/pedestrian access if staged construction needed.
- Bridge mounted utilities - protect or temporarily relocate.

OPPORTUNITIES

- Utilize existing seismic retrofit.
- Slabs under bridge provide good surface for manlifts or scaffolding.
- Utilize infill between existing columns for lateral stiffness.
- Use of CFRP strengthening or section enlargement to increase girder capacities.
- Column jacketing for column confinement.
- Staged construction of ~1/2 width per stage for bridge/superstructure replacement.

Utilities

- PSE (gas)
- Lumen (underground)
- Lumen (longhaul)
- 108" RCP King Co. Sewer Main
- 18" RCP SPU Sanitary Main
- 15" RCP SPU Drainage Main
- 12" Cast Iron Water Main

General utilities on/near the Bridge that will need to be relocated (temp or permanent):

- Bridge drains
- Trolley lines and pull boxes on side of bridge
- Power line for under bridge lighting
- Under bridge lighting

AREAS OF INTEREST/IMPACT

University Bridge – North Approach Concrete Span
see General Structural notes for constraints & opportunties

Potential property use
1 Option for construction jobsite.

NE Northlake Pl
2 Close (temporary) road and back entrance to UW Building. Building loading dock can be access from the West.

Burke Gilman Trail
3 Construction disruptions to trail use.
3 Shift trail to NE 40th St. Utilitize the Burke Gilman Trail as jobsite staging and setup crane access.

Sidewalk on East side of bridge and landscaping
4 Close sidewalk, use area for crane setup to service bridge.

UW Dorms
5 Potential working hours and noise level restrictions.

Miscellaneous items under bridge
6 Remove during bridge replacement construction.

SPECIFIC ITEMS OF INTEREST/IMPACT

7 **Extent of Shoreline Jurisdiction** – just outside of study area.
8 **Ramp Access Points (gates)** – access to fenced in storage area.
9 **Wall of Death (art installation)** – may need to be disassembled and relocated during construction, reassembled at end of project.
10 **Crosswalk** – doesn't have compliant ADA Ramps. If we touch, will need to upgrade.
11 **Critical Area** – Slope greater than 40%.
12 **Old Stairway** – if impacted will be difficult to replace in kind.
12 Fall protection may need to be upgraded. Could improve access between Burke-Gillman Trail and University Bridge.
13 **Impacted trees** – Tree removal and replacement requirements.
14 **Meandering Opportunity** – Create a meandering trail connection here to make more accessible.
15 **Ramps** – not ADA compliant, if impacted will need to upgrade.
16 **Driveway Access Points (gates)** – access to fenced in storage area.
17 **Multiple overhead lines and guide wires** along north side of NE Northlake Way/NE Pacific St. and low overlead wires from bridge to the Northlake Building.
18 **Shoreline Access** – Provide access to shoreline street end.

Attachment K

Concept Alternatives Development Exhibits

Memo

Date:	Friday, March 03, 2023
Project:	University Bridge North Approach Planning Study
To:	Elisabeth Wooton, Seattle Department of Transportation
From:	Ken Jumpawong, HDR Project Manager
Subject:	**Draft Concept Alternatives Development Summary Memorandum**

1.0 Introduction

1.1 Background

The concrete spans of the north approach to the University Bridge are on the north side of the Lake Washington Ship Canal, approximately between the north side of NE Pacific St and ends at the north side of NE 40th St and carry Eastlake Ave NE over NE 40th St. and the Burke-Gilman trail. These concrete spans are approaching 100 years old and though they appear to be in fair condition, this portion of the bridge is showing signs of deteriorating concrete and is deemed functionally obsolete. Eastlake Ave NE is a principal arterial, a minor freight street, and a priority transit corridor for the City of Seattle. The Seattle Department of Transportation (SDOT) would like to conduct a planning study to evaluate alternatives for replacement and rehabilitation of these northern concrete spans. This will help to provide a basis for SDOT to plan for future funding and eventually move forward with design and construction of one of the alternatives evaluated.

1.2 Alternative Objectives

The purpose of this study is to screen and identify feasibility of concept alternatives and sub-options that will result in up to three (3) final alternatives to move forward for more detailed analysis. The concept development phase will perform a high-level feasibility review to define the alternatives to inform SDOT on the range of issues and opportunities of the long-term options for the north approach concrete span section of the bridge.

The alternatives to be developed will fit into three categories: Rehabilitation and retrofit alternatives, replacement alternatives, and a combination consisting of superstructure replacement and substructure rehabilitation and retrofit.

Rehabilitation and retrofit alternatives are intended to bring the bridge up to current design standards for live load traffic demands and seismic resilience. Replacement alternatives will meet current design standards for structural demands for traffic loads and seismic resilience. Likewise, the hybrid alternatives will also meet the current design standards for traffic loads and seismic resilience.

2.0 Concept Alternatives Development and Description

The University Bridge North Approach Concrete spans segment consists of nine spans of arched reinforced concrete deck girders on multi-column concrete bents. Constructed around 1932 this segment is approximately 321 feet in length, carrying Eastlake Avenue NE over the Burke-Gilman Trail and NE 40th Street. The south end of this segment shares Pier 10 with the North Approach Steel spans, Bents 11 through 14 are square to the bridge centerline, Bents 15 through 18 are progressively skewed, and the North Abutment is skewed approximately 26.5-degrees, ahead right, and parallel to NE 40th Street.

The roadway section is comprised of four 11-foot traffic lanes, two 5-foot bike lanes, with 2-foot soft buffers between traffic and bike lanes, and two 6-foot sidewalks. Vehicular and transit traffic is carried including an overhead catenary line system for electrified transit busses.

2.1 Alternative 1 – Bridge Rehabilitation and Retrofit

The University Bridge North Approach Concrete spans segment received a seismic retrofit upgrade around 1995. This retrofit utilized a “superbent”, a large and stiff substructure unit used to anchor the bridge, placed between and tied to the closely spaced Bents 14 and 15, near the middle of the bridge segment. Pier 10 at the south end was stiffened with concrete filled steel casing jackets on the columns, crossbeam enlargement, and diaphragm walls between girder supports for transverse restraint. The North Abutment wall was strengthened and transverse girder restraints added.

The original seismic retrofit was most likely a strength-based design, typical of that era, which tended toward a stiffer and stronger substructure. This approach tends to reduce the period of the structure and maximize the seismic forces, as opposed to the ductility approach which softens the structure resulting in increased periods and lower seismic forces.

Based on the details of the retrofit, we expect that the superbent will draw a majority of the seismic forces and reduce the overall displacements of the bridge. With the two ends restrained transversely, and somewhat longitudinally as well, the displacements and forces at the intermediate bents are expected to be relatively low. The seismic demands resulting from changes to the criteria have increased since 1995, so the existing retrofit measures are not expected to meet the current criteria. The seismic retrofit strategy is to evaluate retrofit alternatives that would facilitate the existing structure meeting the new criteria. The existing foundations are assumed to perform reasonably well given the dense glacial soils with high bearing values. Therefore, retrofit alternatives for bridge foundations are not provided at this time.

The rehabilitation alternatives also need to address bringing the superstructure live load capacity up to current LRFD design criteria. The bridge was instrumented to collect live load responses and modeled to analyze load capacities in 2003. In 2020, the analysis was updated for current conditions and to include emergency vehicle load ratings using load factor rating methodology. The current load rating is controlled by negative flexure of interior girders over

Bent 15 and shear in interior girders. Positive flexure is not shown to have deficiencies in the current load rating but strengthening may still be needed for the HL-93 load.

2.1.1 Alternative 1a – CFRP Strengthening

This alternative involves using carbon fiber reinforced polymer (CFRP) strengthening of superstructure and substructure members. One or more laminate strips on the bottom of girders would address the positive flexure demands. Negative flexure over piers would be addressed with near-surface mounted CFRP bars. Shear strengthening of girders would be a combination of side face laminate strips and U-shaped strips wrapping the sides and bottom of girders. Wet layup systems are assumed for girders though preformed laminate strips could be used for positive flexure reinforcement.

The intermediate bents are moderately well reinforced and may perform relatively well, but are expected to need shear and confinement strengthening to meet design criteria. A combination of vertical laminate strips on each face of the square shaped columns for shear and flexural strengthening and horizontal wraps for confinement strengthening would be used to meet stress and strain limits.

The partial diaphragm wall added at Pier 10 is expected to need additional strength and connection capacities. Additional reinforced concrete section strengthening the connection of the girders to the pier cap is anticipated. The North Abutment wall strengthening performed in the 1990’s is expected to perform fairly well. If flexural strengthening is required then CFRP laminate strips added to the face of the wall is anticipated.

The strengthening measures for this alternative would be mostly performed from beneath the bridge and would not impact traffic. The exception would be for the near-surface mounted CFRP bars. This work would be performed under lane closures in stages or under nighttime bridge closures if acceptable.

See Attachment A. Alternative 1 – Bridge Rehabilitation and Retrofit Exhibits for details of Alternative 1a.

2.1.2 Alternative 1b – Reinforced Concrete Strengthening

This alternative involves reinforced concrete section enlargement and strengthening for the superstructure and substructure. This alternative would be employed if the CFRP strengthening turns out to be inadequate to effectively increase the capacities needed. The girder sections would be increased in depth and width to increase the nominal capacity for shear and positive flexure, and to a lesser extent negative flexure would be improved. If additional negative flexure capacity is still needed, then near-surface mounted CFRP bars would be utilized. Crossbeams would also be evaluated for additional strengthening requirements.

For the intermediate bents, infill walls would be added between columns to further strengthen the bents. This measure would also increase the stiffness of these bents, drawing more force to them. However, the capacity increase would more than offset the increased demand and may help the performance of the superbent and end restraints by reducing demand at those locations. There would be an increase in the seismic forces throughout the bridge due to the added mass of the section enlargement to girders and the upper section of infill walls.

Construction staging and traffic shifts may be required during the concrete placement and initial setup of the sections added to girders. Traffic impacts may be required for access of equipment to get concrete placed or if live load vibrations are deemed to be detrimental to the concrete bond of the sections.

See Attachment A. Alternative 1 – Bridge Rehabilitation and Retrofit Exhibits for details of Alternative 1b.

2.2 Alternative 2 – Bridge Replacement

2.2.1 Bridge Type

The North Approach Replacement Bridge is a concrete column supported beam bridge similar to the existing bridge, thus preserving some of the aesthetic of the existing structure. The beam/girder types considered are cast-in-place (CIP) concrete beam and slab, precast concrete girders and steel girders.

The existing bridge is approximately 75'-0" wide (58’-0” curb to curb), 321’-0” long with 1'-6" wide railing/parapet on each side. It consists of four 11'-0" vehicular traffic lanes, one 5'-0" wide bike lane and one 6'-0" sidewalk on each side, see Figure 2-1. It has 8-spans (two 4-span units separated by expansion joint), Pier 10 (made up of Bents 11-12-13-14), and North Abutment (made up of Bents 15-16-17-18).

An expansion joint separates the north approach steel spans from the concrete spans at Pier 10.

2.2.1 Span Arrangements

Four span arrangements were considered. The arrangements are to evaluate the span efficiency of viable superstructure types, impact of additional load demand on Pier 10 and North Abutment, and the potential challenges of transportation and erection of prefabricated girders. In all cases, conflict with the sewer line in the vicinity of Bent 16 is avoided so that the footing will not be subjected to surcharge loading. However, shoring for structural excavation is anticipated in constructing neighboring new footings.

2.2.1.1 6 Span Configuration (five-55 ft spans and one-46 ft span)

This span configuration will be best suited for a CIP concrete superstructure because the short span lengths would not be efficient for precast concrete girders or steel girders. In addition, this configuration will produce the least load impact, gravity and seismic, to Pier 10 and North Abutment.

2.2.1.2 4 Span Configuration (80 ft, 85 ft, 85 ft, and 71 ft)

This span configuration will be applicable to CIP concrete, precast concrete I-girders and steel girders and would not be section efficient for precast concrete tub girders.

2.2.1.3 3 Span Configuration (110 ft, 110 ft, and 101 ft)

This span arrangement will be applicable to deeper precast concrete I-girders, steel girders, and more efficient use of precast concrete tub girders.

2.2.1.4 2 Span Configuration (165 ft and 156 ft)

This arrangement will be applicable to deeper precast concrete I-girders, tub girders and deeper steel girders. This configuration was not explored for three reasons: (a) it poses potential transportation and erection challenges, (b) it would require substantial middle column sizes and (c) it would increase the transverse load demand on North Abutment and on Pier 10.

2.2.1.5 Potential Issues to be Resolved:

1. The northeast flared bridge deck section cantilevers off the North Abutment. This section may not be demolished without significant impact to the North Abutment and stairway.
2. Existing beam ends haunch are indicated on the Plans to be 8'-8" deep. It appears this may conflict with 12'-3" bridge clearance constraint at North Abutment.

2.2.2 Superstructure

Three superstructure types were considered, all with depths meeting the 12’-3” vertical clearance requirements at the North Abutment.

2.2.2.1 Alternative 2a – CIP Concrete (w/ or w/o Post-Tensioning)

Two span arrangements consisting of six and four span configurations, see Figures 2-2 and 2-3.

2.2.2.2 Alternative 2b – Precast Concrete Girders

Includes two options:

- I-girders with two span arrangements consisting of three and four span configurations, see Figures 2-4 and 2-5.
- Tub girders with three span configuration, see Figure 2-4.

2.2.2.3 Alternative 2c – Steel Girders

Two span arrangements consisting of three and four span configurations, see Figures 2-6 and 2-7.

2.2.3 Tie–in/Connection at Pier 10 and North Abutment

2.2.3.1 Pier 10 Connection

The existing north approach steel bridge beam seat (corbel) at Pier 10 is 12" wide and includes a 2½-inch wide expansion joint. On the north side of the pier, the existing hunched north approach concrete beams are integral with piers above the bent.

The 1'-6" thick pier stiffener walls constructed in the 1990's will be demolished down to the encased cap beam which was also constructed in 1990's.

A new, wider replacement wall will be constructed to provide sufficient bearing width for both approach spans as well as increase the lateral stiffness of Pier 10. Two blockouts will be provided in the replacement wall to accommodate the truss rocker bearing support. See Figures 2-8 to 2-11.

2.2.3.2 North Abutment Connection

The load capacity of the North Abutment has not been evaluated.
It is assumed that it would experience added eccentric loading and hence retrofit or enlargement of the existing strip footing would be required.

In addition, the 1'-0" thick concrete fascia wall will be demolished to accommodate new bridge deck construction. The replacement wall will be tied to the footing enlargement and wide enough to accommodate the new bridge deck framing. See Figures 2-12 to 2-14.

2.2.3.3 Potential Issues to be Resolved:

1. Maintaining a 12'-3" vertical clearance at the wall.
2. Review consequences and stages of cutting the existing tieback rods anchored to existing beams.
3. Review existing cantilever at framing and stairway at the northeast corner.

2.2.4 Substructure Type and Location

Existing concrete bridge consists of four columns at Bents 14 to 18. Pier 10 is a two-column bent, where the columns are not in line with those of Bents 14 to 18.

Two new Pier Bent arrangements are considered, see Figure 2-15:

2.2.4.1 4 – Column Pier

Consists of two configurations:

- Columns in line (longitudinally) with the existing columns.
- The two exterior columns are in line with those in Pier 10, and the two interior columns straddles the bridge centerline. Our evaluation indicates that 2 columns in each half of the bridge will be the most compatible option for demolishing one half and maintaining traffic on the other half of the bridge.

2.2.4.2 3 – Column Pier

This pier configuration consists of two exterior columns to be in line with those in Pier 10 and oval center column at the centerline of the bridge. This scheme will require that only one half of the center column will be constructed during the first stage of construction; this is inefficient.

2.2.4.3 Foundation

The existing North Approach concrete bridge is founded on concrete spread footings at each bent, except for Bent 16 which is adjacent to the sewer main and is founded on piles.

In the 1996 geotechnical report prepared by Shannon and Wilson Inc. for the North Approach concrete span seismic retrofit indicates an ultimate soil bearing capacity of 50ksf. Based on this high bearing capacity, it is anticipated that the new bent foundations would be concrete spread (strip) footings. The use of drilled shaft foundation will be evaluated should there be any advantage over spread footing with respect to constructability and time savings.

2.2.5 Construction Staging

2.2.5.1 Maintenance of Traffic (MOT) During Construction

It is anticipated that approximately about half of the bridge (38-6”) would be demolished for reconstruction and the other half (36’-6”) would be open for traffic. The remaining section open for traffic will accommodate a 6 ft sidewalk, two traffic lanes (26’-0” travelway) and 3’-0” for temporary traffic barrier and lip, see Figure 2-16.

2.2.5.2 Temporary Shoring/Construction Support

The existing concrete bridge consist of two exterior edge beams and four interior beams, two on each side of centerline. This results in a cantilever condition for the second interior slab span for supporting wheel loads. Therefore, it is anticipated the tip of the cantilever would be temporarily supported during construction unless the top reinforcing bars can support the imposed wheel loads.

2.2.5.3 Potential Issues to be Resolved:

Review the lateral capacity of the bents when half of the bent is demolished. This may necessitate using the temporary shoring as a part of the lateral bracing system.

2.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

The hybrid alternatives would utilize the existing substructure and foundations, retrofitted for seismic and live loads, while replacing the superstructure (girders and deck). Since the existing girders frame directly into the columns, alternatives other than an in-kind replacement would require bent caps to frame the columns and provide a bearing seat for girders to be installed on. Framing and connections at the superbent would need to accommodate the new superstructure while preserving the function of the superbent. Similarly, framing and connections at Pier 10 and the North Abutment would need to be modified to accommodate the new superstructure.

The existing spans from Pier 10 to the North Abutment are: 35.5', 35.5', 35.5', 35.5', 14.78', 44.47', 50.59', 32.28', 36.96' along the bridge centerline. The spans from Bent 15 to the North Abutment vary in length across the width of the bridge due to the varying skew of the bents. The sidewalks curve outward from the roadway width at the north end, most notably in the northeast corner where cantilevered support brackets frame into the face of the abutment wall. NE 40th Street runs between Bent 18 and the North Abutment wall and has a posted minimum vertical clearance of 12'-3".

2.3.1 Alternative 3a – Precast Concrete Superstructure

Precast prestressed concrete girder superstructure options would consist of 26" slab beams or WF36G wide-flange girders. Either of these sections would accommodate the span lengths with 8 girder lines spaced at approximately 9'-7" with 3'-11 ½" deck overhangs.

The existing haunched girder superstructure is 8'-8" deep at the columns and 4'-0" deep at midspan. Both of the shallower precast concrete sections would allow for an arched crossbeam to be constructed above the existing column capitals. This allows preservation of the top of column architectural features and a slightly arched new crossbeam thereby minimizing the impact of the new superstructure girder elements. See Alternative 3a Exhibit for a typical section view.

In order to maintain the functionality of the superbent, superstructure diaphragms and the crossbeams would need to be anchored to the superbent crossbeam. Partial demolition and reconstruction of the existing superbent crossbeam may be required to facilitate adequate connections. Similarly, partial demolition and reconstruction at Pier 10 and the North Abutment would be necessary for support and connection tie-ins at each end of the North Approach segment.

See Attachment C. Alternative 3 – Superstructure Replacement and Substructure Retrofit Exhibits for superstructure details of Alternative 3a.

2.3.2 Alternative 3b – Structural Steel Superstructure

Given the short existing spans a steel beam superstructure would most efficiently be accommodated using standard rolled wide-flange beam sections. Beams could be erected as simple-span beams and spliced at the bents for continuous beam behavior. If necessary, a heavier section could be used in the longer spans or conversely bottom flange cover plates added in those spans. The number of beam lines and spacing is expected to be similar to that of the precast girder alternatives.

If there is a desire to use an arched-girder superstructure, then welded structural steel I-girders could be fabricated to have arched sections at the bents and shallower constant depth beams spliced between them for the mid-span sections. With deeper sections at the bents, fewer girder lines would be needed than the rolled wide-flange beam discussed above. Due to staged construction an even number of girder lines would best accommodate the cross-section. A 6-girder cross-section would result in approximately five spaces at 13'-3" with 4'-4 ½" deck overhangs. Crossbeams would be needed at the existing bents in order to provide adequate bearing surfaces and anchorage of the girders at bearings. The combined depth of girders and crossbeams may not allow for keeping the existing column capitals. If necessary, those features could be reconstructed at a lower section in the columns as needed to meet the aesthetic objectives of the project.

Similar to the precast concrete option, the superstructure on either side of the superbent would need to be adequately anchored to it to preserve the functionality for seismic resistance.

See Attachment C. Alternative 3 – Superstructure Replacement and Substructure Retrofit Exhibits for superstructure details of Alternative 3b.

2.3.3 Alternative 3c – In-kind Superstructure Replacement

An in-kind superstructure replacement alternative could be utilized to minimize changes to the character and aesthetic of the bridge. Parabolic girders would be sized and reinforced as needed to meet the design loads. These girders could be cast-in-place, as the original bridge was, or precast sections could be used with accelerated bridge construction connection techniques. The crossbeams could also be either cast-in-place or precast. Temporary shoring would be required until a deck closure pour is made between the two halves of the bridge. This alternative would not require bent cap crossbeams as the girders would frame into the columns as they currently do. Some amount of reconstruction of the upper column sections would be required.

No specific exhibits are provided for this alternative as it would match very closely to the existing structure.

3.0 Discipline Specific Discussions of Alternatives

3.1 Roadway Engineering

The existing bridge and the configuration of it's surface transportation uses is non-compliant with many of SDOT's and Federal standards. It is expected that the non-conformance is allowed to continue for retrofit or rehabilitation alternatives, because the full superstructure is not being replaced. Replacement of the bridge deck would trigger compliance with current standards and potential for widening the bridge from its current configuration. Improvements to barriers, railings, and stairways would need to be evaluated as part of the replacement activity, to bring them up to standard. Any improvements to the substructure that impact existing streets, sidewalks, stairways, and curb ramps that are not part of the bridge, but the active transportation footprint surrounding the area underneath the bridge, may require upgrades to new standards if impacted during the staging and construction activities for the bridge work. These features would impact project costs, but may also potentially change the footprint of facilities surrounding the bridge and could require ROW for easements or acquisitions if the facility extension pushes outside of SDOT ROW.

Alternatives for rehabilitation and retrofit that have lesser need to excavate around existing substructure elements will be more favorable to the roadway engineering considerations on the project.

3.1.1 Alternative 1 - Bridge Rehabilitation and Retrofit

Alternatives that rehabilitate or retrofit the facility are more attractive for the Roadway Engineering component of the Project. There will be no revisions to the overall bridge width and most non-conforming elements of the structure for bicycle, pedestrian, and vehicle use can remain in their current configuration.

Retrofit construction that impacts barriers, railings, or pedestrian pathways may still require facility upgrades, but they are expected to be lesser impacts compared to the other alternatives available for this bridge.

3.1.2 Alternative 2 – Bridge Replacement

The replacement of the North Approach may require a re-evaluation of the entire bridge. There is risk to the project with this alternative if the design relies on deviation approval for maintaining existing non-conforming standards.

The replacement of the bridge would impact a significant number of stairways at the northern end of the bridge. Current pedestrian pathways and ramps are currently non-compliant and would need to be replaced.

Down below the bridge where the substructure would be replaced, there are a mix of compliant and non-compliant pedestrian facilities. These would need to be replaced and most of the locations would extend limits of work to achieve ADA compliant pedestrian pathways or addition of new landings and pedestrian railing systems to achieve compliance.

For the alternatives changing the number or spacing of piers/columns, there is a ripple effect to modifications for the roadway (Northlake Way / Pacific Street) depending on span lengths and ideal placement of the new substructure components.

3.1.3 Alternative 3 - Superstructure Replacement and Substructure Retrofit

This alternative has essentially the same complications as the full replacement but excludes concerns with shifting columns/piers. It is likely to have minimal impact to the existing transportation uses below the bridge itself. The replacement of the superstructure still necessitates replacement of the stairways and pedestrian facilities from the Bridge to and from NE 40th Street. The pedestrian facilities component will continue to be a challenge to upgrade to current standards.

3.2 Maintenance-of-Traffic

3.2.1 Alternative 1 - Bridge Rehabilitation and Retrofit

This work would likely be accomplished under live traffic with intermittent lane closures. The use of overnight lane closures would reduce the overall impact to traffic. Intermittent lane closures would be difficult to maintain. The impacts to the electrified transit that uses this bridge would require coordination with off-wire operations. If full closure is required for a period of time for concrete placement and curing, then the electrified transit line would be temporarily closed and alternates found and vehicular traffic would be rerouted to Montake Boulevard.

3.2.2 Alternative 2 – Bridge Replacement

This alternative would be accomplished under live traffic by constructing the new bridge in halves. During Phase 1, one lane of traffic in each direction would use half of the existing structure while half of the proposed structure gets built. Phase 2 would run one lane of traffic in each direction on the new structure while the other half of the proposed structure gets built. Given the limited capacity of two lanes instead of four, a regional detour would be set up to limit the amount of vehicular traffic that will attempt to use the two-lane section of open bridge. Pedestrian would not be rerouted as it would be accommodated on one existing sidewalk during Phase 1 and on one proposed sidewalk during Phase 2. The proposed section includes two vehicular lanes and one sidewalk, without room for maintaining the separated bicycle lane, so bicycle traffic may need to be accommodated along alternate routes. This alternative would require closure of the electrified transit line and alternates found to maintain the transit traffic that uses this line.

3.2.3 Alternative 3 - Superstructure Replacement and Substructure Retrofit

Traffic would be accommodated for this alternative in the same manner as it will be accommodated with Alternative 1. The exception would be if replacing superstructure elements require removal of live loads, in which case traffic would be accommodated as described in Alternative 2.

3.3 Overhead Contact System

3.3.1 Alternative 1 - Rehabilitation OCS Impacts

Based on the provided description and exhibits it appears that the retrofit CFRP work is being applied to the substructure in areas that will not require any changes to the existing OCS or feeder conduits. However, if any work is done that alters the dimensions of the girders that the OCS feeder conduits are attached to, the conduit and feeder cable would need to be removed and then replaced which would impact the OCS revenue service. Removing and replacing the feeder conduit and cable would require input from the authority on alternate feeding configurations for the duration of the work, as well as for shutdown timeframes to complete the conduit and feeder removal and replacement.

3.3.2 Alternative 2 and 3 – Replacement/Hybrid OCS Impacts

For both alternatives, the removal and replacement of the superstructure and girders will require a complete removal of all OCS within the construction area. This will require providing locations to terminate the existing wires on either side of the construction zone (temporary during construction) and then removing all OCS wires, poles, feeders, conduits and other associated assemblies and hardware. Once construction has been completed, the OCS can be replaced in a similar configuration to the original. However, this will need to be reviewed and designed based on the new deck type, attachment locations and other factors.

3.4 Bridge Engineering

3.4.1 Alternative 1 – Bridge Rehabilitation and Retrofit

The sub-alternatives discussed in Section 2.1 are presented as a lower level of effort and a higher level of effort, for both the seismic and live load retrofits. This is due to the lack of analytical basis at this concept development phase of the project. Alternative 1a – CFRP Strengthening presents a lower level of impact to the structure aesthetics but also has a lower level of certainty for success. This is largely due to the balancing between strain limits at the lower level (100-yr) event and the ability to maintain life safety criteria during the upper level (1000-yr) event. The expectation is that the existing retrofit provides an adequate limit to transverse displacement at the intermediate bents such that additional shear and confinement strengthening can be accommodated by the CFRP. The taller bents with mid-level tie-beams between columns create stress concentrations at a location where typical CFRP laminates and wraps are more difficult to utilize. If these exceed the capacity for CFRP, then additional concrete or steel plate bolstering at these connections may be necessary. Longitudinally the taller bents would be expected to accommodate whatever displacement the superbent and end anchorages allow. For the shorter and skewed bents at the north end, forces would likely be higher due to increased stiffness, but displacements would also likely be lower. The lack of mid-level tie-beams eliminates the challenging stress concentrations noted above.

The superstructure strengthening uses bonded CFRP strips for flexure and shear applied to the girders. This work is performed from below the deck so traffic is not impacted. The negative moment strengthening at Bents 14 and 15, and potentially other bents if needed, uses near-surface mounted CFRP bars. This work would be done within lane closures and could be done at night when traffic volumes are lower. These bars are installed in shallow groove cuts in the concrete cover allowing them to be installed above existing deck reinforcement. The asphalt overlay in the affected zone would need to be removed and replaced.

By comparison, Alternative 1b – Reinforced Concrete Strengthening makes the bridge incredibly stiff in the transverse direction and greatly increases the shear capacity by constructing in-fill walls between the columns. This effectively turns the bridge into a “brick” for the transverse direction as there would be minimal differential displacement between bents. In the longitudinal direction strip footings can be added between existing footings to accommodate overturning and flexural demands if needed.

The superstructure strengthening involves a reinforced concrete section enlargement to the existing arched concrete girders. Resin bonded anchors would be set into the sides of the girders to avoid drilling into the bottom of girders where the existing reinforcement is closely spaced. Sectional width and depth increases would provide the needed increase in positive moment and shear capacities. Negative moment strengthening would utilize near-surface mounted CFRP bars as discussed above.

3.4.2 Alternative 2 – Bridge Replacement

Of the four span arrangements considered, the two-span configuration was not explored further for the reasons given in Section 2.2.1.4.

Alternative 2a - CIP concrete beam and slab bridge consist of two sub alternatives – a six-span and a four-span arrangement. The construction requirements would dictate that the six-span configuration will require more construction time, require more substructure and hence more expensive of the two sub alternatives.

In comparison to the precast concrete girder and steel girder alternatives it is the heaviest per square foot of deck and hence have more dead and seismic load demands. However, a CIP concrete alternative has the advantage of matching the architecture and aesthetics of the existing bridge.

Alternative 2b - Precast concrete girder bridge consists of four sub alternatives – I-girders and tub girders with either a four-span or a three-span arrangement. Although the tub girders indicate higher span/load carrying efficiency they are heavier per square foot of deck. The three-span arrangement would result in better girder efficiency and lower substructure cost barring transportation and erection of longer length precast concrete girders.

Precast concrete alternative would require shorter construction/erection time and may therefore be less expensive than the CIP concrete alternative. However, the haunch girder ends profile of the existing bridge would not be achievable with standard precast girder sections.

Alternative 2c – Steel girder bridge consist of two sub alternatives – a three-span and a four-span arrangement. This alternative has the least dead load per square foot of deck. Three-span arrangement would result in better girder efficiency and lower substructure cost barring transportation and erection of longer length girders.

Steel girder ends could be haunched to match existing bridge profile and architecture.

3.4.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

Alternative 3a – Precast Concrete Superstructure provides relatively straightforward fabrication and construction means for the superstructure utilizing common elements and construction techniques. The bent cap crossbeams, framed into existing columns, anchorage of Bents 14 and 15 to the superbent, and the temporary supports during staged construction are all aspects that are less typical in new bridge construction and would add moderate complexity to the project. Substructure seismic retrofit efforts would be similar to that of Alternative 1.

The width of the existing roadway section makes it possible to maintain two lanes of traffic and one sidewalk during each phase, but there is minimal room between the two halves for construction clearances or for a closure pour in the deck. A third stage would likely be needed to facilitate a closure pour in the deck between along the centerline of the bridge deck.

Alternative 3b – Structural Steel Superstructure with arched girders adds complexity and cost in the girder fabrication and erection but allows a superstructure shape that more closely resembles that of the existing structure. Because the span lengths are fairly short, each 4-span section of bridge could be fabricated in three segments thus only requiring two field splices in each girder line, either side of the superbent. Bent cap crossbeams, connections at the superbent, temporary supports, and closure pour issues would be similar to that of Alternative 3a.

The rolled beam option discussed in Section 2.3.2, matching the girder line spacing of the precast concrete girders, seems to have no real advantage over the concrete superstructure so not discussed further.

Alternative 3c – In-Kind Superstructure Replacement would provide the greatest opportunity to match the existing architecture of the bridge. Cast-in-place construction would be the slowest method, increasing the time of staged construction impacts, and considerable temporary shoring would be needed due to the limited redundancy of a 2-girder half-structure.

3.5 Geotechnical Engineering

Ground Motions:

Ground motions from the previous seismic retrofit study (1996) were based on a Probabilistic Seismic Hazard Analysis (PSHA) by the USGS for a 475-year return period. A peak ground acceleration (PGA) of 0.30g and a AASHTO Type II soil profile with a site coefficient (S) of 1.2 were recommended for use in the retrofit.

Current ground motions estimates were based on the 2014 USGS Probabilistic Seismic Hazard Model (PSHM) with ASCE 7-16 site coefficients and upcoming AASHTO design spectra based on the 2018 USGS PSHM. PGAs from these ground motions are approximately 0.15g to 0.20g for a 100-year return period and 0.50g to 0.55g for a 1,000-year return period. Acceleration response spectra have been provided for this alternatives analysis. See Attachment D. Preliminary ARS Curve Exhibits for curve plots.

Rehab Options: No changes to the substructure indicated. However, an increase in superstructure forces are described above which will increase the demand on the foundations. Additional lateral support for the North Abutment will likely be required to resist the increased seismic demand in lateral earth pressures.

Replacement Options:

Foundations. Most foundations can be shallow foundations with high bearing capacities. These bearing capacities require the bottom of shallow foundations to be located within the very dense glacial soils beneath existing fill. Existing bottom of foundation elevations can be used as a guide for additional shallow foundations. Deep foundations such as drilled shafts will be required near the current Pier 16 given the deep 108" sewer trunk line to carry loads below the sewer line. Shafts would need to be located at least 3 shaft diameters away from the sewer line.

Abutment Support. The North Abutment will likely require additional ground anchors such as tiebacks to resist the increased seismic demand and lateral earth pressures.

Excavations. If sufficient room is not available for open cut excavations to accommodate foundation depths, then temporary shoring such as cantilever soldier piles can be used.

Groundwater. Groundwater was generally encountered in the glacial advance outwash soils about 40 feet below ground surface. However local groundwater seepage may be encountered within the fill during excavations for footings possibly requiring groundwater control.

3.6 Utilities and Drainage

Osborn Consulting, Inc. (OCI) staff visually verified surface and above-grade existing utilities for the North Approach project area during a site visit on November 15, 2022. Prior to the site visit, OCI reviewed existing utility data, survey information and maps, that were provided by the utility owners. See Attachment E. Utility Exhibits for maps provided by the utility owners, highlighted utilities on the survey basemap, and annotated site visit notes and relevant pictures. Table 1 lists the known utilities within the North Approach project area.

Some utilities were observed during the site visit that may affect proposed repairs but were unable to be identified with the information made available to OCI and include:

- Two miscellaneous pipes protruding through the bottom of the bridge deck
- Overhead line or power line under the bridge along NE Northgate Way; additional information is needed to identify the utility owner for each of these

- Power vaults on the northeast corner of the project identified during the survey as seen on the basemap; owner or power source has not been identified

Table 1: Existing Utility Data

Utility Provider	Data Provided By	Utilities in Project Vicinity?	Identify Which Alternative[(1)] Could Trigger a Utility Relocate	Data Provided
PSE Gas	PSE	Yes	2	Email from maprequest@pse.com on 11/18/2022: Gas image attached. No PSE electric.
PSE Electric	PSE	No	NA	Email from maprequest@pse.com on 11/18/2022: Gas image attached. No PSE electric.
Lumen/Century Link	Century Link	Yes	2	Email from Philp Martin at Lumen on 11/10/22: LUMEN Local/National has facilities within your proposed construction area. Please find the enclosed drawings indicating the location of the LUMEN facilities.
Windstream	Windstream	No	NA	Email from Lisa Zingula on 11/08/22: Windstream facilities are not in conflict with the scope of this work.
King County Sewer Main	Seattle DSO and Survey	Yes	2	Maps provided via SDOT DSO website and survey.
Seattle Public Utilities – Sewer	Seattle DSO and Survey	Yes	2	Maps provided via SDOT DSO website and survey.
Seattle Public Utilities – Stormwater	Seattle DSO and Survey	Yes	1, 2, and 3	Maps provided via SDOT DSO website, survey, and visual identification.
Seattle Public Utilities – Water	Seattle DSO and Survey	No	2	Maps provided via SDOT DSO website and survey.
Overhead Contact System(Trolley System)	Survey	Yes	1, 2, and 3	Locations identified by survey and visual identification.
Overhead Lines – TBD	Visual and Site Visit	Yes	1, 2, and 3	Visual identification and some shown on survey basemap.
Lighting	Visual and Survey	Yes	1, 2 and 3	Locations identified by survey and visual identification.

Notes:

[(1)] Descriptions of the three proposed repair alternatives are described in Section Error! Reference source not found. and are defined as:

Alternative 1 – Bridge Rehabilitation and Retrofit

Alternative 2 – Bridge Replacement

Alternative 3 – Superstructure Replacement and Substructure Retrofit

DSO – Development Services Office

PSE – Puget Sound Energy

SDOT – Seattle Department of Transportation

3.6.1 Known Utilities Potentially Affected by Proposed Alternative 1 – Bridge Rehabilitation and Retrofit Repairs

SPU Stormwater – There are four stormwater inlets within the bridge deck that are connected into bridge drains; two between Bent 15 and 14 and two at Pier 10. The bridge drains could potentially need to be replaced for the installation of the retrofit. Attachment 3.6.2 provides details of the survey and site photographs are found in Attachment 3.6.3.

Overhead Contact System – Trolley pull boxes and conduits were visually identified along the side of the superstructure and may need to be relocated for retrofit work to take place. This would need to be confirmed with the Overhead Contact System lead.

Overhead Lines – Lines identified along NE Northlake near Bent 10 may need to be temporarily relocated for construction access. Attachment 3.6.3 provides notes from the site visit.

Lighting – Under-bridge lighting could be affected by the retrofit and may need to be relocated or replaced once the repairs are complete. Attachment 3.6.2 provides details of the survey and site photographs are found in Attachment 3.6.3.

3.6.2 Known Utilities Potentially Affected by Proposed Alternative 2 – Bridge Replacement Repairs

PSE Gas – Various sizes of gas lines ranging from 2-inch Medium polyethylene pipe (MPE) intermediate pressure (IP) lines up to a 12-inch steel welded pipe(STW) high pressure(HP) line are within the project footprint. New foundations and construction access could potentially necessitate relocation of these lines. The map provided by the utility owner is available as Attachment 3.6.1 and Attachment 3.6.2 provides the basemap survey.

Lumen/Century Link – Provided information identified an underground line, a longhaul underground line, and a local copper aerial line. All lines may need to be relocated based on new foundation locations and construction access. The map provided by the utility owner is available as Attachment 3.6.1 and Attachment 3.6.2 provides the basemap survey.

King County Sewer – A 108-inch sewer main runs east to west parallel with the Burke Gilman Trail at Bent 16. The new bridge foundation will need to be located to avoid relocation of this line. The map provided by the utility owner is available as Attachment 3.6.1 and Attachment 3.6.2 provides the basemap survey.

SPU Sewer – Various 10-inch- to 18-inch-sized lines are potentially located within the limits of the new bridge's foundation or construction access. The map provided by the utility owner is available as Attachment 3.6.1 and Attachment 3.6.2 provides the basemap survey.

SPU Stormwater – Various storm lines sized from 15 inches up to 18 inches could potentially need to be relocated for bridge construction, foundation locations, roadway approach changes, and other construction-related activities. Additionally, there are four stormwater inlets within the bridge deck that are connect into bridge drains; two between Bent 15 & 14 and two at Pier 10. These systems will need to be replaced with the new bridge. The map provided by the utility owner is available as Attachment 3.6.1, Attachment 3.6.2 provides the basemap survey, and site photos for bridge drains are available in Attachment 3.6.3.

SPU Water – The DSO map and basemap identify some water utility access maintenance holes in the project area. No information is provided as what is inside those utility access maintenance holes. The map provided by the utility owner is available as Attachment 3.6.1 and Attachment 3.6.2 provides the basemap survey.

Overhead Contact System – Section **Error! Reference source not found.** provides more information about the project's Overhead Contact System. The entire system would need to be temporarily relocated and replaced with a new bridge structure.

Overhead Lines – Overhead lines were visually identified along NE Northlake during the site visit and would need to be temporarily relocated for new bridge construction. Additionally, a power line feeding the under-bridge lighting would need to be relocated and replaced with the new structure. Attachment 3.6.3 provide notes from the site visit.

Lighting – Overhead lighting mounted to poles on the top of the bridge and under-bridge lighting will need to be replaced with the new bridge structure. Attachment 3.6.2 provides the basemap survey and site photos of the under-bridge lighting are available in Attachment 3.6.3.

3.6.3 Known Utilities Potentially Affected by Proposed Alternative 3 – Superstructure Replacement and Substructure Retrofit Repairs

SPU Stormwater – Four stormwater inlets within the bridge deck connect into bridge drains; two between Bent 15 and 14 and two at Pier 10. These systems will need to be replaced with the new superstructure replacement. The map provided by the utility owner is available as Attachment 3.6.1, Attachment 3.6.2 provides the basemap survey, and site photos for bridge drains are available in Attachment 3.6.3.

Overhead Contact System – Trolley pull boxes and conduits were visually identified along the side of the superstructure and may possibly need to be relocated for retrofit work to take place. This would need to be confirmed with the Overhead Contact System lead.

Overhead Lines – Section **Error! Reference source not found.** provides more information about the project's Overhead Contact System. The entire system would need to be temporarily relocated and replaced with the new super structure. Site visit notes are provided in Attachment 3.6.3.

Lighting – Overhead lighting mounted to poles on the top of the bridge and under-bridge lighting will need to be replaced with the new bridge structure. Attachment 3.6.2 provides the basemap survey and site photos of the under-bridge lighting are available in Attachment 3.6.3.

3.7 Constructability and Construction Staging

3.7.1 Alternative 1 – Bridge Rehabilitation and Retrofit

Eastlake Ave NE and NE 40th St is a busy throughfare into and out of University of Washington, so lane closures are at a minimum. For Alternative 1, most of the project access will be from below the Eastlake Ave NE. Access to the project site will be from the Burke Gilman Trail Road which will be closed during construction or NE Northlake Way access the work zone. The negative moment section work at Pier 14 & Pier 15 require Eastlake Ave NE lanes closure.

Nighttime lane closure of Eastlake Ave NE or NE 40th St will help the project duration. It is envisioned that manlifts will be used for most of the carbon fiber reinforced polymer (CFRP) installation. At the Pier 10 diaphragm wall scaffolding and manlift will be used for access.

3.7.2 Alternative 2 – Bridge Replacement

Eastlake Ave NE and NE 40th St is a busy throughfare into and out of University of Washington, so lane closures are at a minimum. Most of the project access for Alternative 2-bridge replacement will be from below the Eastlake Ave NE. Access to the work zone will be either from the Burke Gilman Trail Road which will be closed during construction or from NE Northlake Way.

Full closure of NE Northlake Way, NE 40th St and the detoured Burke Trail is required for existing bridge demolition. If the bridge demolition is restricted to weekend and daytime closures work, this will require multiple weekend full roadway closures.

After bridge demolition, the majority of the bridge replacement activities access is from NE Northlake Way. For the girder erection access from Eastlake Ave NE is required.

Nighttime lane closure of Eastlake Ave NE or NE 40th St is suggested and will enable the contractor to be more efficient and potentially minimize the project duration.

Due to staged construction for Alternative 2, this will create a tight work zone that require coordination to stagger subcontractor's work. The full bridge replacement requires multiple activities all at once. Given the space restrictions, coordination of the work zones for these activities is required.

3.7.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

Eastlake Ave NE and NE 40th St is a busy throughfare into and out of University of Washington, so lane closures are at a minimum. Access for most of the construction of Alternative 3 will be from Eastlake Ave NE. Other access alternatives to the project site will be from the Burke Gilman Trail which will be closed during construction or NE Northlake Way access the work zone.

Full roadway closure of NE Northlake Way, NE 40th St and the detoured Burke Trail is required for existing bridge superstructure demolition. If the bridge demolition is restricted to weekend and daytime closures , this will require multiple weekend full roadway closures.

After bridge demolition, the permanent work will be accessing from NE Northlake Way. Access from Eastlake Ave NE are required to set girders.

Due to staging construction for Alternative 3 and all the existing columns in the way, this will create a tight work zone that require coordination to stagger subcontractor's work. Given the space restrictions, coordination of the work zones for these activities is required.

Nighttime lane closure of Eastlake Ave NE or NE 40th St is suggested and will enable the contractor to be more efficient and potentially minimize the project duration.

It is envisioned that manlifts will be used for most of the carbon fiber reinforced polymer (CFRP) installation. At the Pier 10 diaphragm wall scaffolding and manlift will be used for access.

3.8 Right-of-Way

This section describes the right-of-way impacts and funding compliance for the University Bridge North approach rehabilitation or replacement alternatives discussed above.

Funding sources precipitate compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended.

3.8.1 Alternative 1 – Bridge Rehabilitation and Retrofit

Acquisition - The right-of-way analysis indicates ample space within existing right-of-way for project construction. The need for additional permanent, or temporary, property rights are not anticipated at this time.

Relocation – There are 3 separate driveway and gate access points to storage areas beneath the bridge's north approach between NE Northlake Way and the Burke-Gilman Trail. There are multiple tenants and all appear to be associated with the University of Washington.

All of the personal property currently stored beneath the bridge structure will need to be relocated under the terms and conditions of the Uniform Act. If storage space is made available in the "after" condition, there may be the need to move the personal property twice.

In addition to the personal property storage, the Wall of Death art installation will either need to be protected in place or disassembled, stored and reassembled at project completion.

3.8.2 Alternative 2 – Bridge Replacement

Acquisition - The right-of-way analysis indicates ample space within existing right-of-way for project construction. There is more likely a need for additional permanent, or temporary, property rights due to the nature of this alternative.

Relocation – There are 3 separate driveway and gate access points to storage areas beneath the bridge's north approach between NE Northlake Way and the Burke-Gilman Trail. There are multiple tenants and all appear to be associated with the University of Washington.

All of the personal property currently stored beneath the bridge structure will need to be relocated under the terms and conditions of the Uniform Act. If storage space is made available in the "after" condition, there may be the need to move the personal property twice.

In addition to the personal property storage, the Wall of Death art installation will either need to be protected in place or disassembled, stored and reassembled at project completion.

3.8.3 Alternative 3 – Superstructure Replacement and Substructure Retrofit

Acquisition - The right-of-way analysis indicates ample space within existing right-of-way for project construction. The need for additional permanent, or temporary, property rights are not anticipated at this time.

Relocation – There are 3 separate driveway and gate access points to storage areas beneath the bridge's north approach between NE Northlake Way and the Burke-Gilman Trail. There are multiple tenants and all appear to be associated with the University of Washington.

All of the personal property currently stored beneath the bridge structure will need to be relocated under the terms and conditions of the Uniform Act. If storage space is made available in the "after" condition, there may be the need to move the personal property twice.

In addition to the personal property storage, the Wall of Death art installation will either need to be protected in place or disassembled, stored and reassembled at project completion.

3.9 Environmental Planning

This section describes the permitting and NEPA compliance for the University Bridge North approach rehabilitation or replacements alternatives discussed above.

3.9.1 Funding

The permitting analysis assumes funding for the project would be provided in part through Federal Highway Administration and Washington State Department of Transportation Local Programs.

3.9.2 Methodology

Permitting requirements for the project were evaluated by reviewing appropriate sections of the City of Seattle, Washington State, and United Sates code.

3.9.3 NEPA Compliance

A Categorical Exclusion (CE) would be prepared to satisfy the requirements of NEPA in accordance with 23 CFR 771.117. The 2015 Categorical Exclusions (CE) Programmatic Agreement between WSDOT and FHWA allows WSDOT to approve all CE NEPA documents for FHWA funded projects. 23 CFR 771.117 provides CEs under which FHWA projects may qualify and (c)(28) provides an exception for bridges:

> *Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings, if the actions meet the constraints in paragraph (e) of this section.*

Paragraph (e) dictates that a project may not be processed as a CE if any of the following conditions are met:

> *(1) An acquisition of more than a minor amount of right-of-way or that would result in any residential or non-residential displacements;*
>
> *(2) An action that needs a bridge permit from the U.S. Coast Guard, or an action that does not meet the terms and conditions of a U.S. Army Corps of Engineers nationwide or general permit under section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act of 1899;*
>
> *(3) A finding of "adverse effect" to historic properties under the National Historic Preservation Act, the use of a resource protected under 23 U.S.C. 138 or 49 U.S.C. 303 (section 4(f)) except for actions resulting in de minimis impacts, or a finding of "may affect, likely to adversely affect" threatened or endangered species or critical habitat under the Endangered Species Act;*
>
> *(4) Construction of temporary access or the closure of existing road, bridge, or ramps that would result in major traffic disruptions;*
>
> *(5) Changes in access control;*
>
> *(6) A floodplain encroachment other than functionally dependent uses (e.g., bridges, wetlands) or actions that facilitate open space use (e.g., recreational trails, bicycle and pedestrian paths); or construction activities in, across or adjacent to a river component designated or proposed for inclusion in the National System of Wild and Scenic Rivers.*

Conditions 1, 2, 4, 5, and 6 are not likely to be triggered by the project. It is too early in the process to determine if Condition 3 would be triggered. A determination of whether NEPA categorical exclusion under 23 CFR 771.117(c)(28) applies or if an NEPA Environmental Assessment be required cannot be determined until the alternative analysis progresses further. .

3.9.4 SEPA Compliance

WAC 197-11-800 provides a list of projects that are categorically exempt from SEPA review. There are two exemptions that relate to bridge projects: WAC 197-11-800(26) relates to

Washington State Department of Transportation Projects and WAC 197-11-800(27) provides an exemption for structurally deficient city, town and county bridges. Structurally deficient is defined as:

The repair, reconstruction, restoration, retrofitting, or replacement of a structurally deficient city, town or county bridge shall be exempt as long as the action:

(a) Occurs within the existing right of way and in a manner that substantially conforms to the preexisting design, function, and location as the original except to meet current engineering standards or environmental permit requirements; and

(b) The action does not result in addition of automobile lanes, a change in capacity, or a change in functional use of the facility.

"Structurally deficient" means a bridge that is classified as in poor condition under the state bridge condition rating system and is reported by the state to the national bridge inventory as having a deck, superstructure, or substructure rating of four or below. Structurally deficient bridges are characterized by deteriorated conditions of significant bridge elements and potentially reduced load-carrying capacity. Bridges deemed structurally deficient typically require significant maintenance and repair to remain in service, and require major rehabilitation or replacement to address the underlying deficiency.

Since the University Bridge's deck, superstructure and substructure all have ratings of greater then 4, the bridge is not structurally deficient and thus subject to SEPA review.

3.9.5 Federal, State and Local Permitting Requirements

The applicability of federal, state and local permits is described in Table 1 below.

Table 1. Federal, State and Local Permits

Permit	Lead Agency	Notes	Applicability
Shoreline Substantial Development Permit (Seattle Municipal Code (SMC) Chapter 23.60A)	City of Seattle (SDCI)	Project appears to be more than 200 feet from the shoreline. Provided no work extends into shoreline jurisdiction, shoreline permitting will not be required.	Not required.
Certificate of Approval (SMC 25.05.675)	City of Seattle (SHPP)	If the site is designated as a Seattle Landmark, the Project needs a Certificate of Approval for alterations from the Historic Preservation Program. If the project is not currently designated but appears to meet the criteria for designation, it may be referred to the Landmarks Preservation Board during the permitting process.	Required

Permit	Lead Agency	Notes	Applicability
Floodplain Development License (SMC Chapter 25.06)	City of Seattle (SDCI)	Project is not located within the 100-year floodplain.	Not required.
Land Use / Master Use Permit – Environmentally Critical Areas (ECA) (SMC Chapter 25.09)	City of Seattle (SDCI)	Project is intersecting with a mapped area of steep slope on the Seattle Department of Construction and Inspections GIS web map, which falls under the definition of an ECA as described in SMC 25.09.	Required.
Street Improvement Permit (SIP) (SMC Chapter 15.04)	City of Seattle (SDOT)	Pursuant to SMC 15.04.010.A the requirements of obtaining a permit and complying with permit procedures do not apply to street maintenance work performed by the City's Department of Transportation or street improvement work authorized by ordinance and administered by the Director of Transportation.	Not required (assuming project authorized by ordinance).
Tree Removal Permit (SMC Chapter 25.11)	City of Seattle (SDCI)	Tree protection and removal requirements vary depending on a number of factors including zoning, size of trees, and presence of environmentally critical areas. If a tree is exceptional, in an environmentally critical area (ECA), on undeveloped land, or if more than three trees are removed in a one year, SDCI requires a permit.	Required for removal of trees on private property.
Urban Forestry Permit (Street Tree Permit) (SMC Chapter 15.43)	City of Seattle (SDOT)	SDOT issues Urban Forestry Permits for the following in the public right-of-way: • Plant a tree • Prune a tree • Remove/replace a tree	Separate Permit not required if approved as with a SIP. SDOT not subject to SIP if project approved by ordinance, but street trees should be addressed.
Utility Major Permit (SUUMP) (SMC Chapter 15.32)	City of Seattle (SDOT)	SUUMPs are required for work that covers a larger than a one-block radius geographic area.	Required.
NPDES Construction Stormwater General Permit (RCW 90.48)	WA Department of Ecology	Required for soil disturbing activities on sites that: • disturb one acre or more • are smaller than one acre that are part of a larger common plan of development that will ultimately disturb one acre or more and discharge stormwater to surface waters • are of any size discharging stormwater to state waters (Waters of the State) that is determined to be a significant contributor of pollutants • are of any size that can be reasonably expected to cause a violation of any water quality standard Project area appears close to one acre.	Required.

Permit	Lead Agency	Notes	Applicability
SEPA Checklist (RCW 43.21)	WA Department of Ecology (City of Seattle Lead Agency)	Given the University Bridge is not structurally deficient, the bridge exemption in WAC 197-11-800(27) cannot be applied and SEPA review will be required.	Required.
Hydraulic Project Approval (RCW 77.55)	Washington Department of Fish and Wildlife	Project will not be in or over state waters and doesn't require use, diversion, obstruction, or change for the natural flow of any salt or freshwater of the state.	Not required.
National Historic Preservation Act Section 106	Washington Department of Historic Preservation (DAHP)	Required by projects receiving federal funding, licenses, or permits.	Required.
CWA Section 401 Water Quality Certification (33 USC § 1251 et seq.)	WA Department of Ecology	Project will not result in discharge into waters or non-isolated wetlands or excavation in water or non-isolated wetlands (including dredge or fill material).	Not required.
CWA Section 404 Permit (33 USC §1251 et seq.)	Army Corps of Engineers	No ground disturbance in Navigable Waters of the US (WOUS).	Not required.
Section 10 of the Rivers and Harbors Act Permit	Army Corps of Engineers	No work in, over or above Navigable WOUS.	Not required.
National Environmental Policy Act (NEPA) (42 USC § 55)	Federal Highways Administration and Washington Department of Transportation	As the administer of the funds, FHWA is required to prepare appropriate NEPA documentation. It is too early in the process to determine if this review would be an Environmental Assessment or if the project would fall under categorical exclusion 23 CFR 771.117(c)(28).	Required.

Attachments:

A. Alternative 1 – Bridge Rehabilitation and Retrofit Exhibits

B, Alternative 2 – Bridge Replacement Exhibits

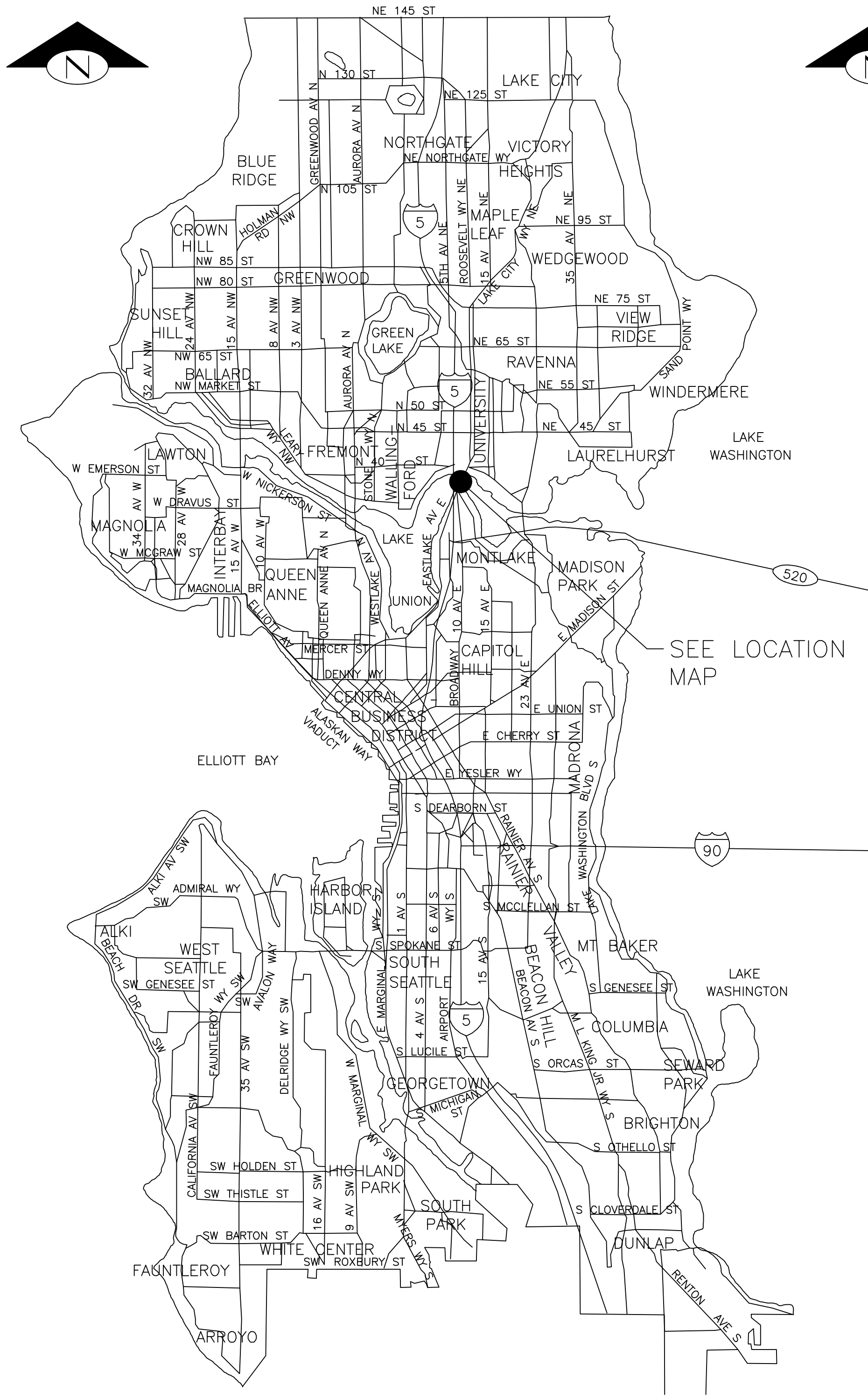
C. Alternative 3 – Superstructure Replacement and Substructure Retrofit Exhibits

D. Preliminary ARS Curve Exhibits

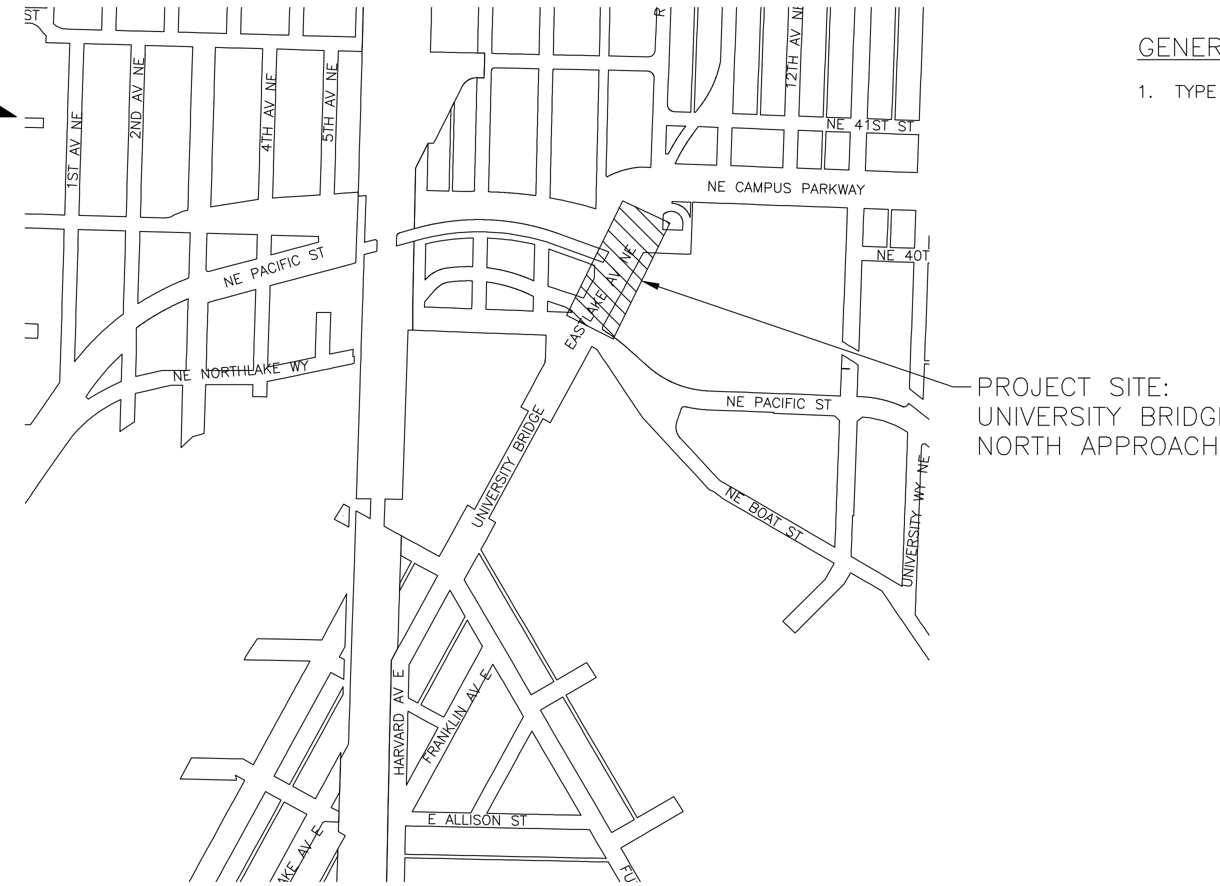
E. Utility Exhibits

Attachment A

Alt. 1 – Bridge Rehabilitation and Retrofit Exhibits



VICINITY MAP
NOT TO SCALE



LOCATION MAP
SCALE: 1" = 400'

GENERAL NOTES

1. TYPE NOTES HERE

Sheet List Table

SHT. NO	DESCRIPTION
1	VICINITY MAP, LOCATION MAP, SHEET INDEX
2	LAYOUT RETROFIT ALT 1A
3	PIER 10 MODIFICATIONS RETROFIT ALT1
4	BENT ELEVATIONS RETROFIT ALT 1A
5	GIRDER STRENGTHENING RETROFIT ALT 1A
6	LAYOUT RETROFIT ALT 1B
7	PIER 10 MODIFICATIONS RETROFIT ALT2
8	BENT ELEVATIONS RETROFIT ALT 2
9	GIRDER STRENGTHENING RETROFIT ALT 1B

SDCI ########, SDOT ########

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VICINITY MAP, LOCATION MAP, SHEET INDEX

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REGISTERED PROFESSIONAL ENGINEER

Seattle Department of Transportation
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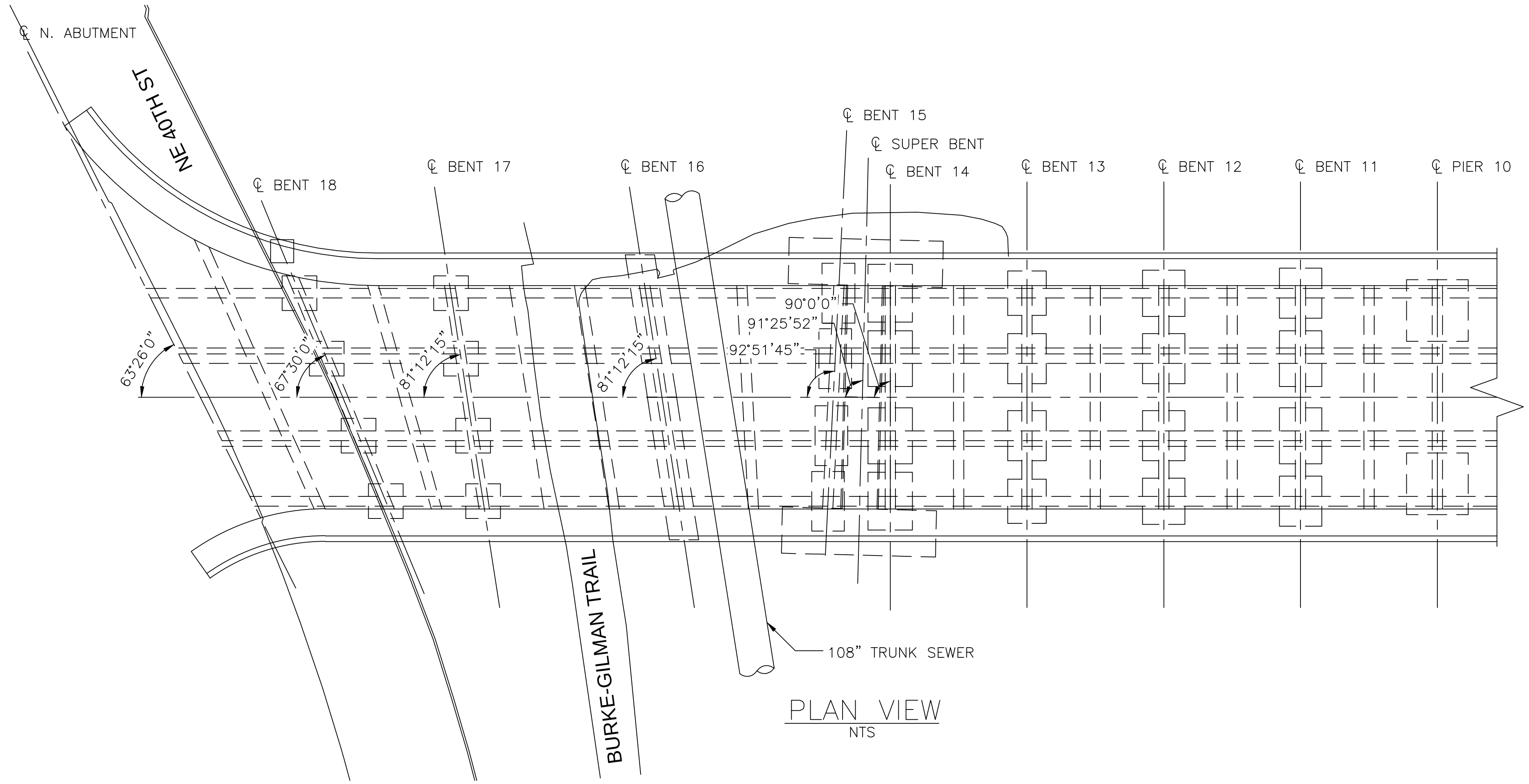
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

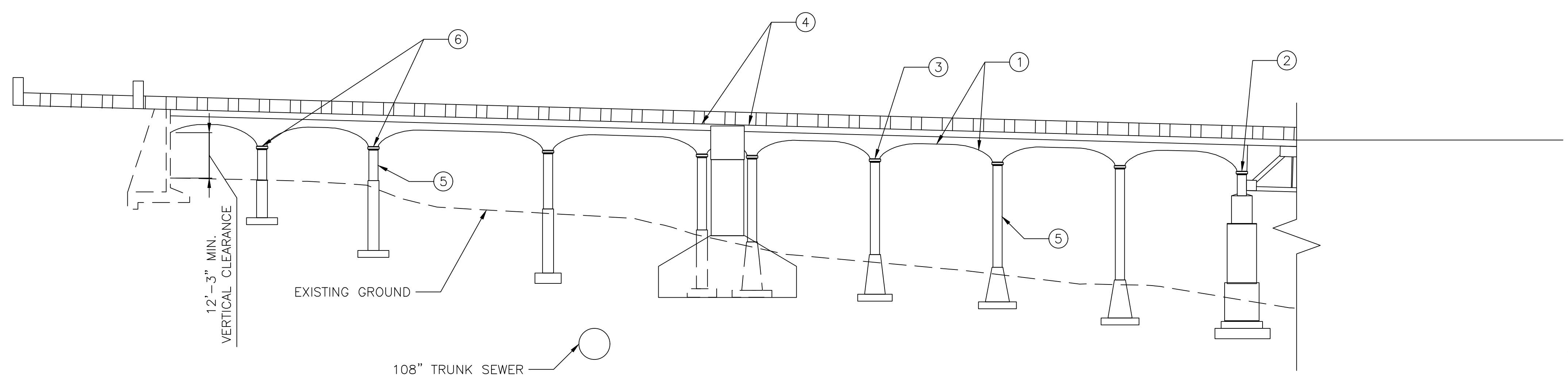
JOB PC
CO
VPI #
SHEET 1 OF 9



PLAN VIEW
NTS

PROPOSED REHABILITATION WORK

1. CFRP STRENGTHENING FOR SHEAR AND FLEXURE ON GIRDERS, TYPICAL ALL SPANS.
2. PIER 10 DIAPHRAGM ENLARGEMENT AND STRENGTHENING.
3. CFRP STRENGTHENING OF CROSSBEAMS, TYPICAL ALL SPANS.
4. NEAR SURFACE MOUNTED CFRP BARS FOR NEGATIVE FLEXURE OVER BENTS.
5. CFRP SHEAR AND CONFINEMENT STRENGTHENING OF COLUMNS, TYPICAL ALL BENTS.
6. SEAT BOLSTER AT ROCKER BEARINGS.



ELEVATION VIEW
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SDCI ########, SDOT ########

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LAYOUT RETROFIT ALT 1A

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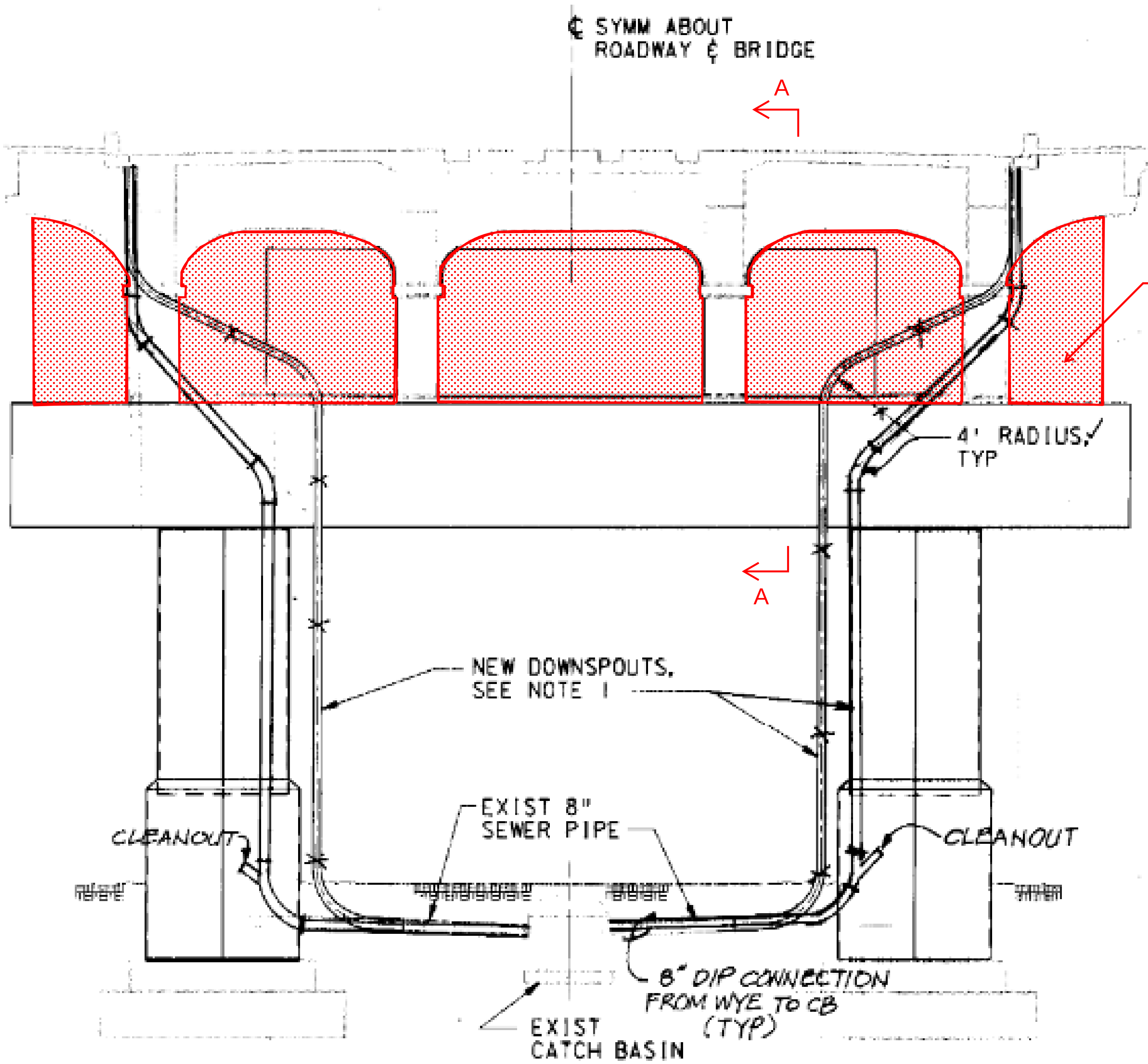
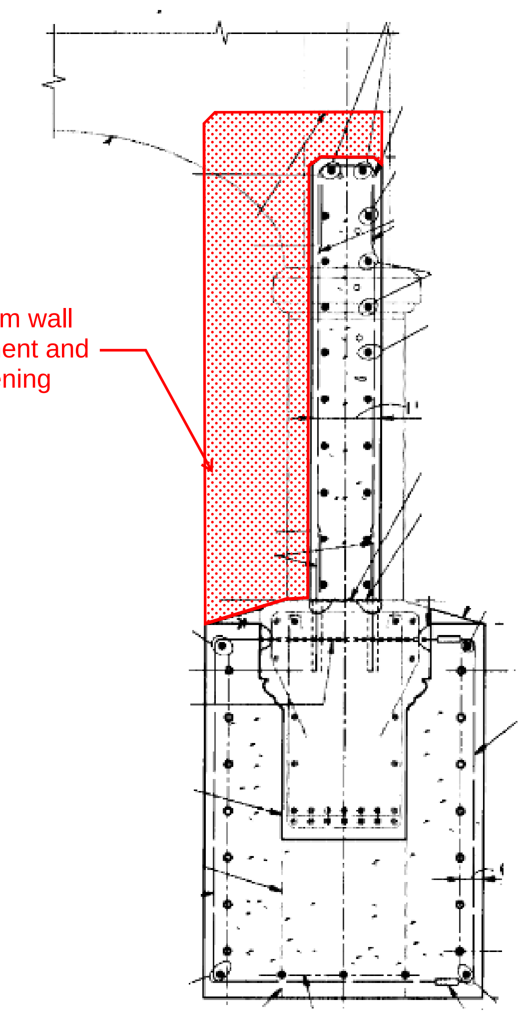


MODIFIED PIER 10 - ELEVATION LOOKING SOUTH



SECTION A-A

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PIER 10 MODIFICATIONS RETROFIT ALT1

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SHEET 3 OF 9

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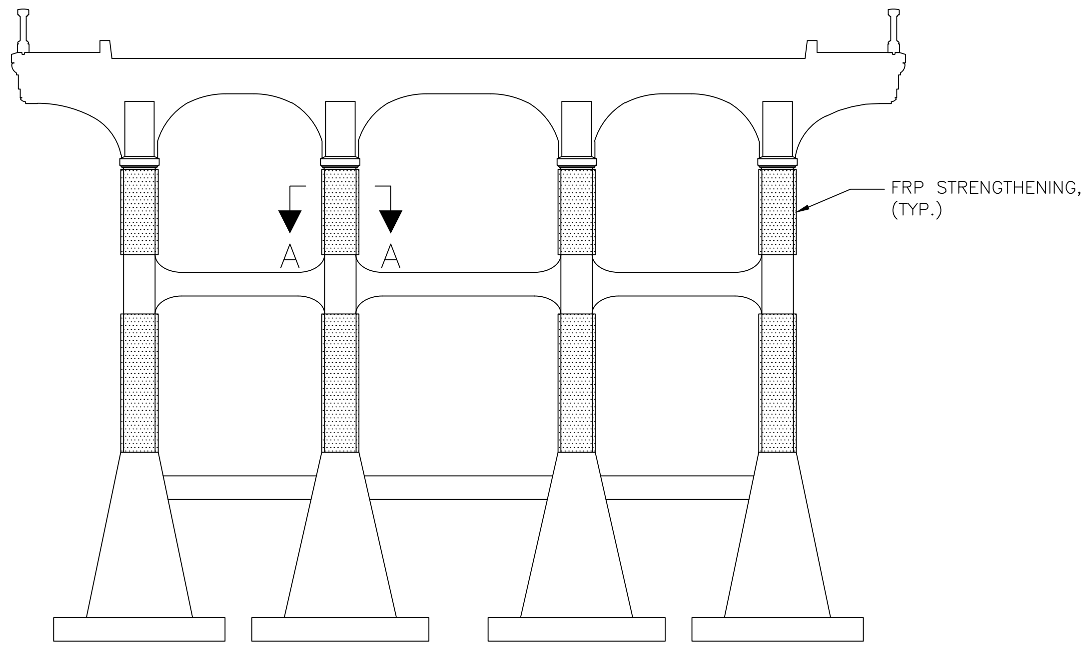
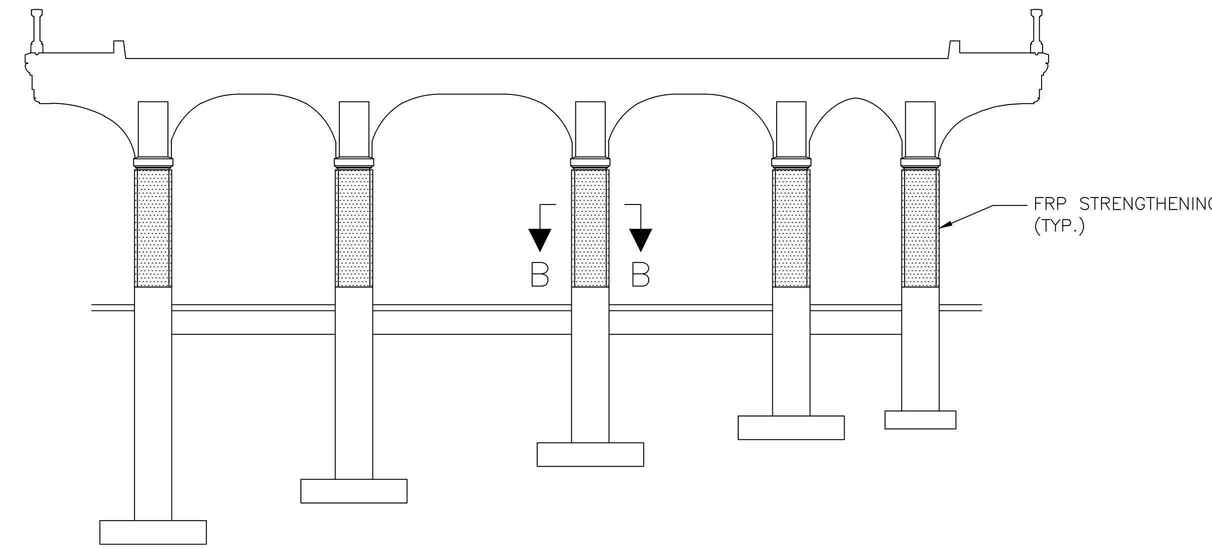


BENT 14 – FRONT ELEVATION (LOOKING NORTH)
NTS



BENT 18 – FRONT ELEVATION (LOOKING NORTH)
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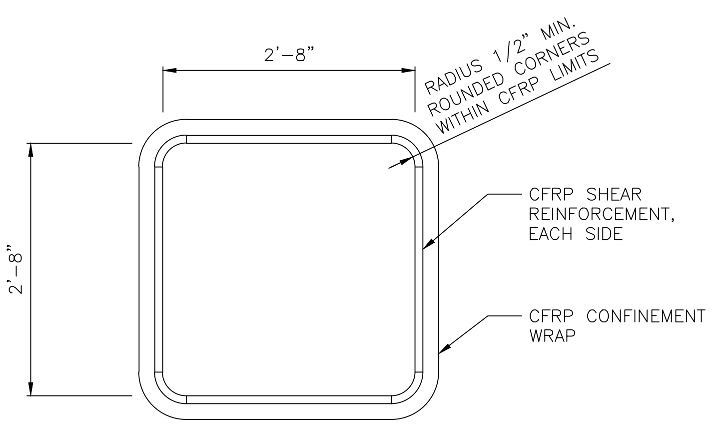
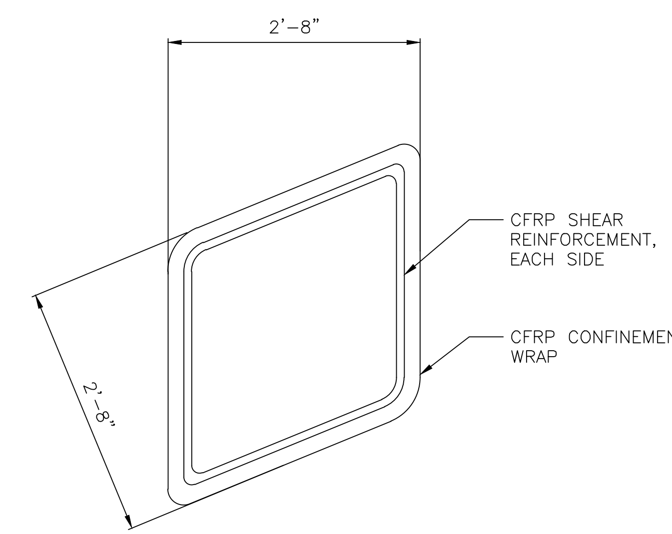


SECTION A–A
NTS



SECTION B–B
NTS

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BENT ELEVATIONS RETROFIT ALT 1A

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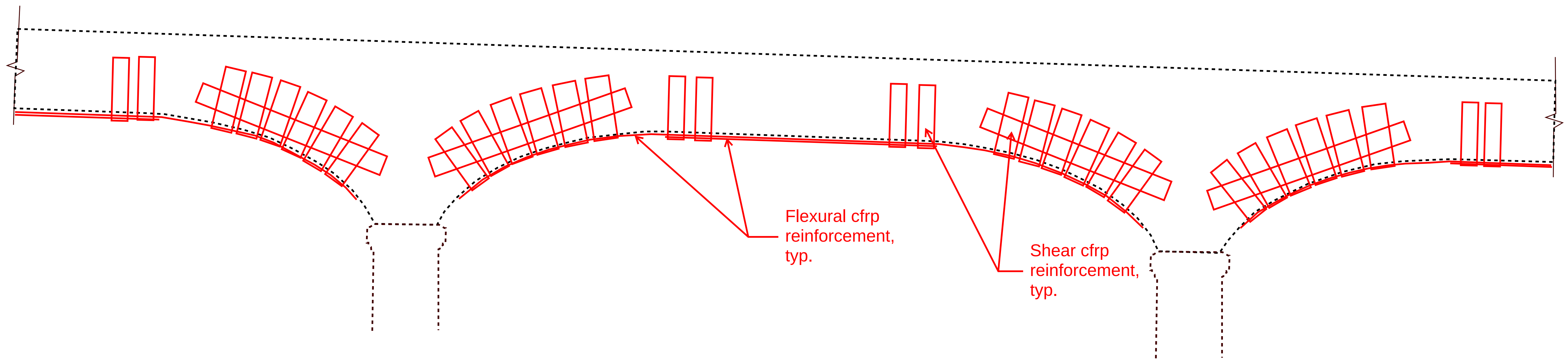
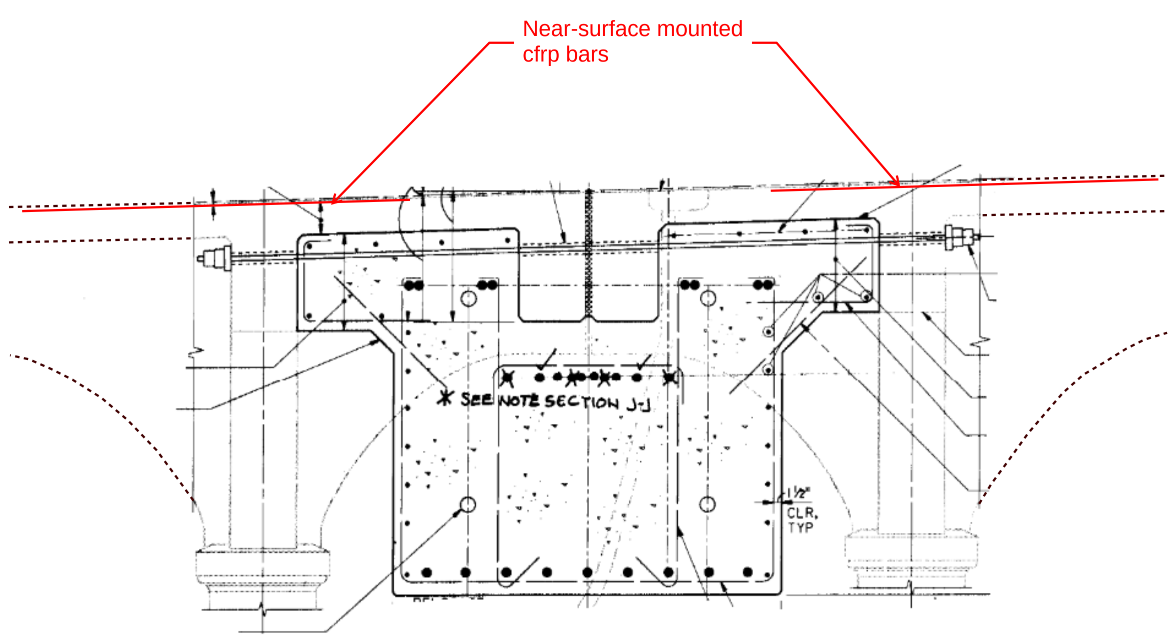
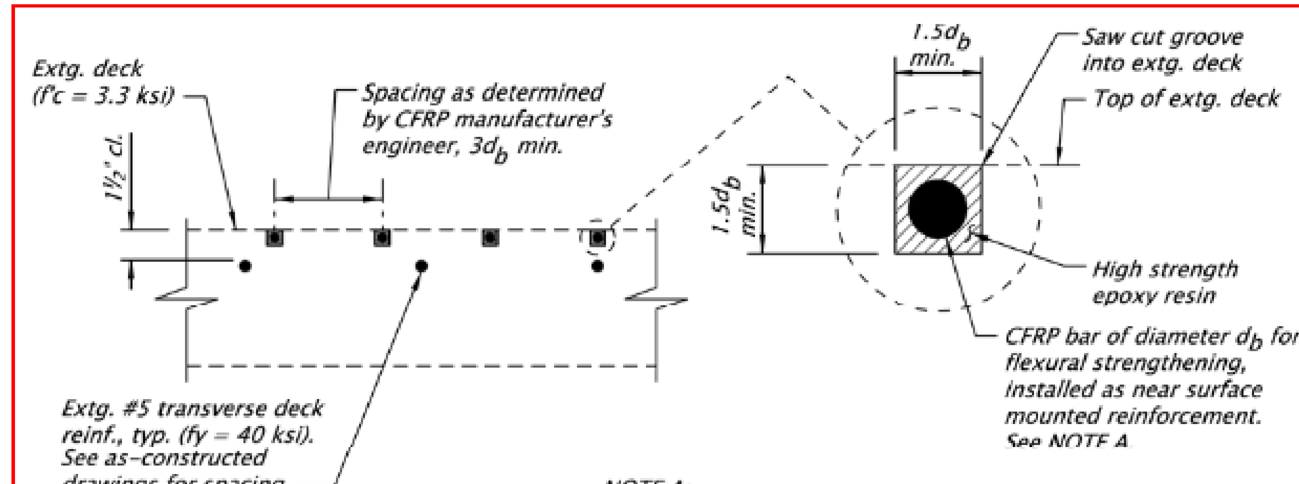


GIRDER ELEVATION - CFRP STRENGTHENING



NEGATIVE MOMENT SECTIONS AT BENT 14, 15



SECTION A–A

NOTE A:
Strengthen the extg. deck overhang to provide additional factored moment capacity of 9.0 kip-ft per foot of deck from the resistance of the CFRP reinforcement. See Special Provision 00566 for further details and requirements.

NEAR-SURFACE MOUNTED CFRP STRENGTHENING - TYPICAL DETAIL FOR DECK OVERHANG

GIRDER STRENGTHENING RETROFIT ALT 1A

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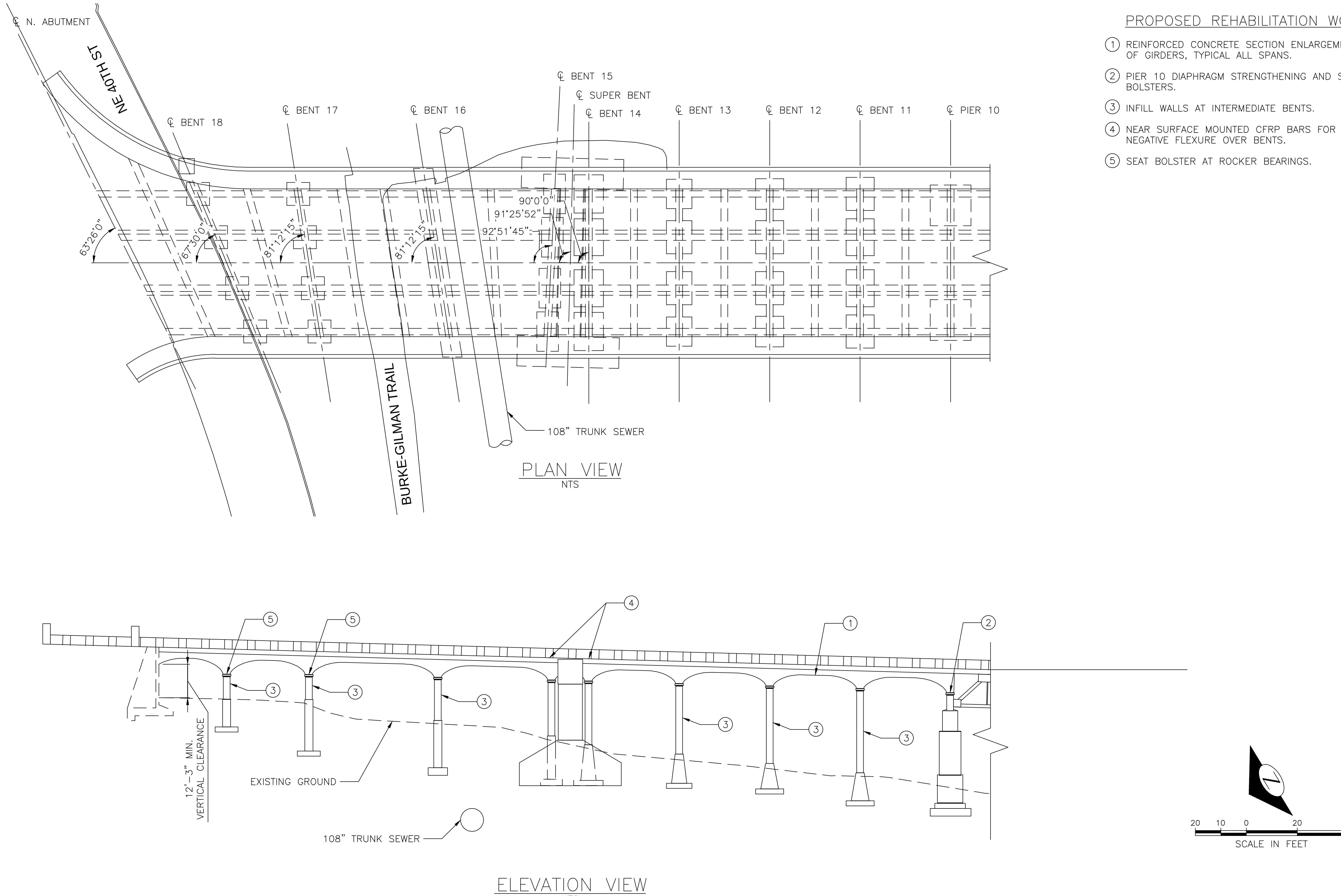
UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

JOB PC CO
VPI #

PROPOSED REHABILITATION WORK

1. REINFORCED CONCRETE SECTION ENLARGEMENT OF GIRDERS, TYPICAL ALL SPANS.
2. PIER 10 DIAPHRAGM STRENGTHENING AND SEAT BOLSTERS.
3. INFILL WALLS AT INTERMEDIATE BENTS.
4. NEAR SURFACE MOUNTED CFRP BARS FOR NEGATIVE FLEXURE OVER BENTS.
5. SEAT BOLSTER AT ROCKER BEARINGS.



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LAYOUT RETROFIT ALT 1B

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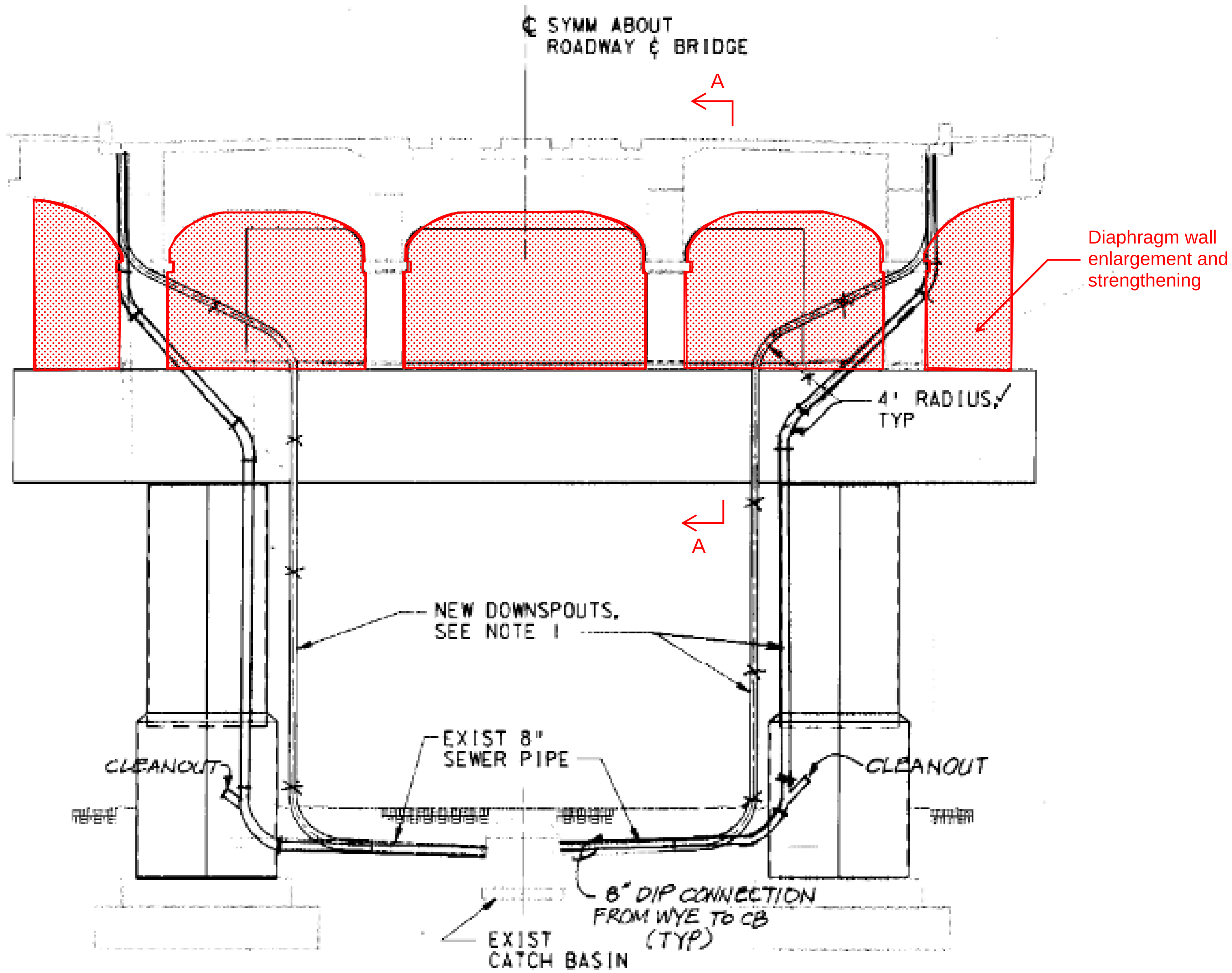
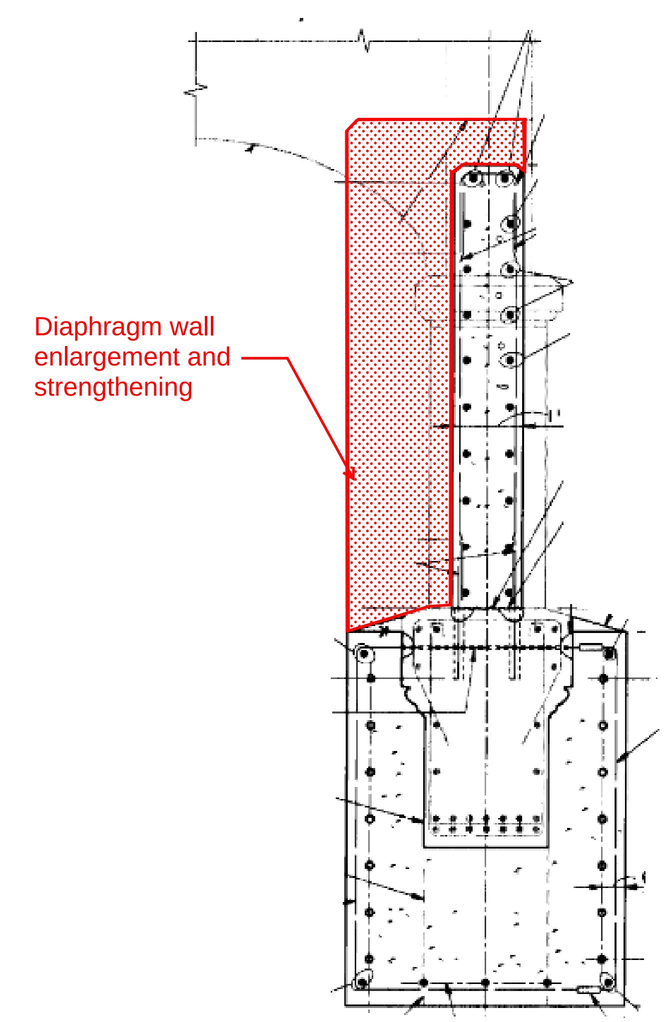


MODIFIED PIER 10 - ELEVATION LOOKING SOUTH



SECTION A-A

PIER 10 MODIFICATIONS RETROFIT ALT2

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UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

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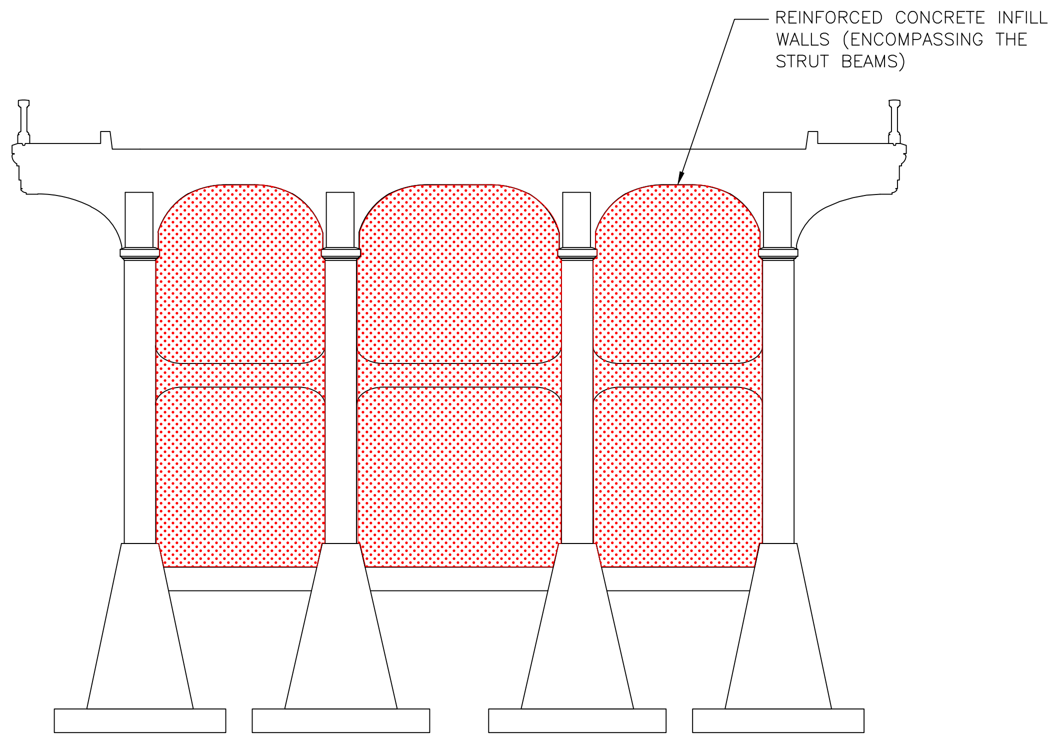

BENT 14 – FRONT ELEVATION (LOOKING NORTH)
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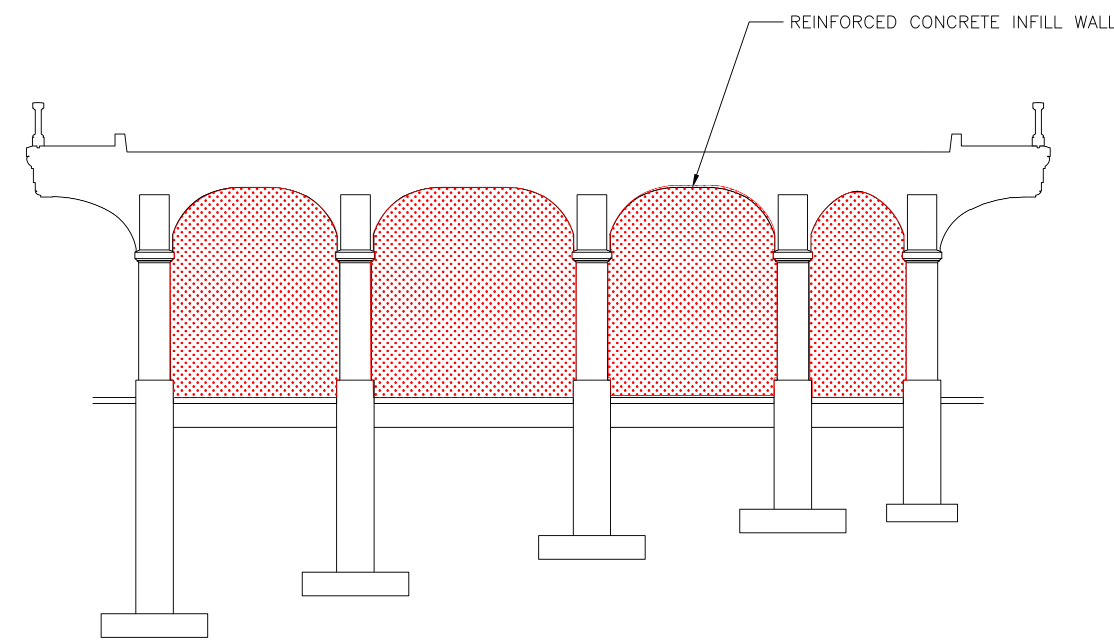

BENT 18 – FRONT ELEVATION (LOOKING NORTH)
NTS

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BENT ELEVATIONS RETROFIT ALT 2

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UNIVERSITY BRIDGE NORTH APPROACH PLANNING STUDY

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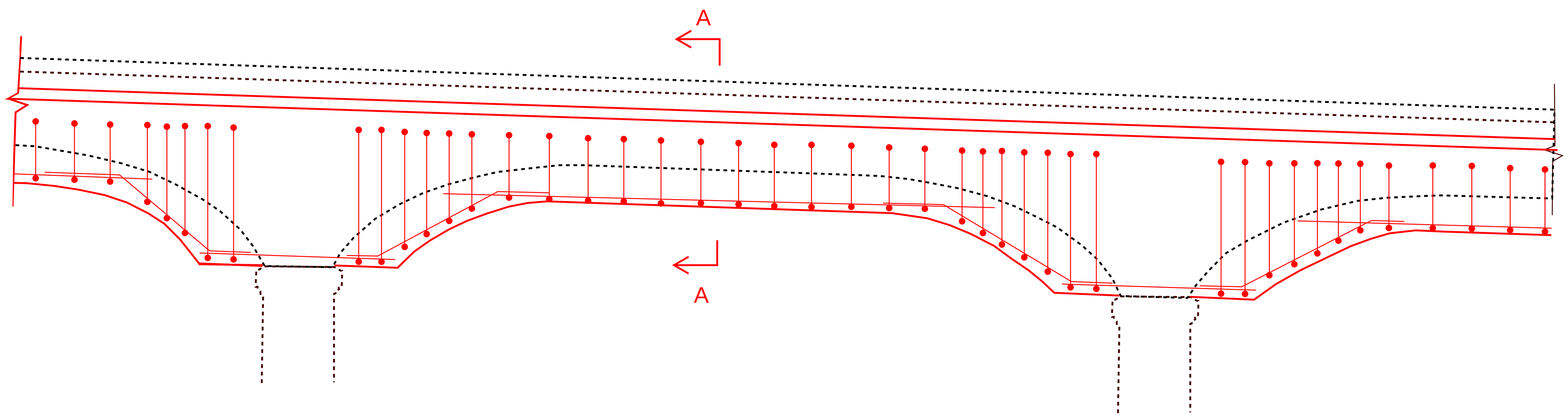
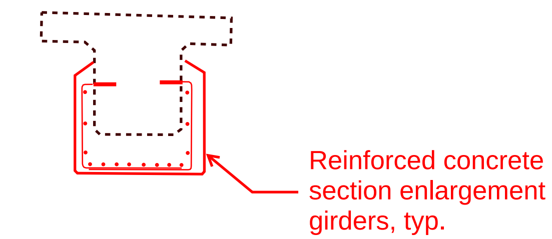
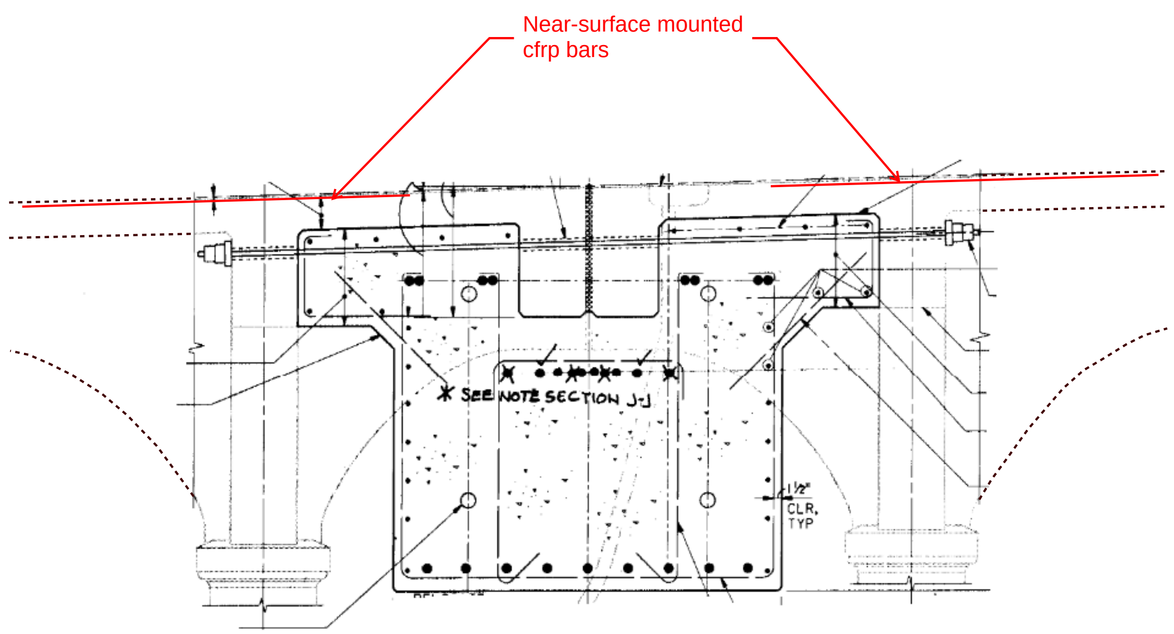


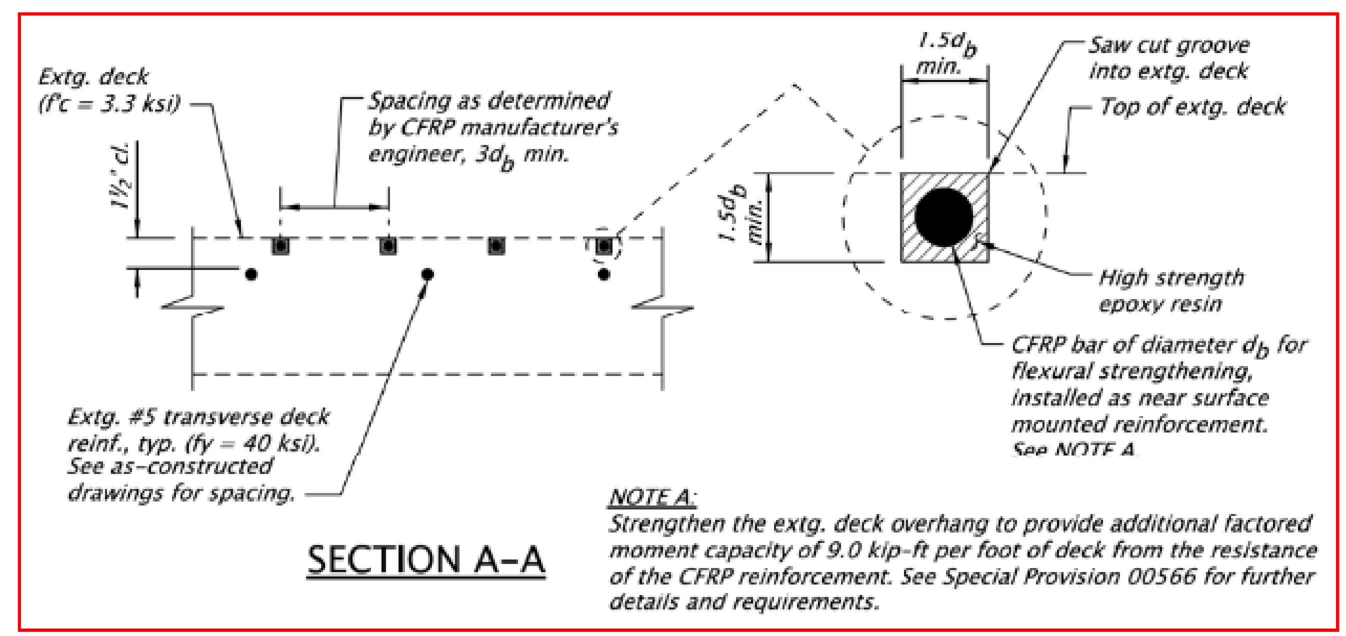


SECTION A-A

GIRDER ELEVATION - REINFORCED CONCRETE STRENGTHENING



NEGATIVE MOMENT SECTIONS AT BENT 14, 15



NEAR-SURFACE MOUNTED CFRP STRENGTHENING - TYPICAL DETAIL FOR DECK OVERHANG

GIRDER STRENGTHENING RETROFIT ALT 1B

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VPI #
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Attachment B

Alt. 2 – Bridge Replacement Exhibits

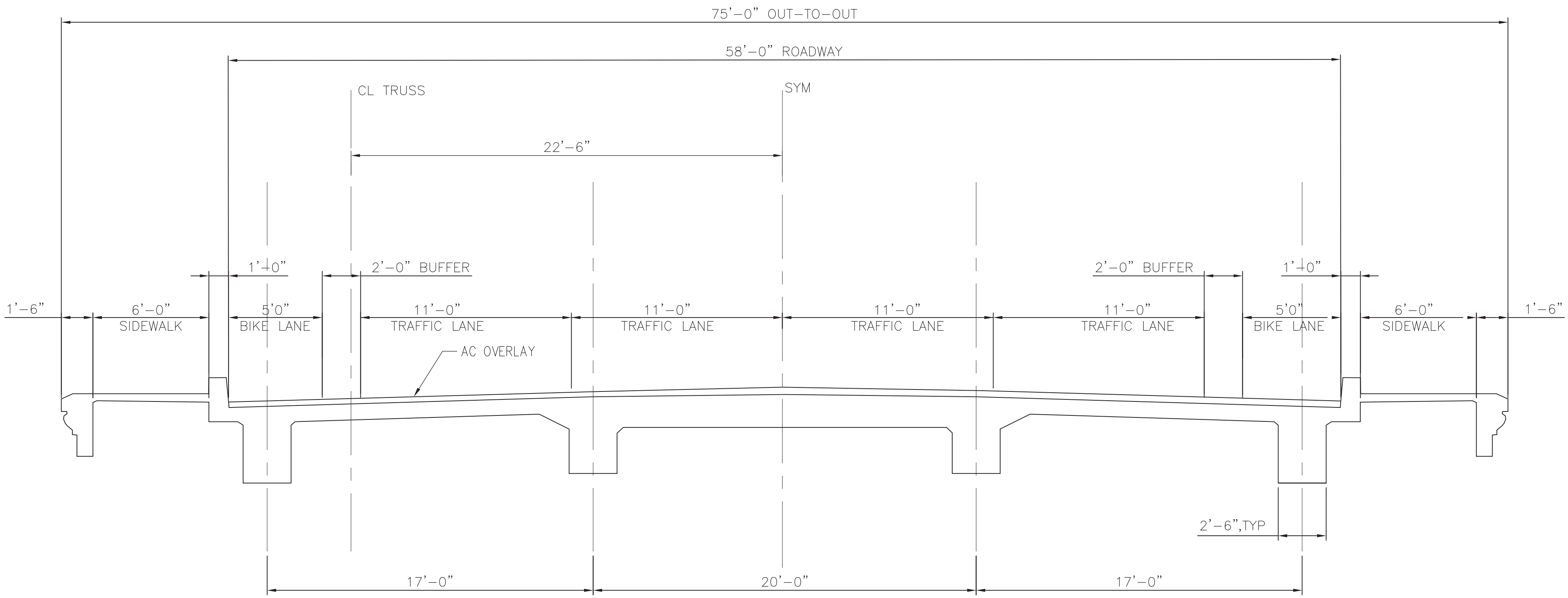


FIGURE 2-1: TYPICAL EXISTING DECK SECTION

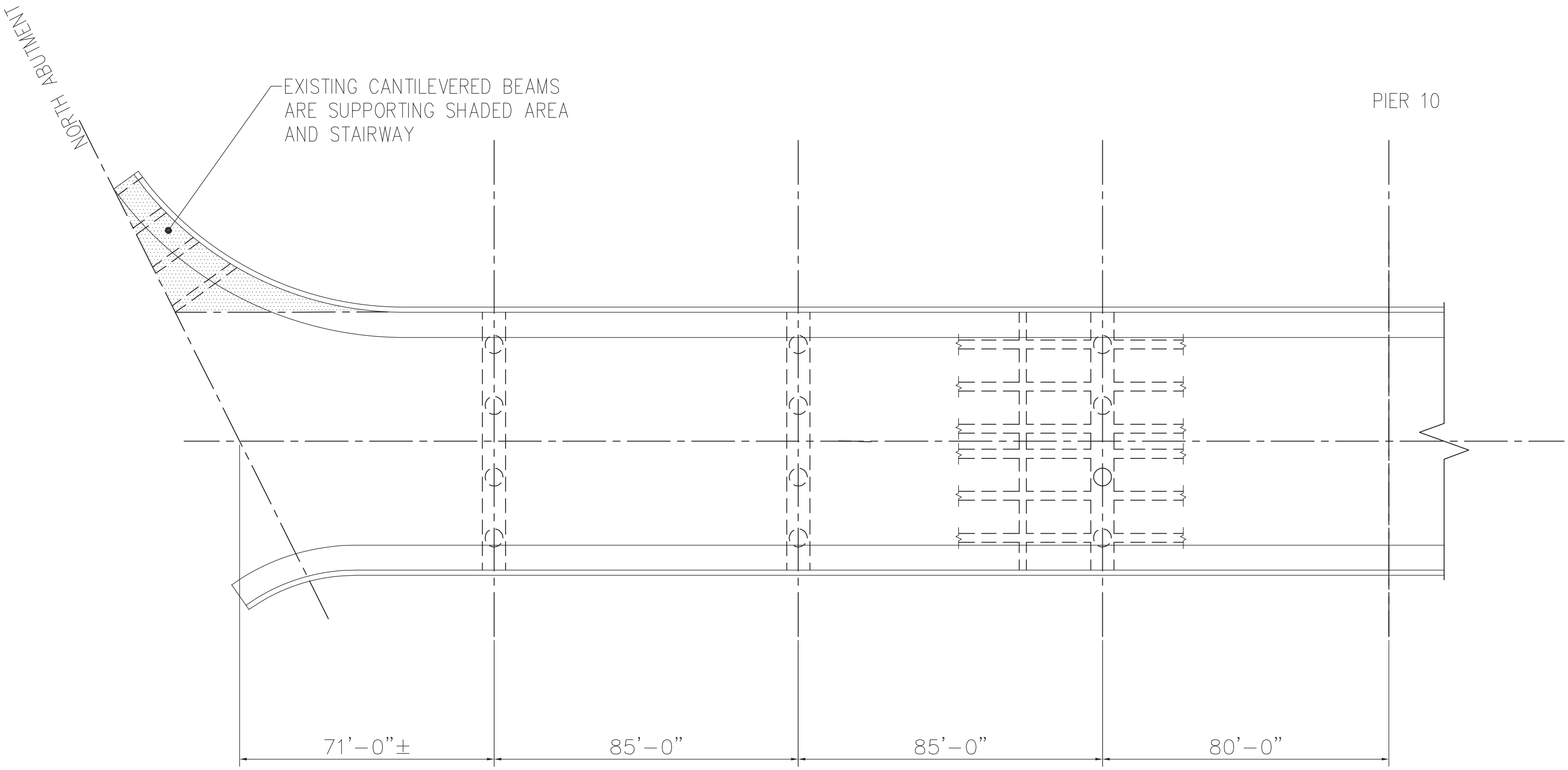


FIGURE 2–2: FOUR SPAN CIP CONCRETE DECK PLAN

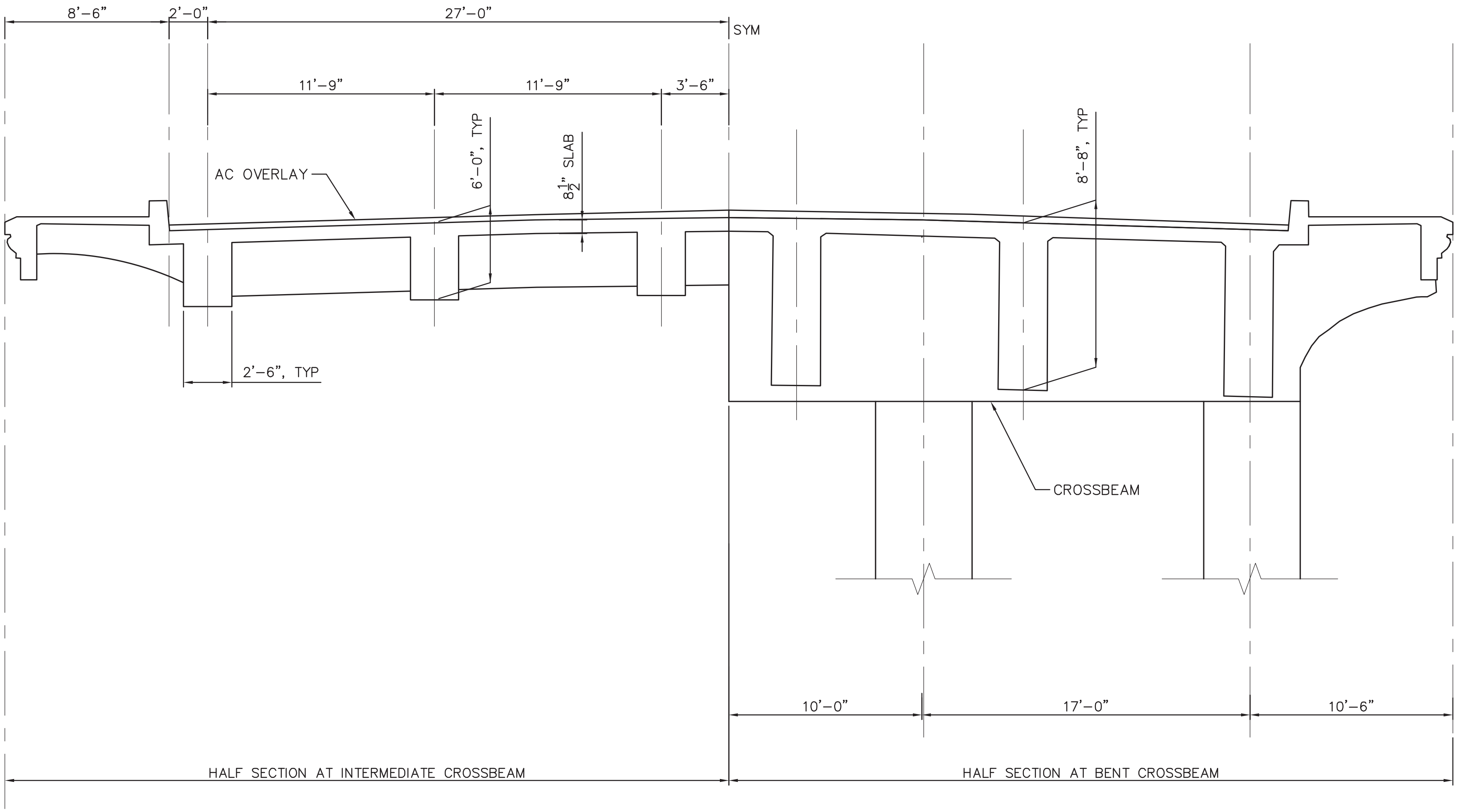


FIGURE 2-3: CIP CONCRETE DECK SECTION

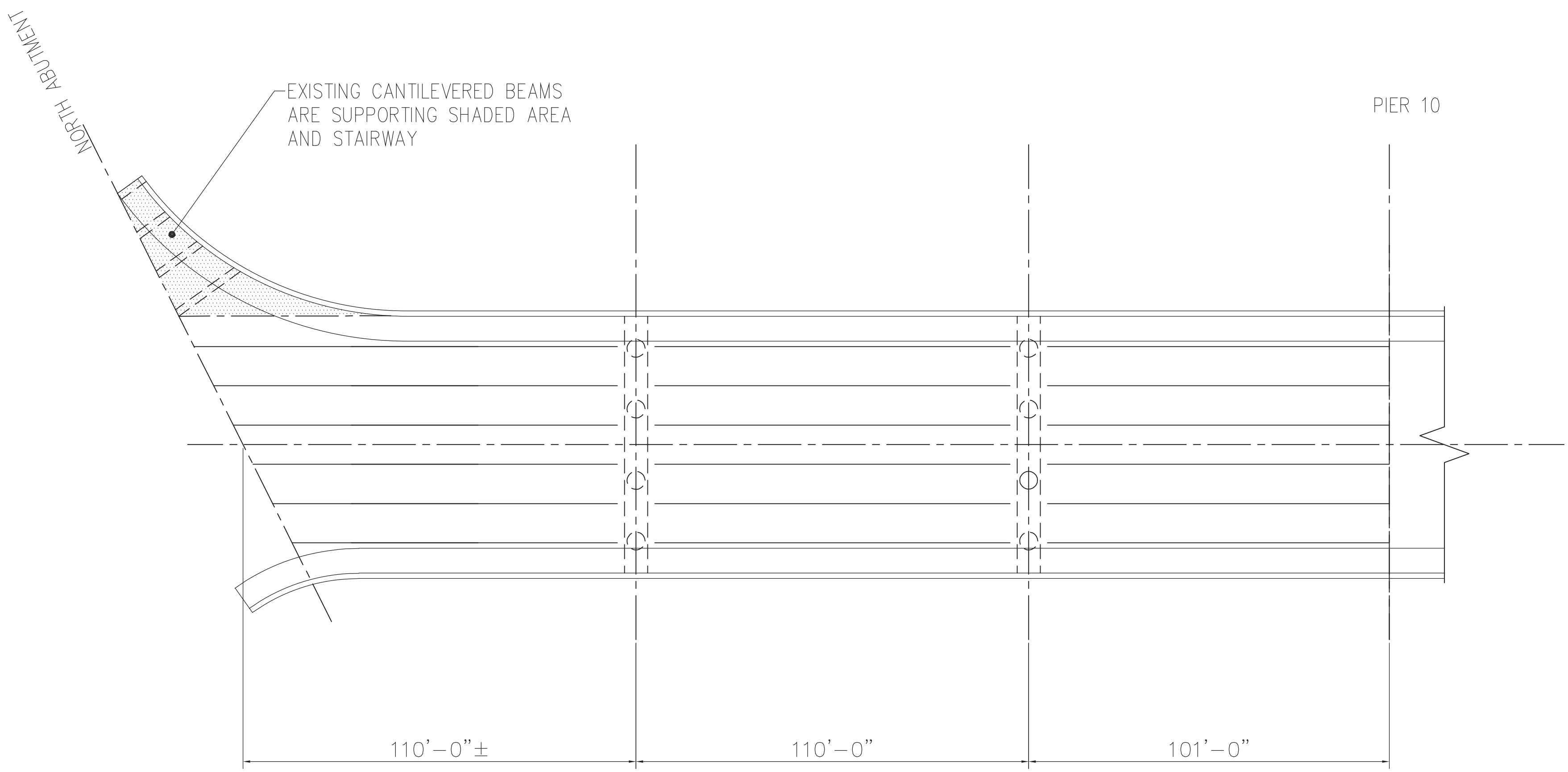


FIGURE 2–4: THREE SPAN PRECAST CONCRETE I–GIRDER DECK PLAN(TUB GIRDER SIMILAR)

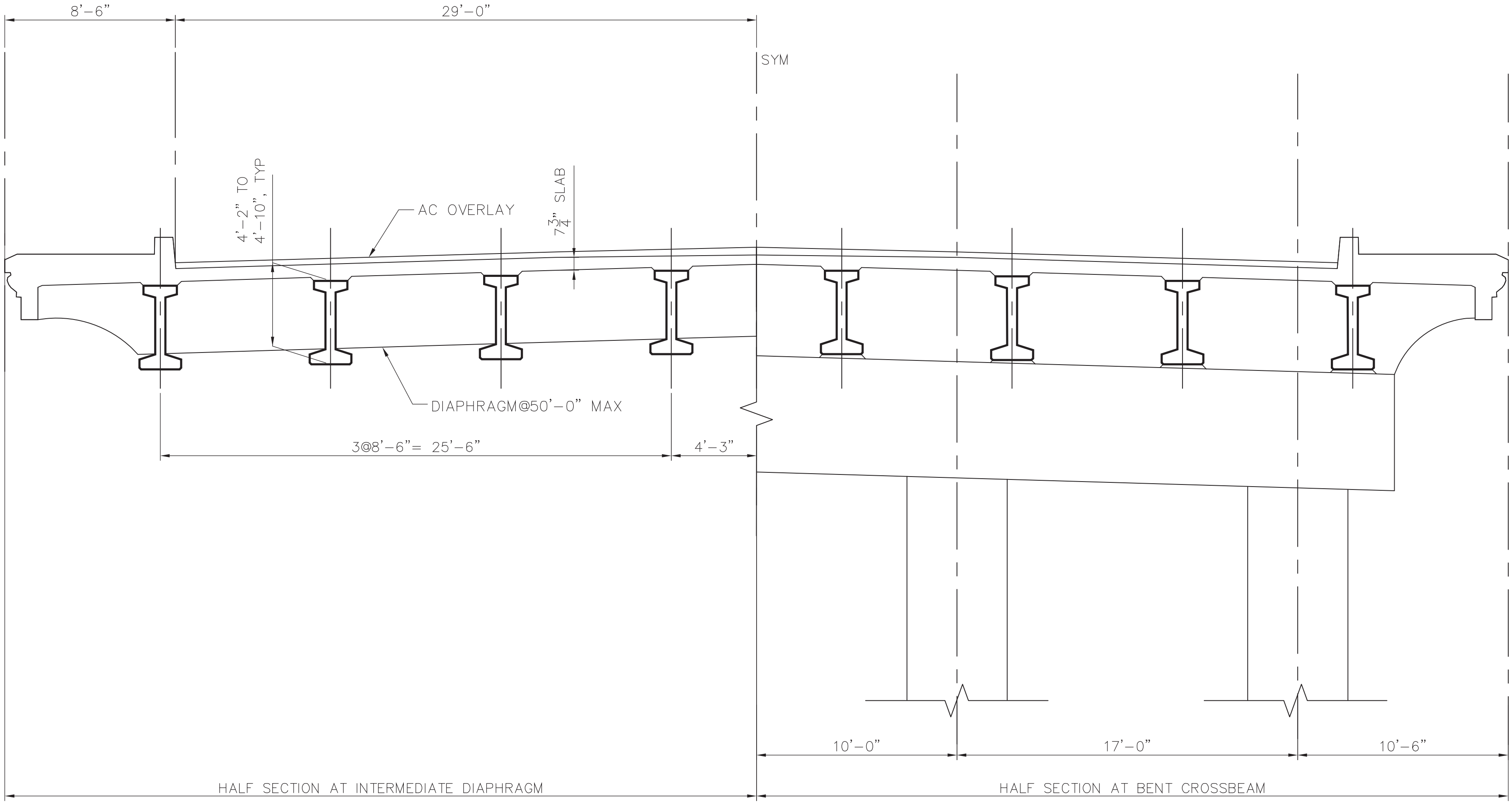


FIGURE 2–5: PRECAST CONCRETE I–GIRDER DECK SECTION

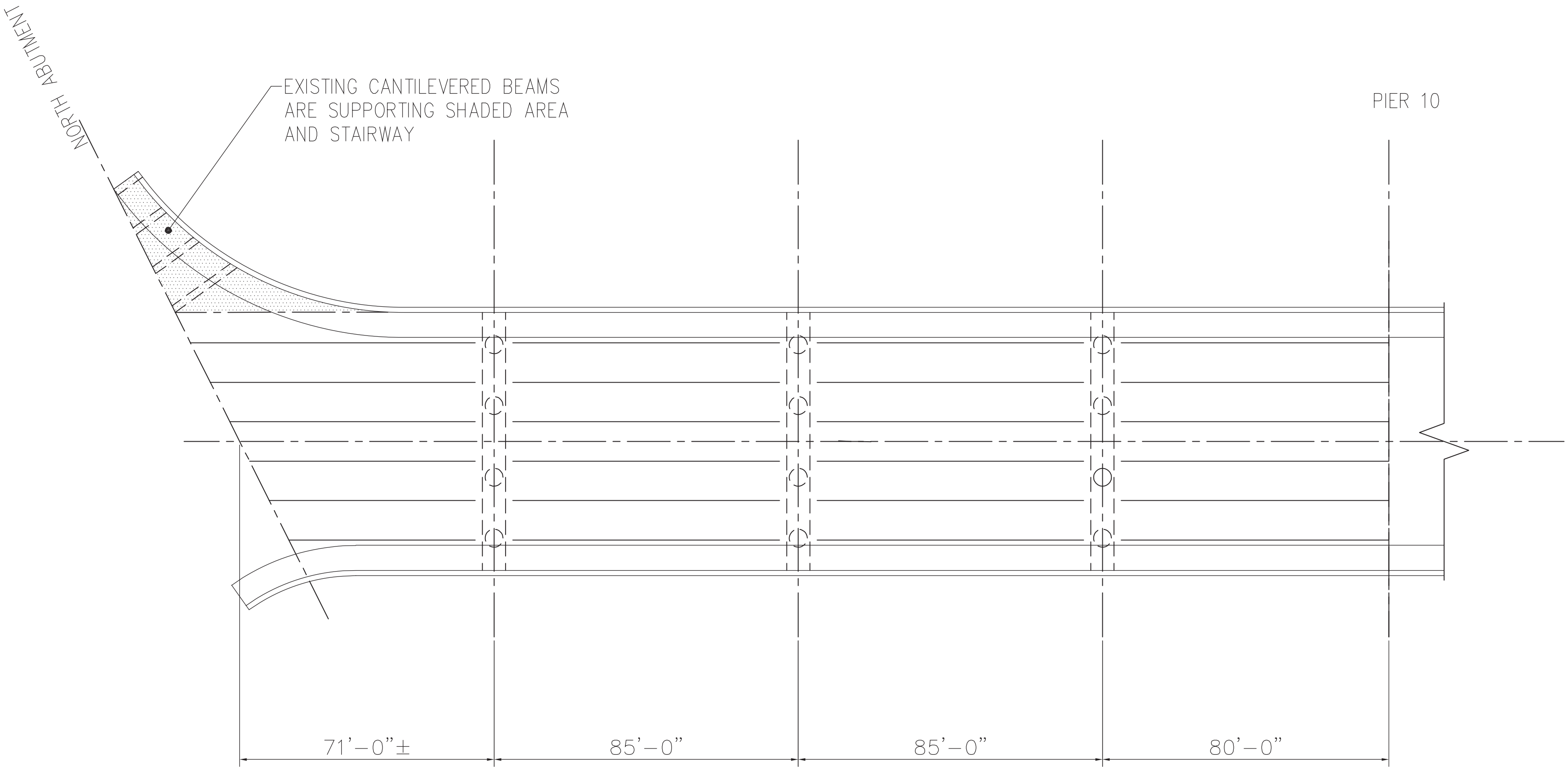


FIGURE 2–6: FOUR SPAN STEEL I–GIRDER DECK PLAN

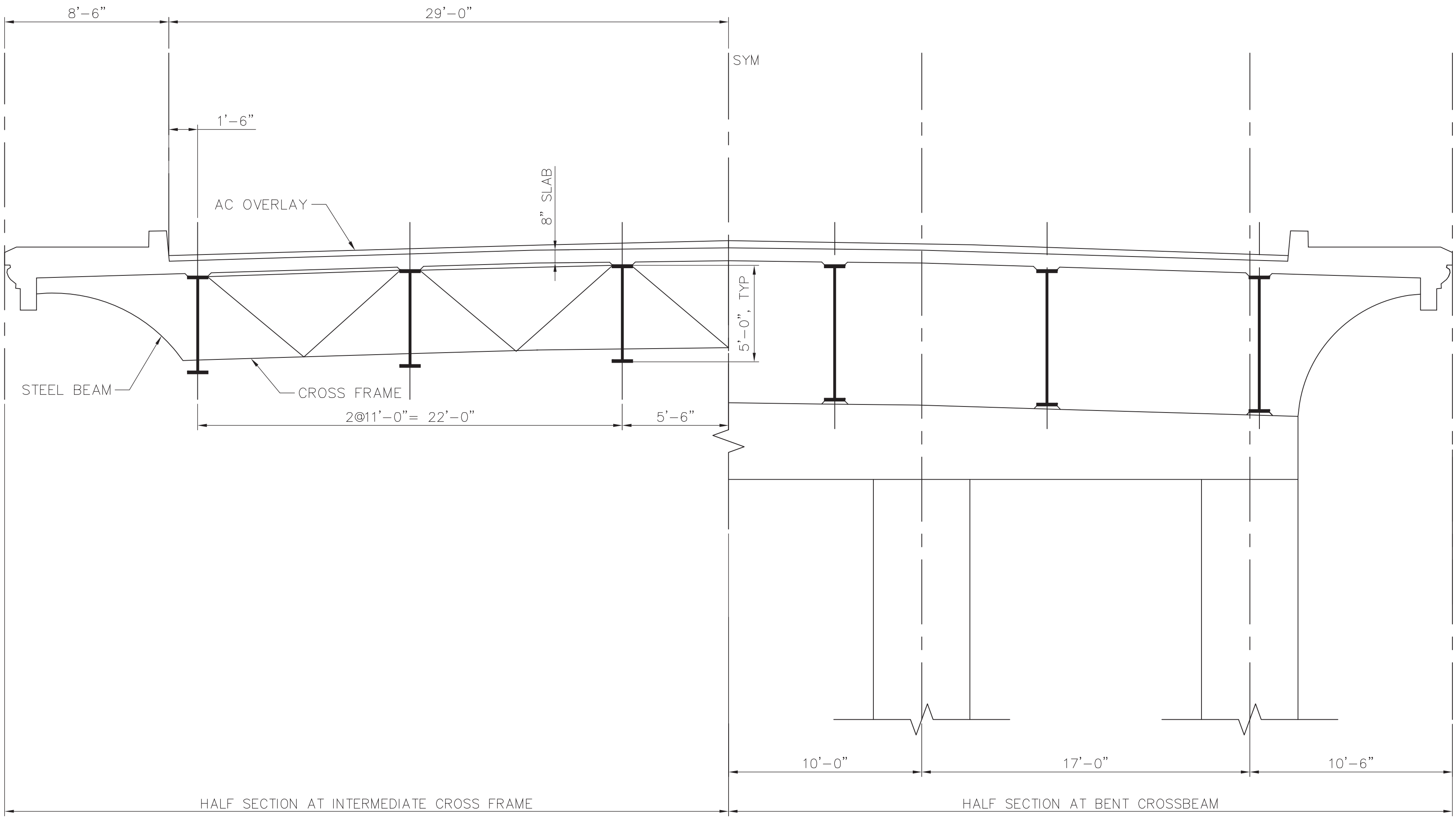


FIGURE 2-7: STEEL I-GIRDER DECK SECTION

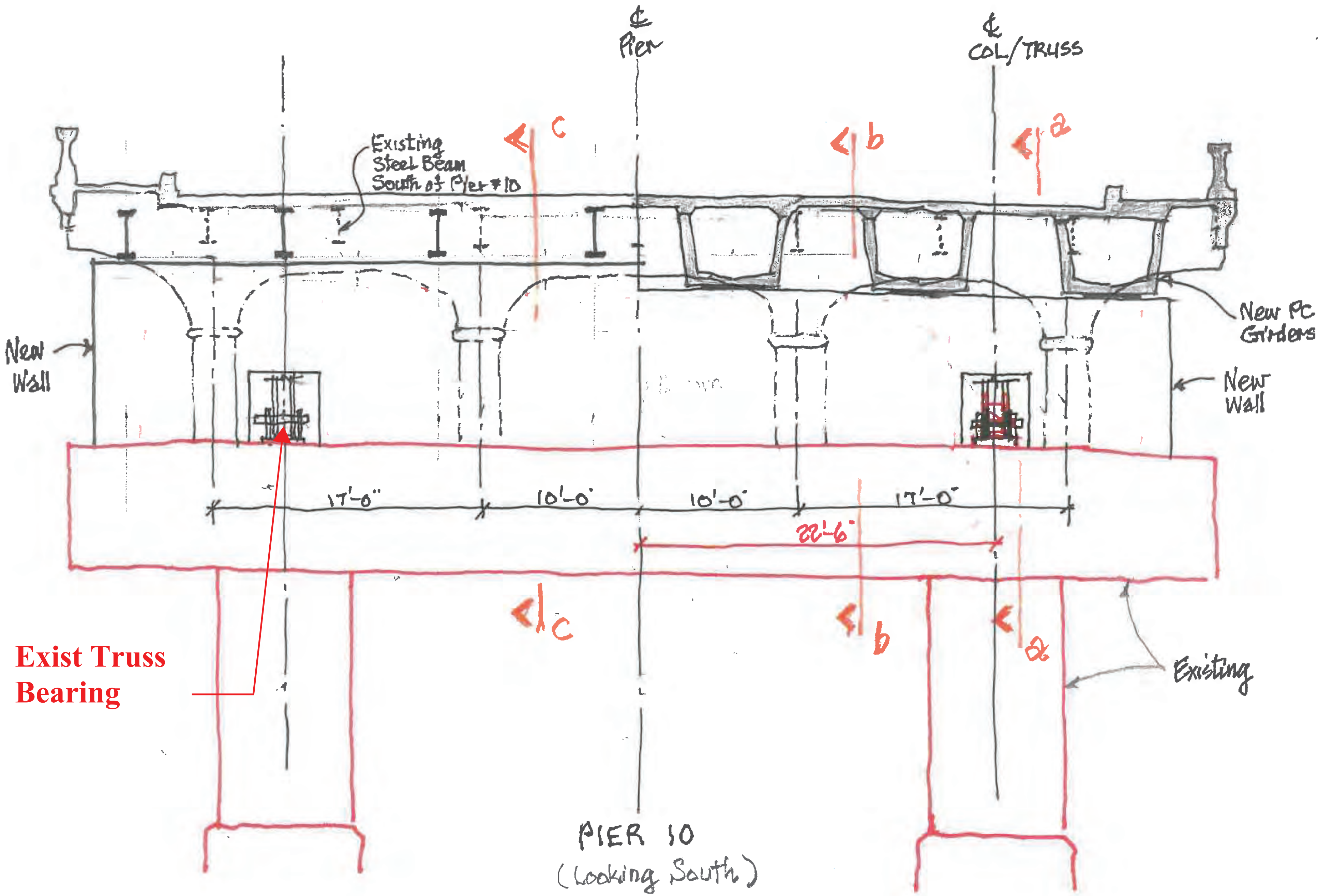


Figure 2-8: Pier 10 - Elevation

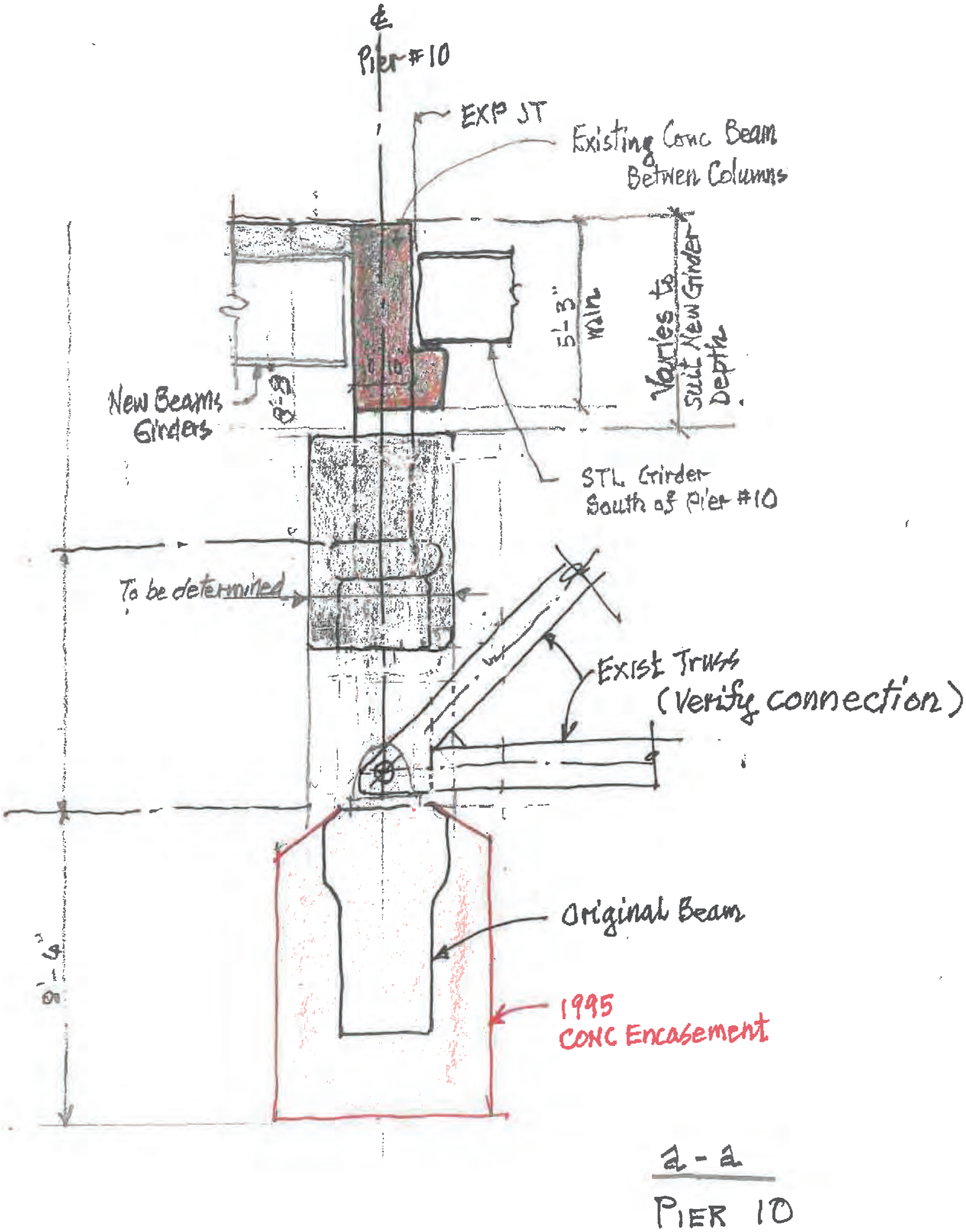


Figure 2-9: Pier 10 - Section

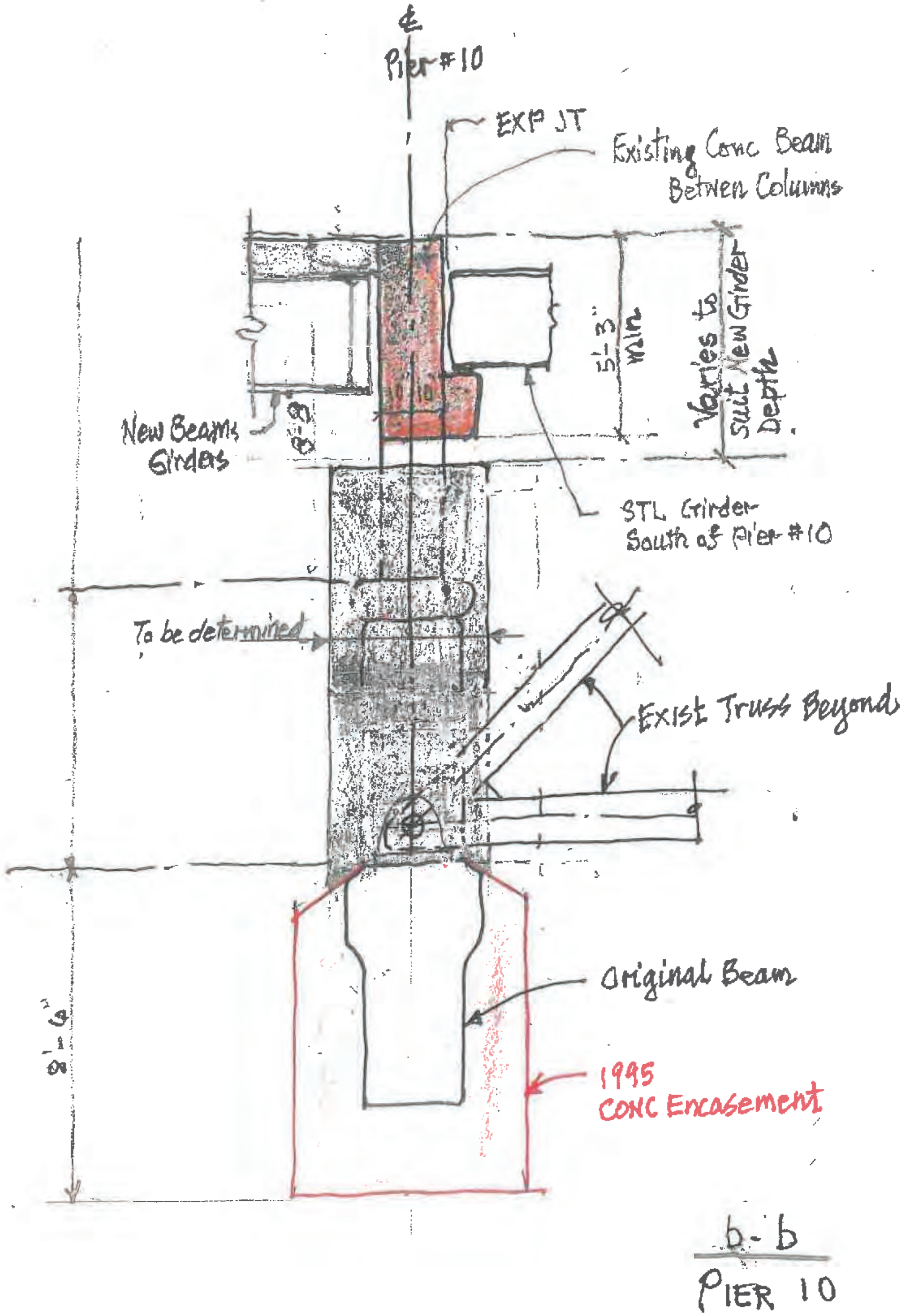


Figure 2-10: Pier 10 - Section

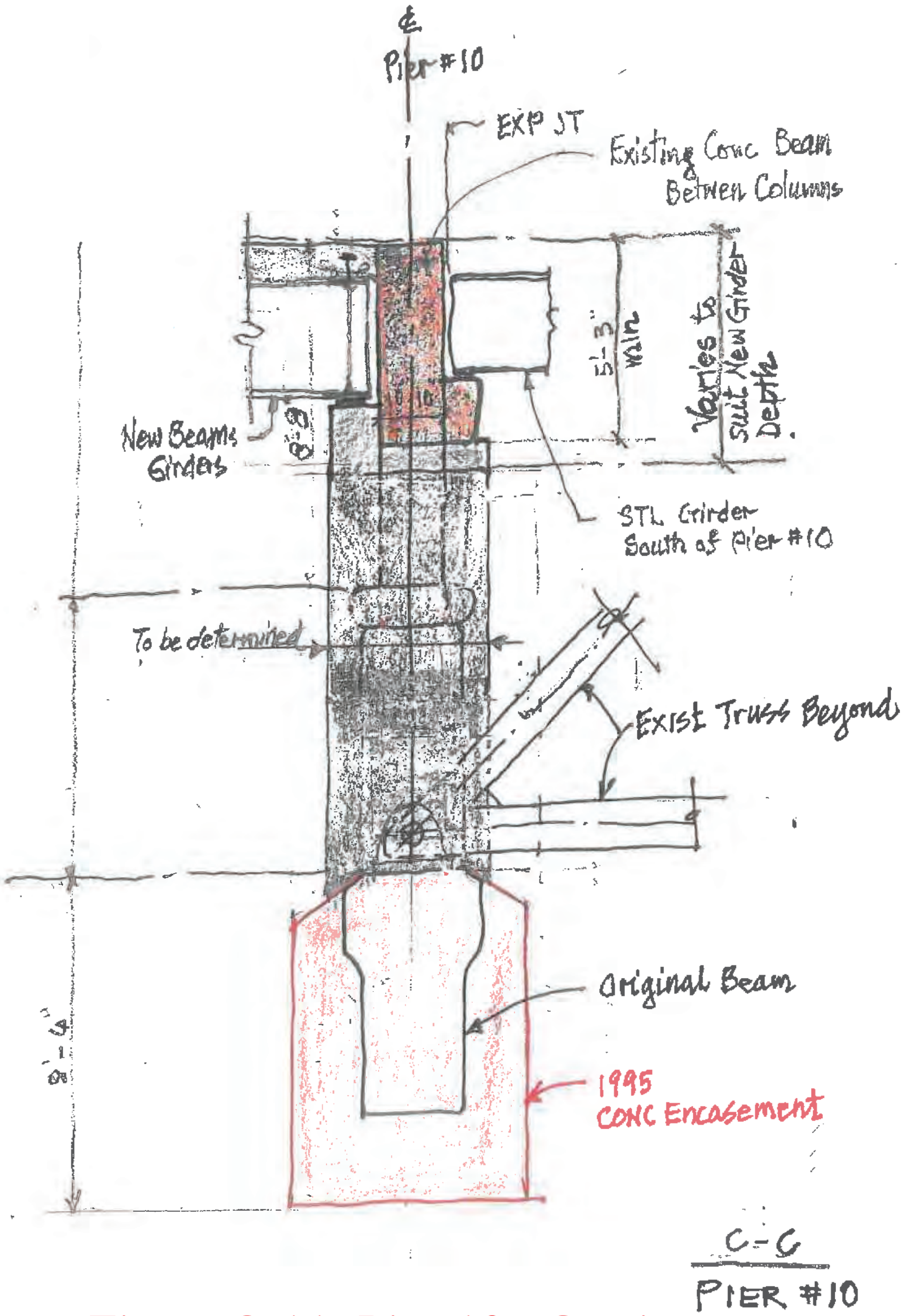


Figure 2-11: Pier 10 - Section

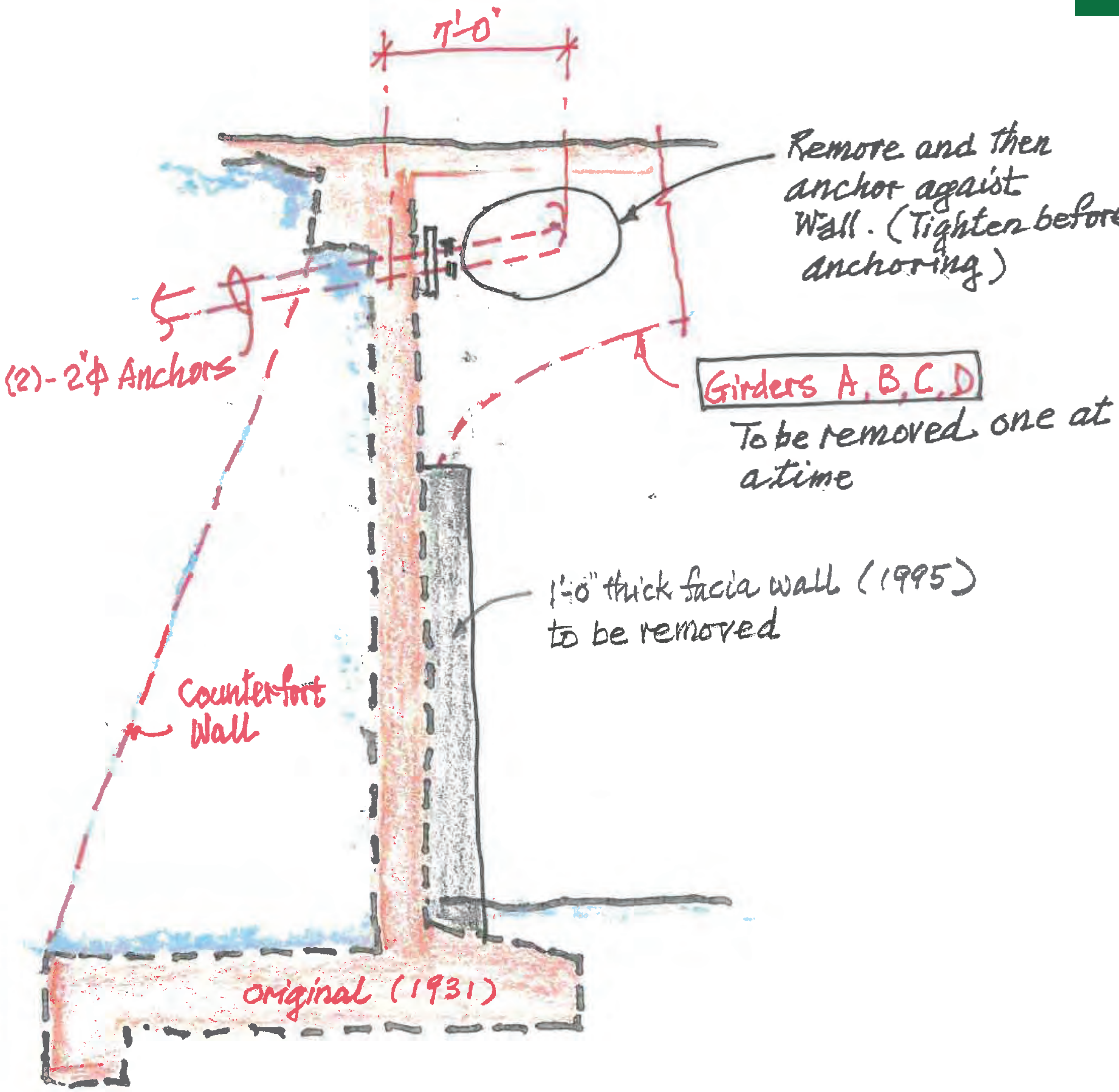


Figure 2-12: Existing North Abutment

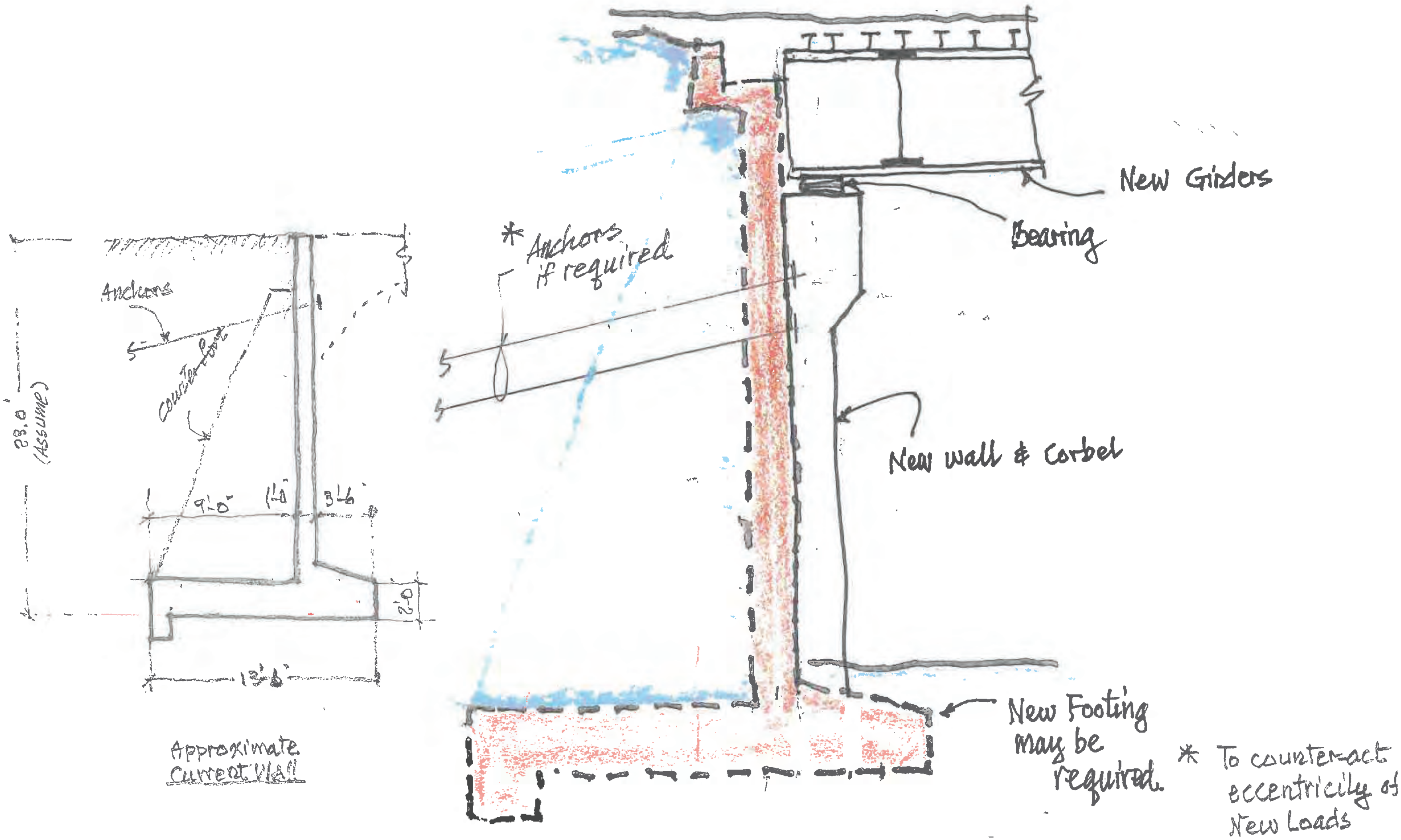


Figure 2-13: North Abutment

reb.

β: pcf   γ = 110 pcf

Surcharge: 2'

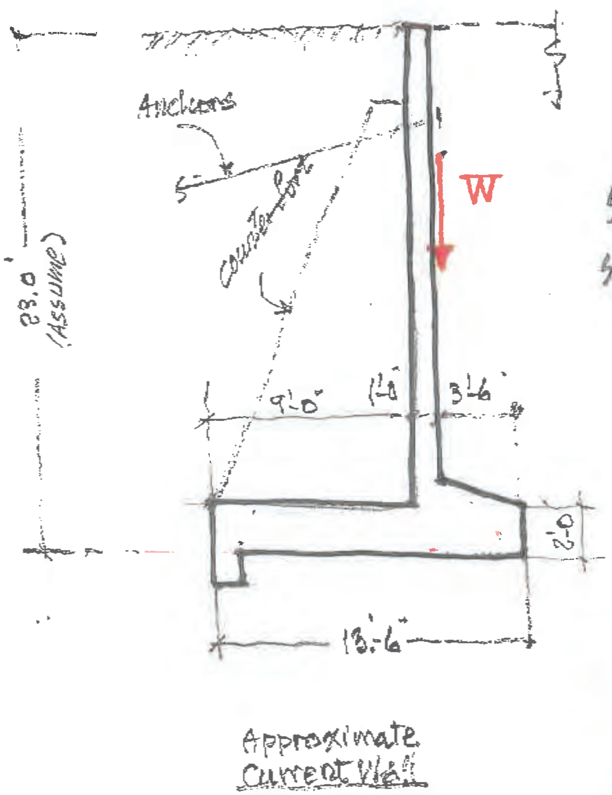
1. $H_1 = 23\beta \times 23/2 = 264.5$ @ $h_1 = \frac{23}{3}$: $M_1 = 2{,}027.8\beta$
2. $H_2 = 2\beta \times 23 = 46\beta$ @ $h_2 = \frac{23}{2}$: $M_2 = 529.0\beta$

$\Sigma M_{(1+2)} = 2556.8\beta$

$W_1 \doteqdot 110 \times 23' \times 10' = 25{,}300$ @ 8.5' from tip of toe

$W_2 \doteqdot 110 \times 2 \times 10 = 2{,}200$ @ "

$\Sigma W_{(1+2)} = 27{,}500$ @



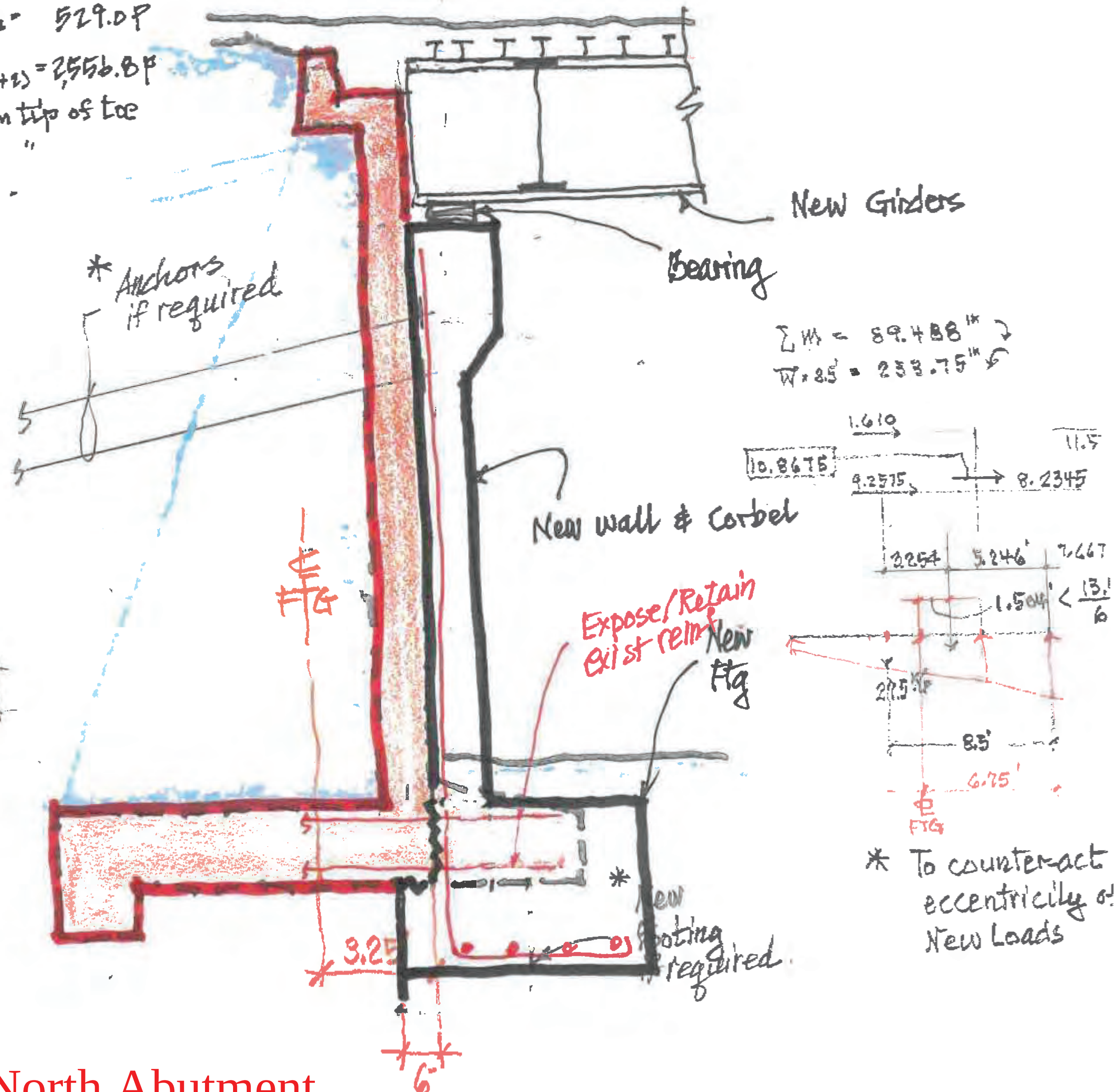


Figure 2-14: North Abutment

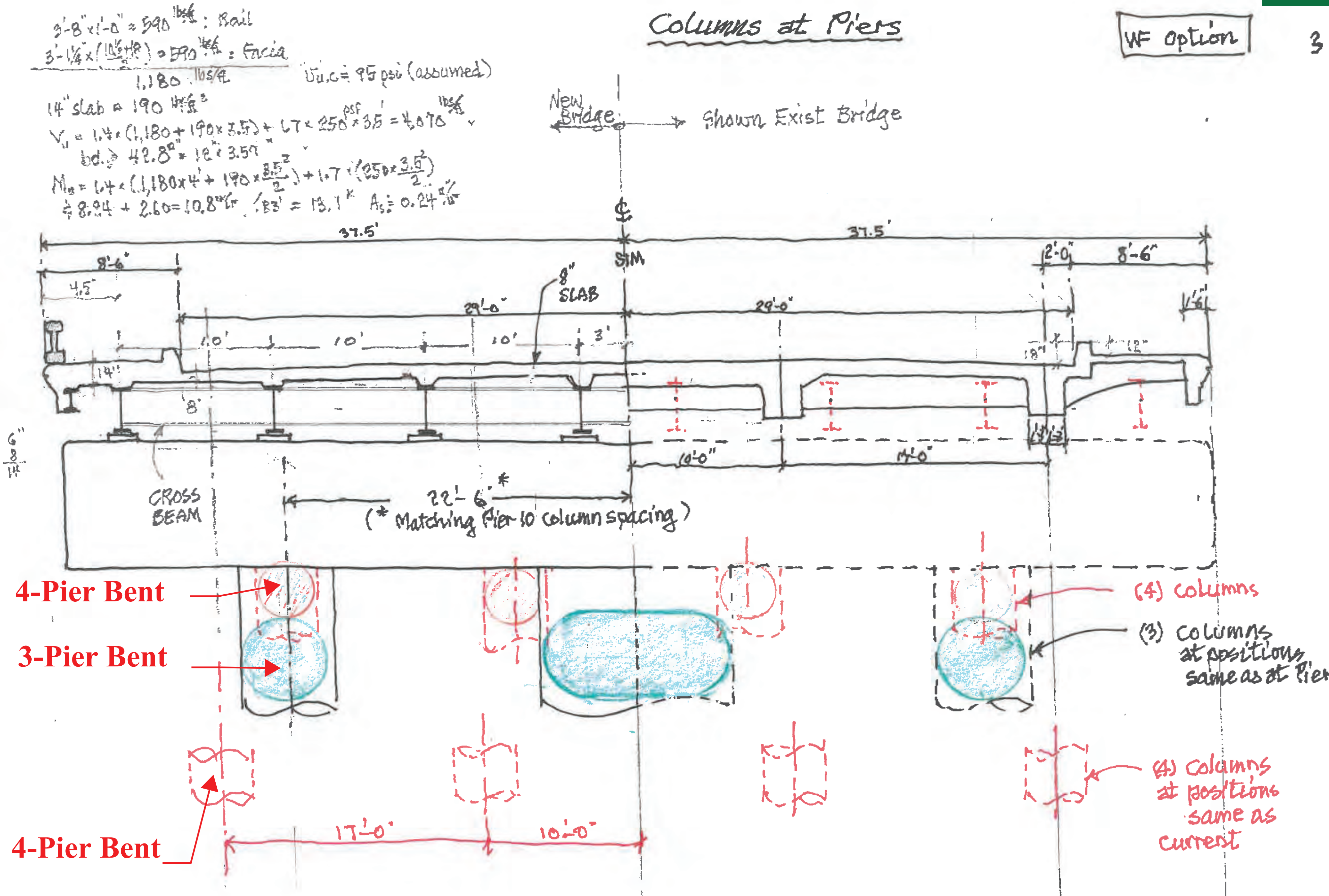


Figure 2-15: Typical New Bents

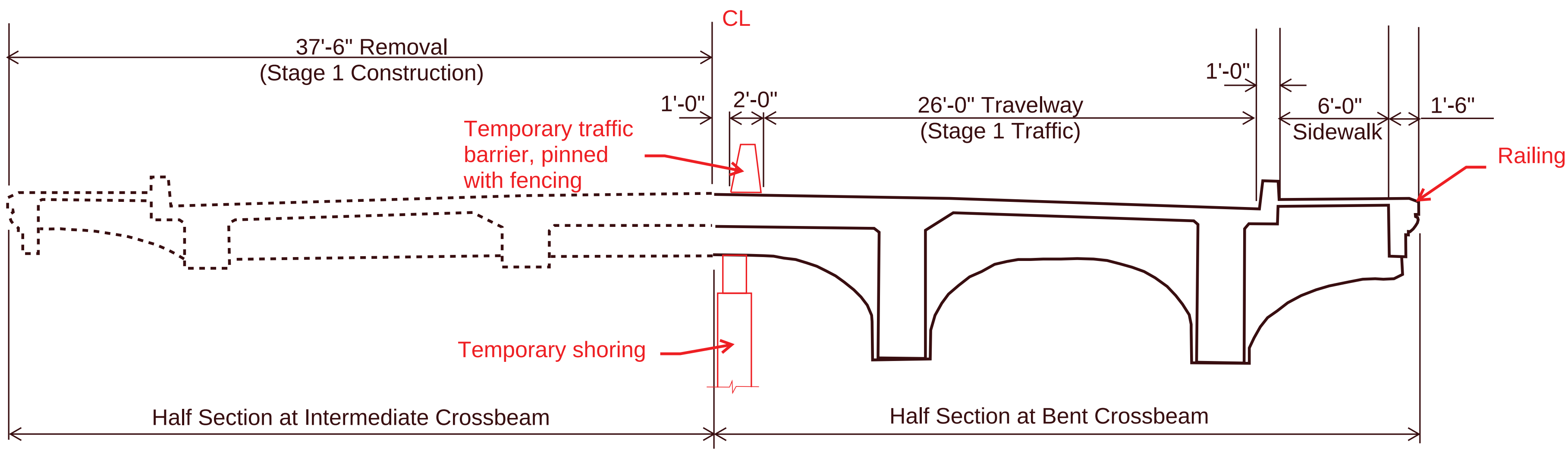
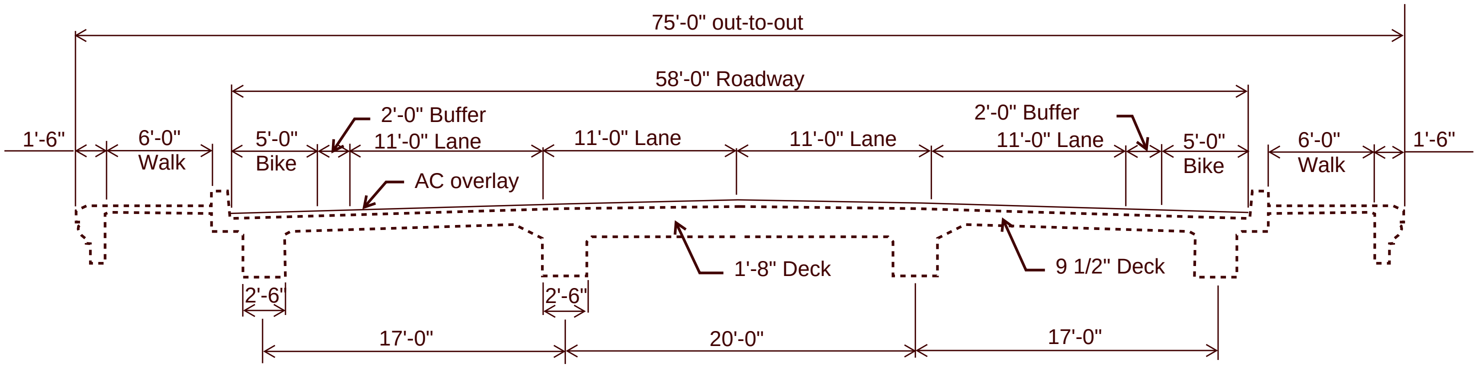


Figure 2-16: Typical 2-Stage Construction Section

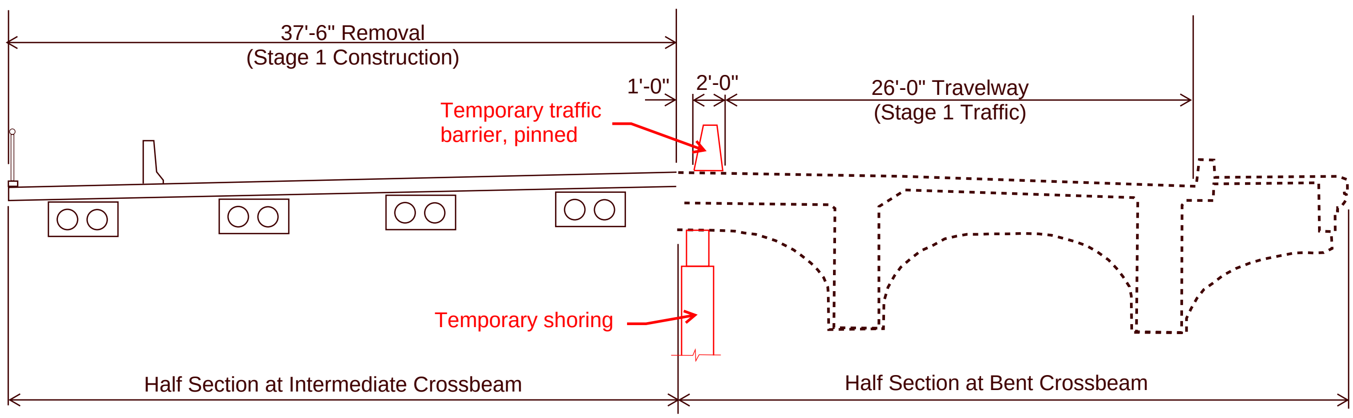
Attachment C

Alt. 3 – Hybrid Exhibits

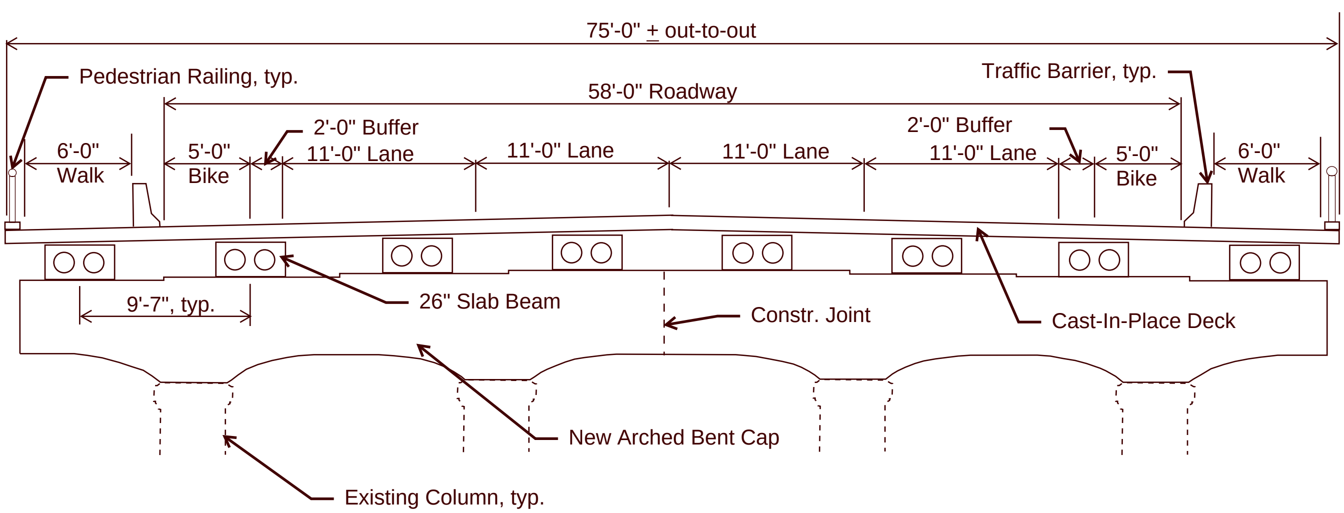
University Bridge North Concrete Approach
Alternative 3 - Superstructure Replacement and Substructure Retrofit



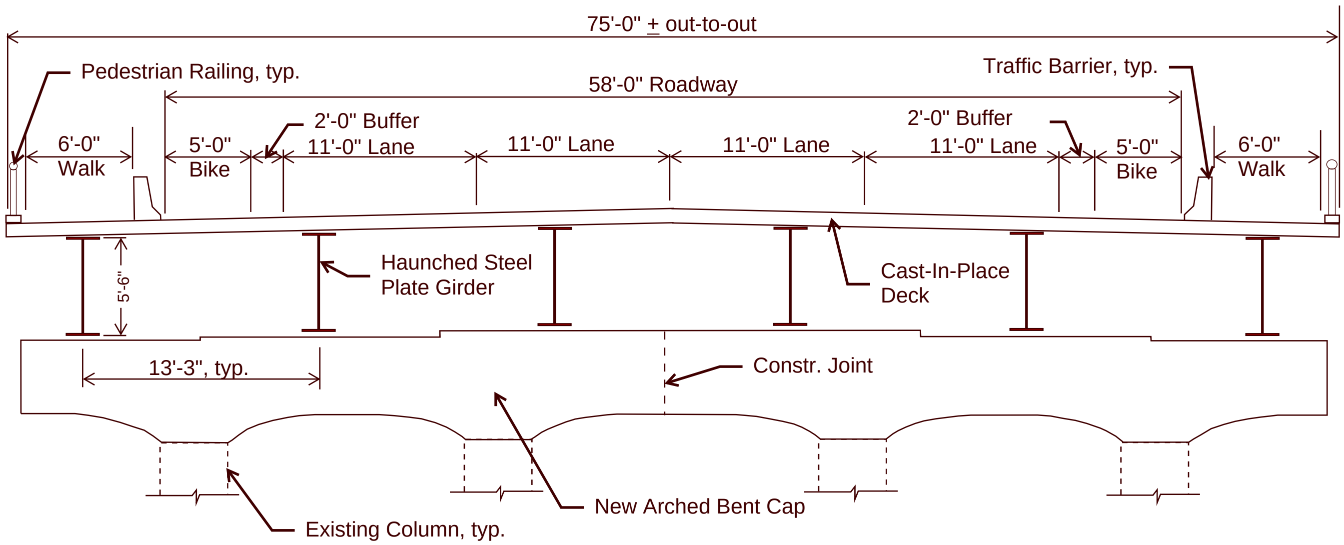
TYPICAL EXISTING DECK SECTION



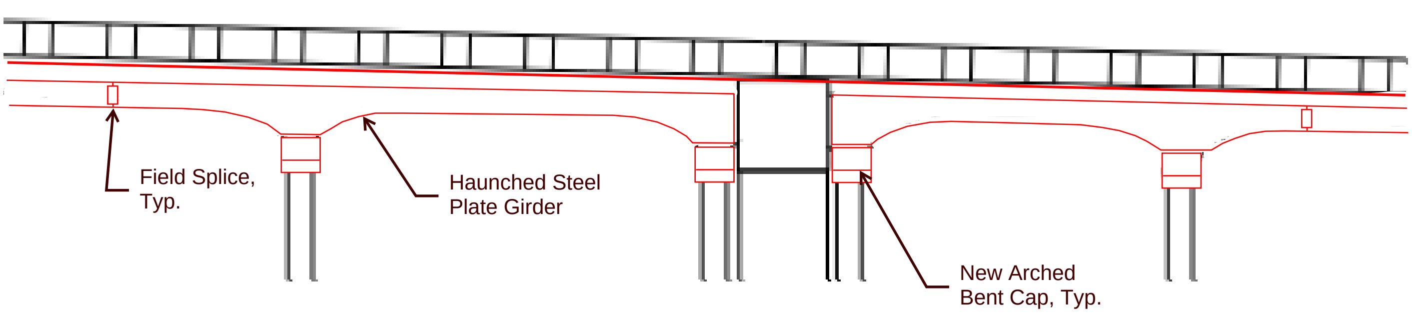
TYPICAL 2-STAGE CONSTRUCTION SECTION



PROPOSED TYPICAL SECTION - PRECAST CONCRETE
ALTERNATIVE 3a



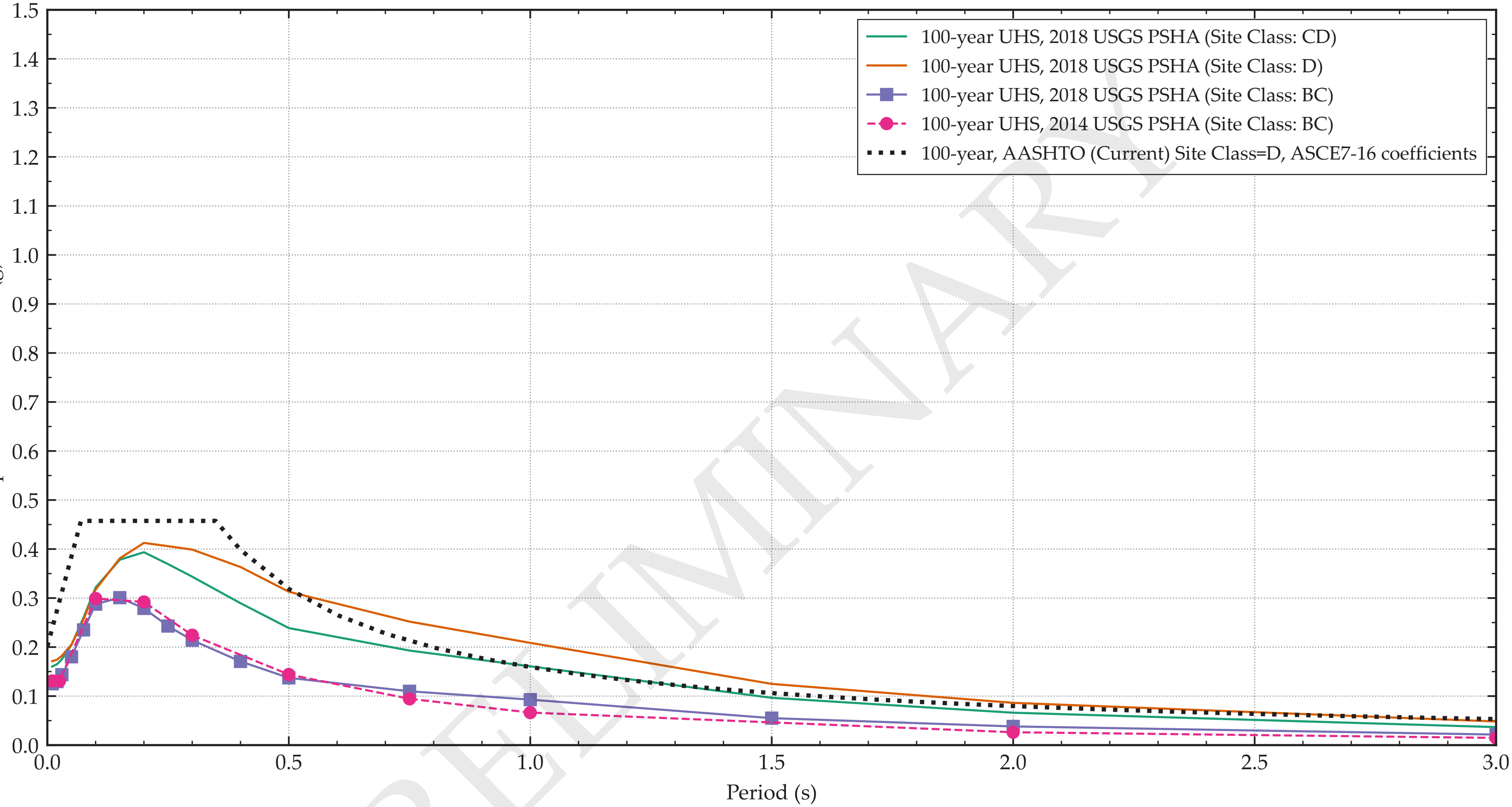
PROPOSED TYPICAL SECTION - HAUNCHED STEEL GIRDERS
ALTERNATIVE 3b



ELEVATION - HAUNCHED STEEL GIRDERS
ALTERNATIVE 3b

Attachment D

ARS Curve Exhibits



Notes:

1. Assumed site $V_{S100} = 1,000$ ft/s which translates to site class D for the current AASHTO specification and is on the boundary for site class D and CD for the next generation of site classes.
2. AASHTO two point spectrum calculated using the current AASHTO guide specification utilizing the 2014 USGS PSHA B/C boundary hazard curves and ASCE7-16 site coefficients.
3. 100 year multipoint spectra are uniform hazard spectra based on the 2018 USGS PSHA and do not include risk targeting or maximum direction factors.
4. See accompanying email dated Feb 18, 2023.
5. Latitude= 47.6542, Longitude= -122.3193

University Bridge, North Approach
Seismic Retrofit Options Analysis
Seattle, Washington

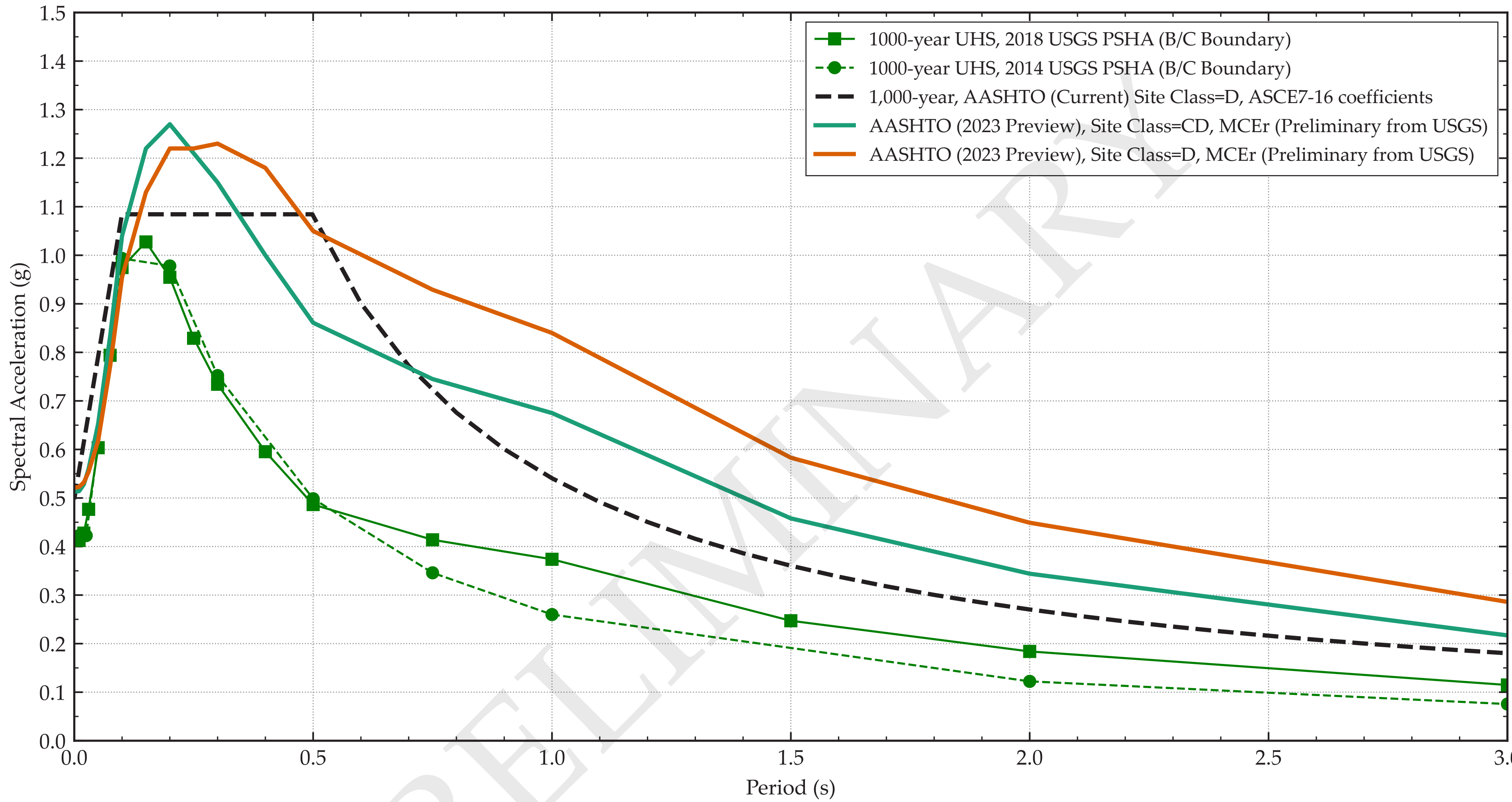
100 YEAR ACCELERATION RESPONSE SPECTRA

February 2023 | 195-01

Clarity Engineering LLC
Geotechnical Consultants

FIG. Y.1

FIG. Y.1



Notes:

1. Assumed site $V_{S100} = 1,000$ ft/s which translates to site class D for the current AASHTO specification and is on the boundary for site class D and CD for the next generation of site classes.
2. AASHTO two point spectrum calculated using the current AASHTO guide specification utilizing the 2014 USGS PSHA B/C boundary hazard curves and ASCE7-16 site coefficients.
3. 1000 year, 2023 AASHTO curves are calculated by the USGS and assumed to be based on an upcoming update to the AASHTO guide specifications.
4. See accompanying email dated Feb 18, 2023.
5. Latitude= 47.6542, Longitude= -122.3193

FIG. X.1

University Bridge, North Approach
Seismic Retrofit Options Analysis
Seattle, Washington

1000 YEAR
ACCELERATION RESPONSE
SPECTRA

February 2023 195-01

Clarity Engineering LLC
Geotechnical Consultants

FIG. X.1

Attachment E

Utility Exhibits

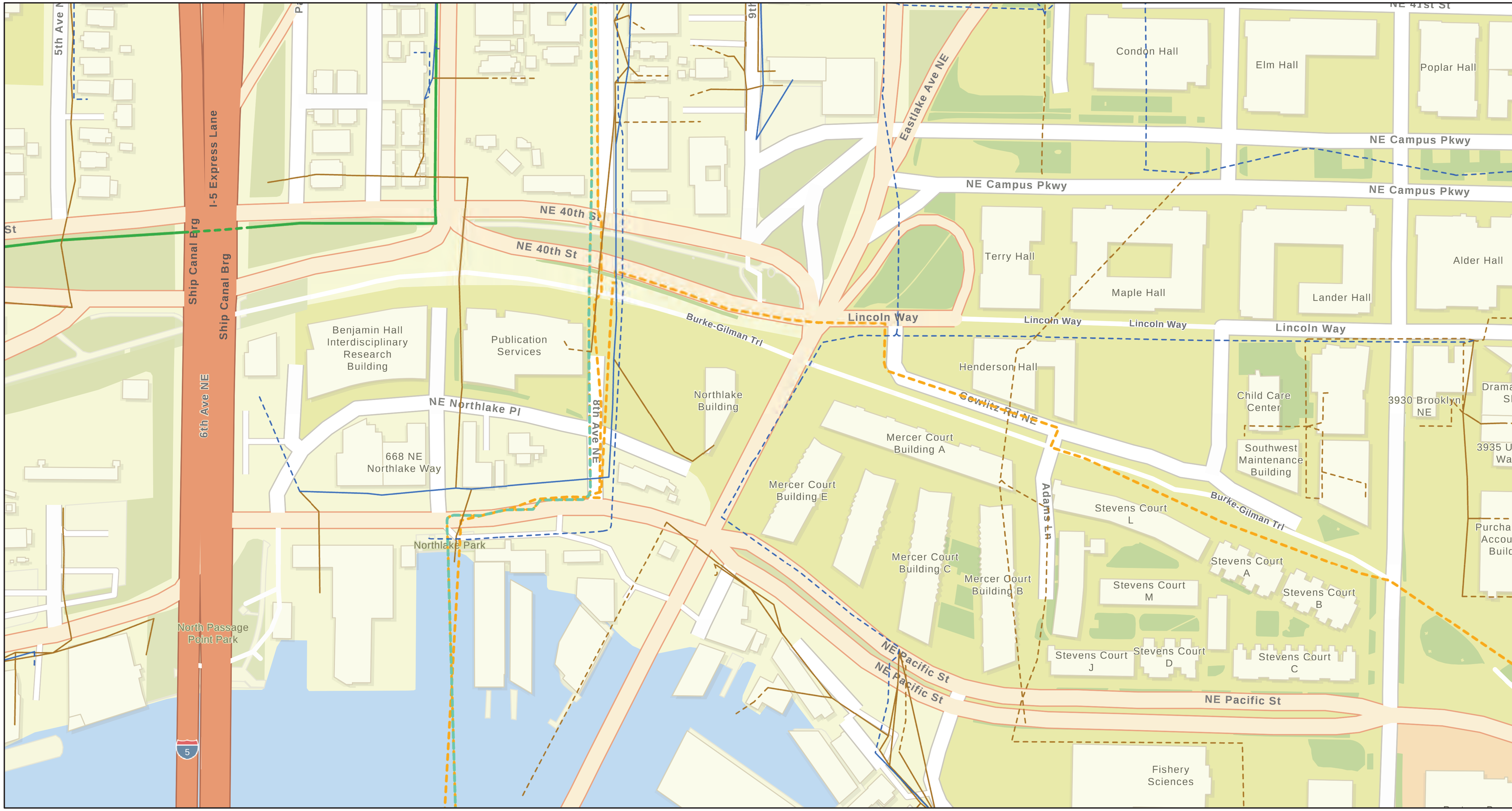
PSE Gas Line

184071C

3.6.1 Utility Owner Maps

LUMEN Relocate Utility Map

3.6.1 Utility Owner Maps



11/10/2022, 3:24:42 PM

1:2,866

0 0.02 0.04 0.09 mi

0 0.04 0.07 0.15 km

Local Copper UG Route

Local Copper Aerial Route

Fiber Routes

Aerial

Underground

Routes Leased

LONGHAUL,UNDERGROUND

Routes Owned

METRO,AERIAL

METRO,UNDERGROUND

METRO/LONGHAUL,UNDERGROUND

Date: 11/8/2022

EarthLink Fiber symbolid
- Aerial
- Buried

Windstream Fiber Placement Type
- Aerial
- Buried

Windstream Copper placement
- Aerial

- Buried

MFS/Adesta Fiber Placement Type
- Aerial

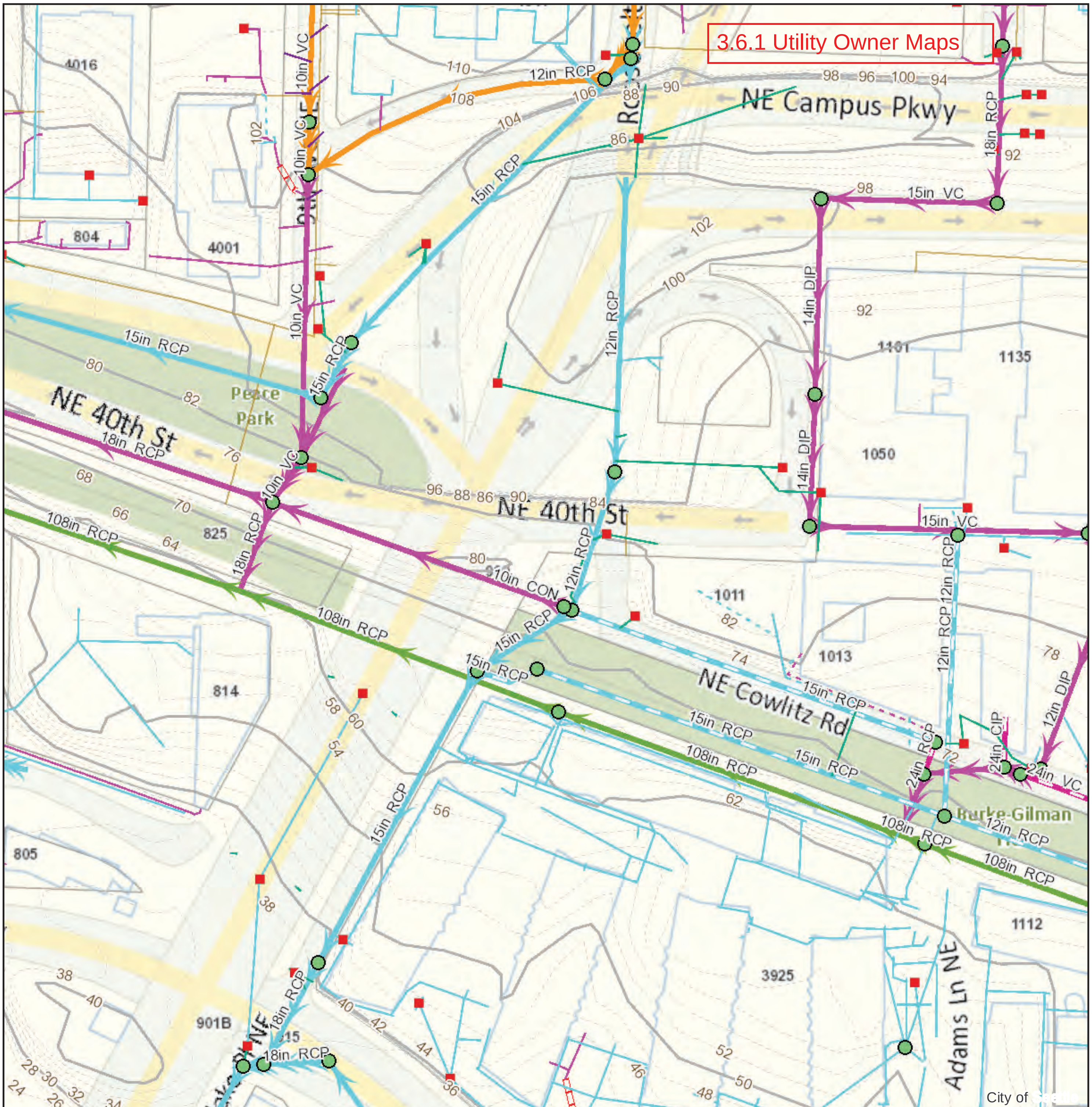
- Buried

Conduit Ownership
- Windstream Conduit

- Third Party Conduit

0 0.03 0.06 0.11 Miles

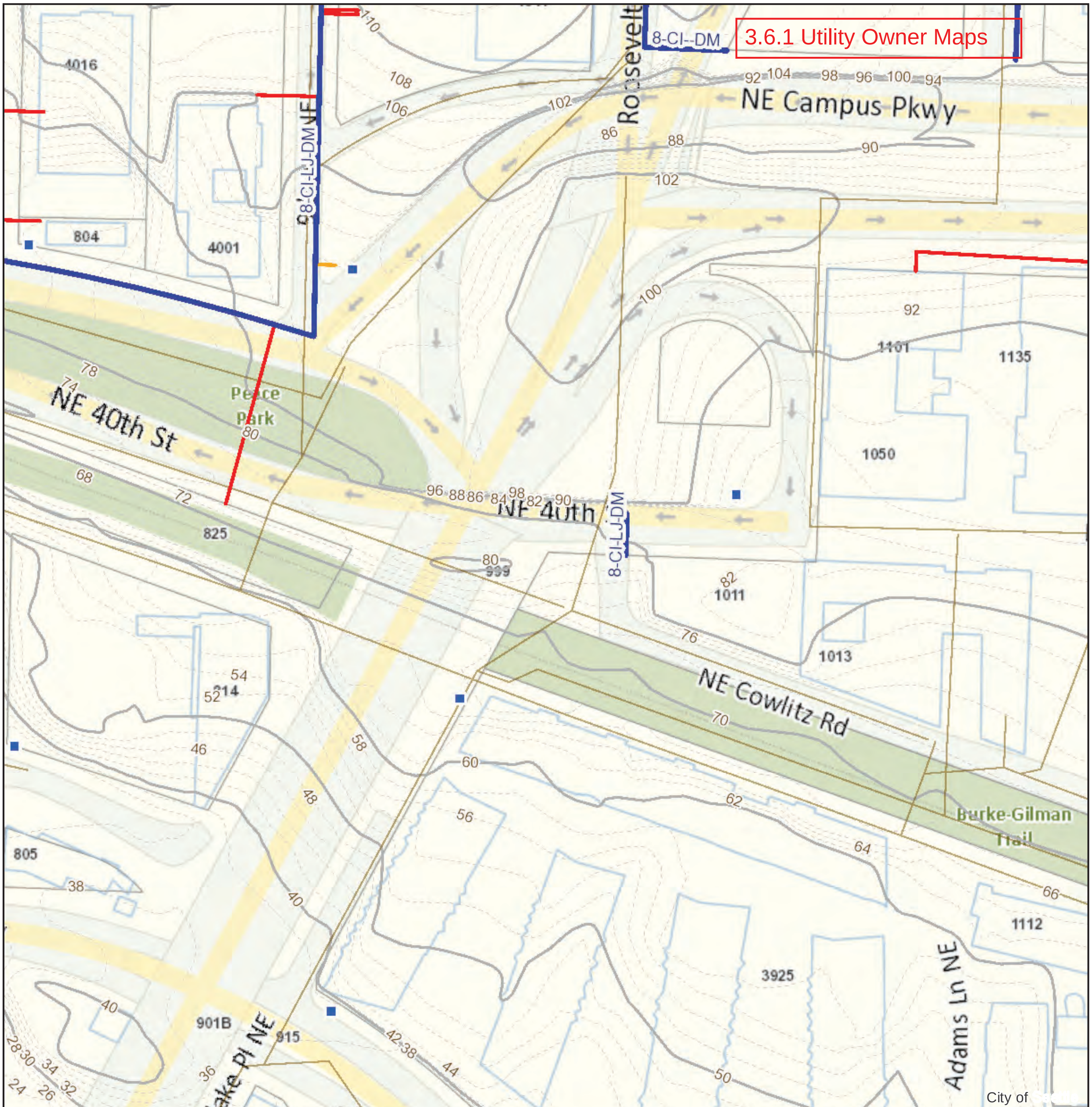
0 0.04 0.09 0.17 Kilometers



DSO maps **Sewer & Drainage**

100
Feet
N

City Limits
Catch Basin, Junction Box, Sand Box
Maintenance Holes and Other Structures
Maintenance Hole
Other Structure
Ditches and Culverts
Ditch
Culvert
Side Sewers and Laterals
Drainage Lateral
Side Sewer
Drainage Lateral (Not Inspected)
Side Sewer (Not Inspected)
SPU Drainage Lateral
SPU Side Sewer
Phantom Connector
Side Sewer and Lateral (Lined)
Private Mainlines
Private Drainage Main
Private Sanitary Main
Private Combined Main
Mainlines (Permitted Use)
King County Main
SPU Drainage Main
SPU Combined Main
SPU Sanitary Main



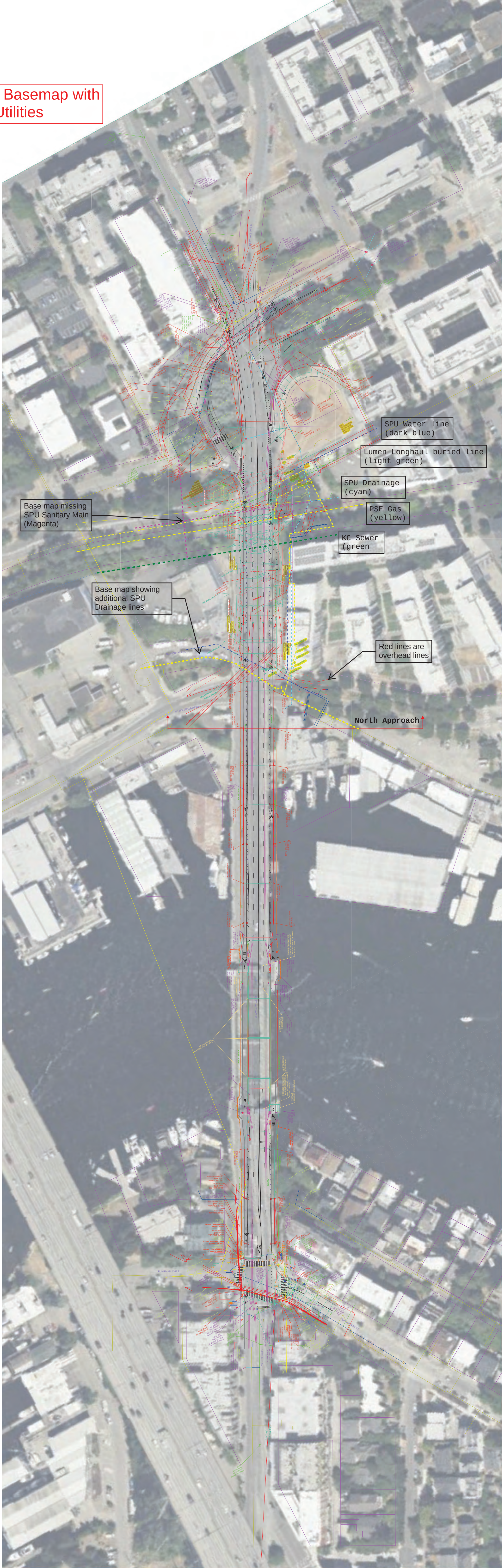
DSO maps **Water**

100
Feet
N

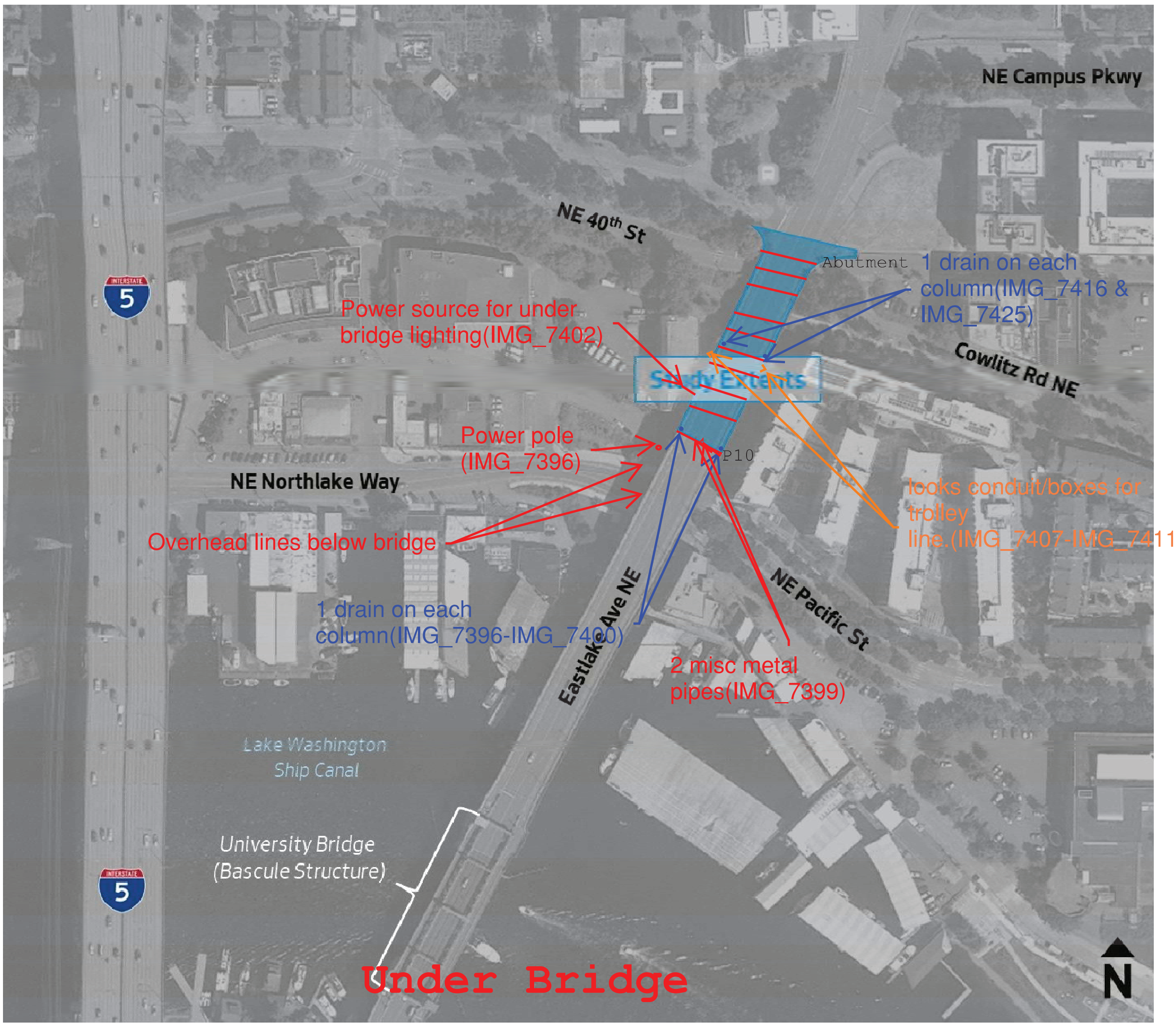
City Limits	No New Taps	Drainage Infrastructure	Red: Band_1
Hydrant Location	**Water Service**	**Topography - 2 Foot**	Green: Band_2
Water Mains	Header	10ft. contour	Blue: Band_3
Same Side Tap Only	Inactive	2ft. contour	
	Active	Parcel	

11/8/2022

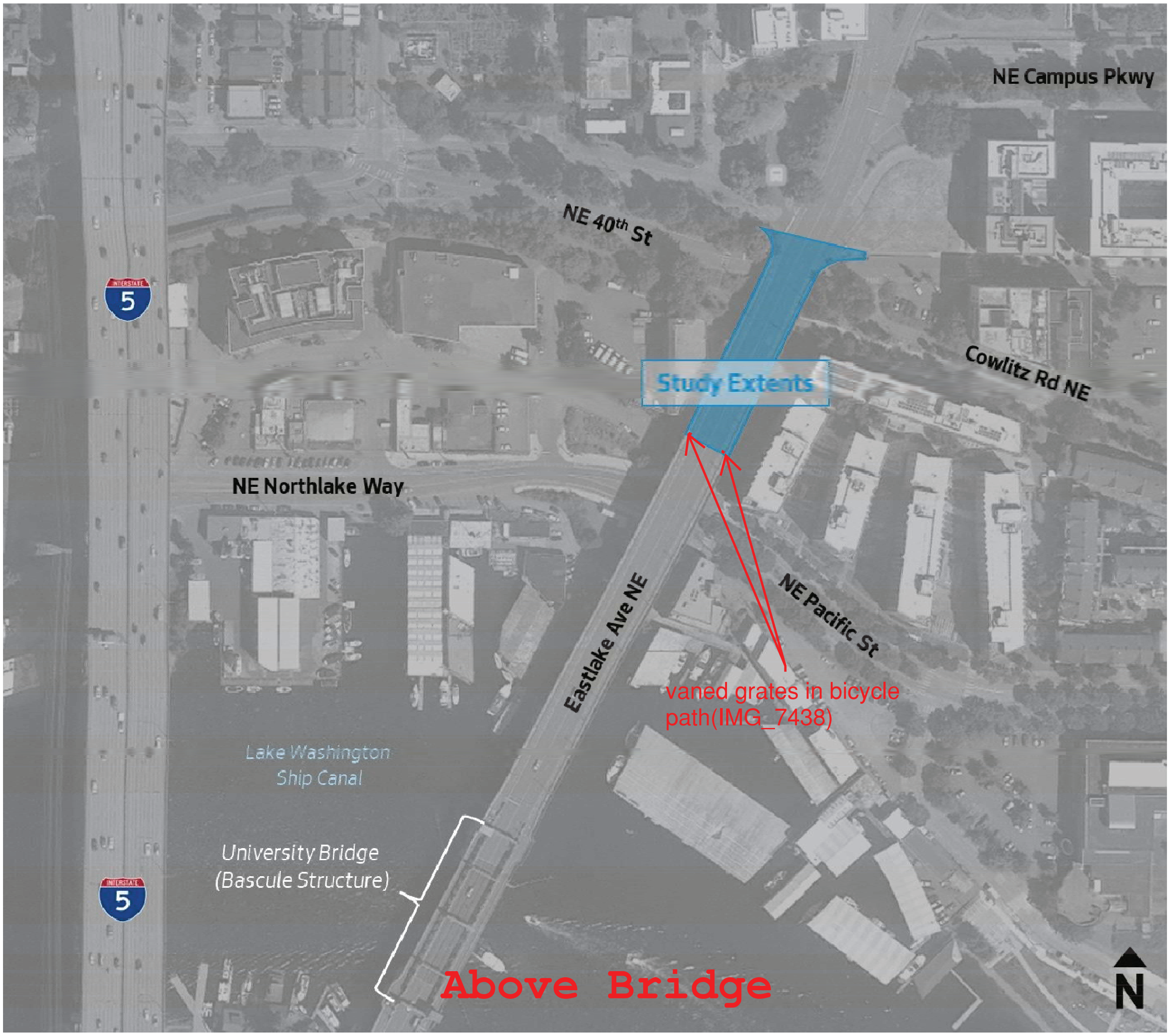
3.6.2 Survey Basemap with Highlighted Utilities



3.6.3 Utility Site Visit Notes with Pictures



3.6.3 Utility Site Visit Notes with Pictures




IMG_7396
3.6.3 Utility Site Visit Notes with Pictures
Power pole
Bridge drain
IMTU 305023 3
22G1
ITALIA


IMG_7399
3.6.3 Utility Site Visit Notes with Pictures
Miscellaneous pipes through bridge deck


IMG_7400
3.6.3 Utility Site Visit Notes with Pictures
Bridge drain

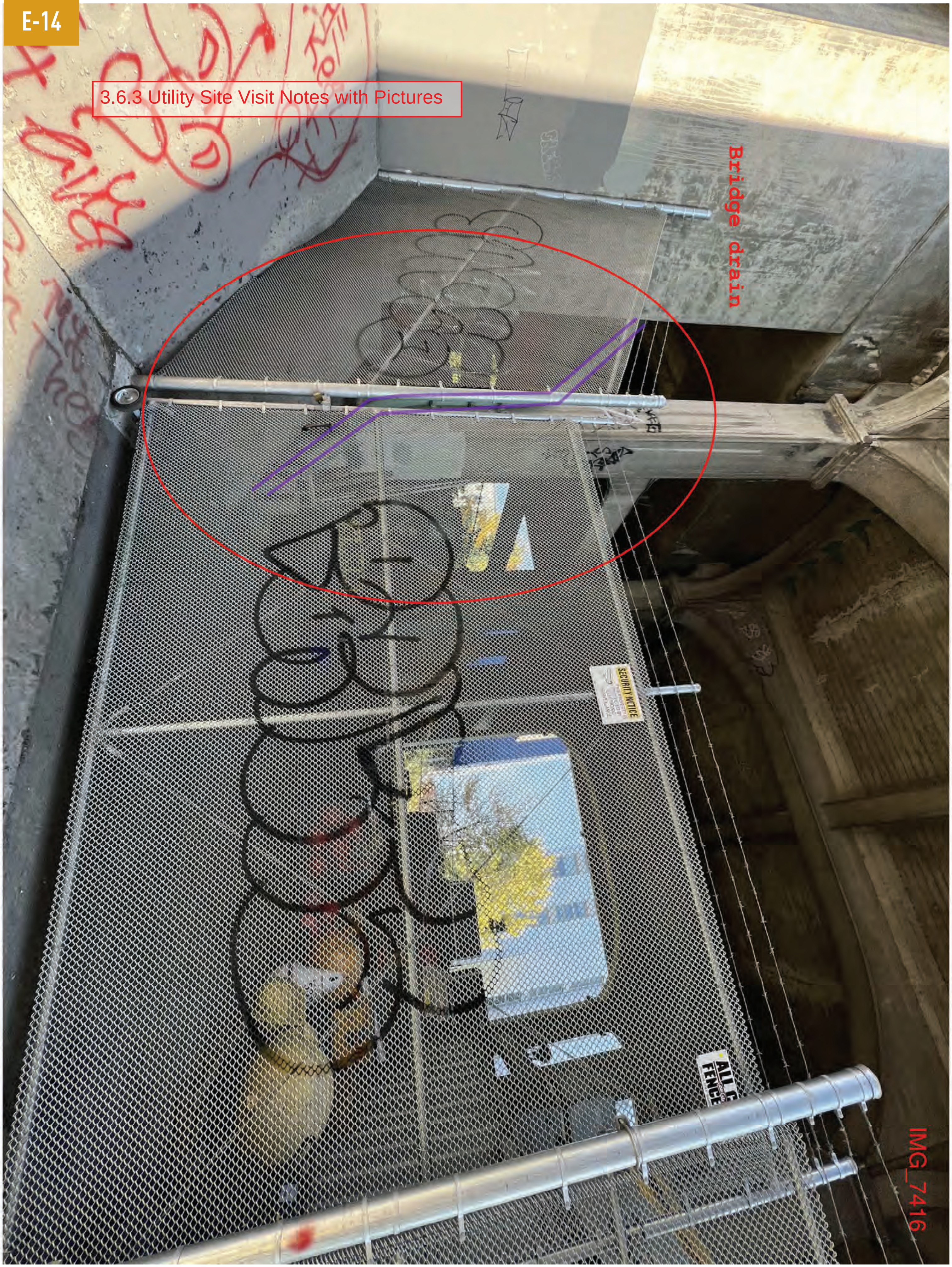

IMG_7402
3.6.3 Utility Site Visit Notes with Pictures
Under bridge lighting power

3.6.3 Utility Site Visit Notes with Pictures

Overhead Contact System boxes and conduits

IMG_7411

3.6.3 Utility Site Visit Notes with Pictures



3.6.3 Utility Site Visit Notes with Pictures

3.6.3 Utility Site Visit Notes with Pictures

Overhead lines form NE Northlake looking east

Overhead lines form NE Northlake looking north

University Bridge North Approach Planning Study

Draft Concept Alternatives - Evaluation Matrix

Evaluation Criteria	Alternative 1 Bridge Rehabilitation and Retrofit		Alternative 2 Bridge Replacement			Alternative 3 Superstructure Replacement and Substructure Retrofit		
	Alternative 1a CFRP Strengthening	Alternative 1b Reinforced Concrete Strengthening	Alternative 2a CIP Concrete Superstructure	Alternative 2b Precast Concrete Girders	Alternative 2c Steel Girders	Alternative 3a Precast Concrete Superstructure	Alternative 3b Structural Steel Superstructure	Alternative 3c In-Kind Superstructure Replacement
1. Structural Constraints	2	2	2	3	3	3	3	1
2. Long-Term Performance	1	1	3	3	3	2	2	2
3. Substructure Impacts	3	2	1	2	3	2	2	2
4. Roadway Impacts	2	2	2	2	2	2	2	2
5. Utilities Impacts	3	3	1	1	1	2	2	2
6. OCS System Impacts	3	3	1	1	1	1	1	1
7. MOT	3	3	2	2	2	2	2	2
8. Inspection	3	3	2	2	1	2	1	2
9. Maintenance	1	1	3	3	3	2	2	2
10. Schedule Impacts	3	3	1	2	2	2	2	1
11. Constructability	3	3	2	2	1	1	1	1
12. Aesthetics	3	2	3	2	3	2	2	3
13. Environmental Impacts	3	3	1	1	1	2	2	2
14. Right-of-Way Impacts	3	3	1	1	1	2	2	2
15. Material Cost Volatility	3	3	2	2	1	2	1	2
16. Design Complexity	3	2	1	2	1	2	1	1
17. Construction Cost	3	3	1	1	1	2	2	2
Rating Score	**45**	**42**	**29**	**32**	**30**	**33**	**30**	**30**
Rank	**1st**	**2nd**	**6th**	**4th**	**5th**	**3rd**	**5th**	**5th**

Rating: 1 = Poor 2 = Fair 3 = Good

Criteria Definition

Structural Constraints ==> Limitations restricting superstructure type related to other items (structure depth limitation due to profile).
Long-Term Performance ==> This category ranks how each structure will perform over time. Example - In 25 years, a required future replacement of the bridge deck may cause a retrofit option to be less desirable than a replacement option.
Substructure Impacts ==> Impact each alternative creates for supporting foundations. Example - One superstructure alternative may be heavier than another creating the need for larger footing.
Roadway Impacts ==> Impacts on roadway as a result of selected structure alternative.
Utilities Impacts ==> Impacts on utilities as a result of selected structure alternative.
OCS System Impacts ==> Impacts on OCS system as a result of selected structure alternative.
MOT ==> Rank each alternative for its impact on maintaining traffic during construction.
Inspection ==> Evaluates each alternative for its ease of inspection.
Maintenance ==> Ranks the maintenance of the alternatives over the design life of the structure.
Schedule Impacts ==> Impacts to schedule based on items such as long lead time items, complexity of fabrication, etc.
Constructability ==> Evaluates the complexity of construction, need for falsework, ability to mitigate issues during construction.
Aesthetics ==> Rank alternatives based on uniformity of structure types and visual appeal.
Environmental Impacts ==> Looks at various environmental items for impacts as a result of selected structure alternative.
Right-of-Way Impacts ==> Impacts on right-of-way as a result of selected structure alternative.
Material Cost Volatility ==> Reflects the risk associated with potential changes in cost of materials.
Design Complexity ==> Rank the options based on ease of design, detailing and need for reviews, etc.
Construction Cost ==> Evaluates each alternative for its initial construction cost.

University Bridge North Approach Planning Study

Draft Concept Alternatives - Evaluation Key Points

Evaluation Criteria	Alternative 1 Bridge Rehabilitation and Retrofit		Alternative 2 Bridge Replacement			Alternative 3 Superstructure Replacement and Substructure Retrofit		
	Alternative 1a CFRP Strengthening	Alternative 1b Reinforced Concrete Strengthening	Alternative 2a CIP Concrete Superstructure	Alternative 2b Precast Concrete Girders	Alternative 2c Steel Girders	Alternative 3a Precast Concrete Superstructure	Alternative 3b Structural Steel Superstructure	Alternative 3c In-Kind Superstructure Replacement
1. Structural Constraints	(2) Limitations of existing conditions	(2) Limitations of existing conditions	(2) Most new bents and potential foundation conflicts	(3) Least constraint compared with other alternatives	(3) Least constraint compared with other alternatives	(3) Least constraint compared with other alternatives	(3) Least constraint compared with other alternatives	(1) Low score for the 2-gdr staged constr. conditions, stability, redundancy.
2. Long-Term Performance	(1) Retains existing concrete conditions.	(1) Retains existing concrete conditions.	(3) Best longterm performance	(3) Best longterm performance	(3) Best longterm performance	(2) Retains existing substr. concrete conditions.	(2) Retains existing substr. concrete conditions.	(2) Retains existing substr. concrete conditions.
3. Substructure Impacts	(3) Least impact	(2) Moderate impact	(1) Significant impact	(2) Moderate impact	(3) Moderate-Low impact	(2) Moderate impact	(2) Moderate impact	(2) Moderate impact
4. Roadway Impacts	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.	(2) Roadway channelization is required to remain the same.
5. Utilities Impacts	(3) Least impact	(3) Least impact	(1) Greatest impact	(1) Greatest impact	(1) Greatest impact	(2) Medium impact	(2) Medium impact	(2) Medium impact
6. OCS System Impacts	(3) No impacts with remaining existing bridge top	(3) No impacts with remaining existing bridge top	(1) Significant impact with replacing existing bridge top	(1) Significant impact with replacing existing bridge top	(1) Significant impact with replacing existing bridge top	(1) Significant impact with replacing existing bridge top	(1) Significant impact with replacing existing bridge top	(1) Significant impact with replacing existing bridge top
7. MOT	(3) Least impact with remaining existing bridge top	(3) Least impact with remaining existing bridge top	(2) Significant impact with replacing existing bridge top	(2) Significant impact with replacing existing bridge top	(2) Significant impact with replacing existing bridge top	(2) Significant impact with replacing existing bridge top	(2) Significant impact with replacing existing bridge top	(2) Significant impact with replacing existing bridge top
8. Inspection	(3) No impact to bridge inspetion with existing bridge	(3) No impact to bridge inspetion with existing bridge	(2) Some impacts to bridge inspetion w/ new conc. superstr.	(2) Some impacts to bridge inspetion w/ new conc. superstr.	(1) Most impacts to bridge inspetion w/ new steel girders.	(2) Some impacts to bridge inspetion w/ new conc. superstr.	(1) Most impacts to bridge inspetion w/ new steel girders.	(2) Some impacts to bridge inspetion w/ new conc. superstr.
9. Maintenance	(1) Highest maintenance costs due to age.	(1) Highest maintenance costs due to age.	(3) Lowest maintenance costs.	(3) Lowest maintenance costs.	(3) Lowest maintenance costs.	(2) Medium maint. costs w/ remaining exist. substr.	(2) Medium maint. costs w/ remaining exist. substr.	(2) Medium maint. costs w/ remaining exist. substr.
10. Schedule Impacts	(3) Shortest construction duration	(3) Shortest construction duration	(1) Longest construction duration	(2) Medium construction duration	(2) Medium construction duration	(2) Medium construction duration	(2) Medium construction duration	(1) Longest construction duration
11. Constructability	(3) Least impact	(3) Least impact	(2) Moderate impact	(2) Moderate impact	(1) Greatest impact	(1) Greatest impact	(1) Greatest impact	(1) Greatest impact
12. Aesthetics	(3) Least impact	(2) Moderate impact	(3) Low impact	(2) Moderate impact	(3) Low impact	(2) Moderate impact	(2) Moderate impact	(3) Low impact
13. Environmental Impacts	(3) Least impact	(3) Least impact	(1) Greatest impact	(1) Greatest impact	(1) Greatest impact	(2) Medium impact	(2) Medium impact	(2) Medium impact
14. Right-of-Way Impacts	(3) Least impact	(3) Least impact	(1) Greatest impact	(1) Greatest impact	(1) Greatest impact	(2) Medium impact	(2) Medium impact	(2) Medium impact
15. Material Cost Volatility	(3) Low volatility	(3) Low volatility	(2) Moderate volatility	(2) Moderate volatility	(1) Highest volatility	(2) Moderate volatility	(1) Highest volatility	(2) Moderate volatility
16. Design Complexity	(3) Low complexity	(2) Moderate complexity	(1) Higher complexity	(2) Moderate complexity	(1) Higher complexity	(2) Moderate complexity	(1) Higher complexity	(1) Higher complexity
17. Construction Cost	(3) Least cost	(3) Least cost	(1) Highest cost	(1) Highest cost	(1) Highest cost	(2) Medium cost	(2) Medium cost	(2) Medium cost

Attachment L

Alternatives Evaluation Exhibits

University Bridge North Approach Planning Study

Final Alternatives - Evaluation Matrix

Evaluation Criteria	Weight %		Alternative 1 Bridge Rehabilitation and Retrofit	Alternative 2 Bridge Replacement	Alternative 3 Superstructure Replacement and Substructure Retrofit
	Asset Owner Perspective	Public Perspective	Column Jacketing and Footing Enlargement	Precast Concrete Girders	In-Kind Superstructure Replacement
A1. Long-Term Performance	22%	10%	1	5	3
A2. Inspection	22%	10%	1	5	4
A3. Maintenance	22%	10%	1	5	3
B1. MOT	19%	23%	5	1	2
B2. Schedule Impacts	19%	23%	5	1	2
B3. Constructibility	19%	23%	5	3	1
B4. Material Cost Volatility	19%	23%	5	2	3
C1. Superstructure Constraints	16%	10%	3	5	1
C2. Substructure Impacts	16%	10%	4	2	3
C3. Design Complexity	16%	10%	3	5	1
D1. Roadway Improvements	9%	19%	2	4	4
D2. Utilities Impacts	9%	19%	5	1	3
D3. OCS System Impacts	9%	19%	5	1	1
E1. Environmental Impacts	19%	16%	4	2	3
F1. Right-of-Way Impacts	6%	3%	5	2	3
G1. Aesthetics	9%	19%	4	2	5
G2. Bridge Character Defining Features	9%	19%	5	1	4

Benefit Score: 1 = Worst 2 3 4 5 = Best

Benefit Score	**Alt 1**	**Alt 2**	**Alt 3**
B1 Unweighted - Raw Scores	63	47	46
B2 Weighted - Asset Owner Perspective	90	79	68
B3 Weighted - Public Perspective	107	64	71

Construction Cost	**Alt 1**	**Alt 2**	**Alt 3**
C1 Total Construction Cost ($M)	$19.4	$49.0	$42.1
Life Expectancy (years)	25	75	50
C2 Annual Cost Factor ($M/years)	$0.78	$0.65	$0.84

Benefit Score/Construction Cost	**Alt 1**	**Alt 2**	**Alt 3**
B1/C1 Unweighted: Raw Score	3.2	1.0	1.1
B2/C1 Weighted: Asset Owner Perspective	4.6	1.6	1.6
B3/C1 Weighted: Public Perspective	5.5	1.3	1.7

Benefit Score/Annual Cost Factor	**Alt 1**	**Alt 2**	**Alt 3**
B1/C2 Raw Scores (Unweighted)	80.8	72.3	54.8
B2/C2 Asset Owner Perspective (Weighted)	115.4	121.5	81.0
B3/C2 Public Perspective (Weighted)	137.2	98.5	84.5

Criteria Definition

Long-Term Performance ==> This category ranks how each structure will perform over time, considering age and material type factors.
Inspection ==> Evaluates each alternative for its ease and frequency of inspection.
Maintenance ==> Ranks the maintenance effort of the alternatives over the design life of the structure.
MOT ==> Rank each alternative for its impact on maintaining traffic during construction.
Schedule Impacts ==> Impacts to schedule based on items such as long lead time items, complexity of fabrication, etc.
Constructibility ==> Evaluates the complexity of construction, need for falsework, ability to mitigate issues during construction.
Material Cost Volatility ==> Reflects the risk associated with potential changes in cost of materials.
Supertructure Constraints ==> Limitations restricting superstructure type related to other items (e.g. structure depth limitation due to profile).
Substructure Impacts ==> Impact each alternative creates for size and complexity of supporting columns and foundations.
Design Complexity ==> Rank the options based on scope and complexity of analysis, design, detailing and need for reviews, etc.
Roadway Improvements ==> Improvements on roadway as a result of selected structure alternative.
Utilities Impacts ==> Impacts on utilities as a result of selected structure alternative.
OCS System Impacts ==> Impacts on OCS system as a result of selected structure alternative.
Environmental Impacts ==> Looks at various environmental items for impacts as a result of selected structure alternative.
Right-of-Way Impacts ==> Impacts on right-of-way as a result of selected structure alternative.
Aesthetics ==> Rank alternatives based on uniformity of structure types and visual appeal.
Bridge Character Defining Features ==> Impacts to Bridge Character Defining Features including decorative concrete piers, arched ribbing girders, balustrade railing, west and east monuments on bridge approach, and art deco stylistic details.
Construction Cost ==> Evaluates each alternative for its initial construction cost of the bridge.

University Bridge North Approach Planning Study

Criteria Weighting Scenarios

Asset Owner Perspective

No.	Criteria	A Life-cycle Cost & Maintenance	B Constructibility	C Structure Impacts	D Roadway, Utilities, OCS Impacts	E Environmental Impacts	F ROW Impacts	G Bridge Characters/Aesthetics	No.	Weighting Calculation Count	Weighting Calculation Weight %
A	Life-cycle Cost & Maintenance	A	A	A	A	A	A	A	**A**	7	22%
B	Constructability		B	B	B	B/E	B	B	**B**	6	19%
C	Structure Impacts			C	C	C/E	C	C	**C**	5	16%
D	Roadway, Utilities, OCS Impacts				D	E	D	D/G	**D**	3	9%
E	Environmental Impacts					E	E	E	**E**	6	19%
F	Right-of-Way Impacts						F	F/G	**F**	2	6%
G	Bridge Characters/Aesthetics							G	**G**	3	9%
									Total	**32**	**100%**

Public Perspective

No.	Criteria	A Life-cycle Cost & Maintenance	B Constructability	C Structure Impacts	D Roadway, Utilities, OCS Impacts	E Environmental Impacts	F ROW Impacts	G Bridge Characters/Aesthetics	No.	Weighting Calculation Count	Weighting Calculation Weight %
A	Life-cycle Cost & Maintenance	A	B	A/C	D	E	A	G	**A**	3	10%
B	Constructability		B	B	B	B	B	B	**B**	7	23%
C	Structure Impacts			C	D	E	C	G	**C**	3	10%
D	Roadway, Utilities, OCS Impacts				D	D/E	D	D/G	**D**	6	19%
E	Environmental Impacts					E	E	G	**E**	5	16%
F	Right-of-Way Impacts						F	G	**F**	1	3%
G	Bridge Characters/Aesthetics							G	**G**	6	19%
									Total	**31**	**100%**

A. Life-cycle Cost & Maintenance	**B. Constructibility**	**C. Structure Impacts**	**D. Roadway, Utilities, OCS Impacts**	**E. Environmental Impacts**	**F. Right-of-Way Impacts**	**G. Bridge Characters/Aesthetics**
1. Long-Term Performance	1. MOT	1. Superstructure Constraints	1. Roadway Improvements	1. Environmental Impacts	1. Right-of-Way Impacts	1. Aesthetics
2. Inspection	2. Schedule Impacts	2. Substructure Impacts	2. Utilities Impacts			2. Bridge Character Defining Features
3. Maintenance	3. Constructibility	3. Design Complexity	3. OCS System Impacts			
	4. Material Cost Volatility					

University Bridge North Approach Planning Study

Final Alternatives Comparison Matrix Key Points

Evaluation Criteria	Alternative 1 Bridge Rehabilitation and Retrofit	Alternative 2 Bridge Replacement	Alternative 3 Superstructure Replacement and Substructure Retrofit
	Column Jacketing and Footing Enlargement	Precast Concrete Girders	In-Kind Superstructure Replacement
A1. Long-Term Performance	(1) Retains existing superstructure and substructure concrete conditions.	(5) Best longterm performance, all new materials.	(3) Retains existing substructure. concrete conditions.
A2. Inspection	(1) Most impact, more frequent bridge inspection with existing bridge.	(5) Increased no. of girder lines, reduced substructure units, reduced frequency of inspection.	(4) expect reduced frequency due to new superstructure and jacketed columns.
A3. Maintenance	(1) Highest maintenance costs due to age.	(5) Lowest maintenance costs for new bridge.	(3) Medium maintainance costs with remaining existing substructure.
B1. MOT	(5) Least impact with remaining existing bridge deck, least construction duration.	(1) Significant impact with replacing existing bridge deck, long construction duration.	(2) Significant impact with replacing existing bridge deck, slightly less construction duration vs Alt. 2.
B2. Schedule Impacts	(5) Shortest construction duration.	(1) Longest construction duration.	(2) 2nd longest construction duration.
B3. Constructibility	(5) Least impact.	(3) Moderate impact.	(1) Greatest impact.
B4. Material Cost Volatility	(5) Least volatility.	(2) Moderate volatility.	(3) Moderate volatility.
C1. Superstructure Constraints	(3) Limitations of existing conditions.	(5) Least constraint compared with other alternatives.	(1) Low score for the 2-gdr staged constr. conditions, stability, redundancy.
C2. Substructure Impacts	(4) Least to moderate impact.	(2) Most impact.	(3) Moderate impact.
C3. Design Complexity	(3) Moderate complexity for rehabilitation and retrofit iterations.	(5) Moderate complexity but full design range.	(1) Higher complexity due to retrofit, staging, and superstructure.
D1. Roadway Improvements	(2) Roadway channelization remains the same. Least opportunity for improvements.	(4) More potential to improve roadway channelization.	(4) More potential to improve roadway channelization.
D2. Utilities Impacts	(5) Least impact.	(1) Most impact.	(3) Medium impact.
D3. OCS System Impacts	(5) No impacts with existing bridge deck.	(1) Significant impact with replacing existing bridge deck.	(1) Significant impact with replacing existing bridge deck.
E1. Environmental Impacts	(4) Least impact.	(2) Greatest impact.	(3) Medium impact.
F1. Right-of-Way Impacts	(5) Least impact.	(2) Greatest impact.	(3) Medium impact.
G1. Aesthetics	(4) Least to moderate impact.	(2) Moderate impact.	(5) Least impact.
G2. Bridge Character Defining Features	(5) Least impact.	(1) Greatest impact.	(4) Least to moderate impact

Attachment M

Public Survey

University Bridge Planning Study

Outreach Summary Report

September 2023

OVERVIEW

The University Bridge, originally constructed in 1919 with timber trestle approaches and replaced with current concrete and streel structures in the early 1930s, spans the western edge of Portage Bay and connects the University District to Eastlake, South Lake Union, and Downtown via Eastlake Ave E. The 1,575-foot bridge carries more than 24,000 vehicles per weekday across Portage Bay. The corridor is a critical connection for people walking and biking as well as for transit and freight.

We perform regular maintenance and frequent inspections on the bridge to ensure it is operational and safe for both road and marine traffic. With the steady increase in vehicle weight and traffic volumes, as the structure ages, more significant rehabilitation may be needed to sustain its current level of operation. Since the structure is still in fair condition without any major flaws, we have an opportunity to plan and look beyond just maintaining its current form and function. In 2022, we launched the University Bridge Planning Study to evaluate how to bring the north segment of the structure up to current transportation, functional, and engineering standards and better meet the multimodal needs of this corridor. The Planning Study, funded by the Levy to Move Seattle, explored feasible rehabilitation and replacement options for the long-term future of the north segment of the bridge.

Project Area

We conducted a community online survey to better understand travel habits and preferences for the University Bridge and to hear thoughts, comments, or concerns about the future of the bridge. The survey was available from July 21 to August 18 and was marketed via SDOT Twitter, SDOT Facebook, project webpage banner, project listserv, and neighborhood A-frames, posters, and yard signs.

KEY FINDINGS

Based on the community feedback, here are the major themes that emerged:

1. **Traffic Flow and Commuter Needs:**

    - Many residents emphasize the importance of the bridge for commuters and connecting neighborhoods.
    - They stress the need for quick opening and closing of the bridge to minimize traffic interruptions, especially when the Ship Canal Bridge experiences congestion.
    - Some residents propose limiting bridge openings for recreational boats to minimize disruptions.

2. **Infrastructure Maintenance and Improvement:**

- Many community members advocate for repairing and maintaining the existing bridge structure to ensure its longevity and historic character.
- Suggestions include widening walking paths, improving bike lanes and separation from vehicle traffic, and addressing traffic congestion issues at key intersections like Fuhrman Ave.
- There's also an emphasis on seismic upgrades and making it more resilient to climate change.

3. **Urban Design and Land Use:**

- Community members mention removing highway-style interchanges north of the bridge and connecting bike lanes to the Burke-Gilman Trail to improve accessibility and overall urban design.
- They want to reclaim excess right-of-way north of the bridge for positive land use and urban design benefits.
- There's a suggestion to repurpose areas under the bridge for community use, such as a skatepark.

SURVEY RESPONSE SUMMARY

We received 710 total responses with a 72% completion rate. Below, we've shared each question and how respondents answered as raw data and a percentage. For some questions, respondents could choose more than one response (questions noted below). Percentages for each question are based on the number of respondents who answered the question, not the total number of respondents who took the survey. Note that totals may not add up to 100%.

For open-ended questions, we've summarized what we heard by sharing popular and notable themes. The full questionnaire and all responses are available by request.

Question 1: Why do you travel across or under the University Bridge? (select all that apply, by mode)

	Commute – Work or School	Do My Job	Run Errands	Recreational Activities	Visit Friends/ Family	Other	N/A
Bike	247 (35%)	38 (5%)	328 (46%)	447 (63%)	304 (43%)	70 (10%)	219 (31%)
Boat	1 (<1%)	2 (<1%)	1 (<1%)	154 (22%)	12 (2%)	9 (1%)	553 (78%)
Bus	182 (26%)	25 (4%)	217 (31%)	219 (31%)	186 (26%)	44 (6%)	330 (47%)

	Commute – Work or School	Do My Job	Run Errands	Recreational Activities	Visit Friends/ Family	Other	N/A
Car	210 (30%)	62 (9%)	477 (67%)	367 (52%)	370 (52%)	111 (16%)	138 (19%)
Freight	0	3 (<1%)	2 (<1%)	1 (<1%)	0	3 (<1%)	702 (99%)
Walking/ Mobility device	123 (17%)	31 (4%)	212 (30%)	406 (57%)	185 (26%)	69 (10%)	250 (35%)

Question 2: How often do you travel across or under the University Bridge? (select one per mode)

	At least once a day	At least once a week	At least once a month	Less than once a month	N/A
Bike	90 (13%)	196 (28%)	125 (18%)	83 (12%)	223 (31%)
Boat	3 (<1%)	31 (4%)	33 (5%)	99 (14%)	544 (78%)
Bus	40 (6%)	99 (14%)	113 (16%)	142 (20%)	322 (45%)
Car	135 (19%)	226 (32%)	139 (20%)	115 (16%)	138 (19%)
Freight	0	3 (<1%)	1 (<1%)	3 (<1%)	703 (99%)
Walking/ Mobility device	73 (10%)	134 (19%)	121 (17%)	143 (20%)	242 (34%)

Question 3: What time of day do you travel across or under the University Bridge? (select all that apply, by mode)

	Weekday Morning Peak (6am to 9am)	Weekday Evening Peak (4pm to 7pm)	Weekday Non-Peak Hours	Weekend	N/A
Bike	225 (32%)	307 (43%)	287 (40%)	381 (33%)	231 (33%)
Boat	16 (2%)	44 (6%)	58 (8%)	129 (18%)	552 (78%)
Bus	146 (21%)	203 (29%)	192 (27%)	222 (31%)	355 (50%)
Car	230 (32%)	341 (48%)	401 (57%)	457 (64%)	135 (19%)
Freight	2 (<1%)	2 (<1%)	2 (<1%)	3 (<1%)	703 (99%)

	Weekday Morning Peak (6am to 9am)	Weekday Evening Peak (4pm to 7pm)	Weekday Non-Peak Hours	Weekend	N/A
Walking/ Mobility device	150 (21%)	188 (27%)	273 (39%)	343 (48%)	261 (37%)

Question 4: What times of year do you travel across or under the University Bridge? (select one per mode)

	Year-round	School in Session (Fall – Spring)	Summer	Other (Seasonal Work, etc.)	N/A
Bike	391 (55%)	13 (2%)	91 (13%)	11 (2%)	229 (33%)
Boat	43 (6%)	44 (6%)	58 (8%)	129 (18%)	552 (78%)
Bus	146 (21%)	203 (29%)	192 (27%)	222 (31%)	355 (50%)
Car	230 (32%)	341 (48%)	401 (57%)	457 (64%)	135 (19%)
Freight	2 (<1%)	2 (<1%)	2 (<1%)	3 (<1%)	703 (99%)
Walking/ Mobility device	150 (21%)	188 (27%)	273 (39%)	343 (48%)	261 (37%)

Question 5: What types of improvements to the University Bridge would you like us to prioritize as part of the future rehabilitation or replacement project? (select up to 3)

- Make it better for people walking: 491 (71%)
- Make it better for people biking: 467 (67%)
- Make it better for people taking transit: 293 (42%)
- Make it better for people driving: 190 (27%)
- Make it better for freight: 4 (<1%)
- Make it better for boats: 9 (1%)
- Bridge aesthetics and/or retaining the historic character of the bridge
- Other: 44 (6%)
    - Prioritize the bridge for commuters and essential errands, not freight and recreational boats
    - Limit interruptions from pleasure boats by raising the bridge strategically.
    - Improve traffic and access from 40th onto the bridge southbound
    - Express concerns about southbound traffic backups on Fuhrman Ave

- Stress the need for protections for pedestrians and cyclists
- Preserve the bridge's historic character while ensuring seismic safety, longevity, and resilience of the bridge to withstand climate change and temperature increases.

Question 6: What improvements would you like to see for your top priorities? (482 responses)

Bridge-specific

- Wider paths for people who walk and bike
- More robust barrier between vehicle lanes and bike lanes for safety and so disabled cars can't park and block bike lane
- Longer left turn lane for southbound traffic onto Furman Ave E
- Improve travel lanes so buses keep moving without blocking traffic
- Retain historic bridge characteristics
- Add sign for cars to turn off engines while bridge is open

In bridge vicinity

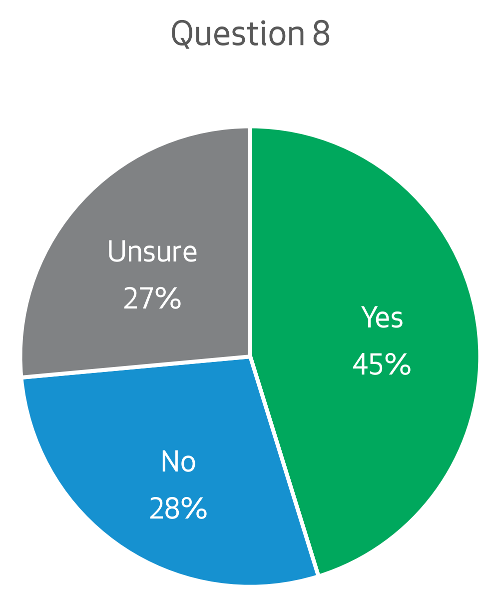
- Replace "freeway-style" off-ramps north of the bridge to better connect the streets and Burke Gilman Trail, and improve safety for people walking and biking north of bridge
- Repurpose vacant parcels north of the bridge to better serve the community
- Remove cloverleaf and slip lanes and replace with signalized intersection with protected bike lanes
- Improve access to the Burke Gilman trail and intersection safety so people who bike can make turns in all directions easily around the bridge
- Slip lane at northeast area of bridge feels dangerous for people who bike because cars don't slow down before taking off-ramp
- Improve bridge accessibility for people with disabilities
- Improve safety and traffic conditions on NE 40th St for southbound access to the bridge
- Consolidate transit hub so transfers are as close and convenient as possible
- People walking north on the east side of the bridge have to make a long detour to get to the neighborhood around 9th Ave NE
- Provide a protected, direct, and clearly marked route to enter/exit the Burke Gilman trail from the bridge

Question 7: What would be most important to you during the construction phase of a future project on the University Bridge? (select up to 3)

- Reducing detours/closures for people biking: 356 (52%)
- Reducing detours/closures for people walking: 348 (51%)
- Reducing detours/closures for people transit: 313 (45%)
- Reducing detours/closures for people driving: 238 (35%)

- Reducing construction duration: 206 (30%)
- Reducing impacts to shoreline and Lake Union: 167 (24%)
- Reducing noise and vibration: 66 (10%)
- Protecting/preserving the Wall of Death art installation: 38 (6%)
- Other: 40 (6%)
    - Prioritize accessibility for people with mobility devices.
    - Coordinate with other projects like the 520 Bridge to prevent traffic congestion
    - Prioritize pedestrians, cyclists, and transit over drivers.
    - Create clear and safe bike detour routes away from car traffic.
    - Minimize traffic delays in surrounding neighborhoods to avoid disruptions for transit riders and drivers.
    - Protect the environment and water from construction-related debris.
    - Keep the public informed in advance of closures and detours.
    - Emphasize green and pedestrian/cyclist-focused project elements.

Question 8: If your mode of travel on the University Bridge was impacted during construction, do you have another reasonable route you could take? (688 responses)



- Yes: 311 (45%)
- No: 195 (28%)
- Unsure: 182 (26%)

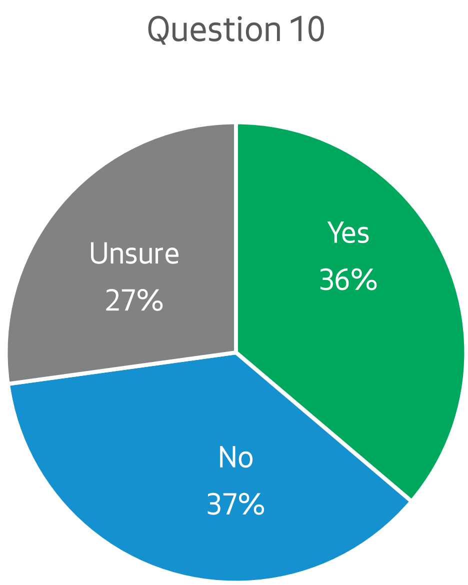
Question 9: Briefly explain the alternative route you would take? (314 responses)

The responses can be organized into three main route options based on the alternative routes people would take:

1. **Montlake Bridge (or Montlake):**
    - Many respondents mentioned they would use the Montlake Bridge for various modes of transportation (bike, car, walking).
    - Some respondents mentioned walking or biking specifically through Montlake.
2. **I-5 (or Interstate 5):**
    - A number of respondents indicated they would use Interstate 5 for driving.
    - Others mentioned using I-5 when no other reasonable alternatives are available.
3. **Other Routes or Modes:**
    - Some respondents mentioned using alternative routes, such as the Fremont Bridge, Ballard Bridge, or routes around Lake Union.
    - A few mentioned taking public transportation, such as the light rail or buses, as alternatives.
    - A couple of respondents mentioned using the Burke-Gilman Trail or other streets depending on their destination.

Please note that some responses indicated different alternatives for different modes of transportation or destinations.

Question 10: Would a detour/closure during construction change your mode choice? (688 responses)



- Yes: 249 (36%)
- No: 252 (37%)
- No sure: 187 (27%)

Question 11: Briefly explain how or why a detour/closure might change your mode choice? (248 responses)

Community members express concerns about alternative routes and modes of transportation, emphasizing the importance of maintaining accessibility and safety during the construction period.

1. **Mode Shifting Due to Accessibility Concerns:**
   - Many residents rely on the University Bridge for their daily commutes, primarily walking or biking.
   - The potential closure or detour of the bridge may force residents to shift to driving or taking public transit.
   - Inconvenience and increased commuting time are primary concerns if alternative routes are less accessible.
2. **Impact on Biking Routes:**

- Closure of the University Bridge for biking could lead to longer and less safe commutes.
- Community members are worried about the lack of reasonable bike detours, potentially discouraging biking altogether.
- Alternative bridges, like Fremont Bridge, might require significant diversions, making biking less attractive.

3. **Effect on Public Transit:**

   - Closure or detour of the University Bridge would significantly impact bus routes (e.g., routes 49 and 70).
   - Longer transit times and uncertain detour routes are a cause for concern among those who rely on public transportation.
   - Potential increases in congestion on alternative routes might affect the reliability of bus services.

4. **Increased Reliance on Cars:**

   - For many, if the University Bridge is inaccessible, driving becomes the most practical option.
   - Concerns about increased traffic congestion and the environmental impact of additional cars on the road are evident.
   - People without cars may face challenges in accessing essential services and commuting.

5. **Safety and Convenience Considerations:**

   - Safety and convenience play a crucial role in transportation choices, especially for pedestrians and cyclists.
   - Detours and alternative routes need to be carefully planned to ensure the safety of vulnerable road users.
   - The potential for longer commutes or inconvenient detours might lead to changes in transportation habits, including opting for the fastest available mode.

The community's concerns revolve around maintaining accessibility, safety, and efficiency during the construction or closure of the University Bridge. Balancing the needs of various transportation modes and ensuring minimal disruption to daily life are essential considerations for the construction phase of a future project.

Question 12: What else should we consider about the future of the University Bridge and the community that relies on it? (341 responses)

These common themes reflect the community's varied concerns and preferences regarding the potential closure of the University Bridge during construction and its impact on various modes of transportation.

1. **Mode of Commute and Reliance on Public Transit:**
   - People consider alternative modes of commute if the bridge is closed, such as driving, biking, walking, or using public transit.
   - The inconvenience of switching to a different mode of transportation is a concern.
   - Many individuals would switch from walking and biking to transit or driving if the bridge is closed.
   - Closure or detours would lead to increased reliance on single-occupancy vehicles (SOVs) for some trips.
2. **Impact on Walking and Biking:**
   - Closure of the bridge would deter walking and biking, as it would require longer routes and may not be safe due to detours.
   - People emphasize the importance of the University Bridge for walking and biking.
   - Closure or detours for bikes are a significant concern, as they may lead to longer and less safe routes.
   - Some express discomfort with alternative biking routes, especially if they involve merging with car traffic.
   - Limited public transportation options are available for some areas, making walking a crucial mode of commuting.
3. **Use of Cars and Traffic Concerns:**
   - Many individuals mention a preference for driving if the bridge is closed, citing practicality and convenience.
   - Concerns about increased traffic and the need to rely more on cars are mentioned.
   - If biking and walking options are hindered, some individuals mention that they may resort to using their cars, even if they prefer more sustainable modes of transportation.
   - Traffic congestion and the inconvenience of using alternate routes are factors considered when contemplating car usage.
4. **Access to Services and Inconvenience:**
   - The closure of the bridge affects access to essential services like groceries, healthcare, and pharmacies for some residents.
   - Lack of access to the bridge could force people to use cars for such errands.
   - Longer commute times are a major factor influencing mode choice.
   - People express a preference for faster options, such as light rail or buses, if available.

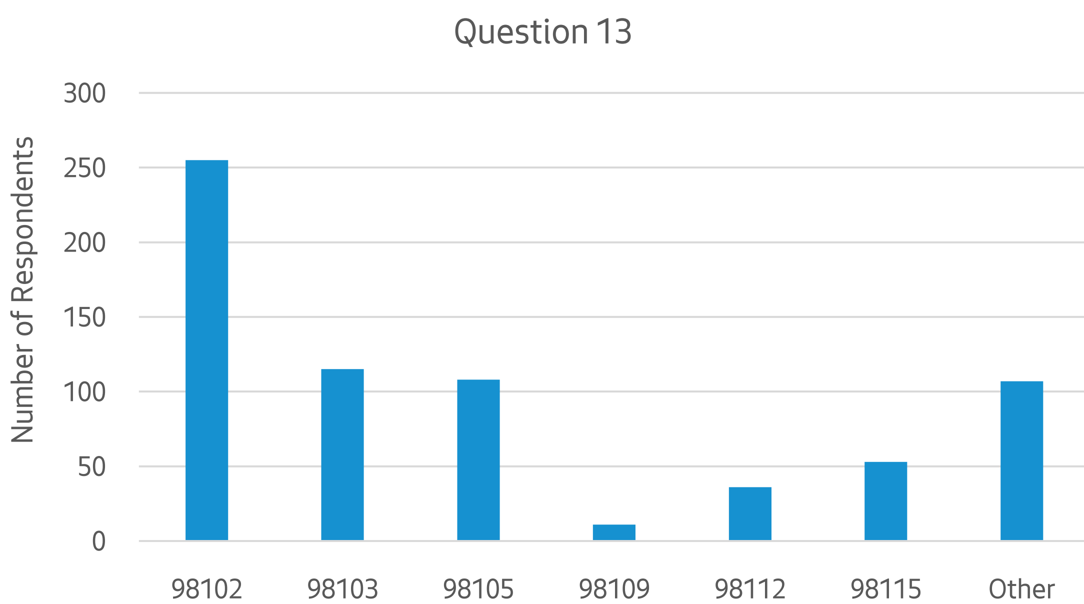
5. **Safety, Accessibility, Avoidance, and Limitation:**

    - Safety concerns arise, especially for pedestrians and cyclists.
    - Some individuals mention the need for improved bike facilities on alternative routes.
    - Many would avoid the affected area entirely during construction or detours.
    - Some may limit their trips or choose alternative modes to cope with the closure.

6. **Avoidance of Car Usage:**

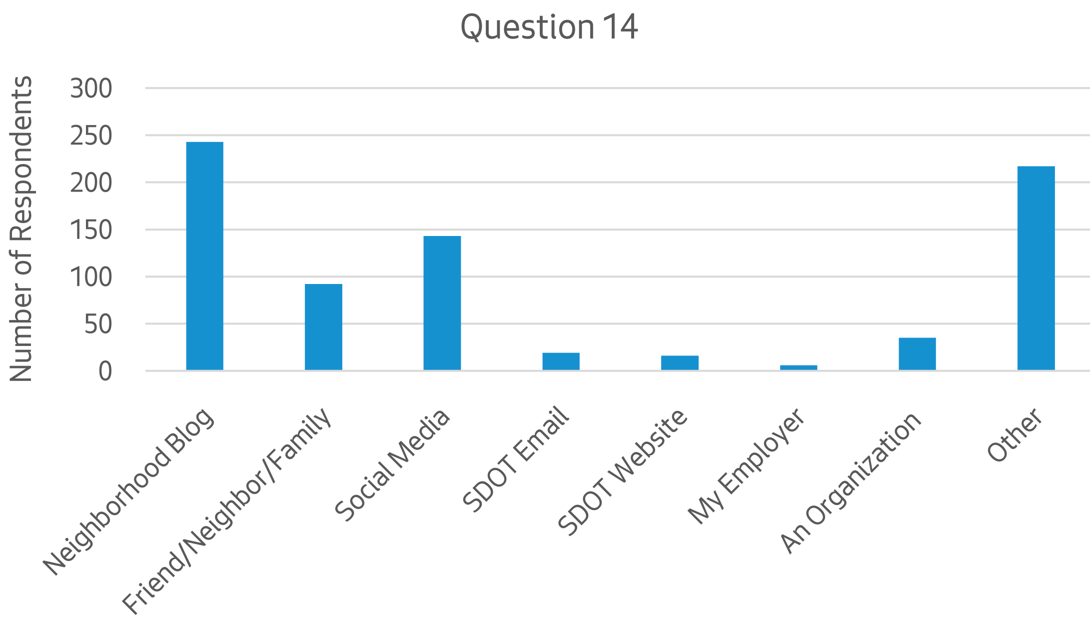
- In cases where the University Bridge is not accessible, some individuals express a preference for biking, walking, or using public transit to avoid driving, citing concerns about traffic and congestion during detours.

Question 13: What is your home zip code? (685 responses)



- 98102: 255 (37%)
- 98103: 115 (17%)
- 98105: 108 (16%)
- 98109: 11 (2%)
- 98112: 36 (5%)
- 98115: 53 (8%)
- Other: 107 (16%)
    - 98107 (15)
    - 98117 (8)
    - 98122 (8)
    - 98125 (6)

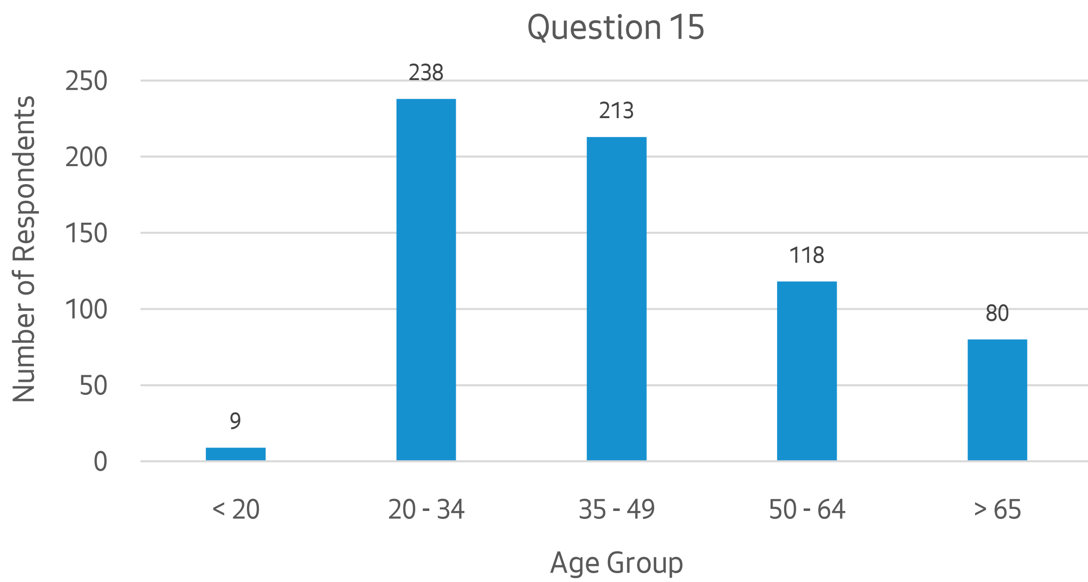
Question 14: How did you learn about this planning study? (685 responses)



- Neighborhood blog: 243 (35%)
- Friend, neighbor, family member: 92(13%)
- Social media (Twitter, Facebook, Instagram, NextDoor, etc.): 143 (21%)
- City of Seattle/SDOT mail: 7 (1%)
- City of Seattle/SDOT email: 19 (3%)
- City of Seattle/SDOT website: 16 (2%)
- My employer: 6 (1%)
- An organization I'm involved with: 35 (5%)
- Other: 217 (32%)
    - SDOT A-Frames, Posters and Yard signs
    - Seattle Bike Blog post

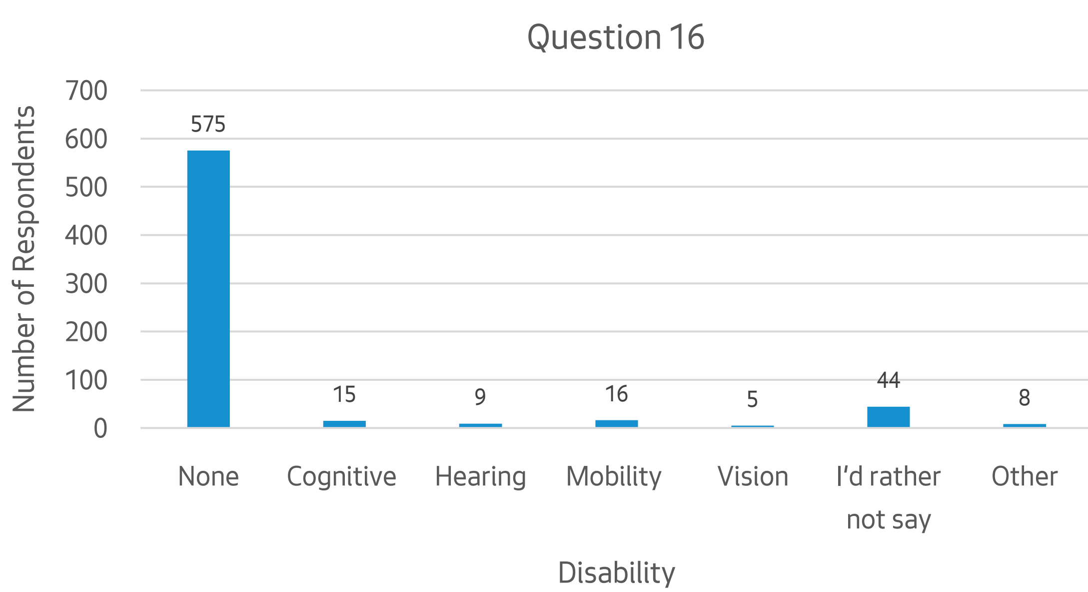
Question 15: What is your age? (679 responses)

- Less than 20 yrs old: 9 (1%)
- 20-34 years old: 238 (35%)
- 35-49 years old: 213 (31%)
- 50-64 years old: 118 (17%)
- 65 years of age or older: 80 (12%)
- I'd rather not say: 23 (3%)



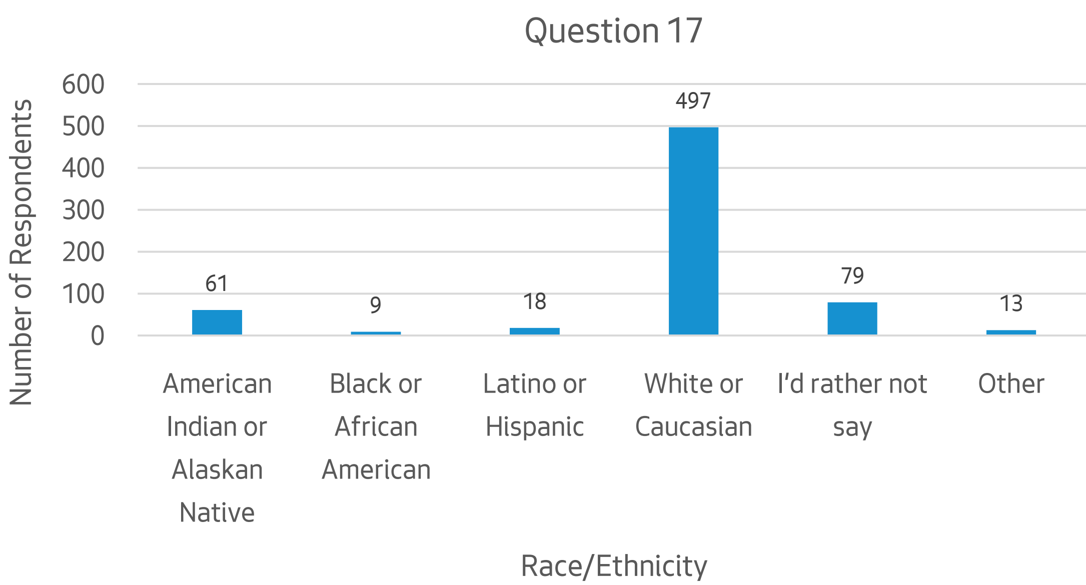
Question 16: Do you have a disability? (666 responses)

- None: 575 (86%)
- Cognitive: 15 (2%)
- Hearing: 9 (1%)
- Mobility: 16 (2%)
- Vision: 5 (1%)
- I'd rather not say: 44 (7%)
- Other: 8 (1%)



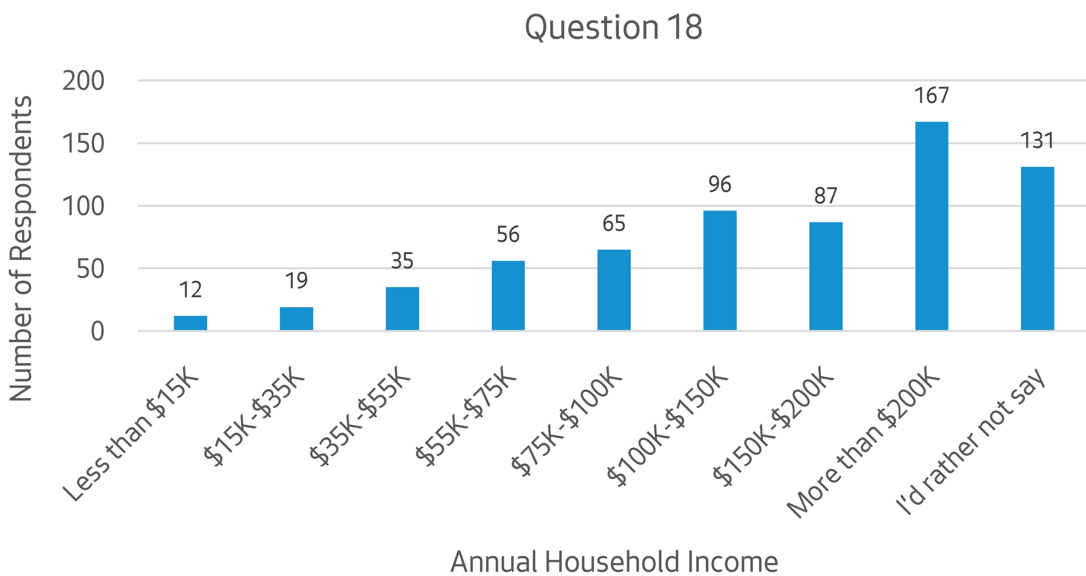
Question 17: What race/ethnicity best describes you? (666 responses)

- American Indian or Alaskan Native: 6 (1%)
- Asian or Pacific Islander: 61 (9%)
- Black or African American: 9 (1%)
- Latino or Hispanic: 18 (3%)
- White or Caucasian: 497 (75%)
- I'd rather not say: 79 (12%)
- Other: 13 (2%)



Question 18: What is your annual household income? (666 responses)

- $15,000 or less: 12 (2%)
- $15,001 to $35,000: 19 (3%)
- $35,001 to $55,000: 35 (5%)
- $55,001 to $75,000: 56 (8%)
- $75,001 to $100,000: 65 (10%)
- $100,001 to $150,000: 96 (14%)
- $150,001 to $200,000: 87 (13%)
- More than $200,000: 167 (25%)
- I'd rather not say: 131 (20%)



Question 18
Number of Respondents
200
150
100
50
0
12
19
35
56
65
96
87
167
131
Less than $15K
$15K-$35K
$35K-$55K
$55K-$75K
$75K-$100K
$100K-$150K
$150K-$200K
More than $200K
I'd rather not say
Annual Household Income

Attachment N

Final Technical Repair Memo

Memorandum

Date:	October 31, 2023
Project:	University Bridge North Approach Planning Study – Task 7 Rehabilitation of University Bridge Structure
To:	Elisabeth Wooton, Seattle Department of Transportation
From:	Ken Jumpawong, HDR Project Manager
Subject:	**Final Technical Repair Memorandum**

1.0 Introduction

The University Bridge is comprised of four distinct sections: the south approach (SA) spans, the bascule (B) spans, the north approach steel (NAS) spans, and the north approach concrete (NAC) spans (see Attachment A). The NAC spans are being studied to evaluate rehabilitation and replacement alternatives and are addressed separately. The other three sections (SA, B, and NAS spans) are addressed here for the repairs and methods intended to bring the bridge up to a general condition rating of “good” or higher and to generate cost estimates for the repair work.

The study is based on the thorough review of the available inspection reports, studies, a site visit, and consultation with SDOT staff. The recommended repair items and proposed methods of repair are described in detail below by each bridge section. See Attachment A for repair drawings. Details are subject to change during final contract plans development.

2.0 South Approach Spans (BRG-003SA)

2.1 Seepage and Corrosion at Floorbeams

Issues: The SA spans of the bridge are comprised of a 200-foot continuous deck truss extending across three spans between Abutment 1 and South Bascule Pier. There are eight floorbeams, which are numbered from north to south as FB2, FB4, FB6, FB8, FB10, FB12, FB14 and FB16. Each floorbeam location has an expansion joint in the deck. The joint uses an expansion filler which is called out as “1/2" flexcell or equal” in the plans (782-59, Sheet No. 182). The concrete deck is covered with an asphalt concrete overlay that exhibits reflective cracking at each floorbeam joint. A copper flashing strip is placed below the joints and above the floorbeam top flanges. The section details of the deck vary across the width of the bridge and sidewalk. Most sections have a cast-in-place (CIP) concrete barrier between the copper flashing and floorbeams, though at some sections the steel and copper are in direct contact.

The design team was unable to verify that the deck cross sections were constructed as indicated in the plans. There is concern that the copper strip may be causing a galvanic reaction, which has the floorbeam steel acting as the sacrificial anode. Inspection notes and discussion with the SDOT bridge inspector indicate that there is significant water seepage through the joints, resulting in minor to moderate corrosion and pack rust at the top and bottom flanges of floorbeams. This was confirmed through inspection photos and site visit as seen by brown staining underneath the deck due to water seepage and greenish stains typical of copper corrosion (Figure 1). The significant seepage of water is confirmed and considered the primary source of the corrosion.

Figure 1. Water seepage and corrosion at south approach floorbeam

Recommendations: Repair and mitigating measures for this issue will be based on controlling seepage and preventing water infiltration at the deck joint. To stop the water infiltration, HDR recommends repair using Detail 5 shown in the WSDOT standard plan A-40.20-04. Repair involves removing enough of the flexcell joint filler to allow installation of backer rod and a silicone or polyurethane joint sealant at the surface of the concrete deck.

The asphalt concrete overlay is also recommended to be removed and replaced throughout the length of the bridge with a minimum of 2-inch asphalt concrete overlay. A waterproof membrane is also recommended underneath the asphalt concrete overlay to prevent water seepage. The recommendation to completely replace the asphalt concrete overlay is made for ease of traffic control and because the asphalt concrete overlay has reached its service life at most locations on the bridge.

2.2 Submerged concrete at Pier 3

Issues: The SA spans of the bridge consist of three spans (Spans 1, 2 and 3) between Abutment 1 and South Bascule Pier. Abutment 1 and Pier 2 foundations are outside the channel limits and Pier 3 foundations and a portion of Pier 3 columns are underwater. The approach piers were rated in poor condition per the 2019 Routine Bridge Inspection report.

Detailed dive inspections of the underwater piers were performed in 2018 (BergerABAM) and 2023 (Echelon Engineering). The extent of pier and foundation damage was identified through these underwater inspection reports (Figure 2). Comparison of the condition of the submerged concrete components of Pier 3 indicates little if any changes in the size and degree of the concrete damage from 2018 to 2023. Main damages in the submerged concrete elements are as follows:

- The concrete surfaces were noted to be soft and hammer penetration of up to 1/4-inch was seen on the column section underwater.
- Multiple vertical cracks were noted on all sides of the column below the waterline, ranging from 1/32-inch to 1/16-inch wide. The vertical cracks transition to map cracking above the waterline.
- Several vertical and horizontal cracks were noted along all faces of the pedestal. The cracks were typically 1/16-inch wide, with a maximum of 1/4-inch wide.
- The seal exhibited multiple horizontal and vertical cracks along exposed faces, typically 1/4-inch-wide and a maximum width of 1 inch.
- The seal was undermined a maximum of 8 inches at the northwest corner, with two exposed timber piles. Piles appeared to be in satisfactory condition.

Figure 2. Typical pier cracks at Pier 3 (Source: 2018 UW inspection report)

Recommendations: Repair and rehabilitation of concrete elements is required to bring the pier condition rating to “good” or higher. HDR recommends repair of concrete columns by removing soft and unsound concrete cover and patching the roughened surface with high strength grout. HDR also recommends carbon fiber reinforced polymer (CFRP) jacketing of the lower portion of the concrete columns to provide confinement and sealing of cracks of the submerged portion of the concrete columns. This recommendation assumes that a majority of the submerged concrete cover is intact even though it may be cracked or moderately degraded.

Should an extensive amount of the cover concrete need to be removed, above 60 percent, then it would be more reasonable to remove all of the remaining cover concrete so that the area can be formed for new concrete placement in lieu of grout patching and wrapping. The existing 3-inch cover concrete may need to be increased to accommodate flow of concrete placement. Given the difficulty of determining the extent of the existing condition, determination of which repair method may not be known until cofferdams are in place and the site dewatered. Plan and specifications for both repair methods should be included in a bid package to facilitate implementation on a site-by-site basis. The cost and schedule impacts of this alternative are expected to be a slight increase over the recommended repair and are assumed to be covered within the applied contingencies.

Due to the extent of cracking in the pedestal and footings, it is recommended to encase these with footing enlargements with additional reinforcement. HDR anticipates that this work will need to be done in confined dewatered spaces, with cofferdams installed around the seals. After improvements are made, HDR recommends placing riprap around the footing seal to mitigate future undermining.

There is an existing Tunnel with a 12′-0″ interior diameter that runs from outside the south end of the bridge and continues across the channel bed. Existing pier footing plans show that the west footing was adjusted to clear the tunnel. Per bridge plans (782-22, Sheet No. 1-A), the top of tunnel is approximately 27′-0″ below the bottom of Pier 3 seal. The tunnel is deep enough not to impact any repair work at Pier 3. Submarine cables under the bascule spans of the bridge and east side of the bridge are also identified in the bridge plans (782-22, Sheet No. 1-A). However, these cables are outside the limits of the repair work and not anticipated to impact repair.

3.0 Bascule Spans (BRG-003B)

3.1 Cracked Rack Splice Plate

Issues: The bascule span of the bridge has two leaves that open to allow marine navigation traffic. The racks are turned by the drive gears to rotate the leaves about the trunnion to open the bridge. The rack is connected to the bridge truss members using multiple plate sections on both sides of the rack. These plates are connected by 6-1/2-inch by 3/8-inch splice plates of increasing lengths from top to bottom at three different locations.

The upper rack splice plate has a history of cracking (Figure 3). Multiple attempts of replacing the plate with similar thickness plates have recracked, as mentioned by the maintenance staff. Through the site visit HDR staff were able to verify that some plates had been replaced with a thicker plate. The original rack splice plates were 3/8-inch thick and the new replaced plates were as large as 3/4-inch. It was likewise noticed that the middle splice plate was also overstressed as some of these plates were partially cracked. The SDOT bridge inspectors assumed that these rack splice plates were probably designed as a weak element to prevent overstressing the rack. This assumption could not be validated by the design team and HDR's assumption is that the splice plate is just undersized for the cycles of loading. The summary in Table 1 shows the state of the upper and middle rack splice plates based on the HDR inspection as of June 2023.

Figure 3. Cracked rack splice plate

Table 1. Rack splice plate status

Rack Location	Plate	Inside	Outside
NW	Upper	Cracked full length	Cracked full length
	Middle	Uncracked	Partially cracked
NE	Upper	Replaced with 3/4" galvanized plate	Cracked full length
	Middle	Uncracked	Partially cracked
SE	Upper	Plate Replaced with a 3/8" plate	Replaced with 3/4" galvanized plate
	Middle	Uncracked	Uncracked
SW	Upper	Cracked full length	Cracked full length
	Middle	Partially cracked	Uncracked

Recommendations: HDR recommends the replacement of all upper and middle splice plates at all faces of the rack, except for the SE and NE upper plates. The SE and NE upper plates are 3/4-inch thick. HDR recommends replacing all other plates with a 3/4-inch-thick splice plate for added capacity. All rivets will need to be replaced with a bolted connection. HDR recommends replacing all plates that are less than 3/4-inch so that differential stress is not observed at any of the bascule trusses. All replacement plates and bolts are recommended to be galvanized.

3.2 Member L7-L9 and Floorbeam 4 Corrosion

Issues: Each bascule leaf is supported by two trusses. The L7-L9 member is the bottom chord extending from the live load (LL) shoe to the counterweight (Figure 4). This member also supports the movable rack. The web plate for the L7-L9 member has a tendency of pooling water and debris which is the primary reason for corrosion. The plates are directly underneath the rack and exposed to the roadway from the top. This allows debris to fall on the web plate and collects at the L9 joint as the rack is opened. The angle members connecting the web plates and the inside face of the gusset plates also exhibit corrosion (Figure 5).

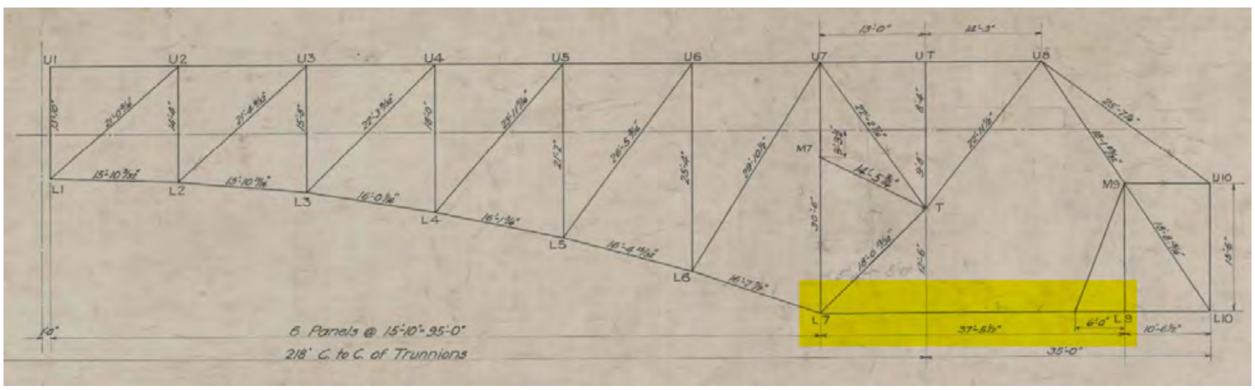


Figure 4. Bascule truss

Figure 5. Corroded bottom chord (L7-L9)

All four trusses exhibit some form of corrosion and debris collection at L9 joint. Mitigating measures like cutting a drainage hole in the web plate were previously incorporated, as seen from photos and verified in the site visits. However, the corrosion is ongoing, and some locations exhibit section loss. Severe corrosion and some section loss was observed at the NW truss under the rack and inside the rack plates. Other trusses also exhibited some corrosion.

The SDOT bridge inspectors also identified corrosion and section loss of steel members at FB4 as an issue. According to the inspection team, FB4 has a hole in the web plate and section loss due to corrosion. The bottom flange also has some corrosion and section loss. The design team was unable to verify these damages through site visit or any of the inspection photos provided.

Recommendations: The section of the plate between the rack plate and joint L9 is the most difficult to access. The only access from above is through the gusset plate handholes. The section can be partially accessed from below if lacing bars are removed. This poses some challenges with repair of the bottom chord inside the rack plates. Also, the bottom chord is under compression when the bridge is closed, and under tension when the bridge is open. This could prevent removal and replacement of the web plate during repair. The debris inside the truss members needs to be removed and the plate surfaces need to be cleaned using a pressure washing system before any repair work can be performed.

The section of the truss member immediately below the rack and between the rack and joint L9 has the most significant corrosion. The recommendation to repair this section is to provide a side plate bolted to each side of the vertical plates. The additional plates would supplement the corroded section of the truss member and allow repair without dismantling the bottom chord member. The side plate would fit between the existing top and bottom angles and stiffened with vertical stiffeners across the length. The bottom lattice bars would need to be removed and reinstalled after plate installation.

Mitigating measures would be required to prevent water and debris access into the bottom chord. This would involve cutting additional holes in the web plate to allow water to drain. HDR also recommends installation of an additional top plate through the section of the truss from the rack to Joint L7. Addition of a top plate will help to prevent ingress of water and debris in the bottom chord. Regular maintenance is anticipated to keep the debris collected at joint L9 cleaned out.

Truss analysis models and capacity analysis should be performed during final design to determine if any additional protective measures need to be taken to maintain the integrity of the truss member. HDR anticipates construction methodologies to be a challenge at this location due to access limitations and traffic impacts.

HDR recommends the repair of FB4 with a cover plate bolted to the web plate of the floorbeam. The corroded bottom flange is recommended to be cleaned and painted to prevent further section loss and corrosion. We lack the specific location information to provide an appropriate repair detail. The next routine or fracture critical inspection should acquire specific location and size information that would support detailing an appropriate repair.

3.3 Gap between the leaves

Issues: The bascule span has a steel grating roadway deck supported on floorbeams and stringers. The gap between the leaves at the midspan is too small and the steel headers touch during intense summer temperatures. During summer, when there is sustained high temperature on consecutive days, the joint closes, preventing the bridge from opening. During hot weather the bridge crew have been watering the bridge throughout the day to cool down the bridge and allow opening of the bridge.

The steel headers at main roadway lanes seem to have adequate clearances. However, the headers at the bike lanes and curb are too close and need intervention (Figure 6). The inspection during the site visit showed that the gap was slightly less than 1 inch at the tightest spot when the temperature was 70–80 degrees (Fahrenheit). Another spot was between stiffener plates connected to each leaf in the floorbeam which could touch during sustained high temperatures. There are potential conflict locations at both the east and west side of the bridge and mainly over the sidewalk and bike path.

Figure 6. Limited gap between bascule leaves

Recommendations: The recommendation would be to increase the gap between the leaves especially at the tightest spots. This can be achieved by cutting the vertical leg of the steel headers beyond the metal grid to increase the gap between the leaves. The bike path has a 6 inch by 3-1/2-inch by 3/8-inch angle at each end of the leaf, which is connected to the steel section below using round head bolts. HDR believes that cutting the vertical leg of the angle member to make it flush with the metal grid deck provides the necessary 1.5-inch minimum gap between the leaves. The steel curb at both sides of the bike path would also need to be cut back so that a gap of at least 1.5 inches can be maintained. The curbs have a cover plate which would need to be cut and a new plate reinstalled.

The sidewalk also has a 2-inch by 2-inch by ¼-inch galvanized angle at each end of the sidewalk at midspan joint. HDR recommends cutting the vertical angle leg along with the concrete sidewalk section to maintain a 1.5-inch gap at the midspan.

Another tight spot is the plate connected to an angle section that is attached to the floorbeam on each leaf. These angles and the adjoining plate would need to be trimmed to increase the gap (Figure 7). There is no work anticipated at the main roadway lanes except trimming this plate and angles. Minimal traffic impact is expected for this repair.

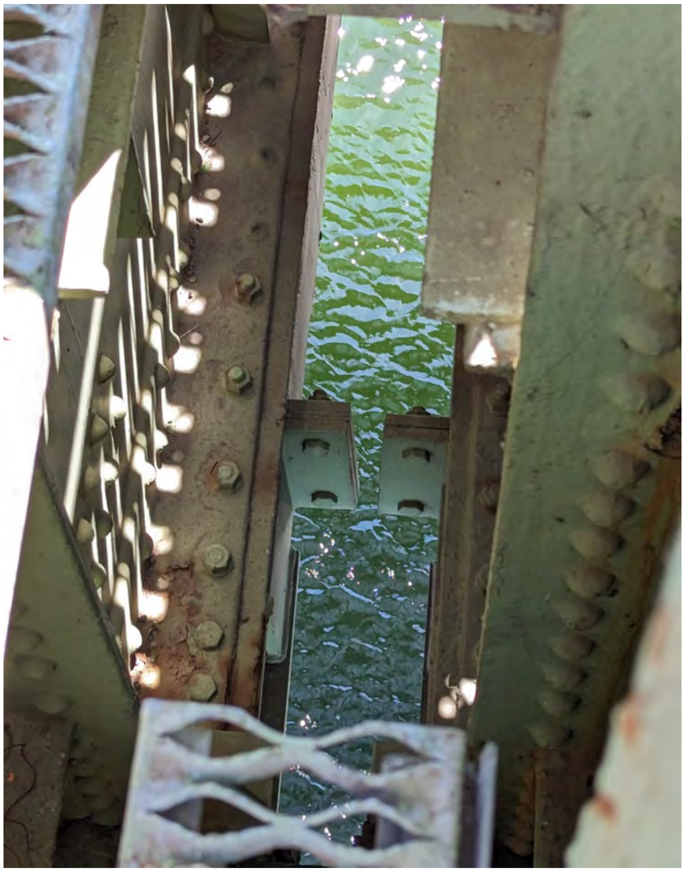


Figure 7. Steel angle and plates to be trimmed below the center lock

3.4 Bridge Touching Steel Guard Rail

Issues: The leaves of the bridge touch and grind against the fixed steel guard rail during opening and closing of the leaves. The separation space between the leaves and the guardrail is very small. The guard rail was impacted and scraped by traffic as demonstrated by the inspection pictures. This has caused a slight deflection of the guardrail causing the leaves to touch the guardrail during opening and closing. There are traffic scrapes at both east and west guardrails. There is clarity needed as to which particular section of the truss and guardrail are touching. This was not able to be verified during the site visit.

Recommendations: Recommendations for this issue is difficult to provide without further clarity on exactly which sections are touching and how severe the contact is. HDR recommends monitoring this issue and see if it develops into a potential issue that needs to be addressed.

3.5 Live Load Shoes

Issues: All four LL shoes, one at each truss of each leaf, show some form of corrosion and have varying gaps in the closed position (Figure 8). Some locations are worse than others. It is anticipated that all LL shoes need some modifications. The contact surfaces on each of the LL shoes is assumed not to be adequately flat. This prevents proper contact at the LL shoes when the bridge is closed. There could also be a potential that one LL shoe touches before the other shoe of the same leaf during closing. However, this could not be verified from the site visit. It was also noted that one of the LL shoes had a plate that fell off while opening the bridge in the recent past. The bolts had sheared off and the plate came completely loose. The plate was reinstalled immediately with new hardware.

The issue of one LL shoe touching before the other shoe of the same leaf could have potential impacts on the machinery and equipment as well as the span locks because it can produce torsion in the bascule span.

Figure 8. Live load shoes

Recommendations: The recommendation to resolve the LL shoes is to replace the two LL shoe plates along with the shims, and connection elements. The LL shoes have demonstrated signs of unevenness and only some portion of the plates touching each other based on the inspection pictures. Also, some plates show that only the side surfaces are touching, and the plates are not fully in contact. Hence, a recommendation to remove and replace the top and bottom LL shoes in kind is proposed for all shoe locations.

Alignment and flattening of the LL shoe plates was initially considered but deemed to be unfeasible. The need to have the plates ground and milled in the shop meant that the bridge would be closed for an extended period or temporary plates used. Field milling and grinding of the LL shoes would be challenging to obtain a level surface. As a result, a recommendation is made to replace both the top and bottom LL shoe plates. Thin shim plates would likely be needed for further height adjustments. HDR also recommends that all bolt holes be properly cleaned, and the bolts, washers, shims and nuts be replaced with new hardware that meet the current specifications.

4.0 North Steel Approach Spans (BRG-003NAS)

4.1 Seepage and corrosion at floorbeams

Issues: The NAS spans of the bridge are comprised of three different trusses extending across seven spans between Pier 10 and North Bascule Pier. The trusses are 300'-0", 291'-6", and 56'-6" long respectively, starting at the Pier 10. The 300'-0" truss supports thirteen floorbeams, the 291'-6" truss supports twelve floorbeams and the 56'-6" truss supports two floorbeams. This is a total of 27 floorbeams in the NAS spans. Each floorbeam location has a joint in the deck. The joint uses an expansion filler which is called out as “1/2" flexcell or equal” in the plans (782-59, Sheet No. 182). A copper flashing strip is placed below the expansion joint and above the floorbeam top flanges similar to the SA spans. The issues at the NAS spans are the same as noted in the SA spans.

Recommendations: Repair and mitigating measures for this issue will be the same as the SA spans.

4.2 Submerged concrete at Piers 4, 5 and 6

Issues: The NAS spans of the bridge comprise of seven spans (Spans 4 through 10) between Pier 10 and North Bascule Pier. Piers 7 through 10 foundations are outside the channel limits. Pier 4, 5 and 6 foundations and portions of the columns are underwater. The approach piers were rated in poor condition per the 2019 Routine Bridge Inspection report (Figure 9).

Detailed dive inspections of the underwater piers were performed in 2018 (BergerABAM), 2020 (Echelon Engineering) and 2022 (WSP). The extent of pier and foundation damage were identified through these underwater inspection reports. The latest inspection reports noted that the damage observed throughout the structure appears consistent with the previous reports, and a few additional were observed during this inspection. These additional cracks are not new to the structure, and widths do not have appeared to have increased.

All inspection reports identified minor scale of the concrete surfaces from the high water to the mudlines. Other major defects identified at Piers 4, 5 and 6 are shown in Table 2:

Table 2. Submerged Pier Damage

No.	Damage	Pier/ Column	Pier/ Column	Pier/ Column	Pier/ Column	Pier/ Column	Pier/ Column
		4A	4B	5A	5B	6A	6B
1	Multiple vertical cracks were noted on all sides of the column. The cracks extend from the waterline to the footing and transition into map cracking at the waterline and above.	1/8" typical, Waterline to 4" below waterline	1/8" typical, up to 1/4", Waterline to Footing	1/8" typical, up to 1/4", Waterline to Footing	1/8" typical, Waterline to Footing	1/16" to 1/4" typical, Waterline to 1 feet below waterline	1/4" typical, below waterline
2	Several vertical and horizontal cracks on all faces of Footing.	1/8" typical, up to 1/4" max	1/8" typical, up to 1/4" max	No	1/8" typical, up to 1/2" max	Footing under channel bed	Footing under channel bed
3	The seal exhibited open cold joints along the exposed portion of the south face	Up to 6" in width	Up to 6" in width	Seal not exposed	Seal not exposed	Seal not exposed	Seal not exposed
4	Other damage	Construction void at the interface between footing and seal	16" high x 12" deep spall at SW corner of the seal	No	No	No	No

Figure 9. Pier column cracking (Source: 2018 UW Inspection Report)

Recommendations: Repair and rehabilitation of concrete elements is required to bring the pier condition rating to “good” or higher. HDR recommends repair of concrete columns by removing soft and unsound concrete and patching the roughened surface with high strength grout. HDR also recommends CFRP jacketing the lower portion of the concrete columns to provide confinement and sealing of cracks of the submerged portion of the concrete columns. This recommendation assumes that a majority of the submerged concrete cover is intact even though it may be cracked or moderately degraded.

Should an extensive amount of the cover concrete need to be removed, above 60 percent, then it would be more reasonable to remove all of the remaining cover concrete so that the area can be formed for new concrete placement in lieu of grout patching and wrapping. The existing 3-inch cover concrete may need to be increased to accommodate flow of concrete placement. Given the difficulty of determining the extent of the existing condition, determination of which repair method may not be known until cofferdams are in place and the site dewatered. Plan and specifications for both repair methods should be included in a bid package to facilitate implementation on a site-by-site basis. The cost and schedule impacts of this alternative are expected to be a slight increase over the recommended repair and are assumed to be covered within the applied contingencies.

It is anticipated that footing strengthening and enlargement will be needed at some locations. The footing will need to be enlarged and strengthened with additional reinforcement and resin bonded anchors because the footing concrete is losing integrity and has developed major cracks at some piers. HDR anticipates that this work will need to be done in confined dewatered spaces, with cofferdams installed around the seals. After improvements are made, it is recommended to place riprap around the footings to mitigate future undermining. Table 3 shows the matrix of repair work needed at each pier and column location.

Table 3. Recommended pier repair matrix

No.	Repair	Pier/ Column	Pier/ Column	Pier/ Column	Pier/ Column	Pier/ Column	Pier/ Column
		4A	4B	5A	5B	6A	6B
1	Epoxy sealing of concrete column cracks	No	No	No	No	Yes	Yes
2	Remove soft/unsound concrete and patch with high strength grout	Yes	Yes	Yes	Yes	No	No
3	CFRP jacketing of concrete columns with CFRP wrap	Yes	Yes	Yes	Yes	No	No
4	Footing strengthening with resin bonded anchors and footing enlargement	Yes	Yes	No	No	No	No
5	Riprap around concrete seal	Yes	Yes	No	No	No	No

4.3 Expansion Joint Repair

Issues: The NAS spans are located between the north bascule pier and Pier 10. Expansion joints are provided at the ends of the NAS bridge and between each set of trusses. Expansion

Joint 3 is located at the North Bascule Pier, Joint 4 at Pier 4, Joint 5 at Pier 7, and Joint 6 at Pier 10 of the bridge. The original expansion joints were replaced in 1970 with a reinforced elastomeric molded rubber expansion joint system, which has a joint movement range of 1 inch to 3 inches. The original expansion joint elements (plates, angles, and bolt holes) were modified to accommodate the installation of the new elastomeric expansion joints during construction.

All joints are showing signs of deterioration and have reached their service life (Figure 10). These joints leak and sound loose under traffic load. The rubber covering the reinforcement is worn off and the joints are starting to come loose. It was also noted that a few joint segments had bolts missing. Joints 2 and 3 which are located at each end of the bascule span are covered by asphalt concrete overlay and do not need to be replaced.

Figure 10. Expansion joint, typical

Recommendations: The maintenance team has been replacing the expansion joints in kind and do not see any issues with the type of expansion joint used. Hence, HDR's recommendation is to replace full length of the existing Expansion Joint 4 to 6 with new similar elastomeric expansion joint. HDR recommends the same limit of joint movement for all the joints. These expansion joints come in 6-foot sections so traffic staging could allow incremental installation. Bolt replacement is anticipated at some location where bolts are missing or sheared off. It is HDR's assumption that the plates and angles underneath the expansion joints (that were reused from original construction) are in good condition and would not need repair during joint installation.

Joint 1, which lies in the SA bridge at Abutment 1 of the bridge, is also a reinforced elastomeric molded rubber expansion joint. In addition to the three joints mentioned above, HDR also recommends the replacement of Joint 1. Joint 1 is not located in the NAS spans but also has sections that are identified as Condition State 2 in the inspection report.

WSDOT BDM 9.1.4.C raises durability concerns with bolt-down expansion joints and specifies silicone or strip seal replacements whenever possible. If SDOT has issues with the performance and durability of this type of expansion joint, other alternatives could also be evaluated in the future.

4.4 Concrete Rail damage

Issues: The bridge has concrete railings at both the east and west side of the bridge and at both approaches. Concrete railings are showing signs of deterioration and exposed reinforcement can be seen at some locations (Figure 11). Maintenance teams have been repairing the damaged railing with patches, but a thorough investigation and repair is needed.

Figure 11. Concrete railing damage, typical

Recommendation: HDR recommends the repair of concrete railings to help prevent further cracking and delamination of concrete. Railing repair would require the removal of loose and unsound concrete and patched with a non-shrink grout. If reinforcement is exposed, the reinforcement will need to be cleaned and made free of rust. The existing geometry and architectural features will need to be maintained during repair. Repair locations have been identified in the inspection report. However, it is anticipated that unrecorded damages might be present and need to be repaired when the work is performed.

5.0 Discipline Specific Input on Repairs

5.1 Environmental Planning

This section describes the permitting and National Environmental Policy Act (NEPA) compliance for the University Bridge North Approach rehabilitation and repairs to the SA, NAS, and B spans described above.

5.1.1 Funding

The permitting analysis assumes funding for the project would be provided in part through Federal Highway Administration (FHWA) and Washington State Department of Transportation (WSDOT) Local Programs.

5.1.2 Methodology

Permitting requirements for the project were evaluated by reviewing appropriate sections of the City of Seattle, Washington State, and United States codes. Two overarching environmental review statues that may apply to the project are the federal NEPA and the Washington State Environmental Policy Act (SEPA). Environmental review is not a permit in and of itself, but rather provides for environmental analysis of certain actions. The application of NEPA and SEPA and the Seattle Landmarks Preservation Board review to the project are summarized below and Table 4 identifies the applicability of various federal, state, and local permits that are particular to the repairs described above.

5.1.3 NEPA Compliance

NEPA review would be required if the project included federal funding and/or permitting. The environmental review under NEPA can involve three different levels of analysis: a Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS).

A CE could be prepared to satisfy the requirements of NEPA in accordance with 23 CFR (Cod of Federal Regulations) 771.117. The 2015 CE Programmatic Agreement between WSDOT and FHWA allows WSDOT to approve all CE NEPA documents for FHWA funded projects. The 23 CFR 771.117 provides CEs under which FHWA projects may qualify and (c)(28) provides an exception for bridges; however, the project is unlikely to qualify under a CE as impacts to the historic property of the University Bridge are expected as a result of project actions. As such, a NEPA EA is anticipated for the project. An EA could result in a Finding of No Significant Impacts (FONSI) or determine that the environmental impacts of a project will be significant. Preparation of an EIS would be required if the project was found to have significant environmental impacts.

The repairs described above are not anticipated to have additional implications to the NEPA review for the project beyond those considered on the north approach.

5.1.4 SEPA Compliance

Similarly, SEPA provides three potential determinations. The project may be exempt from SEPA review from statutory exemptions in Revised Code of Washington (RCW) 43.21C or exemptions provided in Washington Administrative Code (WAC) 197-11-800 and Seattle Municipal Code (SMC) 25.05.800. If a project is not exempt a threshold determination could be issued which Determination of Nonsignificance, Mitigation Determination of Nonsignficance, or a Determination of Significance. An EIS would be required to be prepared if the project was found to have significant environmental impacts.

WAC 197-11-800 provides a list of projects that are categorically exempt from SEPA review. There are two exemptions that relate to bridge projects: WAC 197-11-800(26) and SMC 25.05.800.BB relate to WSDOT projects, and WAC 197-11-800(27) and SMC 25.08.800.CC provide an exemption for structurally deficient city, town, and county bridges. Structurally deficient is defined as:

> *The repair, reconstruction, restoration, retrofitting, or replacement of a structurally deficient city, town or county bridge shall be exempt as long as the action:*
>
> *(a) Occurs within the existing right of way and in a manner that substantially conforms to the preexisting design, function, and location as the original except to meet current engineering standards or environmental permit requirements; and*
>
> *(b) The action does not result in addition of automobile lanes, a change in capacity, or a change in functional use of the facility.*
>
> *"Structurally deficient" means a bridge that is classified as in poor condition under the state bridge condition rating system and is reported by the state to the national bridge inventory as having a deck, superstructure, or substructure rating of four or below. Structurally deficient bridges are characterized by deteriorated conditions of significant bridge elements and potentially reduced load-carrying capacity. Bridges deemed structurally deficient typically require significant maintenance and repair to remain in service and require major rehabilitation or replacement to address the underlying deficiency.*

According to a 2021 inspection report for on the University Bridge, the bascule span's superstructure had a rating of 4 and the NAS approach span's substructure had a rating of 4, qualifying them as structurally deficient. Evaluation for the structurally deficient exemption WAC 197-11-800(27) and SMC 25.05.800.CC would be subject to the findings of future inspections being consistent with the current ratings.

Another SEPA exemption that may apply is the repair, remodeling, and maintenance activities exemption provided in WAC 197-11-800(3) and SMC 25.05.800.C. This exemption applies to the repair, remodeling, maintenance, or minor alteration of existing private or public structures, facilities, or equipment, including utilities, recreation, and transportation facilities involving no material expansions or changes in use beyond that previously existing; except that, where undertaken wholly or in part on lands covered by water, only minor repair or replacement of structures may be exempt (examples include repair or replacement of piling, ramps, floats, or mooring buoys, or minor repair, alteration, or maintenance of docks). The repairs considered in this memorandum include work on lands covered by water, but may still be considered minor repairs for SEPA purposes.

The SEPA impacts and threshold determination will be decided as the project develops further. The repairs described above are not expected to have additional implications on the SEPA review for the project beyond those considered on the North Approach.

5.1.5 Seattle Landmarks Preservation Board Review

If a demolition permit is required for any part of the bridge, the Project may be referred to the Seattle Landmarks Preservation Board for review, which could result in its nomination and/or designation as a City of Seattle Landmark. If the bridge is designated a City landmark, a Certificate of Approval (COA) from the Seattle Landmarks Preservation Board may be required to pursue any alterations to the bridge. A COA is a written authorization that must be issued before any exterior changes can be made to a City Landmark, or before changes can be made to the external appearance of any building, structure, or site within the City's eight historic districts (City of Seattle 2023).

The repairs described above are not expected to have additional implications to a review by the Seattle Landmarks Preservation Board for the project.

5.1.6 Seattle Shoreline Master Program

All portions of repairs are located with shoreline jurisdiction which extends 200 feet from the ordinary high-water mark of a shoreline (such as the ship canal). There are three shoreline environmental designations within the project area. The ship canal is designated as the Conservancy Navigation (CN) environment. Landward on the north side of the ship canal the shoreline environment is Urban Commercial (UC) and on the south side of the ship canal there is both Urban Commercial (west of the bridge centerline) and Urban Residential (UR) (east of the bridge center line). Shoreline development is regulated by the City of Seattle Shoreline Master Program (SMP) which is contained in Chapter 23.60A SMC. Bridges are permitted through a shoreline substantial development permit in the UC shoreline environment and on upland lots in the UR environment. With the CN environment and waterfront lots of the UR zone are allowed as a special use in the CN water.

SMC 20.60A.020 provides exemptions from shoreline permitting requirements. SMC 20.60A.020.C provides an exemption from shoreline substantial development permitting requirements for normal maintenance or repair of existing structures. This exemption would not exempt the special use permit requirements. However, SMC 20.60A.020.A.5 provides that repair and maintenance of an existing development, shoreline modification, or use that was authorized by a special use, does not require approval of a special use permit if no expansion occurs. This exemption would seem to apply; however, the Shoreline Management Act (SMA) was adopted in 1971, and the bridge has been in existence before the SMA and the City’s SMP and it is unknown if the bridge has been authorized by a special use permit. Permitting requirements from the Seattle Department of Construction and Inspections (SDCI) need to be verified.

Regardless of whether or not a permit is required, bridge repairs are required to be consistent with the requirements of the SMP pursuant to SMC 20.60A.012.

5.1.7 Federal, State and Local Permitting Requirements

The applicability of federal, state, and local permits that are particular to the repairs described above is described in Table 4. Permits for the NAC spans rehabilitation and replacement alternatives are addressed separately.

Table 4. Federal, State, and Local permits

Permit	Lead Agency	Notes	Applicability		
			South Approach Spans	Bascule Spans	North Steel Approach Spans
Shoreline Substantial Development Permit and Shoreline Special Use. (Seattle Municipal Code (SMC) Chapter 23.60A)	City of Seattle (SDCI)	Compliance with the Seattle's Shoreline Master Program is required for projects within shoreline jurisdiction which extends 200 feet from the ordinary high water mark of a shoreline (such as the ship canal). The project repairs extend 200 feet from the shoreline and include in-water work in the shoreline jurisdiction. Repairs likely exempt from permitting requirements under SMC 23.60A.020.A.5 and SMC 23.60A.020.C. Compliance with SMP requirements required regardless of permitting.	SMP compliance required.	SMP compliance required.	SMP compliance required.
Certificate of Approval (SMC 25.05.675)	City of Seattle Historic Preservation Program (SHPP)	If the site is designated as a Seattle Landmark, the Project needs a Certificate of Approval for alterations from the Historic Preservation Program. If the project is not currently designated but appears to meet the criteria for designation, it may be referred to the Landmarks Preservation Board during the permitting process.	Required	Required	Required
Street Improvement Permit (SIP) (SMC Chapter 15.04)	City of Seattle (SDOT)	Pursuant to SMC 15.04.010.A the requirements of obtaining a permit and complying with permit procedures do not apply to street maintenance work performed by the City's DOT or street improvement work authorized by ordinance and administered by the Director of Transportation.	Not required (assuming project authorized by ordinance).	Not required (assuming project authorized by ordinance).	Not required (assuming project authorized by ordinance).

Permit	Lead Agency	Notes	Applicability		
			South Approach Spans	Bascule Spans	North Steel Approach Spans
National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit (RCW 90.48)	WA Department of Ecology	Required for soil disturbing activities on sites that: • disturb one acre or more • are smaller than one acre that are part of a larger common plan of development that will ultimately disturb one acre or more and discharge stormwater to surface waters • are of any size discharging stormwater to state waters (Waters of the State[1]) that is determined to be a significant contributor of pollutants • are of any size that can be reasonably expected to cause a violation of any water quality standard Since the project location is overwater or in-water, and construction activities could result in the discharge of stormwater into the Ship Canal, it is likely a NPDES general construction permit will be required.	Required.	Required.	Required.
SEPA Checklist (RCW 43.21)	Washington State Department of Ecology (City of Seattle Lead Agency)	SEPA environmental review is required for any state or local agency decision that meets the definition of an “action.” WAC 197-11-800 and SMC 25.05.800 provides a list of projects that are categorically exempt from SEPA review. There are two exemptions that relate to bridge projects: WAC 197-11-800(26) and SMC 25.05.800.BB relates to WSDOT Projects and WAC 197-11-800(27) and SMC 25.05.800.CC provides an exemption for structurally deficient city, town and county bridges. Additionally, WAC 197-11-800(3) and SMC 25.05.800.C provide exemptions for repair, remodeling and maintenance activities that may be applicable.	Potentially exempt from SEPA review under WAC 197-11-800(26) and SMC 25.05.800.BB.	Potentially exempt from SEPA review under WAC 197-11-800(27) and SMC 25.05.800.CC.	Potentially exempt from SEPA review under WAC 197-11-800(27) and SMC 25.05.800.CC.

[1] For purposes of the NPDES: WAC173-226-030(26) “Surface waters of the state” means all waters defined as “waters of the United States” in 40 C.F.R. 122.2 that are within the boundaries of the state of Washington. This includes lakes, rivers, ponds, streams, inland waters, wetlands, ocean, bays, estuaries, sounds, and inlets. WAC 220-660-030 “Waters of the state” or “state waters” means all salt and freshwaters waterward of the OHWM and within the territorial boundary of the state.

Permit	Lead Agency	Notes	Applicability		
			South Approach Spans	Bascule Spans	North Steel Approach Spans
Hydraulic Project Approval (RCW 77.55)	Washington Department of Fish and Wildlife	Activities in, under, or above Waters of the State,[2] including those that use, divert, obstruct, or change the natural flow or bed of any Water of the State, including some wetlands, are required to obtain a Hydraulic Project Approval (HPA).	Required.	Required	Required.
National Historic Preservation Act (NHPA) Section 106	Washington Department of Historic Preservation (DAHP)	The NHPA requires any agency issuing a federal permit or license, providing federal funds or otherwise providing assistance or approval, to comply with Section 106. Section 106 requires evaluation a proposed project if it appears that the proposed project may cause any change, beneficial or adverse, to historic properties listed in or eligible for inclusion in the National or State Registers of Historic Places (NRHP).	Required only if federally funded.	Required only if federally funded	Required only if federally funded
U.S. Department of Transportation Act Section 4(f)	Federal Highway Administration (FHWA)	Section 4(f) provides consideration of park and recreation lands and historic sites for federally funded transportation projects. Given presence of Burke Gilman Trail and the historic University Bridge Section 4(f) consideration required if federally funded.	Required if federally funded	Required if federally funded	Required if federally funded
Clean Water Act (CWA) Section 404 Permit (33 USC §1251 et seq.)	US Army Corps of Engineers	A Section 404 permit is required for projects that will discharge any dredge or fill material into Waters of the United States (WOTUS).	Required for Pier 3 repairs.	Not required.	Required for Pier 4, 5, and 6 repairs
CWA Section 401 Water Quality Certification (33 USC § 1251 et seq.)	Washington State Department of Ecology	All activities requiring a CWA Section 404 permit (discussed above) must also be certified as meeting State Water Quality Regulations, pursuant to Section 401 of the CWA. The authority to issue Section 401 certifications has been delegated to Ecology. Project will not result in discharge into waters or non-isolated wetlands or excavation in water or non-isolated wetlands (including dredge or fill material).	Required for Pier 3 repairs.	Not required.	Required for Pier 4, 5, and 6 repairs

[2] WAC 220-660-030 “Waters of the state” or “state waters” means all salt and freshwaters waterward of the OHWM and within the territorial boundary of the state.

Permit	Lead Agency	Notes	Applicability		
			South Approach Spans	Bascule Spans	North Steel Approach Spans
Section 10 of the Rivers and Harbors Act Permit	US Army Corps of Engineers (USACE)	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through USACE, for the construction of any structure in or over any navigable water of the United States.	Required.	Required.	Required.
Section 7 Endangered Species Act.	US Fish & Wildlife (USFW) and National Marine Fisheries Service (NMFS).	When a federal action agency authorizes, funds, or carries out an action (including review and issuance of Section 404 and Section 10 permits), it must consult with NMFS and/or USFWS if the agency determines that the action may affect an ESA listed species. Projects without federal nexus that have the potential to result in take of endangered or threatened species or impact critical habitat are still subject to consultation with NMFS and USFWS.	Required for Pier 3 repairs.	Not required	Required for Pier 4, 5 and 6 repairs
NEPA (42 USC § 55)	FHWA and WSDOT	As the administer of the funds, FHWA is required to prepare appropriate NEPA documentation. It is too early in the process to determine if this review would be an Environmental Assessment or if the project would fall under categorical exclusion 23 CFR 771.117(c)(28).	Required only if federally funded.	Required only if federally funded.	Required only if federally funded.

5.2 Cultural Resources

If the Project requires a federal permit, such as from the U.S. Army Corps of Engineers for work within the navigable waterway, or acquires federal funding, such as monies from the FHWA, the Project would be subject to Section 106 of the National Historic Preservation Act (NHPA). Under Section 106, the lead federal agency must consult with the State Historic Preservation Officer (SHPO), affected Indian tribes, representatives of local governments, federal permit/funding applicant(s), other individuals and organizations with a demonstrated interest in the project, and the public. Section 106 requires the lead federal agency to define the project's area of potential effects (APE) in consultation with SHPO, which comprises the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 CFR §800.16[d]).

Historic properties are any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) (36 CFR 800.16[1]). As provided in 36 CFR 800.16(y), a federal undertaking is defined as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval." The University Bridge was listed in the NRHP in 1982 and is significant as an example of one of the earliest double-leaf trunnion bascule bridge in Seattle. As a whole, the property retains its character-defining features including its double-leaf design, steel frame arches, and bascule piers. As such, it merits continued listing in the NRHP.

5.2.1 Archaeological Resources

The project is within an area considered very high risk for containing archaeological materials according to the Washington Department of Archaeology and Historic Preservation's (DAHP) predictive model available on the Washington Information System for Architectural and Archaeological Records Data (WISAARD) online database. This is due to the extensive use of the Lake Union and Lake Washington waterways and shorelines by indigenous peoples prior to non-native settlement of the area and later historic industries and communities that developed throughout the region. However, there are no previously recorded cultural resources in the direct vicinity of the bridge repairs described above. The project is additionally within an area that has been extensively disturbed by previous developments, including historic and modern roads and railways, commercial and residential buildings, industrial structures, utilities, and the construction of the University Bridge. Intact archaeological resources are subsequently unlikely to be present within the immediate project footprint.

The repairs described above are not anticipated to require further review or approvals for archaeological resources for the project. The repairs are limited to the historic bridge surface and the in-water bridge pier columns and footings, which would not result in ground disturbing activities, and therefore, do not have anticipated impacts to archaeological resources.

5.2.2 Historic Built Environment Resources

The bridge was listed in the NRHP for its engineering characteristics as an example of a double-leaf trunnion bascule bridge. In a previous memo, HDR recommended that the north and south approaches are important setting features of the bascule bridge and that maintaining their integrity of design, materials, and workmanship is important in maintaining the integrity of the bridge as a whole and its NRHP listing (see Robison-Mathes, et al. 2023). Any work that negatively impacts the character-defining features of any part of the bridge could result in an adverse impact to the bridge under NEPA or SEPA, and during a potential review by the Seattle Landmarks Preservation Board. Adverse impacts to a historic property typically require mitigation and could extend or complicate the review process.

As described above, repairs to the expansion joints, asphalt concrete overlay, and floorbeams of the SA and NAS spans will be made in-kind. Repair of submerged concrete on the SA and NAS spans as described above, including footing enlargement and strengthening of the lower portions, will be conducted on in-water elements. Repairs to the concrete railings on the NAS spans will be conducted in-kind. These repairs to the SA and NAS spans as described above are not anticipated to have additional implications for the review process.

Repairs to the bascule spans as described above will primarily be conducted in-kind and are necessary to maintain the continued operation of the bascule spans. The operation of the spans is an important character-defining feature of the bridge, and it is therefore important in maintaining the overall integrity and NRHP listing status of the bridge. Thus, the work as described above is not anticipated to have additional implications to SEPA or NEPA review, or to a potential review by the Seattle Landmarks Preservation Board.

5.3 Geotechnical Engineering

Geotechnical consideration for this phase of the project will include access for the proposed foundation repairs at Piers 3, 4, 5, and 6 within the waterway. HDR anticipates that sheetpile cofferdams will be required to perform excavations at the foundation locations. Each pier has a varying amount of water head and soil that will need to be retained to gain access to the pile caps. The cofferdams will be formed by either single or double wall sheetpiles with internal bracing.

Subsurface information is limited to explorations shown on the 1930 bridge plans where there are borings near Piers 3 and 4, but no borings near Piers 5 and 6. In general the subsurface conditions likely consist of mud (lake bottom), sand, and gravel/cobbles with interbedded layers of lacustrine clays over very dense glacially overridden soils. The following information should be considered for initial cost opinions of cofferdam construction and soil excavation:

- Sheetpiles can be driven without predrilling in all these soils except for the glacially overridden soils.
- Sheetpile sections and lengths will be determined by the retained soil and water heights and the amount of internal bracing used in the excavation.

- Groundwater seepage around the sheetpiles may control sheetpile lengths. Sheetpiles will need sufficient lengths to dissipate groundwater head around the sheetpiles to prevent piping and bottom blowout of the excavation.
- The ground within the cofferdam can be dewatered with well points.
- Given the presence of interbedded lacustrine clay, deeper depressurization wells may be required below the clays to prevent base blowout of the excavation.
- Depending on actual excavation dimensions and subsurface conditions at each bent, sheetpile embedment may be 0.5 to 1.5 times the depth of the excavation from the lake water surface.

The cofferdam and dewatering system will require design engineering including lateral earth pressures, braced excavation design, seepage analysis, and dewatering analyses. Geotechnical explorations and testing will be required for final design analyses.

5.4 Maintenance of Traffic

Development of maintenance of traffic (MOT) plans must consider four lanes of vehicular traffic, the electrified bus transit routes that use the outside lanes of traffic, bicycle traffic, pedestrians, and marine traffic beneath the bridge. Additionally, due to construction needs, methods for maintaining traffic during construction differ for the bascule spans than the remainder of the bridge. This section offers recommendations for the optimal MOT plans that balance the need for mobility of all modes of travel with particular construction needs.

South Spans

As noted above, repair along these south spans requires removal of enough of the flexcell joint filler to allow for the installation of the backer rod and joint sealant along each floorbeam. Also, it’s likely that the existing membrane will be damaged when the asphalt is removed, so a new strip of membrane will need to be installed. To maximize the integrity of the backer rod, filler material and membrane, it is preferable to minimize the amount of discontinuity along each floorbeam during construction, which requires maximizing the length that can be installed at a time. In addition, the existing asphalt will be removed and a new roadway surface installed to provide a smooth riding surface after construction.

Balancing this construction need with the mobility needs listed above, HDR recommends construction to occur overnight in halves, with an overlapping joint at the centerline of the bridge. This would require that vehicular traffic be reduced to one lane in each direction and shift both lanes onto one side of the bridge. The electrified bus routes will need to be taken out of service and the electrified bus route will need to transition to another technology during construction. The sidewalk adjacent to construction will need to be closed and optimal pedestrian accommodations will need to be provided; these will be determined at the next phase of design. There shouldn’t be any impacts to marine traffic since this work would be relegated to nighttime.

There are 7 floorbeam joint repairs along the south approach spans. It’s anticipated that six floorbeams could be done during each overnight period, so this work should be accomplished over the course of two nights per half of the bridge, one week in total.

See Attachment D for MOT exhibits.

Bascule Spans

Replacement of the plates and repairs to the bottom chord, as described above, may not be possible with the bridge in the closed position, which means open to traffic. It is likely that the bridge will need to be at least slightly in the open position, which means fully closed to all traffic (vehicles, busses, bicycles, pedestrians). Unless a load analysis indicates otherwise, it is recommended that all of the work to be done on the bascule spans be done under full closure of the bridge. To minimize impacts to all modes of transportation, up to 10 full weekend closures are proposed to complete the work, with the bridge available to operate in its normal condition during the weekdays.

When the bridge is fully closed, all traffic will be rerouted to Montlake Boulevard. This detour will span approximately 3.5 miles and will include, from south to north:

- Fuhrman Avenue E/Boyer Avenue E
- 24th Avenue E/Montlake Boulevard NE
- NE Pacific Street
- 15th Avenue NE
- NE Campus Parkway

As noted above, during this full closure of the bridge, all modes of transportation will need to use this or another detour. The electrified bus line will need to be replaced by another technology of bus and those busses may need to follow a slightly different detour route to rejoin the remainder of the existing bus routes. Other options may need to be explored for accommodating pedestrians and bicyclists due to the length of the detour (i.e., King County Metro busses equipped with bike racks may pick up passengers on one side of the bridge and drop them off on the other side).

North Spans

Traffic would be accommodated along the north approach spans in the same manner as proposed for the SA spans. There are 22 floorbeam joint repairs along the north approach spans. Assuming the same six floorbeams per night as the SA spans, this work could also be accomplished over the course of one week per half of the bridge, two weeks in total. See Attachment D for MOT exhibits.

5.5 Constructability, Cost and Schedule

Eastlake Avenue NE and NE 40th Street is a busy throughfare into and out of the University of Washington campus, so lane closures are at a minimum. Substructure rehabilitation access will be from the water with barge and equipment. Superstructure rehabilitation access will be from the top of the bridge with lane closures.

Substructure rehabilitations require the installation of cofferdams around the existing footing. Cofferdam installation and removal needs to be inside the in-water work window. The current schedule shows the allowable in-water work window is from October 15 to April 15. The current schedule shows installation of the cofferdams starts on October 15, 2024, and finished removal on April 2, 2025. This work is the project critical path. This schedule is based on a notice to proceed (NTP) on April 1, 2024; if this NTP date pushed it may delay the start of in-water work activities.

Superstructure rehabilitations require Eastlake Avenue NE lane closures. The current schedule shows majority of the superstructure rehabilitation work occurs during the summer when there is less traffic. For the bascule bridge rehab work, a containment system is necessary to prevent any debris from falling into the water. This project also calls for grind and pave existing asphalt concrete overlay. For the safety of the workers, the overhead contact system (OCS) power should be de-energized during the superstructure rehab work.

With bascule bridges, existing submarine cables should be identified on the plans to avoid damage during construction.

The contractor construction project duration for University Bridge Rehabilitation scoped in this memo is 12 months and based on NTP on April 1, 2024.

The estimated contractor construction cost for the current design of University Bridge Rehabilitation is $10,421,677. This includes a 10.25% tax on permanent and consumable materials and 30% design contingency. Cost for construction administration and inspection is not included.

See Attachment B for construction cost and schedule exhibits.

5.6 Utilities

Osborn Consulting, Inc., (OCI) reviewed as-built plans provided by SDOT to identify utilities impacted by repairs. See Attachment C, Utility Exhibits, for as-built plans. Table 5 lists the known utilities within the bridge structure vicinity that could be impacted by repairs.

Table 5. Existing Utility Data

Utility Provider	Data Provided By	Utilities in Project Vicinity?	Identify Which Section of Bridge Repairs Affect Utilities	Data Provided
Seattle Department of Transportation – Stormwater	SDOT and Seattle DSO	Yes	NAS – Expansion Joints	As-builts plans provided by SDOT and utility maps by Seattle DSO.
Seattle Public Utilities – Sewer	As-built Plans and Seattle DSO	Yes	NAS – Expansion Joints	As-builts plans provided by SDOT and utility maps by Seattle DSO.
Seattle Public Utilities – Water	As-built Plans and Seattle DSO	Yes	SA – Pier 3	As-builts plans provided by SDOT and utility maps by Seattle DSO.
Bridge Waterline	As-built Plans		NAS – Expansion Joints-	As-builts plans provided by SDOT.
Seattle City Light – Lighting	As-built Plans	Yes	NAS – Concrete Rail Damage	As-builts plans provided by SDOT.

Utility Provider	Data Provided By	Utilities in Project Vicinity?	Identify Which Section of Bridge Repairs Affect Utilities	Data Provided
Overhead Contact System (Trolley System)	See Section 4.9			

Notes: Distinct Section: South approach (SA) spans, the bascule (B) spans, and the north approach steel (NAS) spans
SDOT – Seattle Department of Transportation, DSO – Development Services Office

SDOT Stormwater – At each expansion joint called out to be repaired on the NAS spans there are bridge inlets and track inlets within the bridge deck in close proximity to the joints. The track inlets do not appear to visible from the bridge deck, therefore it is assumed they are paved over. The recommendation is to replace the existing joints in kind, which would allow these drainage systems to be unaffected by the repairs. Attachment C includes as-built plans.

SPU Sewer – A side sewer line is shown entering the South Bascule Pier on the Seattle DSO map. No other information was identified on the as-built plans to specifically locate how this utility is attached to, or within, the bridge structure. This could potentially be affected by the NAS spans expansion joint replacement. Attachment C includes maps provided by the utility owners.

SPU Water – A tunnel that contains a 42-inch watermain is buried under the SA abutment and runs in between the columns at Piers 2 and 3. The tunnel is directly adjacent to the west column on Pier 3. During the SA pier repairs, the tunnel location needs to be taken into consideration for how the footing will be encased. Attachment C includes as-built plans.

Bridge Waterline – A 1.5-inch galvanized pipe runs from the northern side of the bridge to the North Bascule Pier and a pipe of the same size runs from the south approach to the South Bascule Pier. Both waterlines are noted as “laid under walk” per the as-built plans. These lines could potentially be affected by the NAS spans expansion joint replacement. Attachment C includes as-built plans.

Seattle City Lighting – Conduit was identified to be placed in the barrier that potentially feeds the pedestrian lights. If there is extensive concrete damage, these conduits could potentially be affected by the NAS spans concrete rail damage repairs. Attachment C includes as-built plans.

5.7 Roadway

The roadway impacts of the repairs included in this report will consist of improvements in most all situations. The replacement of the roadway overlay is already a need and resolves the maintenance issue on the bridge as part of the repair. With the overlay, new signing, striping, and ADA compliance requirements are triggered. There are noncompliant pedestrian curb ramps at either end of the bridge facility. If overlay work was proposed to extend out past the limits of the bridge those ramps should be accounted for in the estimating of the work. In addition, if the waterproof paving matting is placed just 2 inches below the pavement surface, there is a high likelihood that the material will be impacted the next time the City replaces the asphalt surfacing. New waterproof matting will need to be placed each time the City completes paving maintenance if a 2-inch overlay is desired each time they resurface. Alternatively, the future repairs could consider only a 1-inch to 1.5-inch grind and a 1.5-inch to 2-inch overlay to avoid damage to the waterproof membrane. To accommodate a thicker overlay, the expansion joints would need to be adjusted and a dead load analysis would be required for additional weight on the bridge. The other consideration for modifying the top elevation of the pavement surface is the remaining height of curbs on either side of the street. There are options to protect the waterproof membrane in place with proper planning and foresight during the next phase of design.

Repairs to the pedestrian railings will improve the use of the facility and doesn't materially change the permanent facility.

Repairs to expansion joints and connection points between different bridge structure facilities that cross the sidewalk need to be cognizant of ADA compliance for gaps in the surface of the facility. Vertical and horizontal differences could present a tripping hazard.

The internal bridge foundation or girder repairs and other repairs not affecting the surface of the roadway, sidewalk, or bike lane, do not have roadway implications.

5.8 Right-of-Way

The right-of-way impacts and funding compliance for the project are considered for the bridge repairs. The funding compliance follows the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended.

Impacts for acquisition outside of the existing right-of-way indicates the need for additional permanent, or temporary, property rights are not anticipated but depending on the constraints there may be some temporary easements to be obtained to assist in construction.

5.9 Overhead Contact System

As stated above in the MOT section, for all bridge sections (SA Spans, B Spans and NAS Spans), the electrified bus routes will need to be taken out of service and transitioned to another technology while any work is being performed in the vicinity of the OCS unless the work can be performed entirely during non-revenue hours. Work being done underneath the bridge should have minimal impact to the OCS, unless it conflicts with feeder cable/conduit locations.

The impact to the OCS in each section will depend on the methodology and equipment being used to perform the repairs. Minimum clearance envelopes, as defined by state and local codes and OSHA safety regulations, must be observed when working near or under the OCS wires. If the contractor is unable to maintain the required clearances during construction activities, the OCS wires, equipment and poles will need to be removed and temporarily terminated at either end of the construction zone. New termination structures will have to added, as the existing poles may have capacity limitations.

Further consideration will be required to analyze the impact of de-energization on the OCS system as a whole. If the work requires the removal or disconnect of any feeder cables or OCS wire, temporary feeder cable connections and associated raceway between the ends of the bridge must be designed and installed to ensure that bus service is available on both sides of the bridge during construction.

6.0 References

Inspection Reports:

BRG-003SA Fracture Critical Inspection Report, 05-22-2018

BRG-003SA Routine Inspection Report, 08-22-2019

BRG-003SA Fracture Critical Inspection Report, 08-08-2020

BRG-003SA Routine Inspection Report, 07-29-2021

BRG-003B Routine and Fracture Critical Inspection Report, 08-08-2019

BRG-003B Fracture Critical Inspection Report, 03-24-2021

BRG-003B Routine Inspection Report, 08-12-2021

BRG-003NAS Fracture Critical Inspection Report, 05-22-2018

BRG-003NAS Routine Inspection Report, 08-22-2019

BRG-003NAS Fracture Critical Inspection Report, 08-08-2020

BRG-003NAS Routine Inspection Report, 07-29-2021

BRG-003B, -003NAS, -003SA Underwater Inspection Report, 04-26-2018 (BergerABAM)

BRG-003NAS Underwater Inspection Report, 11-23-2020 (Echelon Engineering)

BRG-003NAS Underwater Inspection Report, Dec 2022 (WSP)

BRG-003SA, -003B Underwater Inspection Report, April 2023 (Echelon Engineering)

As-Built Plans:

1915 University Bridge Bascule (Original As-builts) (782-22)

1915 University Bridge Machinery and Bearings (782-23)

1930 North Approach Bookmarked original plans (782-59)

1930 University Bridge Bascule Widening (782-60)

1951 Double Leaf Trunnion Deflection and Stress diagrams and calculations (782-21)

1968 University Bridge Deck Modification (865-56)

1970 Joint Repair U. Bridge (862-79)

1973 University Bridge Sidewalk Replacement (864-57)

1997 Seismic Retrofit Dwgs U. Bridge (782-194)

2017 Paving Plan U. Bridge (790-185-A83 and A84)

City of Seattle. 2023. https://www.seattle.gov/neighborhoods/historic-preservation

Robison-Mathes, Anna, Sarah Desimone, and Jennifer Ferris. 2023. *Cultural Resources Desktop Review for the University Bridge North Approach Replacement Planning Study, Seattle, Washington*. Memo to Elisabeth Wooten, Seattle Department of Transportation. Prepared by HDR.

Attachments:

A. Repair Drawings

B. Construction Cost and Schedule Exhibits

C. Utility Exhibits

D. MOT Exhibits

Attachment A

Repair Drawings

Sheet List Table

SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION
0	G–000	SHEETS LIST
1	S–101	PLAN AND ELEVATION
2	S–201	FLOORBEAM AND EXPANSION JOINT REPAIR DETAILS
3	S–202	CONCRETE RAILING REPAIR DETAILS
4	S–203	PIER 3 REPAIR DETAILS
5	S–204	PIER 4 REPAIR DETAILS
6	S–205	PIER 5 REPAIR DETAILS
7	S–206	PIER 6 REPAIR DETAILS
8	S–207	BASCULE TRUSS MISCELLANEOUS DETAILS – 1
9	S–208	BASCULE TRUSS MISCELLANEOUS REPAIR – 2
10	S–209	BASCULE TRUSS MISCELLANEOUS DETAILS – 3

REV'D	CHK'D	MADE	NATURE	MARK	DATE

REVISIONS

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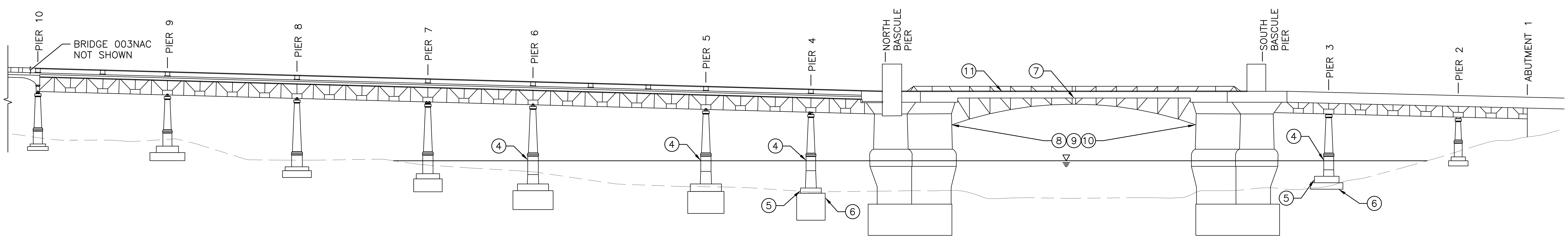
SHEET 0 OF 10

PLAN

SCALE: 1" = 40'



ELEVATION

SCALE: 1" = 40'

LEGEND

1. RAILING AND BALUSTER REPAIR (SHEET 3)
2. EXPANSION JOINT REPAIR (SHEET 2)
3. DECK JOINT REPAIR AT FLOORBEAMS (SHEET 2)
4. PIER COLUMN REPAIR AND CFRP JACKETING (SHEETS 4, 5, 6 AND 7)
5. PIER FOOTING ENLARGEMENT (SHEETS 4 AND 5)
6. RIPRAP AROUND FOOTING SEAL (SHEETS 4 AND 5)
7. GAP BETWEEN BASCULE LEAVES REPAIR (SHEET 8)
8. RACK SPLICE PLATE REPLACEMENT/REPAIR (SHEET 9)
9. LIVE LOAD SHOE ADJUSTMENT (SHEET 10)
10. BASCULE TRUSS MEMBER L7-L9 CORROSION REPAIR (SHEET 10)
11. FLOORBEAM 4 CORROSION REPAIR (FIELD VERIFICATION REQUIRED)
12. REMOVE AND REPLACE 2"± HMA ℄ ½" OVERLAY (SHEET 2)

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PLAN AND ELEVATION

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SHEET 1 OF 10

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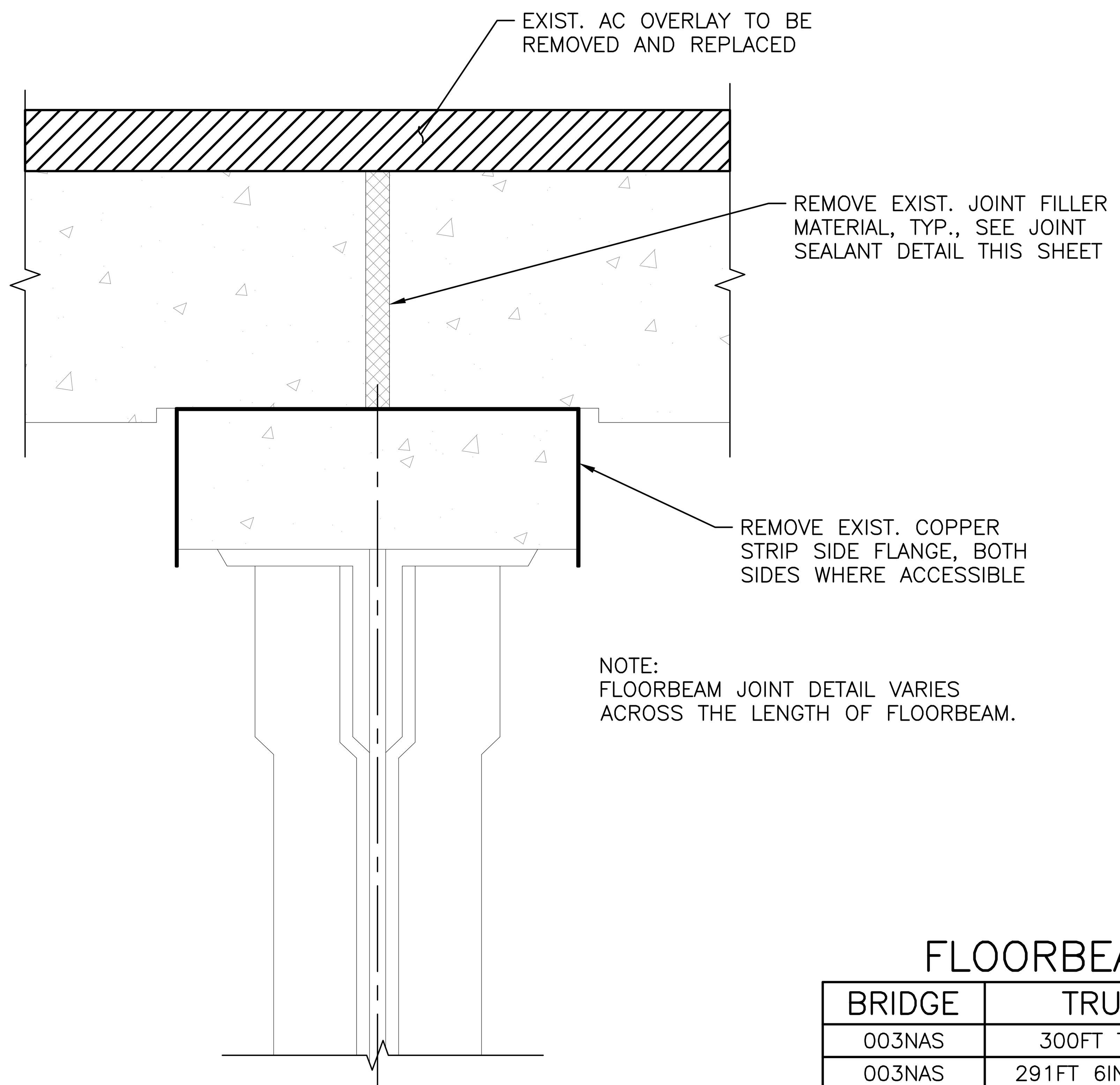
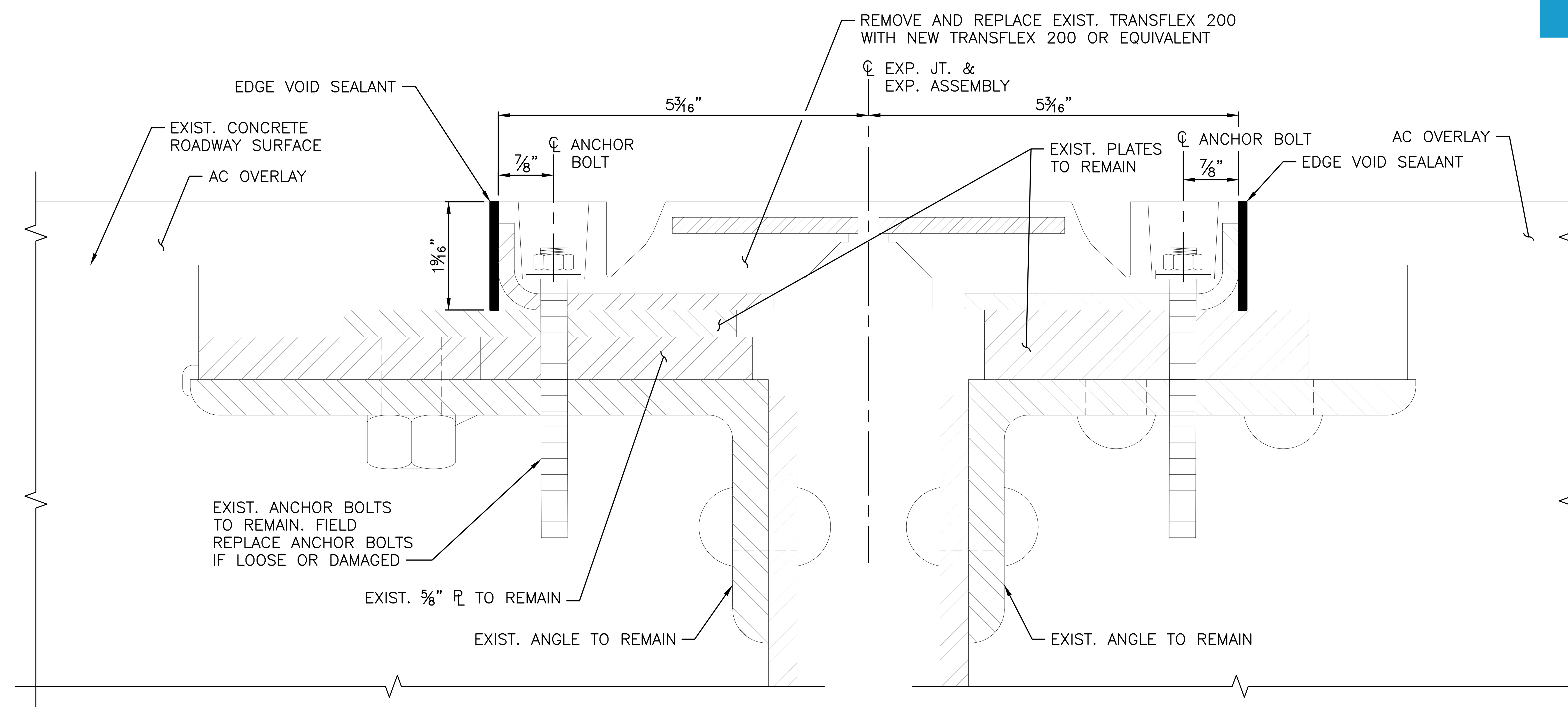


FLOORBEAM JOINT REPAIR DETAIL

SCALE: 1/4" = 1'-0"

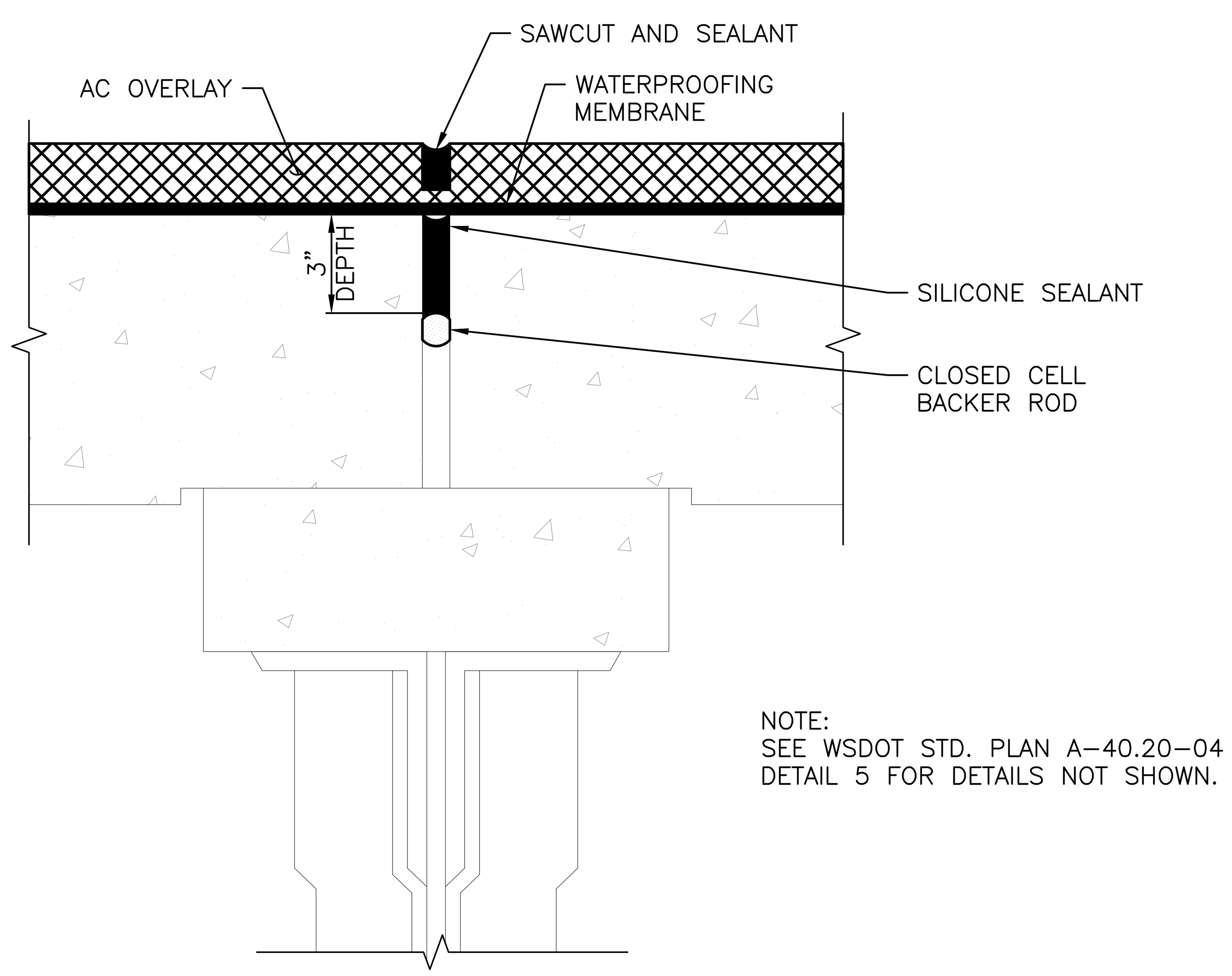


EXPANSION JOINT REPLACEMENT – JOINTS 1, 4, 5

SCALE: 3/4" = 1'-0"

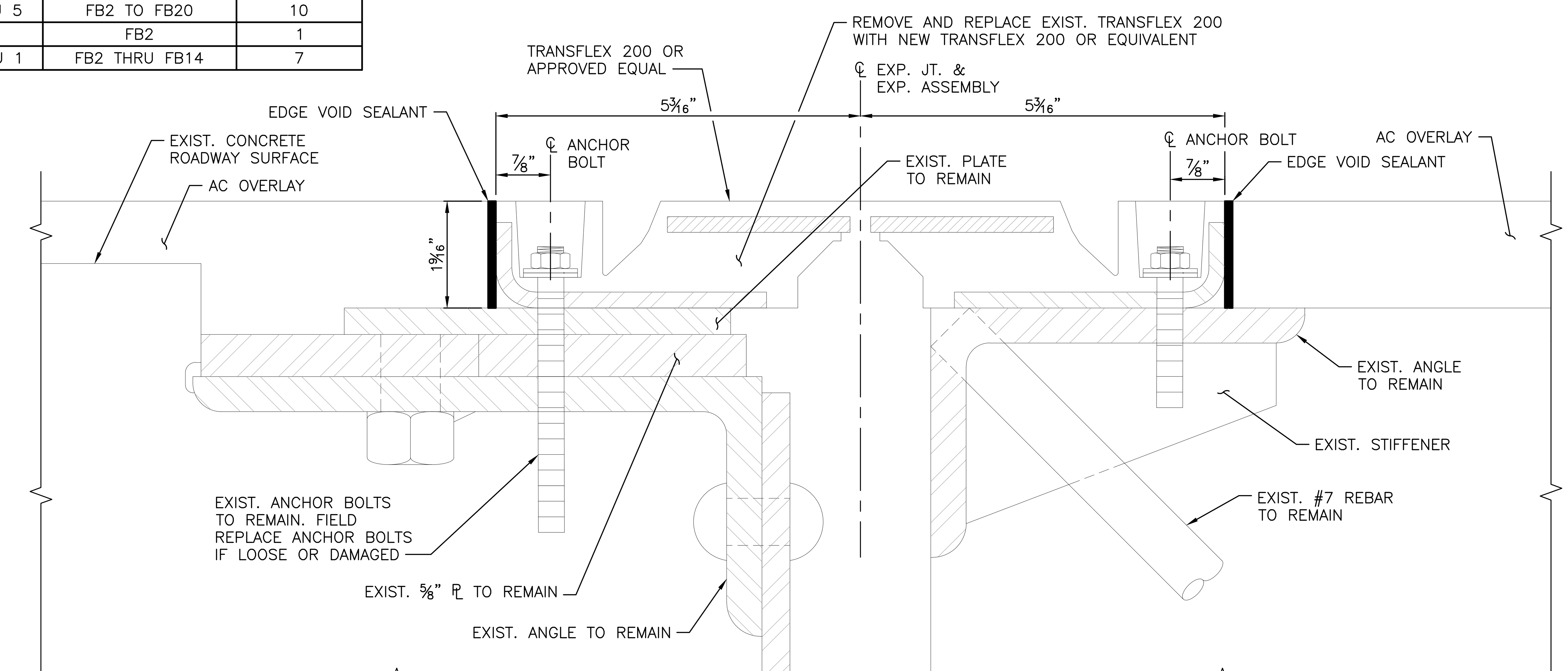
FLOORBEAM JOINT REPAIR LOCATIONS

BRIDGE	TRUSS	SPAN	FLOORBEAM	NUMBER
003NAS	300FT TRUSS	10 THRU 8	FB2 TO FB22	11
003NAS	291FT 6IN TRUSS	7 THRU 5	FB2 TO FB20	10
003NAS	56FT 6IN TRUSS	4	FB2	1
003SA	200FT TRUSS	3 THRU 1	FB2 THRU FB14	7



JOINT SEALANT DETAIL

SCALE: 1/4" = 1'-0"



EXPANSION JOINT REPLACEMENT – JOINT 6

SCALE: 3/4" = 1'-0"

FLOORBEAM AND EXPANSION JOINT REPAIR DETAILS

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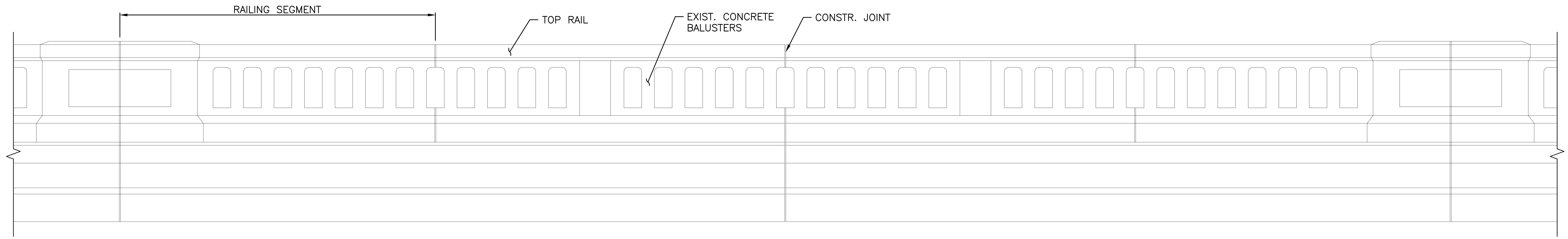
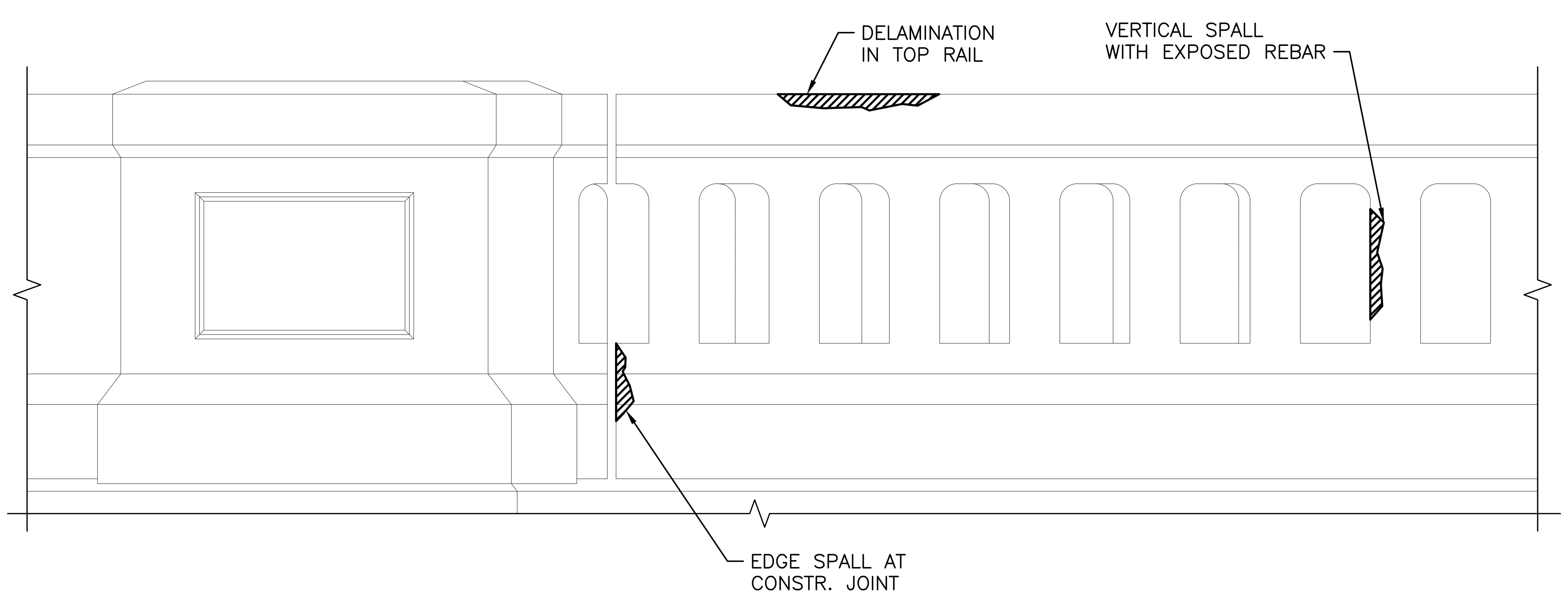


RAILING ELEVATION
SCALE: 1/2" = 1'-0"



RAILING REPAIR DETAIL
SCALE: 1" = 1'-0"

BRIDGE	SPAN	SIDE	RAILING NUMBER	BALUSTER NUMBER	SIZE	DEFECT
003NAS	7	WEST	54	10	2" X 8"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	7	WEST	55	2	2" X 8"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	7	WEST	55	7	2" X 8"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	6	WEST	56	1	2" X 4"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	WEST	69	TOP/RAIL	4'	LONGITUDINAL DELAMINATIONS W/ INCIPIENT SPALLING
003NAS	9	EAST	41	9	2" X 4"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	9	EAST	42	2	2" X 2"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	8	EAST	43	8	2" X 2"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	6	EAST	59	3	2" X 6"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	6	EAST	60	8	1" X 2"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	6	EAST	60	10	2" X 2"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	6	EAST	66/67	CONST JOINT	4" X 7"	EDGE SPALL W/ NO EXPOSED REBAR
003NAS	5	EAST	69	4	2" X 4"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	5	EAST	70	4	2" X 6"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	5	EAST	70	6	2" X 4"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	EAST	72	4	2" X 4"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	EAST	72	7	4" X 6"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	EAST	72	8	2" X 2"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	EAST	72	TOP/RAIL	2'	DELAMINATION
003NAS	4	EAST	73	8	2" X 4"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	EAST	73	8	4" X 6"	VERTICAL SPALL W/ EXPOSED REBAR
003NAS	4	EAST	74/75	CONST JOINT	3" X 8"	VERTICAL SPALL W/ EXPOSED REBAR

NOTES

1. BALUSTER NUMBERING STARTS AT EACH CONSTRUCTION JOINT.
2. RAILING NUMBERING STARTS AT THE NORTH END OF THE BRIDGE.
3. REPAIR CONCRETE RAILING AS FOLLOWS:
   -REMOVE LOOSE AND UNSOUND CONCRETE.
   -CLEAN EXISTING REINFORCEMENT FREE OF RUST IF REBAR IS EXPOSED.
   -SATURATE SUBSTRATE CONCRETE.
   -PATCH CLEAN SURFACE WITH NON-SHRINK GROUT TO MATCH EXISTING RAILING.
4. DEFECT SIZE AND LOCATION IS BASED UPON EXISTING INSPECTION REPORT FINDINGS AND COULD VARY IN THE FIELD.

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CONCRETE RAILING REPAIR DETAILS

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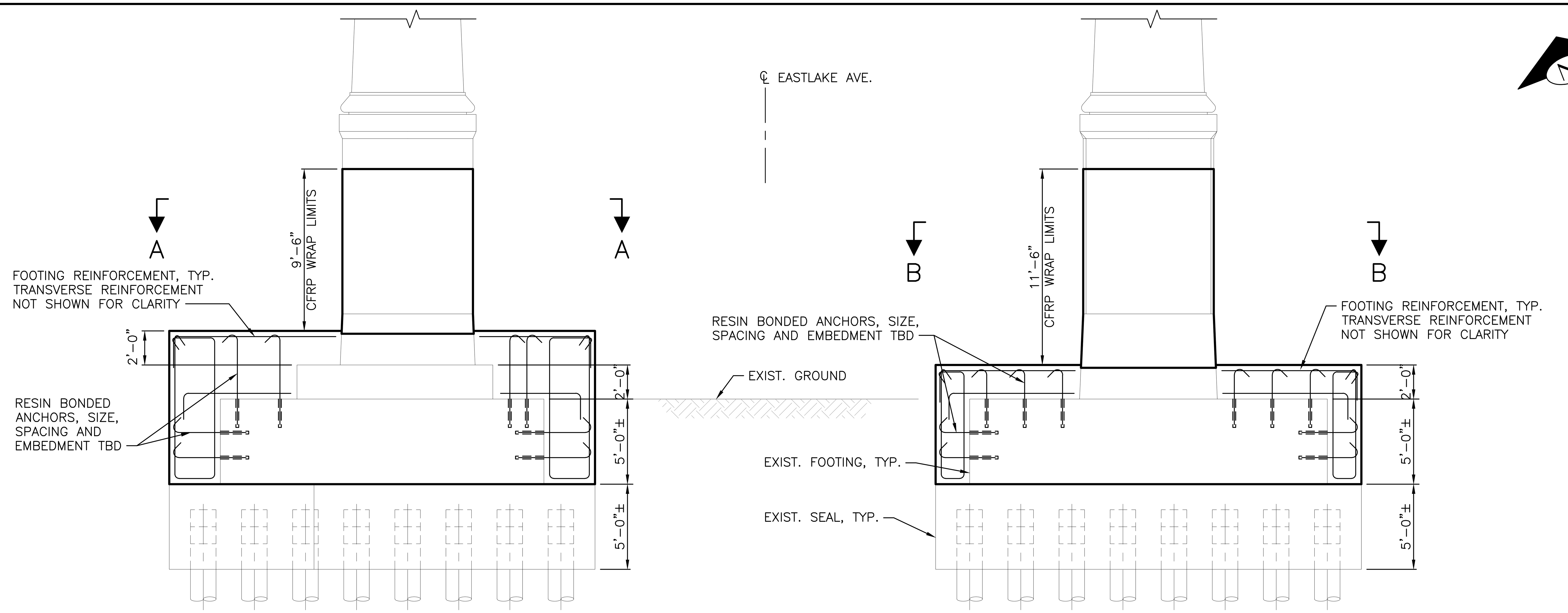
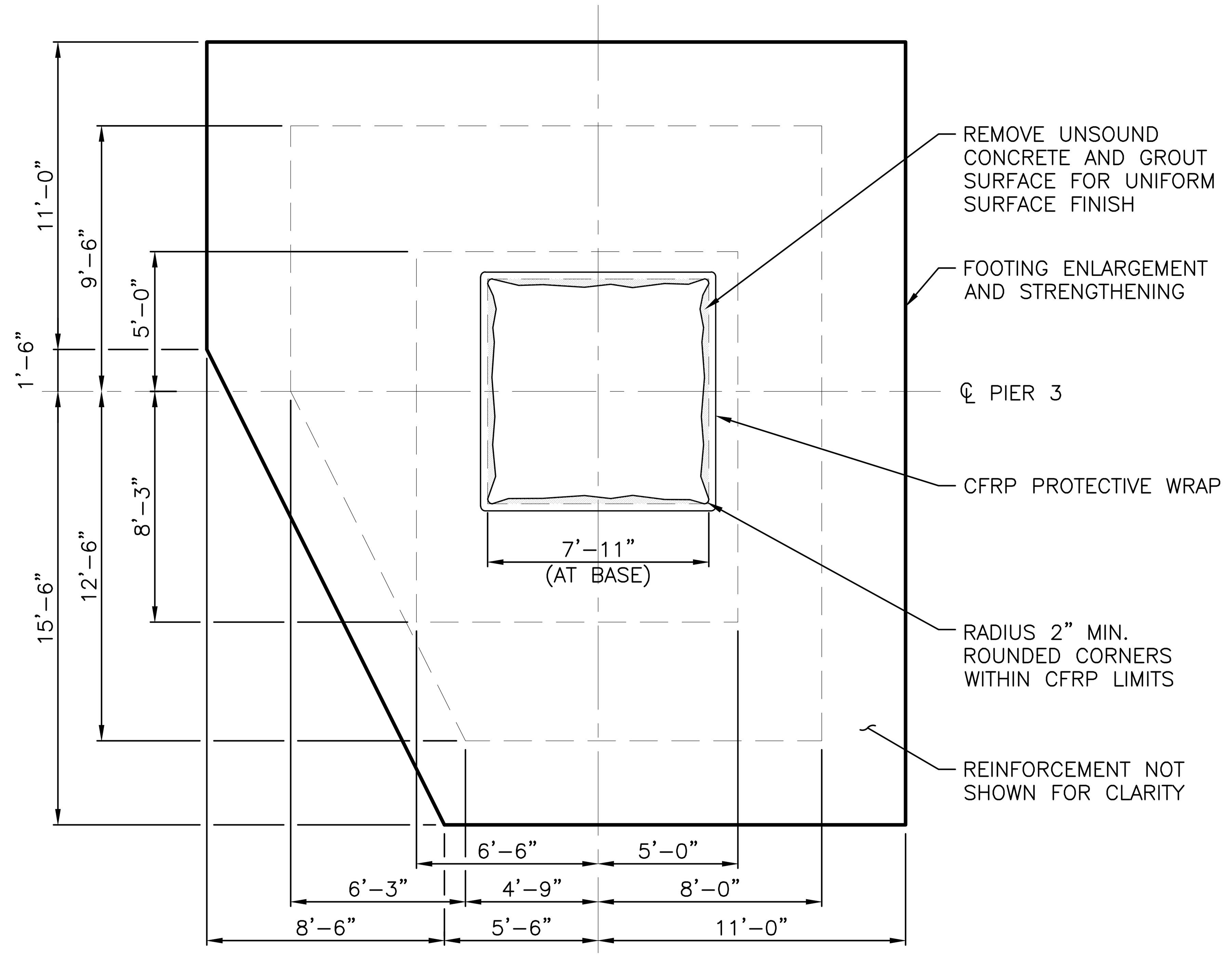
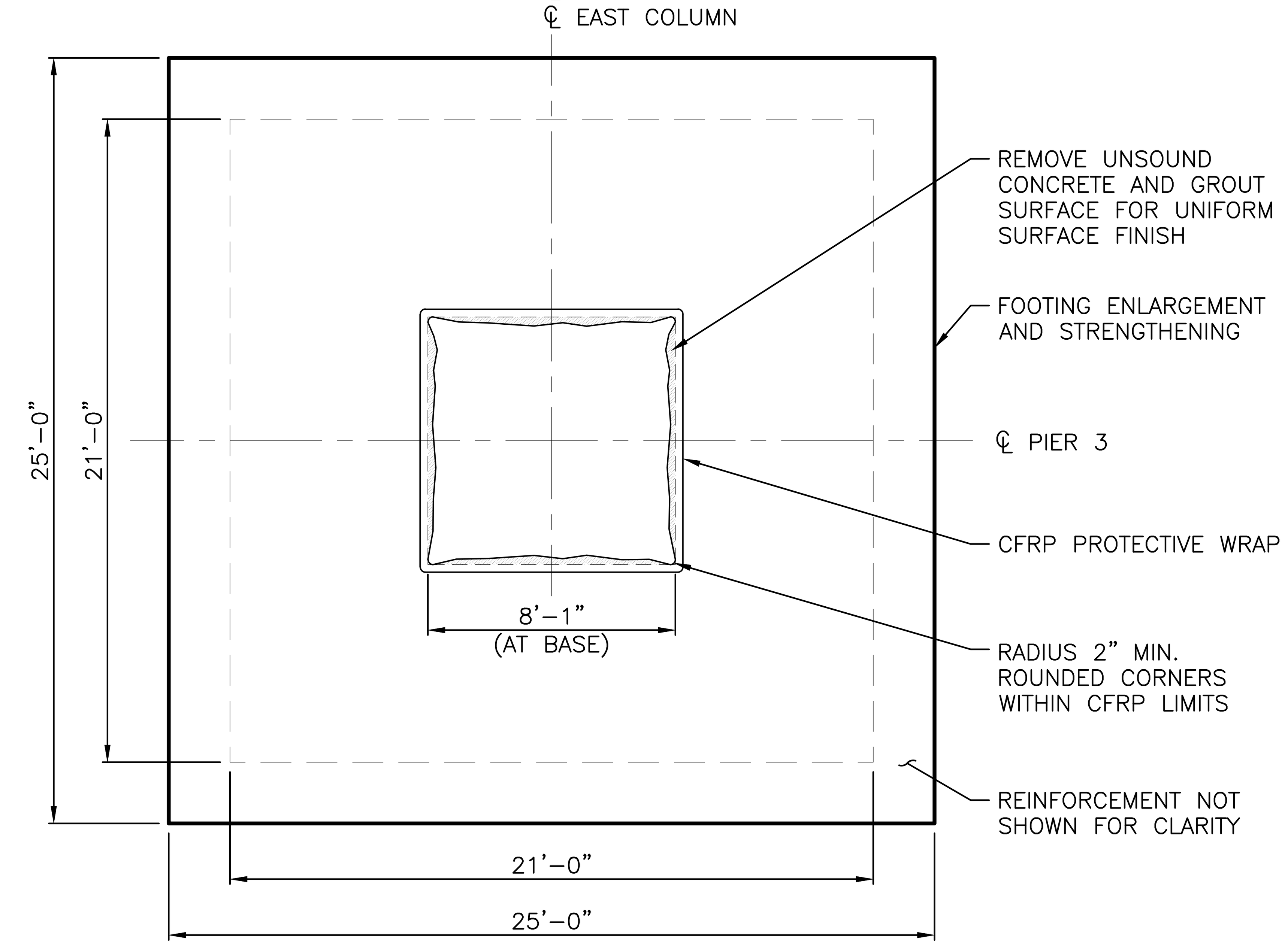
VPI #
S-202
SHEET 3 OF 10



PIER 3 ELEVATION
SCALE: 1/4"=1'-0"



SECTION A–A
SCALE: 1/4"=1'-0"



SECTION B–B
SCALE: 1/4"=1'-0"

CONSTRUCTION NOTES

1. INSTALL COFFERDAM, DEWATER, AND REMOVE SEDIMENT TO BOTTOM OF FOOTING.
2. REMOVE TIMBER FORMWORK AROUND THE FOOTING AS NEEDED.
3. CLEAN CONCRETE CRACKS AND REMOVE UNSOUND CONCRETE AS REQUIRED.
4. PATCH AND GROUT COLUMN SURFACE WITH HIGH STRENGTH GROUT TO OBTAIN UNIFORM SURFACE FINISH.
5. INSTALL AND CURE CFRP PROTECTIVE WRAP TO THE PIER COLUMN FOR LIMITS SHOWN.
6. DRILL AND ANCHOR RESIN ANCHORS INTO EXISTING CONCRETE FOOTING.
7. CONSTRUCT ENLARGED CONCRETE FOOTING SECTION TO THE LIMITS SHOWN.
8. APPLY FINAL SURFACE FINISH ON CFRP AS REQUIRED.
9. REMOVE COFFERDAM.

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PIER 3 REPAIR DETAILS

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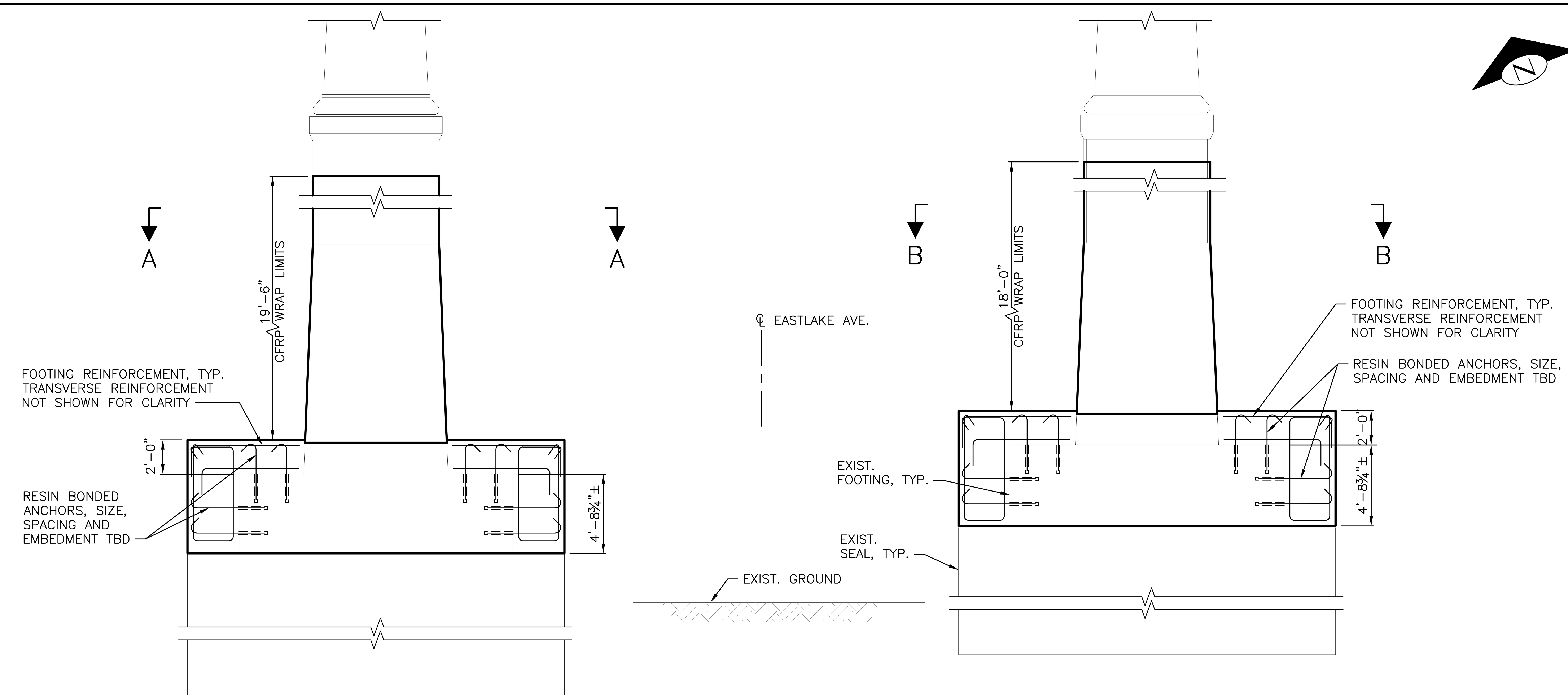
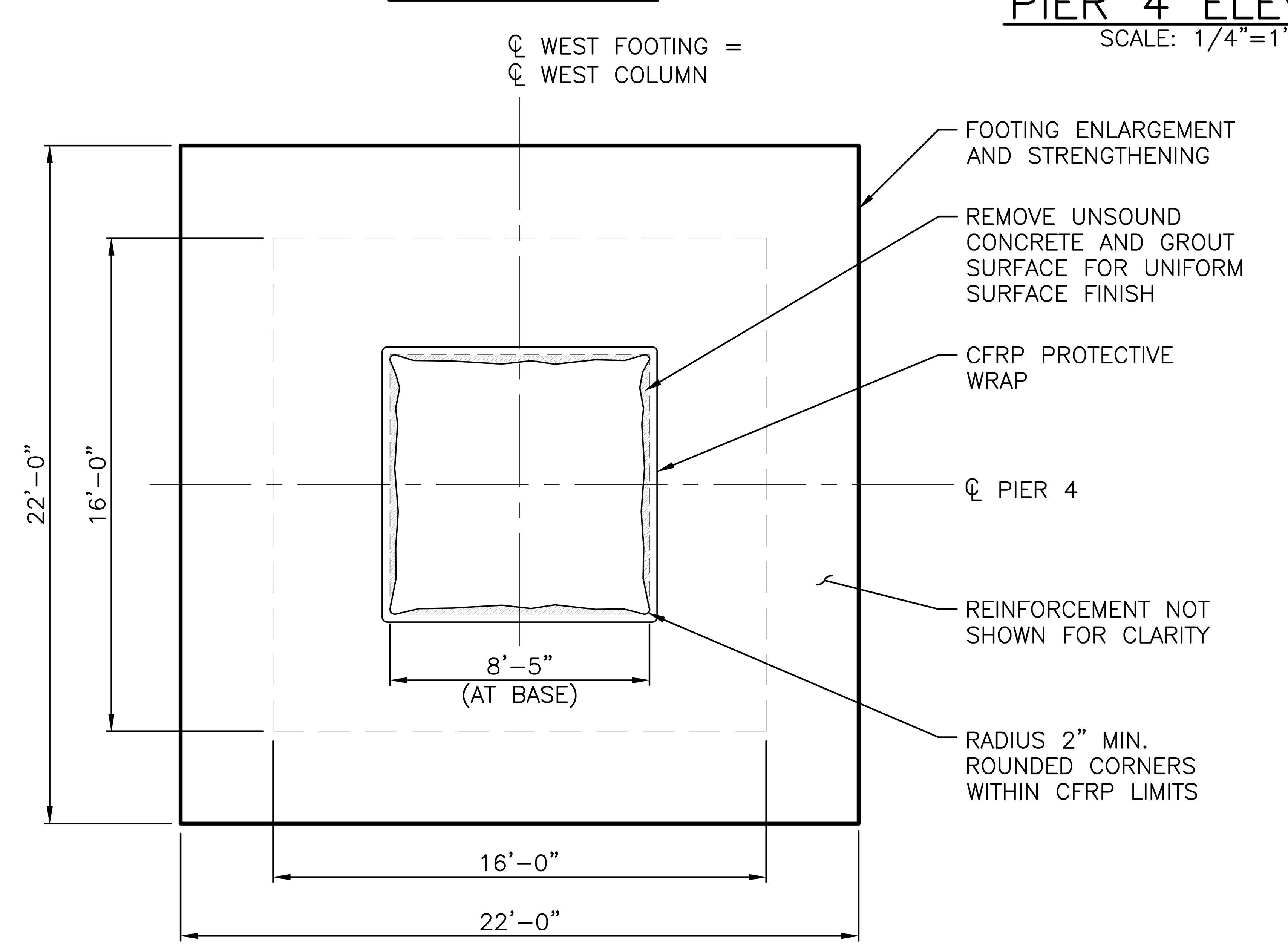
S-203



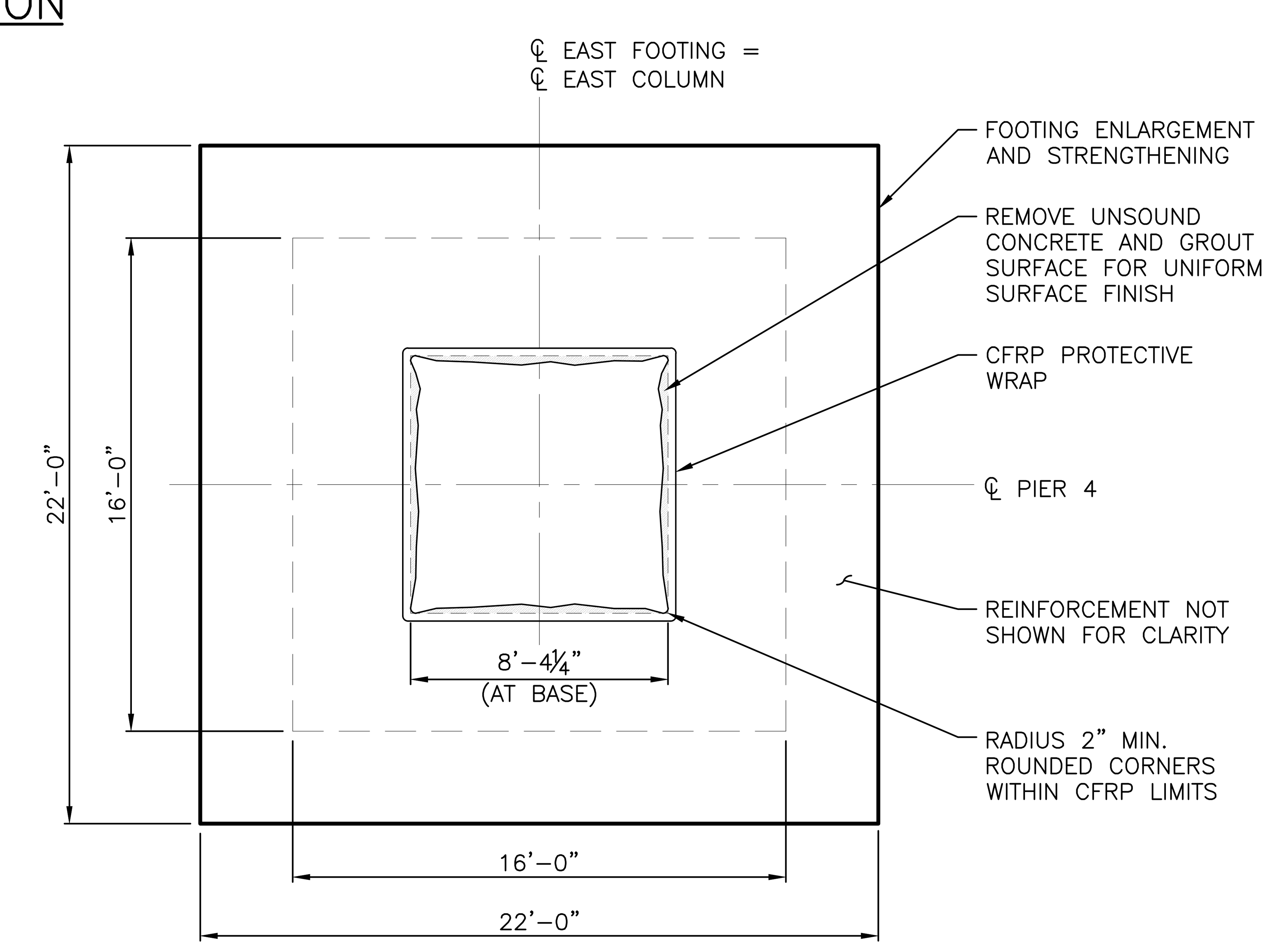
WEST FOOTING

PIER 4 ELEVATION
SCALE: 1/4"=1'-0"

EAST FOOTING



SECTION A–A
SCALE: 1/4"=1'-0"



SECTION B–B
SCALE: 1/4"=1'-0"

CONSTRUCTION NOTES

1. INSTALL COFFERDAM, DEWATER, AND REMOVE SEDIMENT TO BOTTOM OF FOOTING.
2. REMOVE TIMBER FORMWORK AROUND THE FOOTING AS NEEDED.
3. CLEAN CONCRETE CRACKS AND REMOVE UNSOUND CONCRETE AS REQUIRED.
4. PATCH AND GROUT COLUMN SURFACE WITH HIGH STRENGTH GROUT TO OBTAIN UNIFORM SURFACE FINISH.
5. INSTALL AND CURE CFRP PROTECTIVE WRAP TO THE PIER COLUMN FOR LIMITS SHOWN.
6. DRILL AND ANCHOR RESIN ANCHORS INTO EXISTING CONCRETE FOOTING.
7. CONSTRUCT ENLARGED CONCRETE FOOTING SECTION TO THE LIMITS SHOWN.
8. APPLY FINAL SURFACE FINISH ON CFRP AS REQUIRED.
9. REMOVE COFFERDAM.

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PIER 4 REPAIR DETAILS

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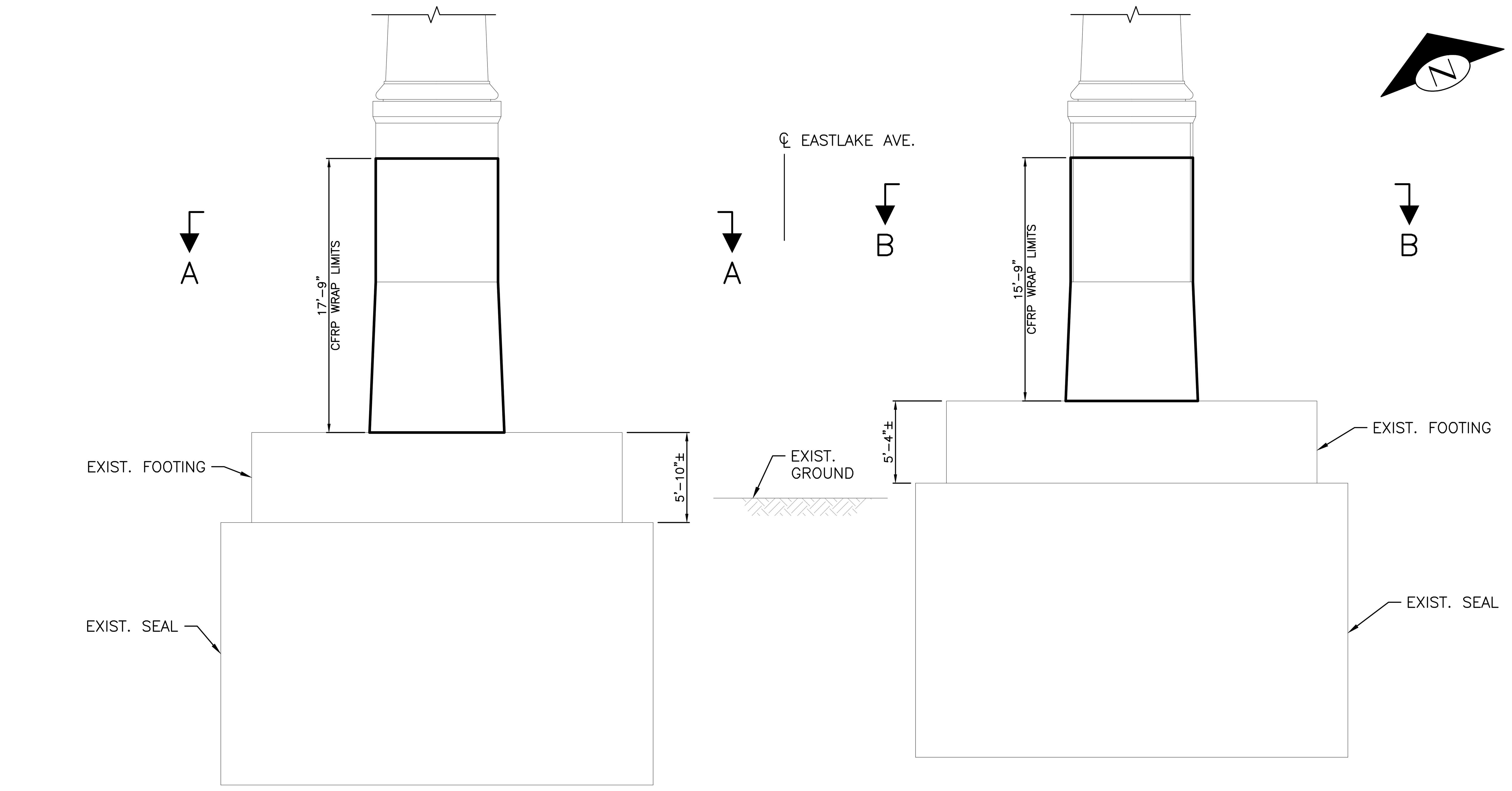
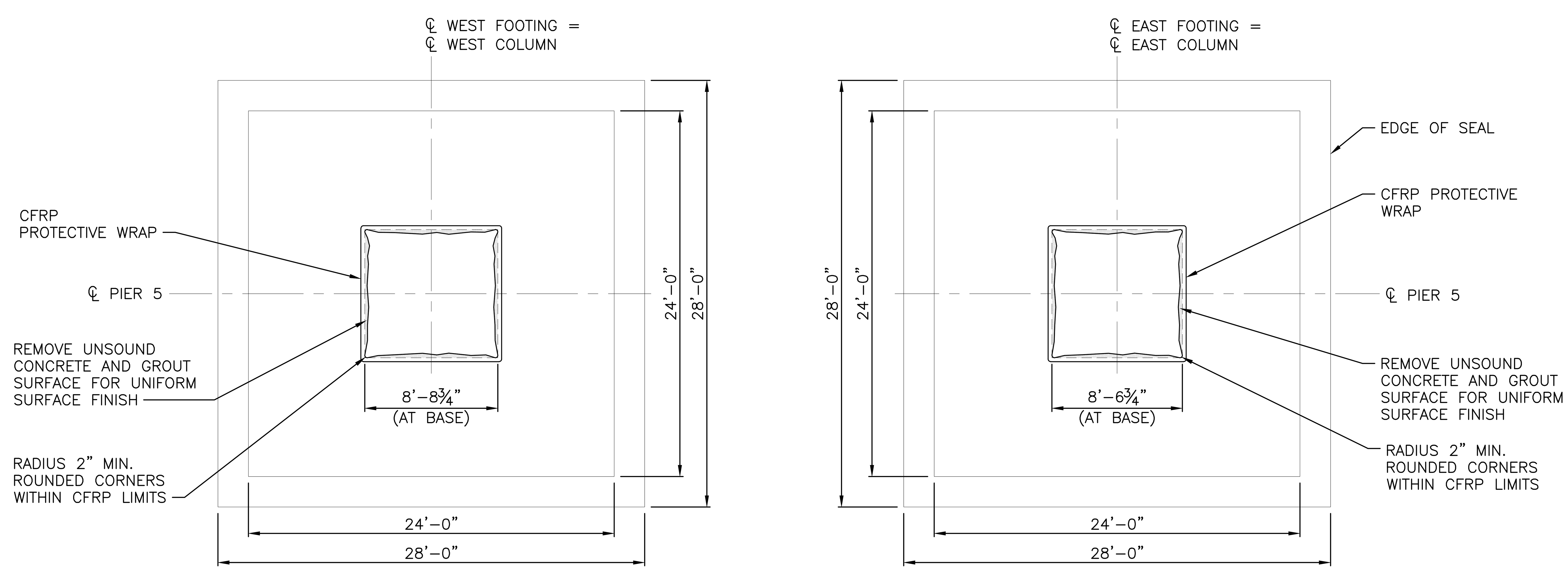
SHEET 5 OF 10



WEST FOOTING

EAST FOOTING

PIER 5 ELEVATION
SCALE: 3/16"=1'-0"



SECTION A–A
SCALE: 3/16"=1'-0"

SECTION B–B
SCALE: 3/16"=1'-0"

CONSTRUCTION NOTES

1. INSTALL COFFERDAM, DEWATER, AND REMOVE SEDIMENT TO TOP OF FOOTING.
2. REMOVE TIMBER FORMWORK AROUND THE FOOTING AS NEEDED.
3. CLEAN CONCRETE CRACKS AND REMOVE UNSOUND CONCRETE AS REQUIRED.
4. PATCH AND GROUT COLUMN SURFACE WITH HIGH STRENGTH GROUT TO OBTAIN UNIFORM SURFACE FINISH.
5. INSTALL AND CURE CFRP PROTECTIVE WRAP TO THE PIER COLUMN FOR LIMITS SHOWN.
6. APPLY FINAL SURFACE FINISH ON CFRP AS REQUIRED.
7. REMOVE COFFERDAM.

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PIER 5 REPAIR DETAILS

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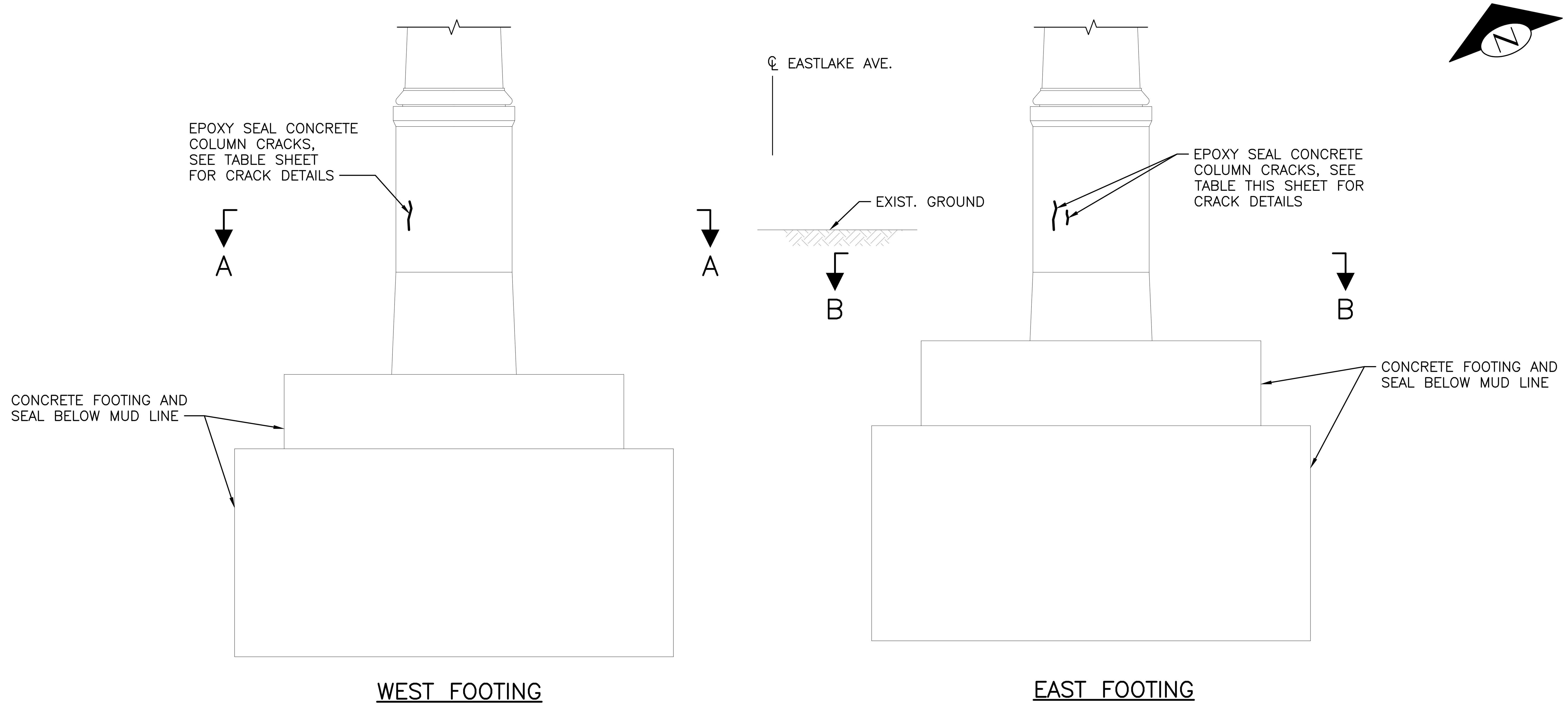
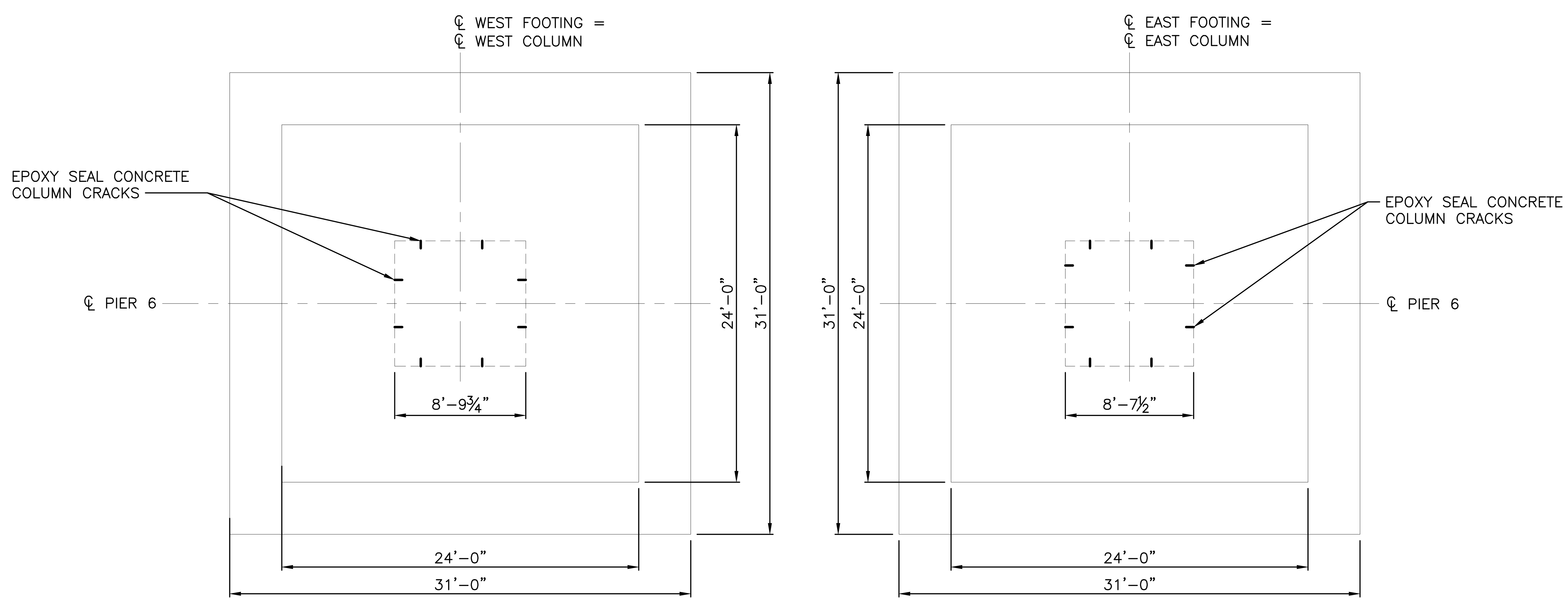


PIER 6 ELEVATION
SCALE: 3/16"=1'-0"



SECTION A–A
SCALE: 3/16"=1'-0"

SECTION B–B
SCALE: 3/16"=1'-0"

COLUMN CRACK DETAILS

COLUMN	FACE	NUMBER	APPROXIMATE AVERAGE CRACK LENGTH*
6A	NORTH	1	6'–0"
6A	EAST	NONE	NONE
6A	SOUTH	2	5'–0"
6A	WEST	2	5'–0"
6B	NORTH	1	4'–0"
6B	EAST	1	4'–0"
6B	SOUTH	NONE	NONE
6B	WEST	1	4'–0"

* APPROXIMATE AVERAGE CRACK LENGTHS BASED ON LATEST UNDERWATER INSPECTION REPORT PROVIDED BY SDOT.

NOTES

1. VERTICAL CRACKS ON FACES OF COLUMN RANGE FROM 1/16" TO 1/4".
2. NUMBER OF CRACKS AND APPROXIMATE CRACK LENGTHS ARE SHOWN IN 'COLUMN CRACK DETAILS'.
3. SCRAPE OR GRIND LENGTH OF CRACK TO BE SEALED, BRUSH LOOSE PARTICLES AND APPLY EPOXY SEALANT PER PROJECT SPECIFICATIONS.

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PIER 6 REPAIR DETAILS

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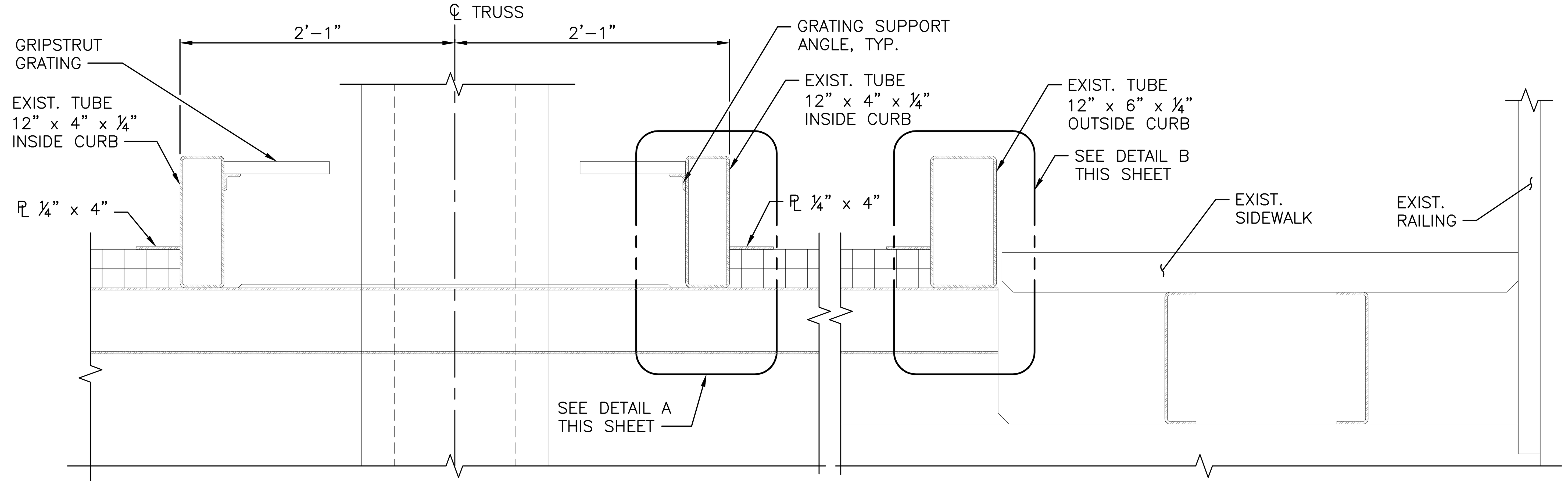
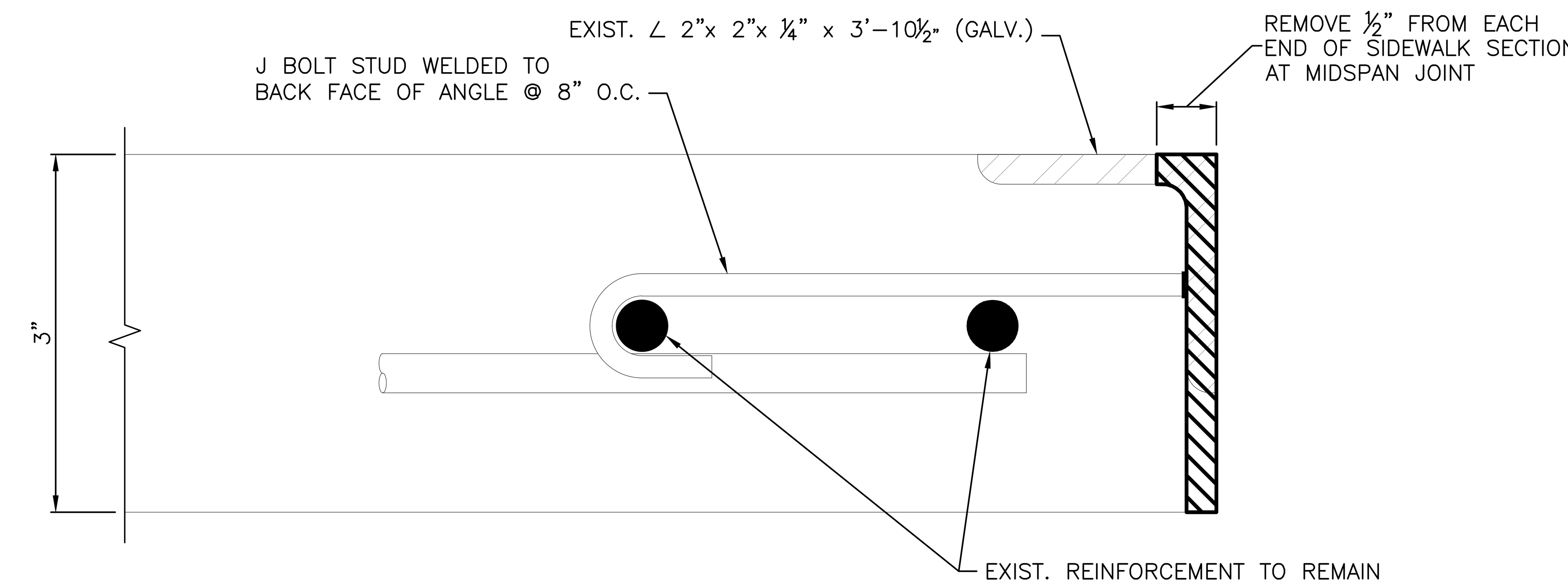


TYPICAL PARTIAL SECTION

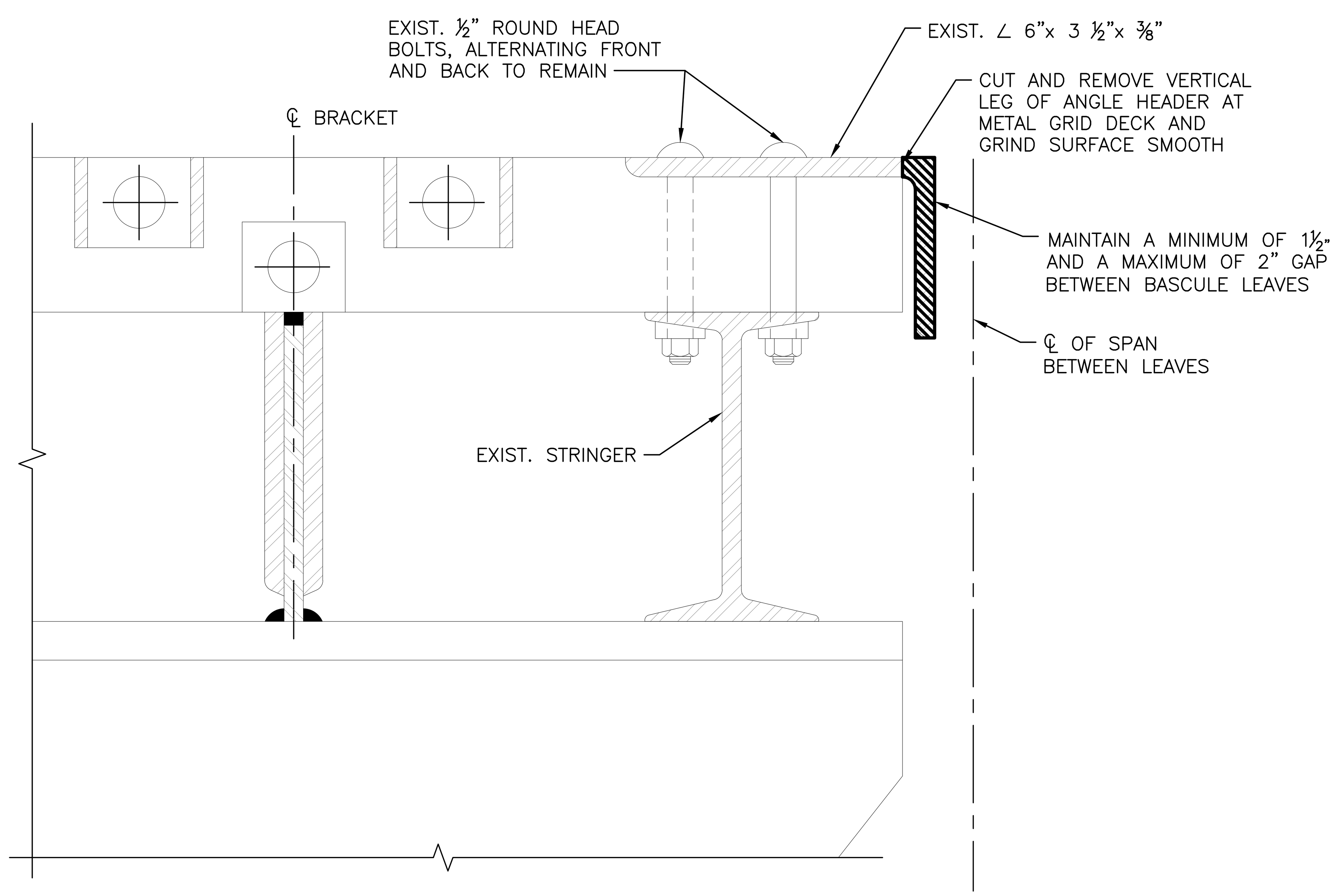
SCALE: 1 1/2" = 1'–0"

(SHOWN ADJACENT TO CENTER LOCK)



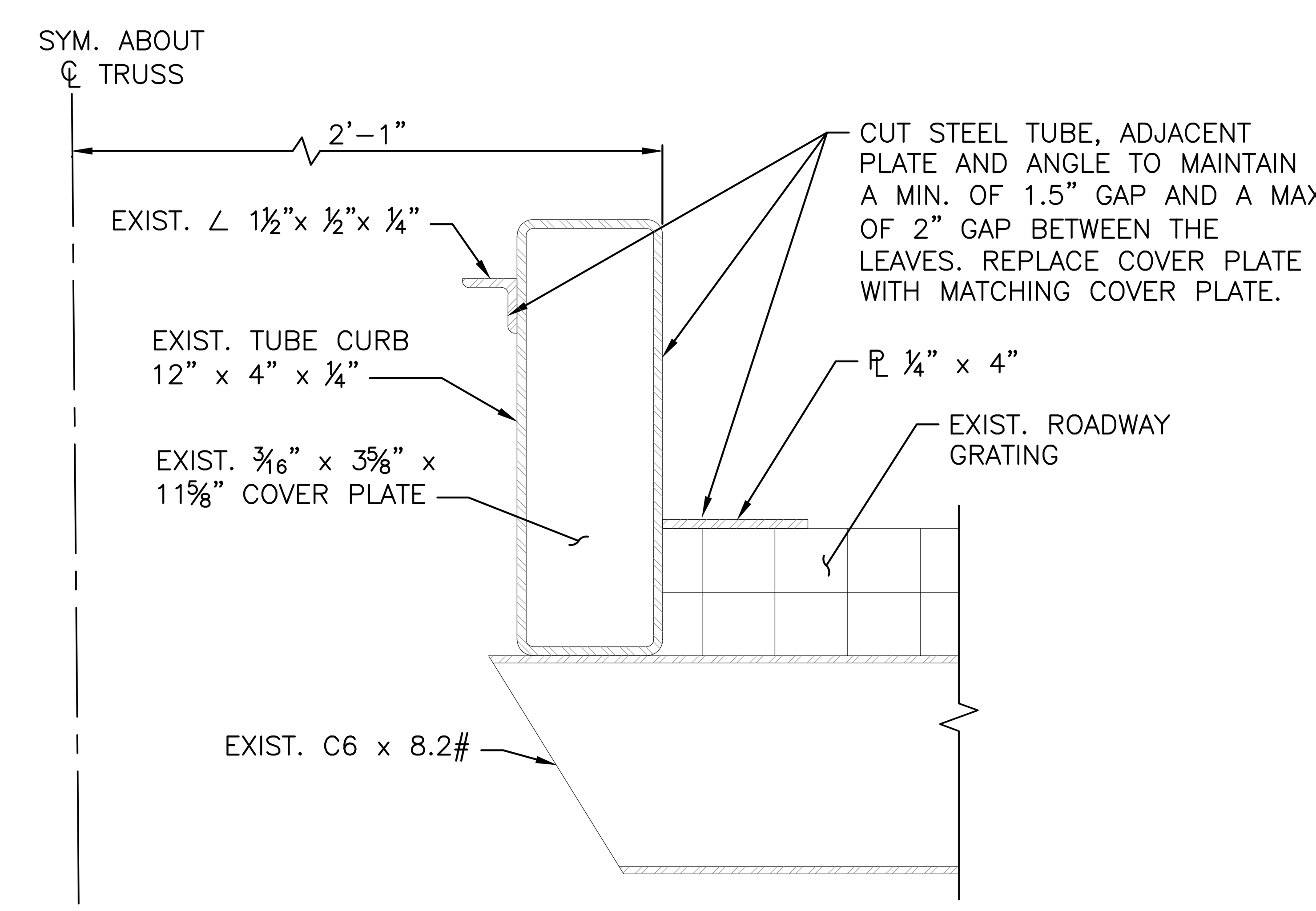
CROSS SECTION THROUGH SIDEWALK AT ℄ OF BASCULE SPAN

SCALE: 1' = 1'–0"



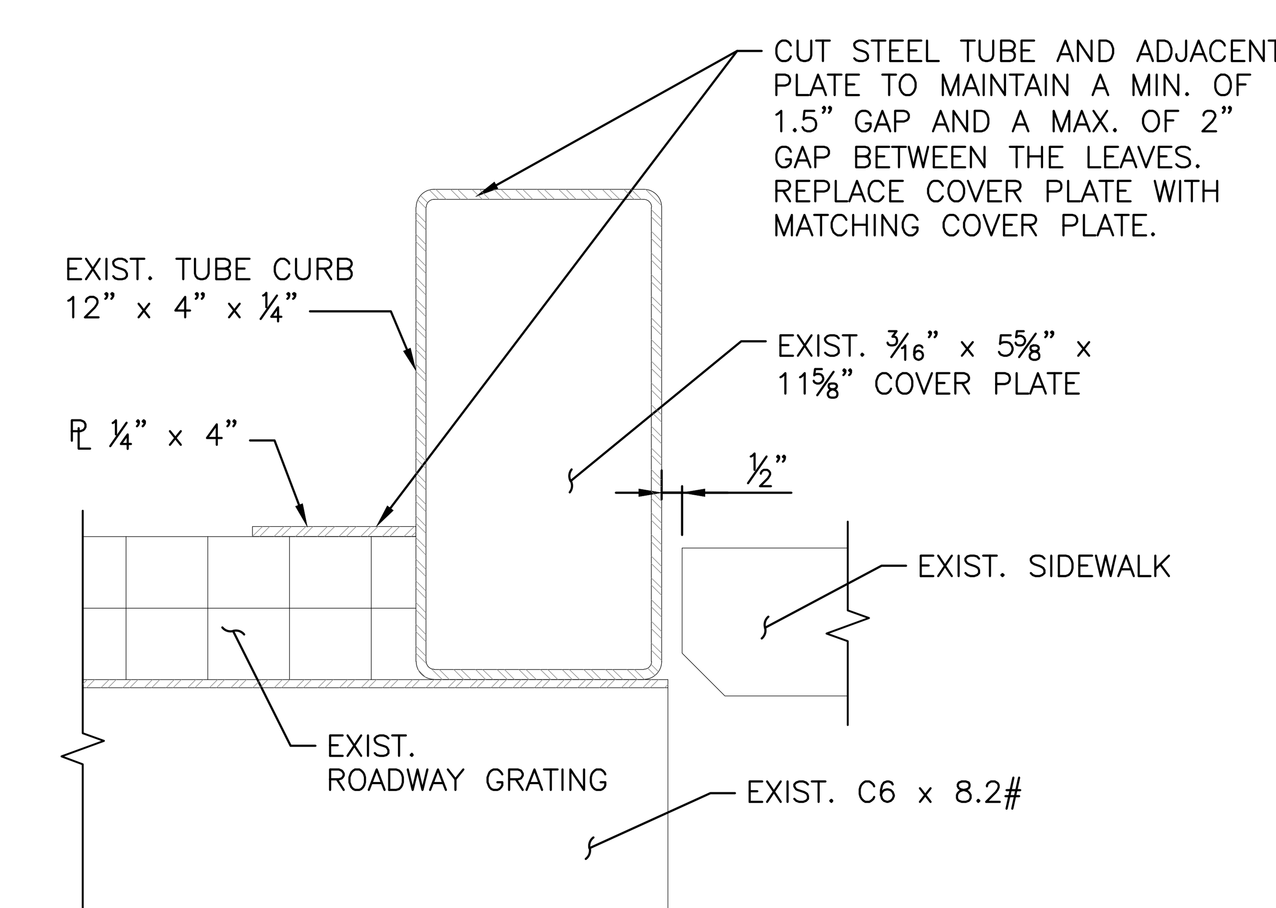
CROSS SECTION THROUGH BIKE PATH AT ℄ OF BASCULE SPAN

SCALE: 6" = 1'–0"



DETAIL A

SCALE: 3"=1'–0"



DETAIL B

SCALE: 3"=1'–0"

SDCI ########, SDOT ########

BASCULE TRUSS MISCELLANEOUS DETAILS – 1

VAULT SERIAL NO.	DATE	MARK	NATURE REVISIONS	MADE	CHK'D	REV'D

HDR

929 108th Avenue NE, Suite 1300
Bellevue, WA 98004-4361

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED ST CHECKED MAL	REVIEWED: DES. CONST. SDOT PROJ. MGR.
DRAWN MV CHECKED ST	RECEIVED
	REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation

ORDINANCE NO. PW NO.

SCALE: AS NOTED

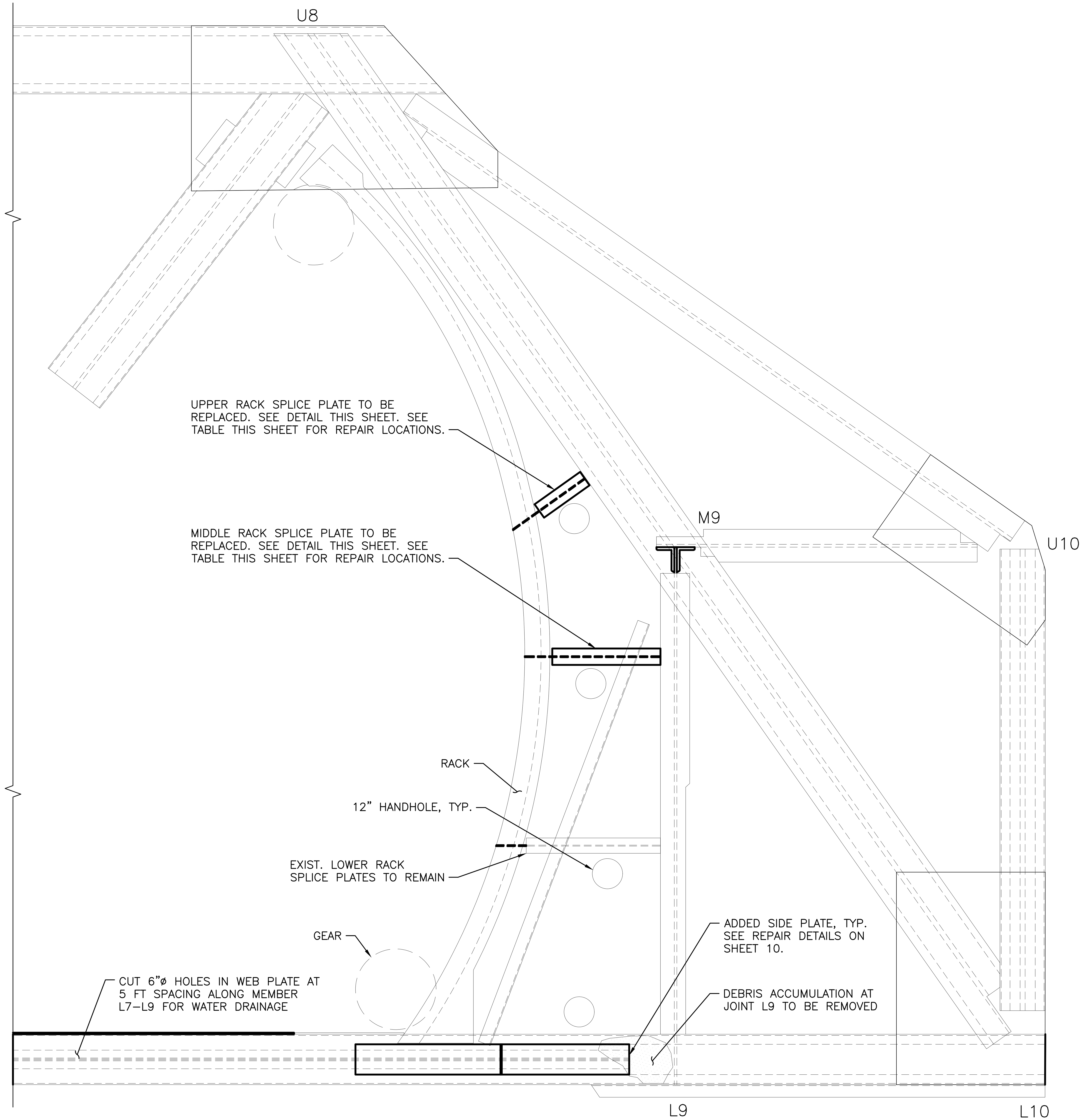
REHABILITATION OF UNIVERSITY BRIDGE STRUCTURE

JOB PC CO

VPI #

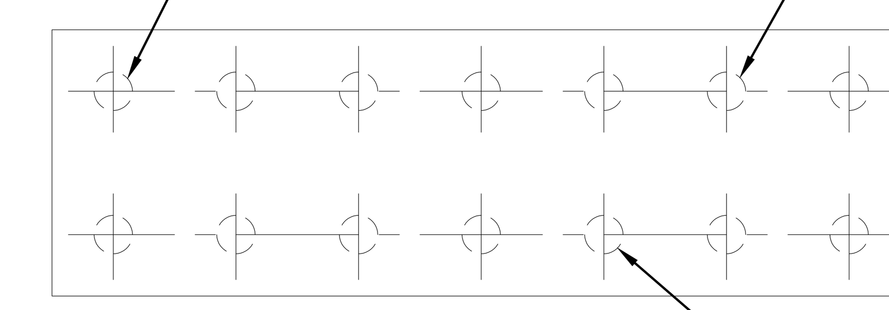
S-207

SHEET 8 OF 10



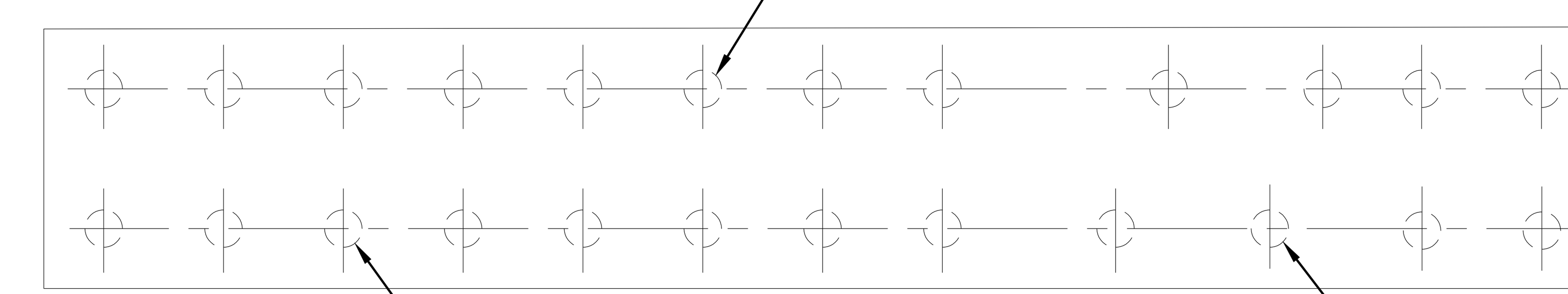
TRUSS DETAILS

SCALE: 1/2" = 1'–0"



UPPER PLATE

REPLACE ALL EXIST. RIVETS/BOLTS WITH NEW ASTM A325 H.S. BOLTS AND COMPATIBLE WASHERS AND NUTS



MIDDLE PLATE

RACK SPLICE PLATE REPAIR DETAIL

SCALE: 3" = 1'–0"

RACK PLATE	PLATE	INSIDE	OUTSIDE
NW	UPPER	REPLACE	REPLACE
	MIDDLE	REPLACE	REPLACE
NE	UPPER	DO NOT REPLACE	REPLACE
	MIDDLE	REPLACE	REPLACE
SE	UPPER	REPLACE	DO NOT REPLACE
	MIDDLE	REPLACE	REPLACE
SW	UPPER	REPLACE	REPLACE
	MIDDLE	REPLACE	REPLACE

RACK SPLICE REPLACEMENT LOCATIONS

SDCI ########, SDOT ########

VAULT SERIAL NO. | DATE | MARK | NATURE REVISIONS | MADE | CHK'D | REV'D

C:\pwworking\west01\d3264700\9 S–208.dwg
Aug–17–23 5:14pm

BASCULE TRUSS MISCELLANEOUS REPAIR – 2

HDR
929 108th Avenue NE, Suite 1300
Bellevue, WA 98004–4361

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE
DESIGNED ST
CHECKED MAL
DRAWN MV
CHECKED ST

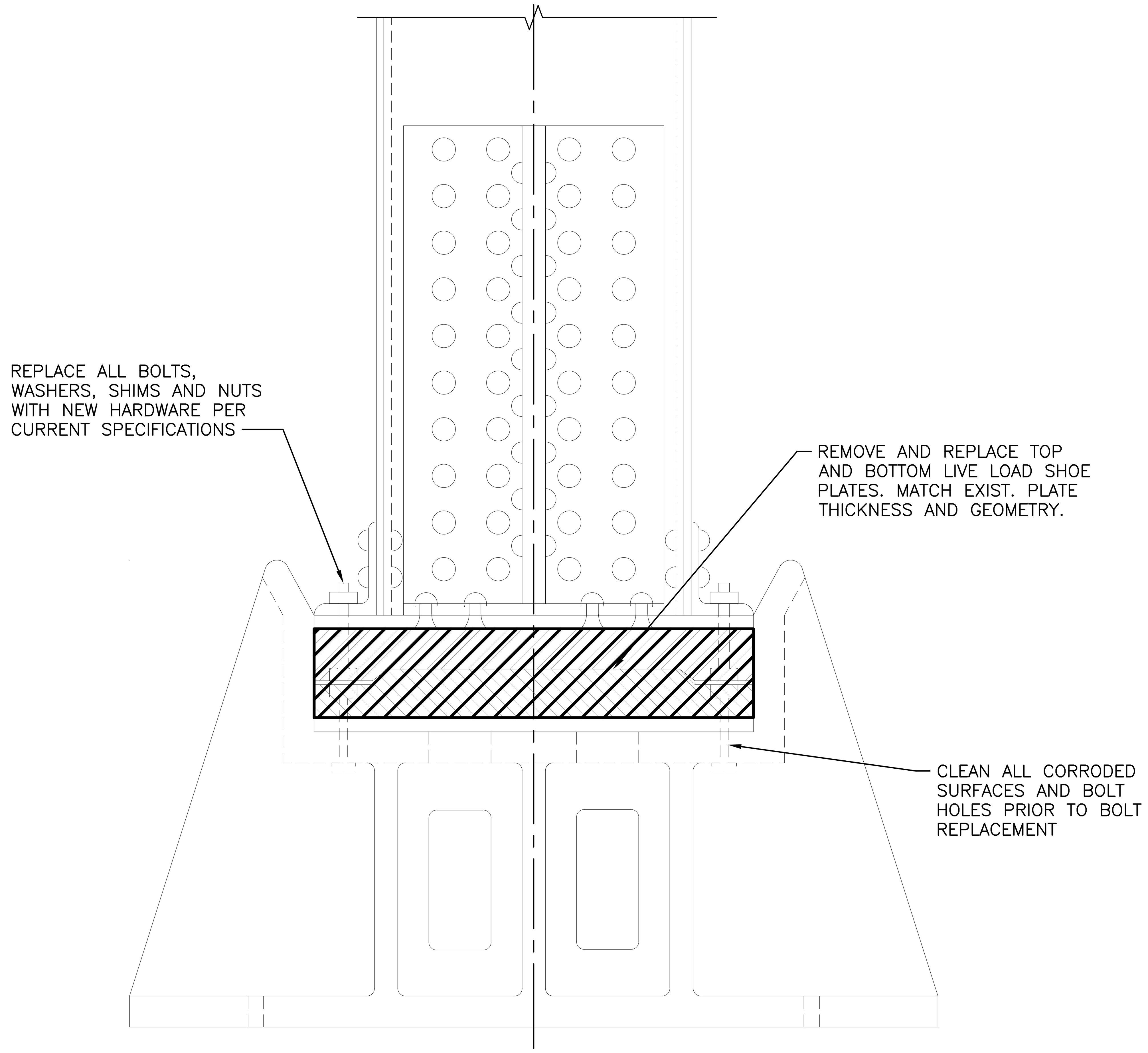
INITIALS AND DATE
REVIEWED:
DES. CONST.
SDOT PROJ. MGR.
RECEIVED
REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0–02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: AS NOTED

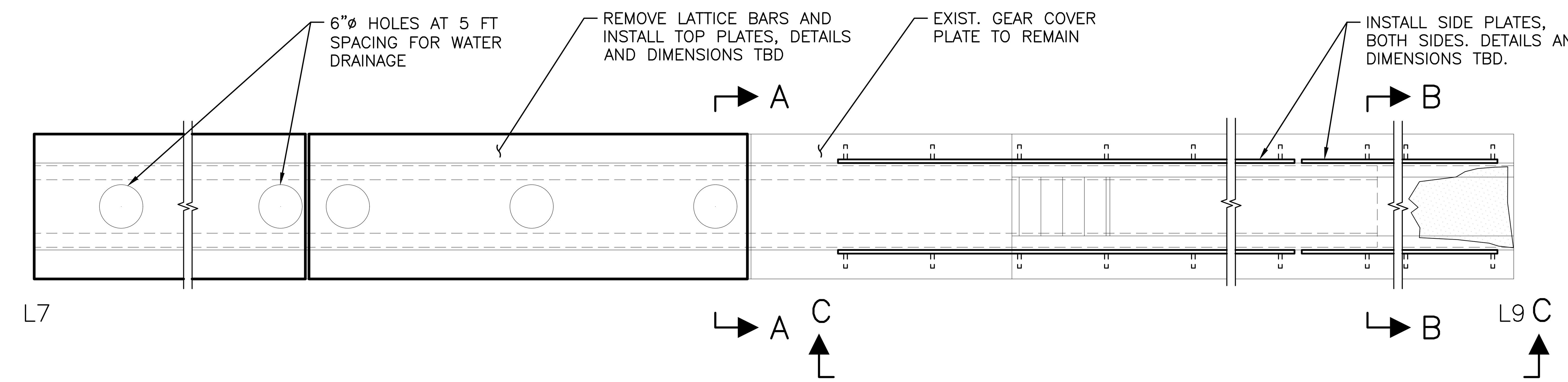
REHABILITATION OF UNIVERSITY BRIDGE STRUCTURE

JOB PC CO
VPI #
S-208



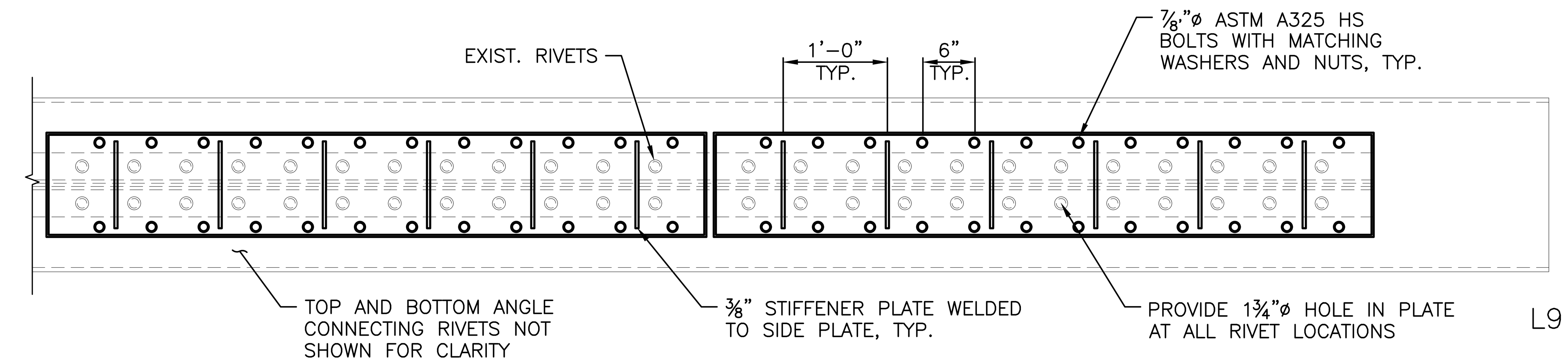
LIVE LOAD SHOE REPAIR DETAIL

SCALE: 2" = 1'-0"



L7–L9 MEMBER PLAN

SCALE: 1" = 1'-0"

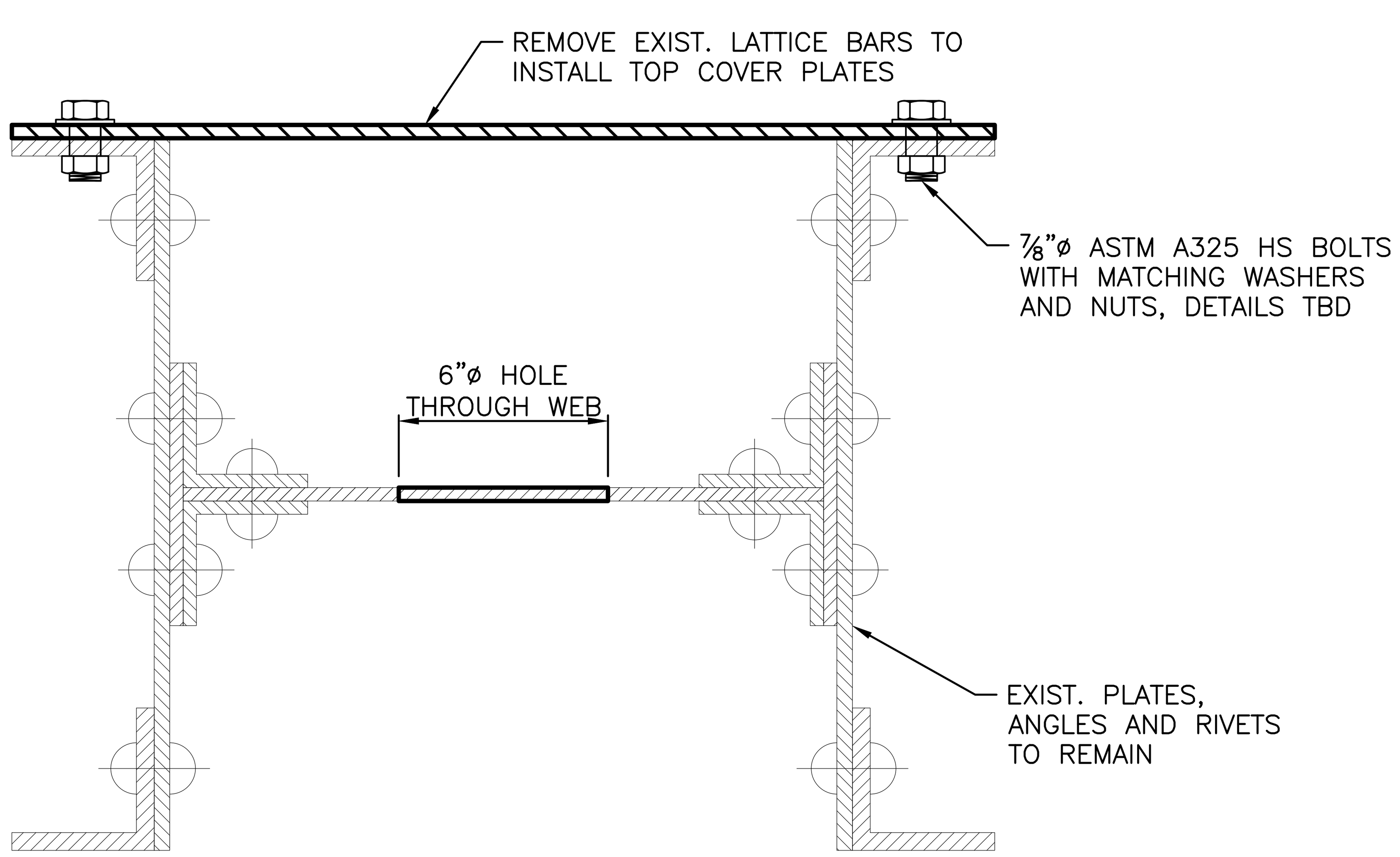


VIEW C–C

SCALE: 3"=1'-0"

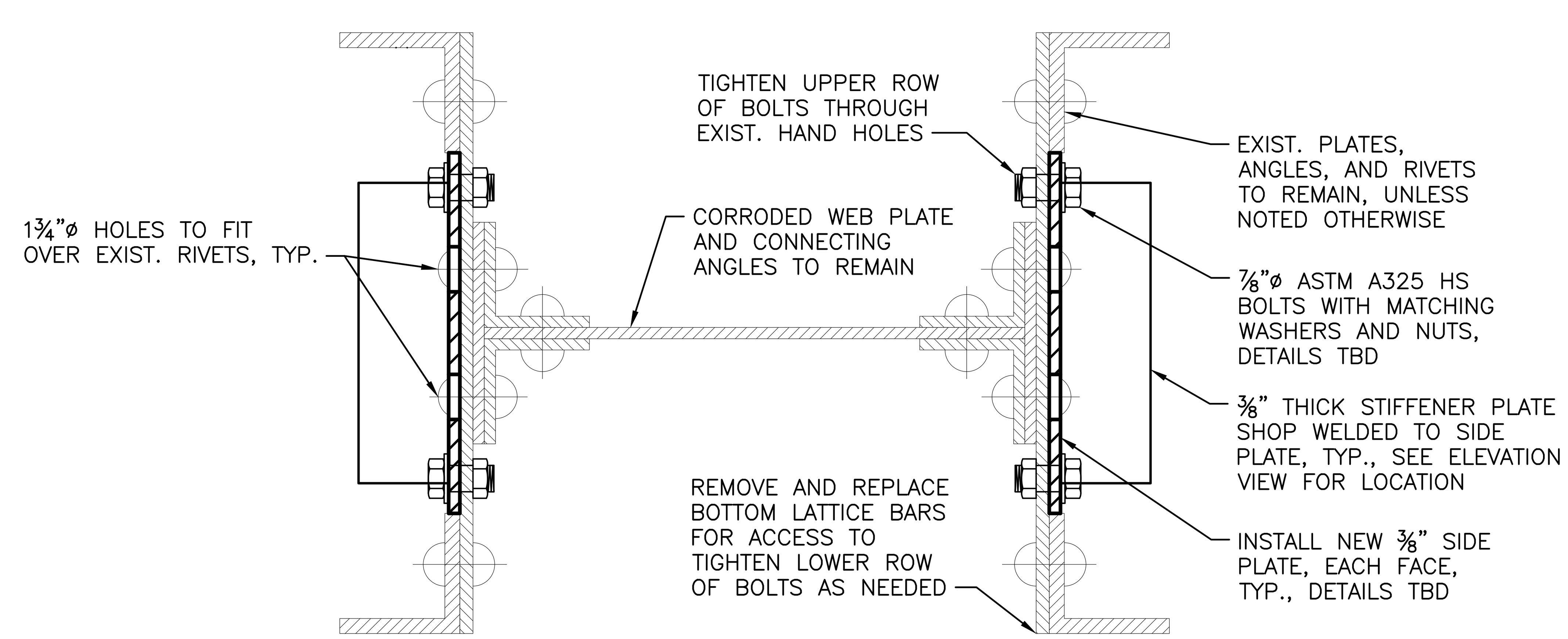
CONSTRUCTION NOTES

1. FIELD VERIFY ALL DIMENSIONS PRIOR TO PLATE FABRICATION.



SECTION A–A

SCALE: 3"=1'-0"



SECTION B–B

SCALE: 3"=1'-0"

BASCULE TRUSS MISCELLANEOUS DETAILS – 3

SDCI ########, SDOT ########

VAULT SERIAL NO.	DATE	MARK	NATURE REVISIONS	MADE	CHK'D	REV'D

C:\pwworking\west01\d3264700\10 S-209.dwg
Aug-17-23 5:14pm

HDR
929 108th Avenue NE, Suite 1300
Bellevue, WA 98004-4361

APPROVED FOR ADVERTISING
LIZ ALZEER
DEPARTMENT OF FINANCE & ADMINISTRATIVE SERVICES
SEATTLE, WASHINGTON . . . . 20 . . .
BY: . . . .
PURCHASING AND CONTRACTING DIRECTOR

INITIALS AND DATE	INITIALS AND DATE
DESIGNED ST CHECKED MAL	REVIEWED: DES. CONST. SDOT PROJ. MGR.
DRAWN MV CHECKED ST	RECEIVED REVISED AS BUILT

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SEATTLE STANDARD PLANS AND SPECIFICATIONS AND OTHER DOCUMENTS CALLED FOR IN SECTION 0-02.3 OF THE PROJECT MANUAL.

Seattle Department of Transportation
ORDINANCE NO. PW NO.
SCALE: AS NOTED

REHABILITATION OF UNIVERSITY BRIDGE STRUCTURE

JOB PC CO
VPI #
S-209

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Attachment B

Construction Cost and Schedule Exhibits

Ott - Sakai & Associates, LLC

B-1

Bid	Description - Task 7 University Bridge Steel Rehab- 08.13.2023	Bid Quan	Unit	Unit Cost	Total
1-000	MOBILIZATION	1.000	LS	$725,000.00	$725,000
2-000	SCHEDULE UPDATE, MIN. BID ($1500/EA)	12.000	EA	$2,500.00	$30,000
3-000	Misc Civil Items	1.000	LS	$850,000.00	$850,000
10-000	MAINT AND PROTECTION OF TRAFFIC CONTROL INCL FLAGG	1.000	LS	$450,000.00	$450,000
500-000	~~Substructure Retrofit	1.000	LS	$3,550,000.00	$3,550,000
600-000	~~Superstructure Containment	1.000	LS	$365,000.00	$365,000
700-000	~~Superstructure Retrofit	1.000	LS	$750,000.00	$750,000
800-000	Bridge Deck - Grind and Overlay	5,517.000	SY	$80.00	$441,360
900-000	Railing and Baluster Repair	22.000	EA	$5,000.00	$110,000

				Subtotal:	**$ 7,271,360**
	Design Contingency - 30%	30.00%	%		$ 2,181,408

Before Tax **Total:**	**$ 9,452,768**

Tax	10.25%	%	$ 968,908.72
City of Seattle - Task 7 Steel Rehab (Total)			**Total: $ 10,421,677**

ESTIMATE RECAP - BID QUANTITIES

	DIRECT	INDIRECT	TOTAL	% OF TOTAL
Labor	454,891.37	666,851.88	1,121,743.25	18.622%
Burden	261,923.74	78,542.73	340,466.47	5.652%
Lab+Bur	716,815.11	745,394.61	1,462,209.72	24.274%
Perm Matl	151,825.05		151,825.05	2.520%
Const Exp	780,414.51	276,000.00	1,056,414.51	17.538%
Equipment	232,361.26	65,134.72	297,495.98	4.939%
Subs	2,426,292.70		2,426,292.70	40.279%
Other	157,714.00	471,695.00	629,409.00	10.449%
Total Costs:	4,465,422.63	1,558,224.33	6,023,646.96	99.999%
% of Total	74.132%	25.868%	100.000%	

Escalation on:	Labor	Burden	Perm Matl	Const Matl	Co Eqp	Rented Eqp
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

	Eq Op Exp	Sub	Misc1	Misc2	Misc3	Total Escalation
	0	0	0	0	0	0
	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

* Data Below here is dependent on the Summary Process. *
The Summary Process was last run 08/13/2023 at 11:50 AM

Markup on Resource Costs	1,211,529.39	20.1129%
MARKUP TOTALS ===>	1,211,529.39	20.1129%
	=============	(% of costs)
COST + MARKUP ------------------->	$7,235,176.35	
	(On Takeoff Quantity)	

There * ARE NOT * closing accounts for this bid.

		-Effect on Bid-
Rounding difference:	5.12	Adjusted
Unbalancing difference:	2,178.53	Adjusted
From Cut&Add Sheet-costs:		(on Bid Quantity)
From Cut&Add Sheet-markup:		(on Bid Quantity)
Pass Through Adjustments:		None
Net Adjustments (to the balanced bid):	$2,183.65	[or desired bid]
BALANCED BID TOTAL	$7,269,176.35	
DESIRED BID (if specified)		
BID TOTAL (on bid quantities)	$7,271,360.00	
BID COSTS (on bid quantities)	$6,057,646.96	
MARKUP (on bid quantities)	$1,213,713.04	20.036%
EXPECTED JOB VALUE (on takeoff quantities):	$7,271,360.00	

B-3

EXPECTED COSTS (on takeoff quantities): $6,057,646.96
EXPECTED MARKUP (on takeoff quantities): $1,213,713.04 20.036%

Adjust to Bid Quantities = Y

On Takeoff Quantities

Labor Hrs. (MH/MHS)	7,813	600	8,413
(incl burden)	704,552	55,424	759,977
Labor (DAY/DAYS)	0	0	0
(incl burden)	0	0	0
Labor (OtherUnits) (incl burden)	12,262	689,970	702,232
Labor Burden	261,923	78,542	340,466

Spread Indirects on: Total Cost
Spread Addons&Bond on: Total Cost
Spread Markup on: Total Cost

Markup on:	Labor	Burden	PermMatl	CM	CoEqp	RentedEqp
	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
	EOE	Sub	Misc1	Misc2	Misc3	
	20.00%	20.00%	0.00%	0.00%	0.00%	

Key Indicators

Balanced Markup	/	Total Labor	=	Balanced Markup/Total Labor
1,211,529.39	/	1,462,209.72	=	82.86%
Indirect Cost	/	Direct Cost	=	Indirect Cost/Direct Cost
1,592,224.33	/	4,465,422.63	=	35.66%
Direct Manhours	+	Indirect Manhours	=	Total Manhours
7,813.73	+	600.00	=	8,413.73
Direct Manhours	/	Job Duration	=	Hours/MO
7,814	/	12	=	651

------ ESTIMATE NOTES: ------
Bid Date: 04/01/2024
Owner:
Engr Firm:
Estimator-In-Charge:
Desired Bid (if specified) = 0.00
Notes:
Last Summary on 08/13/2023 at 11:50 AM.

Last Spread on 08/13/2023 at 11:50 AM.

Cost Report

BID ITEM = 10000
Description = MOBILIZATION Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Prime Mobilization**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
5TRTHRFLTBD	TRUCK SEMI FLATBED	1.00	40.00	HR	190.000			7,600			7,600
B	**Monthly Mobilization**		**Quan: 2.00 MO**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
Assume: 20 Hours Per Month											
5TRTHRFLTBD	TRUCK SEMI FLATBED	1.00	40.00	HR	190.000			7,600			7,600
C	**Demobilization**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
5TRTHRFLTBD	TRUCK SEMI FLATBED	1.00	40.00	HR	190.000			7,600			7,600
D	**Staging Area Surfacing**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
25E2EM	Embankment Crew		10.00	CH	**Prod: 10.0000 CH**		Lab Pcs: 3.00		Eqp Pcs: 3.00		
2AGGBST1	5/8"CR ROCK TOP COUR	1.00	20.00	TON	24.000		480				480
8CO563	COMPACT CAT CP563	1.00	10.00	HR	43.020				430		430
8DO5	D5 DOZER (25k)	1.00	10.00	HR	34.582				346		346
8TRPU450	FLATRACK, BAREBED	1.00	10.00	HR	29.277				293		293
ODL	OP ENG DOZER D9 & <	1.00	10.00	MH	57.470	1,029					1,029
OFRMAN	OPERATOR FOREMAN	1.00	10.00	MH	71.510	1,218					1,218
OPAKH	OP ENG COMPACTOR H	1.00	10.00	MH	57.470	1,029					1,029
$4,823.61	30.0000 MH/LS		30.00	MH	[2050.95]	3,275	480		1,069		4,824
=====> **Item Totals:**	**10000 - MOBILIZATION**										
$27,623.61	30.0000 MH/LS		30.00	MH	[2050.95]	3,275	480	22,800	1,069		**27,624**
27,623.610	1 LS					3,274.82	480.00	22,800.00	1,068.79		27,623.61

BID ITEM = 20000
Description = CRITICAL PATH SCH & UPDATE Unit = EA Takeoff Quan: 12.000 Engr Quan: 12.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
S	**~~CRITICAL PATH SCH UPDAT**		**Quan: 12.00 EA**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
											**Unreviewed
1OEALL	OUTSIDE Engineering	1.00	96.00	HR	200.000			19,200			19,200
=====> **Item Totals:**	**20000 - CRITICAL PATH SCH & UPDATE**										
$19,200.00					[ ]			19,200			**19,200**
1,600.000	12 EA							1,600.00			1,600.00

BID ITEM = 30000
Description = Misc. Civil Items Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000	**Misc. Civil Items**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
20% of direct costs.											
4	SUBCONTRACTORS	1.00	1.00	LS	570,000.000					570,000	570,000

B-6

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 100000
Description = MAINT OF TRAFFIC INCL FLAGGING   Unit = LS   Takeoff Quan: 1.000   Engr Quan: 1.000

```
5 months of traffic control
```

13001080 Traffic Control Labor   Quan: 1,040.00 HR   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC6979	TRAFFIC CTL LABOR	3.00	3,120.00	HR	80.000					249,600	249,600

13001081 Traffic Control Equip   Quan: 5.00 MO   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC6968	TRAFFIC CTL VEHICAL	1.00	100.00	DAY	100.000					10,000	10,000
4TC6971	PROJECT TEMP TRAFFI	1.00	1.00	LS	25,000.000					25,000	25,000
4TC7447	TRUCK-MTD IMP ATTE	1.00	1.00	EA	13,000.000					13,000	13,000
4TC7449	OP TRK MTD IMP ATTE	1.00	200.00	HR	30.000					6,000	6,000
$54,000.00					[ ]					54,000	54,000

13001083 PCMS Boards   Quan: 866.00 HR   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4TC6995	OP P/CH MESSAGE SIGN	2.00	1,732.00	HR	10.000					17,320	17,320

=====> Item Totals: 100000 - MAINT OF TRAFFIC INCL FLAGGING

$320,920.00					[ ]					320,920	**320,920**
320,920.000			1	LS						320,920.00	320,920.00

PARENT ITEM = 500000
Description = ~~SUBSTRUCTURE RETROFIT   Unit = LS   Takeoff Quan: 1.000   Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 500000:

PARENT ITEM = 506000
Description = ~~Substructure Containment   Unit = CY   Takeoff Quan: 361.000   Engr Quan: 361.000

Listing of Sub-Biditems of Parent Item 506000:

BID ITEM = 506010
Description = Install/Remove Cofferdam   Unit = SF   Takeoff Quan: 16,672.000   Engr Quan: 0.000

501530 Cofferdam   Quan: 16,672.00 SF   Hrs/Shft: 10.00   Cal: 510   WC: WA0201

**Unreviewed

```
Short duration
```

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4	SUBCONTRACTORS	1.00	16,672.00	SF	60.000					1,000,320	1,000,320

90001020 Boom truck   Quan: 176.00 HR   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8CRRT22	==> RT HYD CRANE 22	1.00	176.00	HR	47.305				8,326		8,326
OC	==> OP ENG CRANE 45-9	1.00	176.00	MH	58.800	17,239					17,239
$25,564.34	1.0000 MH/HR		176.00	MH	[58.8]	17,239			8,326		25,564

90001030 Forklift   Quan: 1.00 MO   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9KM	==> FORKLIFT 9K - MO	1.00	1.00	MO	2,576.000				2,576		2,576

90001050 Air compressor   Quan: 176.00 HR   Hrs/Shft: 8.00   Cal: 508   WC: WA0201

**Unreviewed

Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8AC185	==> COMPRESSOR POR	1.00	176.00	HR	17.692				3,114		3,114

Cost Report

BID ITEM = 506010
Description = Install/Remove Cofferdam Unit = SF Takeoff Quan: 16,672.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
90001060	**Generator**				**Quan: 176.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
8GEN6	==> ENG DRIVEN GEN 6.	1.00	176.00	HR	9.682				1,704		1,704
90001070	**Welders**				**Quan: 176.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
8WELD400D	==> WELDER 400 AMP	1.00	176.00	HR	9.420				1,658		1,658
90001080	**Light towers**				**Quan: 176.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		**Unreviewed
8GEL2	==> Light Tower-4kW to 2	2.00	352.00	HR	14.500				5,104		5,104
A	**Barge Platform**				**Quan: 1.00 EA**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
3FLATBARGE	60 x 120 Flat Barge	1.00	5.00	MO	15,000.000			75,000			75,000
3FLEXIFLOAT	Flexi Floats	1.00	60.00	MO	2,500.000			150,000			150,000
3MRANCHOR	10,000 lb Anchor	1.00	4.00	EA	6,000.000			24,000			24,000
3MRTUGBO	Tug Boat	1.00	200.00	HR	700.000			140,000			140,000
$389,000.00					[ ]			389,000			389,000
=====> **Item Totals:**	**506010 - Install/Remove Cofferdam**										
$1,429,040.06	0.0105 MH/SF		176.00	MH	[0.621]	17,239		389,000	22,481	1,000,320	**1,429,040**
85.715		16672 SF				1.03		23.33	1.35	60.00	85.71

BID ITEM = 506020
Description = Excavation Unit = CY Takeoff Quan: 361.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
20000503	**Test Haz Matl**				**Quan: 1.00 LS**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
1OEALL	OUTSIDE Engineering	1.00	40.00	HR	200.000			8,000			8,000
25005080	**Structure Exc Class A**				**Quan: 361.00 CY**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
4EW4006	STR EXC CL A W/HAUL	1.00	361.00	CY	50.000					18,050	18,050
30001080	**Vactor Truck Service**				**Quan: 40.00 HR**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
5TRTHRVTRK	VACUUM TRUCK RENT	2.00	80.00	HR	275.000			22,000			22,000
30006025	**Disposal Fees**				**Quan: 361.00 CY**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
5TRECYTTUNS	EXPORT T&T - UNSUITA	1.00	361.00	TKYD	50.000			18,050			18,050
90001060	**Generator**				**Quan: 1.00 UM**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
8GEN6	==> ENG DRIVEN GEN 6.	2.00	352.00	HR	9.682				3,408		3,408
A	**Barge Platform**				**Quan: 0.03 EA**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		**Unreviewed
3FLATBARGE	60 x 120 Flat Barge	1.00	0.15	MO	15,000.000			2,250			2,250
3FLEXIFLOAT	Flexi Floats	1.00	1.80	MO	2,500.000			4,500			4,500
3MRANCHOR	10,000 lb Anchor	1.00	0.12	EA	6,000.000			720			720
3MRTUGBO	Tug Boat	1.00	10.80	HR	700.000			7,560			7,560
$15,030.00					[ ]			15,030			15,030
=====> **Item Totals:**	**506020 - Excavation**										

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 506020
Description = Excavation — Unit = CY — Takeoff Quan: 361.000 — Engr Quan: 0.000

$84,538.03					[ ]			63,080	3,408	18,050	**84,538**
234.177	361 CY							174.74	9.44	50.00	234.18

BID ITEM = 506030
Description = Water Process during Pour — Unit = MGAL — Takeoff Quan: 733.000 — Engr Quan: 0.000

16008001 Buy/Rent Baker Tanks — Quan: 4.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

3WTBTMOB	DEL / RET BAKER TANK	1.00	8.00	HR	250.000			2,000			2,000
3WTBTRENT	BAKER TANK RENTAL	1.00	4.00	MO	3,000.000			12,000			12,000
$14,000.00					[ ]			14,000			14,000

16008010 Buy/Rent Chitosan — Quan: 1.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

3WT	WATER TANKS	1.00	1.00	EA	50,000.000			50,000			50,000

16008030 I/R Baker Tanks — Quan: 4.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0214 — **Unreviewed

LAB3 — Laborer 3 — 16.00 CH — **Prod: 4.0000 HU** — Lab Pcs: 3.00 — Eqp Pcs: 2.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	16.00	HR	17.692				283		283
8TRPU450	FLATRACK, BAREBED	1.00	16.00	HR	29.277				468		468
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	32.00	MH	45.610	2,261					2,261
LGFM	Laborer-General Foreman	1.00	16.00	MH	55.170	1,319					1,319
$4,330.56	12.0000 MH/EA		48.00	MH	[585.56]	3,579			751		4,331

16008080 Water Testing — Quan: 4.00 EA — Hrs/Shft: 8.00 — Cal: 508 — WC: WA0201 — **Unreviewed

4ENVIROTE	WATER TESTING	1.00	4.00	EA	120.000					480	480

50001033 Oper Slurry Disposal Pumps — Quan: 48.00 HR — Hrs/Shft: 12.00 — Cal: WE — WC: WA0201 — **Unreviewed

LAB3 — Laborer 3 — 48.00 CH — **Prod: 1.0000 UH** — Lab Pcs: 3.00 — Eqp Pcs: 2.00

8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	48.00	HR	17.692				849		849
8TRPU450	FLATRACK, BAREBED	1.00	48.00	HR	29.277				1,405		1,405
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	96.00	MH	45.610	10,528					10,528
LGFM	Laborer-General Foreman	1.00	48.00	MH	55.170	6,222					6,222
$19,004.26	3.0000 MH/HR		144.00	MH	[256.183]	16,750			2,254		19,004

A Barge Platform — Quan: 1.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201 — **Unreviewed

3FLATBARGE	60 x 120 Flat Barge	1.00	2.00	MO	15,000.000			30,000			30,000
3FLEXIFLOAT	Flexi Floats	1.00	24.00	MO	2,500.000			60,000			60,000
3MRANCHOR	10,000 lb Anchor	1.00	4.00	EA	6,000.000			24,000			24,000
3MRTUGBO	Tug Boat	1.00	40.00	HR	700.000			28,000			28,000
$142,000.00					[ ]			142,000			142,000

=====> **Item Totals: 506030 - Water Process during Pour**

$229,814.82	0.2619 MH/MGAL		192.00	MH	[19.971]	20,329		206,000	3,006	480	**229,815**
313.526	733 MGAL					27.73		281.04	4.10	0.65	313.53

Cost Report

BID ITEM = 506040
Description = Fish Removal Sub | Unit = LS | Takeoff Quan: 1.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
506040	**Fish Removal Sub**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				
4	SUBCONTRACTORS	1.00	1.00	LS	50,000.000					50,000	50,000

Total of Above Sub-Biditems

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
=====> Item Totals:	**506000 - ~~Substructure Containment**										
$1,793,392.91	**1.0193 MH/CY**		**368.00**	**MH**	**[69.218]**	**37,568**		**658,080**	**28,895**	**1,068,850**	**1,793,393**
4,967.847			**361**	**CY**		**104.07**		**1,822.94**	**80.04**	**2,960.80**	**4,967.85**

BID ITEM = 507000
Description = ~~Footing Enlargement | Unit = CY | Takeoff Quan: 361.000 | Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50000135	**RENT & OPER RT CRANES**		**Quan: 2.00 MO**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
8A	==> ~~~~~EQUIPMENT~	1.00	2.00	HR	0.000						
8CRRT65	==> RT HYD CRANE 65	1.00	352.00	HR	171.695				60,437		60,437
A	==> ~~~~~LABOR~~~	1.00	2.00	MH	0.000						
OC	==> OP ENG CRANE 45-9	1.00	352.00	MH	58.800	34,477					34,477
$94,913.95	177.0000 MH/MO		354.00	MH	[10348.8]	34,477			60,437		94,914
50000170	**CONC PUMP TRUCK**		**Quan: 361.00 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
5COPULA	LARAGE QTY CON PUM	1.00	361.00	CY	25.000			9,025			9,025
50002001	**Buy Concrete**		**Quan: 361.00 CY**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2CONADEC	CONCRETE-ENVIRO CH	1.05	379.05	CY	6.000		2,274				2,274
2CONADFUEL	FUEL SURCHARGE	1.05	379.05	CY	2.000		758				758
2CONADHW	CONCRETE-HOT WATE	1.05	379.05	CY	8.000		3,032				3,032
2CONC4	CONCRETE CL 4000	1.05	379.05	CY	145.000		54,962				54,962
$61,027.05					[ ]		61,027				61,027
50002003	**Buy Dowels & Epoxy**		**Quan: 1.00 LS**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2EPHIT5032	EPOXY HILTI HTE 50 31.	1.00	66.00	EA	90.000		5,940				5,940
2REB-EP	REINF STEEL-EPOXY-C	1.00	2,928.00	LB	2.000		5,856				5,856
$11,796.00					[ ]		11,796				11,796
50002011	**Buy Lumber/Plywood**		**Quan: 1,596.00 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
3LMBR	FORM LUMBER	1.10	5,442.36	BF	1.200			6,531			6,531
3PLY34MDO	3/4" MDO PLYWOOD	1.10	1,755.60	SF	2.000			3,511			3,511
$10,042.03					[ ]			10,042			10,042
50002032	**Fab Footing Form**		**Quan: 1,596.00 SF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
CARP4	Carpenter 4 - Med & PREFAB		33.25	CH	**Prod:**	**12.0000 UM**	Lab Pcs:	4.00	Eqp Pcs:	1.00	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	33.25	HR	29.277				973		973
A	~~~~~LABOR~~~		0.00	MH	0.000						

Cost Report

BID ITEM = 507000
Description = ~~Footing Enlargement Unit = CY Takeoff Quan: 361.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
CFM	CARPENTER F/M	1.00	33.25	MH	64.070	3,331					3,331
CJM	CARPENTER J/M	3.00	99.75	MH	53.700	8,719					8,719
$13,023.29	0.0833 MH/SF		133.00	MH	[4.691]	12,050			973		13,023

50002033 S/S Footing Form Quan: 2,740.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CARP6 Carpenter 6 - S/S 114.16 CH **Prod: 4.0000 UM** Lab Pcs: 6.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	114.17	HR	29.277				3,343		3,343
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	114.17	MH	64.070	11,437					11,437
CJM	CARPENTER J/M	5.00	570.83	MH	53.700	49,896					49,896
$64,675.24	0.2500 MH/SF		685.00	MH	[13.857]	61,333			3,343		64,675

50002034 Plc/Fin Footing Conc Quan: 361.00 CY Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

PLSOGK P/F SLAB ON GRADE 20.00 CH **Prod: 4.5125 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	20.00	HR	29.277				586		586
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMJM	CEMENT MASON J/M	1.00	20.00	MH	52.600	1,721					1,721
LATO	LABORER, AIR TOOL O	2.00	40.00	MH	45.610	2,826					2,826
LGFM	Laborer-General Foreman	1.00	20.00	MH	55.170	1,648					1,648
$6,780.49	0.2216 MH/CY		80.00	MH	[11.024]	6,195			586		6,780

50002035 D/B Dowel to Existing Quan: 1,464.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

LAB3 Laborer 3 244.00 CH **Prod: 2.0000 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	244.00	HR	17.692				4,317		4,317
8TRPU450	FLATRACK, BAREBED	1.00	244.00	HR	29.277				7,144		7,144
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	488.00	MH	45.610	37,012					37,012
LGFM	Laborer-General Foreman	1.00	244.00	MH	55.170	21,644					21,644
$70,116.32	0.5000 MH/EA		732.00	MH	[26.838]	58,656			11,460		70,116

50002036 Roughen Surface Quan: 3,898.17 SF Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

LAB3 Laborer 3 86.62 CH **Prod: 15.0000 UM** Lab Pcs: 3.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	86.63	HR	17.692				1,533		1,533
8TRPU450	FLATRACK, BAREBED	1.00	86.63	HR	29.277				2,536		2,536
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	173.25	MH	45.610	13,140					13,140
LGFM	Laborer-General Foreman	1.00	86.63	MH	55.170	7,684					7,684
$24,893.38	0.0666 MH/SF		259.88	MH	[3.578]	20,825			4,069		24,893

50002075 Cure Substructure Conc Quan: 2,740.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

CURE MISC CONC Cure 27.40 CH **Prod: 50.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 2.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8GENLI	ENG DRIVEN LITE TOW	1.00	27.40	HR	10.382				284		284
8TRPU450	FLATRACK, BAREBED	1.00	27.40	HR	29.277				802		802
A	~~~~~LABOR~~~		0.00	MH	0.000						
LCOM	LABORER, COMMON G#	1.00	27.40	MH	44.530	1,899					1,899
LGFM	Laborer-General Foreman	1.00	27.40	MH	55.170	2,258					2,258
$5,243.79	0.0200 MH/SF		54.80	MH	[0.997]	4,157			1,087		5,244

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 507000
Description = ~~Footing Enlargement Unit = CY Takeoff Quan: 361.000 Engr Quan: 0.000

50002076 Point/Patch Quan: 2,740.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
FINCAP	Finish Caps		13.70	CH	**Prod:**	**100.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:	3.50	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	6.85	HR	17.692				121		121
8GEL2	Light Tower-4kW to 20k	1.00	13.70	HR	14.500				199		199
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	13.70	HR	9.682				133		133
8TRPU450	FLATRACK, BAREBED	1.00	13.70	HR	29.277				401		401
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	13.70	MH	62.860	1,352					1,352
CMJM	CEMENT MASON J/M	1.00	13.70	MH	52.600	1,179					1,179
$3,384.47	0.0100 MH/SF		27.40	MH	[0.577]	2,531			854		3,384

50002077 Surface Finish Quan: 2,740.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
FINCAP	Finish Caps		27.40	CH	**Prod:**	**50.0000 UM**	Lab Pcs:	2.00	Eqp Pcs:	3.50	
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	0.50	13.70	HR	17.692				242		242
8GEL2	Light Tower-4kW to 20k	1.00	27.40	HR	14.500				397		397
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	27.40	HR	9.682				265		265
8TRPU450	FLATRACK, BAREBED	1.00	27.40	HR	29.277				802		802
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	27.40	MH	62.860	2,704					2,704
CMJM	CEMENT MASON J/M	1.00	27.40	MH	52.600	2,358					2,358
$6,768.95	0.0200 MH/SF		54.80	MH	[1.155]	5,062			1,707		6,769

50002098 Rebar Bridge Substructure Quan: 47,680.00 LB Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
3RE-H	REBAR HOISTING SUPP	1.00	47,680.00	LB	0.050			2,384			2,384
4REBSUB	SUBSTRUCTURE REBAR	1.00	47,680.00	LB	1.000					47,680	47,680
$50,064.00					[ ]			2,384		47,680	50,064

=====> Item Totals: 507000 - ~~Footing Enlargement

$431,753.96	6.5952 MH/CY		2,380.88	MH	[362.467]	205,285	72,823	21,451	84,515	47,680	**431,754**
1,195.994	361 CY					568.66	201.73	59.42	234.11	132.08	1,195.99

BID ITEM = 509000
Description = ~~Column Repair and FRP Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

100 F&I CFRP Quan: 3,714.00 SF Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

two layers

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4CFRPF&I	22 oz CFRP Layer	1.00	3,714.00	SF	20.000					74,280	74,280

110 CFRP QC Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8TRPU150M	==> C.P.O. VEHICLES -	1.00	1.00	MO	1,600.000				1,600		1,600
ZQCMAN	==> QC MANAGER	1.00	0.25	MO	21,000.000	5,723					5,723
ZQCT1H	==> QC TECHNICIAN	1.00	0.50	MO	12,000.000	6,540					6,540
$13,862.50					[ ]	12,263			1,600		13,863

50008092 Epoxy Injection Quan: 8.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4EPINJ	Epoxy Injection	1.00	8.00	EA	2,500.000					20,000	20,000

Cost Report

BID ITEM = 509000
Description = ~~Column Repair and FRP Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
=====> Item Totals: 509000	**- ~~Column Repair and FRP**										
$108,142.50					[ ]	12,263			1,600	94,280	**108,143**
108,142.500			1	LS		12,262.50			1,600.00	94,280.00	108,142.50

BID ITEM = 509500
Description = ~~Riprap Around Footing Unit = CY Takeoff Quan: 196.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
25002005	**Buy Quarry Spalls - KC**		**Quan: 353.00**	**TN**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
2AGGDQS	QUARRY SPALLS	1.00	353.00	TON	40.000		14,120				14,120
25002090	**Embankment Compaction**		**Quan: 196.00**	**CY**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
4EW0470	EMBANKMENT COMPA	1.00	196.00	CY	20.000					3,920	3,920
A	**Barge Platform**		**Quan: 1.00**	**EA**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**				**Unreviewed
3FLATBARGE	60 x 120 Flat Barge	1.00	0.25	MO	15,000.000			3,750			3,750
3FLEXIFLOAT	Flexi Floats	1.00	3.00	MO	2,500.000			7,500			7,500
3MRANCHOR	10,000 lb Anchor	1.00	1.00	EA	6,000.000			6,000			6,000
3MRTUGBO	Tug Boat	1.00	20.00	HR	700.000			14,000			14,000
$31,250.00					[ ]			31,250			31,250
=====> Item Totals: 509500	**- ~~Riprap Around Footing**										
$49,290.00					[ ]		14,120	31,250		3,920	**49,290**
251.480			196	CY			72.04	159.44		20.00	251.48

Total of Above Sub-Biditems

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
=====> Item Totals: 500000	**- ~~SUBSTRUCTURE RETROFIT**										
$2,382,579.37	**2,748.8800 MH/LS**		**2,748.88**	**MH**	**[155838.25]**	**255,115**	**86,943**	**710,781**	**115,010**	**1,214,730**	**2,382,579**
2,382,579.370			**1**	**LS**		**255,115.19**	**86,943.05**	**710,781.03**	**115,010.10**	**1,214,730.00**	**2,382,579.37**

BID ITEM = 600000
Description = ~~SUPERSTRUCTURE CONTAINMENT Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
16000503	**Dev Spill Prevention Plan**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
1OEALL	OUTSIDE Engineering	1.00	24.00	HR	200.000			4,800			4,800
20000502	**Dev Lead/Haz Matl Plan**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
Should be none. Paint looks new.											
1OEALL	OUTSIDE Engineering	1.00	60.00	HR	200.000			12,000			12,000
20000503	**Test Haz Matl**		**Quan: 1.00**	**LS**	**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**				**Unreviewed
1OEALL	OUTSIDE Engineering	1.00	16.00	HR	200.000			3,200			3,200

Cost Report

BID ITEM = 600000
Description = ~~SUPERSTRUCTURE CONTAINMENT Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
20000580	**Haz Matl Abatement**				**Quan: 1.00 LS**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**	**Unreviewed
4ABAT	HAZ MAT REMOVAL &	1.00	1.00	LS	25,000.000					25,000	25,000
A	**Safe Span Decking Rental**				**Quan: 4,000.00 SF**		**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**	**Unreviewed
Area near L7-L9 only.											
3SAFERENT	Safe Span Decking Rent	1.00	4,000.00	SF	20.000			80,000			80,000
3SAFESENG	Safe Span Decking Enginee	1.00	1.00	LS	30,000.000			30,000			30,000
3SAFESHIP	Safe Span Decking - Shippi	1.00	4,000.00	SF	2.000			8,000			8,000
$118,000.00					[ ]			118,000			118,000
B	**Install Safe Span**				**Quan: 4,000.00 SF**		**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**	**Unreviewed
LABAT4	LABORER 4 - DECK PREP		125.00	CH	**Prod: 8.0000 UM**			Lab Pcs:	4.00	Eqp Pcs:	3.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	125.00	HR	17.692				2,211		2,211
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	125.00	HR	9.682				1,210		1,210
8TRPU450	FLATRACK, BAREBED	1.00	125.00	HR	29.277				3,660		3,660
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	3.00	375.00	MH	45.610	28,442					28,442
LGFM	Laborer-General Foreman	1.00	125.00	MH	55.170	11,088					11,088
$46,611.10	0.1250 MH/SF		500.00	MH	[6.6]	39,530			7,081		46,611
C	**Remove Safe Span Decking**				**Quan: 4,000.00 SF**		**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**	**Unreviewed
LABAT4	LABORER 4 - DECK PREP		62.50	CH	**Prod: 16.0000 UM**			Lab Pcs:	4.00	Eqp Pcs:	3.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	62.50	HR	17.692				1,106		1,106
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	62.50	HR	9.682				605		605
8TRPU450	FLATRACK, BAREBED	1.00	62.50	HR	29.277				1,830		1,830
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	3.00	187.50	MH	45.610	14,221					14,221
LGFM	Laborer-General Foreman	1.00	62.50	MH	55.170	5,544					5,544
$23,305.50	0.0625 MH/SF		250.00	MH	[3.3]	19,765			3,541		23,306
D	**Maintain Access Platform**				**Quan: 4,000.00 SF**		**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**	**Unreviewed
Included work to clean platform before unexpected opening.											
LAB3	Laborer 3		74.40	CH	**Prod: 7.4405 S**			Lab Pcs:	3.00	Eqp Pcs:	2.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	74.40	HR	17.692				1,316		1,316
8TRPU450	FLATRACK, BAREBED	1.00	74.40	HR	29.277				2,178		2,178
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	148.81	MH	45.610	11,287					11,287
LGFM	Laborer-General Foreman	1.00	74.40	MH	55.170	6,600					6,600
$21,380.47	0.0558 MH/SF		223.21	MH	[2.995]	17,886			3,494		21,380
=====> **Item Totals: 600000**	**- ~~SUPERSTRUCTURE CONTAINMENT**										
$254,297.07	973.2100 MH/LS		973.21	MH	[51581.07]	77,181		138,000	14,116	25,000	**254,297**
254,297.070	1 LS					77,180.66		138,000.00	14,116.41	25,000.00	254,297.07

PARENT ITEM = 700000
Description = ~~SUPERSTRUCTURE RETROFIT Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 700000:

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 700100
Description = Asbuilt Existing Member for Fabrication — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

A — Asbuilt Existing Member for Fabrication — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201
**Unreviewed

STEELR — Steel Retrofit - Comp — 20.00 CH — **Prod: 2.0000 S** — Lab Pcs: 4.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	20.00	HR	29.277				586		586
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	20.00	MH	64.570	2,370					2,370
IWSJM	IRONWORKER J/M	1.00	20.00	MH	54.150	2,089					2,089
LATO	LABORER, AIR TOOL O	1.00	20.00	MH	45.610	1,517					1,517
PILE	PB Journeyman	1.00	20.00	MH	54.100	1,881					1,881
$8,442.66	80.0000 MH/LS		80.00	MH	[4805.46]	7,857			586		8,443

S — Fabrication & Detail — Quan: 1.00 LS — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1OEALL	OUTSIDE Engineering	1.00	40.00	HR	200.000			8,000			8,000

=====> Item Totals: 700100 - Asbuilt Existing Member for Fabrication

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$16,442.66	80.0000 MH/LS		80.00	MH	[4805.46]	7,857		8,000	586		**16,443**
16,442.660	1 LS					7,857.12		8,000.00	585.54		16,442.66

BID ITEM = 702000
Description = Gap Between Bascule Leaves — Unit = LS — Takeoff Quan: 1.000 — Engr Quan: 0.000

1000 — Purchase Steel Member — Quan: 6.00 LB — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201
**Unreviewed

```
Plate with holes from shop drawings.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2STMA&PL	Perm MISC ANGLE & PL	1.00	6.00	LB	10.000		60				60

2000 — Truss Repair — Quan: 2.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201
**Unreviewed

STEELR — Steel Retrofit - Comp — 20.00 CH — **Prod: 10.0000 HU** — Lab Pcs: 4.00 — Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	20.00	HR	29.277				586		586
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	20.00	MH	64.570	2,370					2,370
IWSJM	IRONWORKER J/M	1.00	20.00	MH	54.150	2,089					2,089
LATO	LABORER, AIR TOOL O	1.00	20.00	MH	45.610	1,517					1,517
PILE	PB Journeyman	1.00	20.00	MH	54.100	1,881					1,881
$8,442.66	40.0000 MH/EA		80.00	MH	[2402.73]	7,857			586		8,443

=====> Item Totals: 702000 - Gap Between Bascule Leaves

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$8,502.66	80.0000 MH/LS		80.00	MH	[4805.46]	7,857	60		586		**8,503**
8,502.660	1 LS					7,857.12	60.00		585.54		8,502.66

BID ITEM = 703000
Description = Rack Splice Plate — Unit = LB — Takeoff Quan: 573.000 — Engr Quan: 0.000

1000 — Purchase HS Bolts — Quan: 276.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201
**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2ABST034X6	3/4 X 6" A325 BOLT	1.00	276.00	EA	5.000		1,380				1,380

1010 — Purchase Steel Member — Quan: 573.00 LB — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201
**Unreviewed

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 703000
Description = Rack Splice Plate — Unit = LB — Takeoff Quan: 573.000 — Engr Quan: 0.000

```
Plate with holes from shop drawings.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2STMA&PL	Perm MISC ANGLE & PL	1.00	573.00	LB	4.000		2,292				2,292

2000 — Enlarge Hole for HS Bolts — Quan: 276.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		27.60	CH	**Prod:**	**10.0000 UH**	Lab Pcs:		4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	27.60	HR	29.277				808		808
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	27.60	MH	64.570	3,270					3,270
IWSJM	IRONWORKER J/M	1.00	27.60	MH	54.150	2,883					2,883
LATO	LABORER, AIR TOOL O	1.00	27.60	MH	45.610	2,093					2,093
PILE	PB Journeyman	1.00	27.60	MH	54.100	2,596					2,596
$11,650.87	0.4000 MH/EA		110.40	MH	[24.027]	10,843			808		11,651

2010 — Rivet Rem & Replace w/ HS Bolts — Quan: 276.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

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Only one section at a time.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		23.00	CH	**Prod:**	**12.0000 UH**	Lab Pcs:		4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	23.00	HR	29.277				673		673
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	23.00	MH	64.570	2,725					2,725
IWSJM	IRONWORKER J/M	1.00	23.00	MH	54.150	2,403					2,403
LATO	LABORER, AIR TOOL O	1.00	23.00	MH	45.610	1,744					1,744
PILE	PB Journeyman	1.00	23.00	MH	54.100	2,164					2,164
$9,709.05	0.3333 MH/EA		92.00	MH	[20.023]	9,036			673		9,709

2020 — Truss Repair — Quan: 8.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		40.00	CH	**Prod:**	**5.0000 HU**	Lab Pcs:		4.00	Eqp Pcs:	1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	40.00	MH	64.570	4,739					4,739
IWSJM	IRONWORKER J/M	1.00	40.00	MH	54.150	4,178					4,178
LATO	LABORER, AIR TOOL O	1.00	40.00	MH	45.610	3,034					3,034
PILE	PB Journeyman	1.00	40.00	MH	54.100	3,763					3,763
$16,885.33	20.0000 MH/EA		160.00	MH	[1201.365]	15,714			1,171		16,885

=====> Item Totals: 703000 - Rack Splice Plate

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$41,917.25	0.6324 MH/LB		362.40	MH	[37.991]	35,593	3,672		2,652		**41,917**
73.154	573 LB					62.12	6.41		4.63		73.15

BID ITEM = 703500
Description = Live Load Shoe Adjustment — Unit = LB — Takeoff Quan: 3,305.000 — Engr Quan: 0.000

1000 — Purchase HS Bolts — Quan: 48.00 EA — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2ABST034X6	3/4 X 6" A325 BOLT	1.00	48.00	EA	5.000		240				240

1010 — Purchase Steel Member — Quan: 3,305.00 LB — Hrs/Shft: 10.00 — Cal: 510 — WC: WA0201

**Unreviewed

```
Plate with holes from shop drawings.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2STMA&PL	Perm MISC ANGLE & PL	1.00	3,305.00	LB	4.000		13,220				13,220

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 703500
Description = Live Load Shoe Adjustment | Unit = LB | Takeoff Quan: 3,305.000 | Engr Quan: 0.000

2000 Enlarge Hole for HS Bolts | **Quan: 48.00 EA** | **Hrs/Shft: 10.00** | **Cal: 510** | **WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		4.80	CH	**Prod: 10.0000 UH**		Lab Pcs: 4.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	4.80	HR	29.277				141		141
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	4.80	MH	64.570	569					569
IWSJM	IRONWORKER J/M	1.00	4.80	MH	54.150	501					501
LATO	LABORER, AIR TOOL O	1.00	4.80	MH	45.610	364					364
PILE	PB Journeyman	1.00	4.80	MH	54.100	452					452
$2,026.22	0.4000 MH/EA		19.20	MH	[24.027]	1,886			141		2,026

2010 Rivet Rem & Replace w/ HS Bolts | **Quan: 48.00 EA** | **Hrs/Shft: 10.00** | **Cal: 510** | **WC: WA0201**

**Unreviewed

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Only one section at a time.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		4.00	CH	**Prod: 12.0000 UH**		Lab Pcs: 4.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	4.00	HR	29.277				117		117
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	4.00	MH	64.570	474					474
IWSJM	IRONWORKER J/M	1.00	4.00	MH	54.150	418					418
LATO	LABORER, AIR TOOL O	1.00	4.00	MH	45.610	303					303
PILE	PB Journeyman	1.00	4.00	MH	54.100	376					376
$1,688.52	0.3333 MH/EA		16.00	MH	[20.023]	1,571			117		1,689

2020 Truss Repair | **Quan: 8.00 EA** | **Hrs/Shft: 10.00** | **Cal: 510** | **WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		80.00	CH	**Prod: 10.0000 HU**		Lab Pcs: 4.00		Eqp Pcs: 1.00		
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	80.00	HR	29.277				2,342		2,342
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	80.00	MH	64.570	9,478					9,478
IWSJM	IRONWORKER J/M	1.00	80.00	MH	54.150	8,357					8,357
LATO	LABORER, AIR TOOL O	1.00	80.00	MH	45.610	6,068					6,068
PILE	PB Journeyman	1.00	80.00	MH	54.100	7,526					7,526
$33,770.66	40.0000 MH/EA		320.00	MH	[2402.73]	31,429			2,342		33,771

=====> **Item Totals: 703500 - Live Load Shoe Adjustment**

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$50,945.40	0.1074 MH/LB		355.20	MH	[6.456]	34,886	13,460		2,600		**50,945**
15.415	3305 LB					10.56	4.07		0.79		15.41

BID ITEM = 703600
Description = Bascule Truss Member L7-L9 | Unit = LB | Takeoff Quan: 4,061.000 | Engr Quan: 0.000

1000 Purchase HS Bolts | **Quan: 672.00 EA** | **Hrs/Shft: 10.00** | **Cal: 510** | **WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2ABST034X6	3/4 X 6" A325 BOLT	1.00	672.00	EA	5.000		3,360				3,360

1010 Purchase Steel Member | **Quan: 4,061.00 LB** | **Hrs/Shft: 10.00** | **Cal: 510** | **WC: WA0201**

**Unreviewed

```
Plate with holes from shop drawings.
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2STMA&PL	Perm MISC ANGLE & PL	1.00	4,061.00	LB	4.000		16,244				16,244

2000 Enlarge Hole for HS Bolts | **Quan: 672.00 EA** | **Hrs/Shft: 10.00** | **Cal: 510** | **WC: WA0201**

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
STEELR	Steel Retrofit - Comp		67.20	CH	**Prod: 10.0000 UH**		Lab Pcs: 4.00		Eqp Pcs: 1.00		

Cost Report

BID ITEM = 703600
Description = Bascule Truss Member L7-L9 Unit = LB Takeoff Quan: 4,061.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	67.20	HR	29.277				1,967		1,967
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	67.20	MH	64.570	7,962					7,962
IWSJM	IRONWORKER J/M	1.00	67.20	MH	54.150	7,020					7,020
LATO	LABORER, AIR TOOL O	1.00	67.20	MH	45.610	5,097					5,097
PILE	PB Journeyman	1.00	67.20	MH	54.100	6,322					6,322
$28,367.34	0.4000 MH/EA		268.80	MH	[24.027]	26,400			1,967		28,367

2010 Rivet Rem & Replace w/ HS Bolts Quan: 672.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Only one section at a time.

STEELR Steel Retrofit - Comp 56.00 CH **Prod: 12.0000 UH** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	56.00	HR	29.277				1,640		1,640
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	56.00	MH	64.570	6,635					6,635
IWSJM	IRONWORKER J/M	1.00	56.00	MH	54.150	5,850					5,850
LATO	LABORER, AIR TOOL O	1.00	56.00	MH	45.610	4,247					4,247
PILE	PB Journeyman	1.00	56.00	MH	54.100	5,268					5,268
$23,639.44	0.3333 MH/EA		224.00	MH	[20.023]	22,000			1,640		23,639

2020 Truss Repair Quan: 14.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

STEELR Steel Retrofit - Comp 140.00 CH **Prod: 10.0000 HU** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	140.00	HR	29.277				4,099		4,099
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	140.00	MH	64.570	16,587					16,587
IWSJM	IRONWORKER J/M	1.00	140.00	MH	54.150	14,625					14,625
LATO	LABORER, AIR TOOL O	1.00	140.00	MH	45.610	10,618					10,618
PILE	PB Journeyman	1.00	140.00	MH	54.100	13,170					13,170
$59,098.64	40.0000 MH/EA		560.00	MH	[2402.73]	55,000			4,099		59,099

=====> Item Totals: 703600 - Bascule Truss Member L7-L9

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$130,709.42	0.2592 MH/LB		1,052.80	MH	[15.572]	103,400	19,604		7,706		**130,709**
32.187	4061 LB					25.46	4.83		1.90		32.19

BID ITEM = 703700
Description = Floorbeam 4 Corrosion Repair Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

703700 Floorbeam 4 Corrosion Repair Quan: 1.00 LS Hrs/Shft: 10.00 Cal: 510 WC: WA0201

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
4	SUBCONTRACTORS	1.00	1.00	LS	25,000.000					25,000	25,000

PARENT ITEM = 704000
Description = ~~Primary Gusset Plates - X7.2 Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 704000:

BID ITEM = 704200
Description = Rivet Rem & Replace w/ HS Bolts Unit = EA Takeoff Quan: 160.000 Engr Quan: 0.000

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 704200
Description = Rivet Rem & Replace w/ HS Bolts Unit = EA Takeoff Quan: 160.000 Engr Quan: 0.000

1000 Purchase HS Bolts Quan: 160.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
2ABST034X6	3/4 X 6" A325 BOLT	1.00	160.00	EA	5.000		800				800

2000 Enlarge Hole for HS Bolts Quan: 160.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

STEELR Steel Retrofit - Comp 1.80 CH **Prod: 22.1337 UM** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	1.81	HR	29.277				53		53
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	1.81	MH	64.570	214					214
IWSJM	IRONWORKER J/M	1.00	1.81	MH	54.150	189					189
LATO	LABORER, AIR TOOL O	1.00	1.81	MH	45.610	137					137
PILE	PB Journeyman	1.00	1.81	MH	54.100	170					170
$764.03	0.0452 MH/EA		7.24	MH	[2.718]	711			53		764

2010 Rivet Rem & Replace w/ HS Bolts Quan: 160.00 EA Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

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Only one section at a time.
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STEELR Steel Retrofit - Comp 10.00 CH **Prod: 16.0000 UH** Lab Pcs: 4.00 Eqp Pcs: 1.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	10.00	HR	29.277				293		293
A	~~~~~LABOR~~~		0.00	MH	0.000						
IWFM	IRONWORKERS FOREM	1.00	10.00	MH	64.570	1,185					1,185
IWSJM	IRONWORKER J/M	1.00	10.00	MH	54.150	1,045					1,045
LATO	LABORER, AIR TOOL O	1.00	10.00	MH	45.610	758					758
PILE	PB Journeyman	1.00	10.00	MH	54.100	941					941
$4,221.34	0.2500 MH/EA		40.00	MH	[15.017]	3,929			293		4,221

=====> Item Totals: 704200 - Rivet Rem & Replace w/ HS Bolts

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$5,785.37	0.2952 MH/EA		47.24	MH	[17.735]	4,640	800		346		**5,785**
36.159	160 EA					29.00	5.00		2.16		36.16

Total of Above Sub-Biditems

=====> Item Totals: 704000 - ~~Primary Gusset Plates - X7.2

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$5,785.37	**47.2400 MH/LS**		**47.24**	**MH**	**[2837.62]**	**4,640**	**800**		**346**		**5,785**
5,785.370	**1 LS**					**4,639.64**	**800.00**		**345.73**		**5,785.37**

BID ITEM = 705000
Description = ~~Expansion Jt Retrofit Unit = LF Takeoff Quan: 232.000 Engr Quan: 0.000

20001032 Hand Demo EOD Quan: 464.00 LF Hrs/Shft: 8.00 Cal: 508 WC: WA0214

**Unreviewed

20D2HA Demo Hand Work 20.00 CH **Prod: 11.6000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	20.00	HR	17.692				354		354
8GEL2	Light Tower-4kW to 20k	1.00	20.00	HR	14.500				290		290
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	20.00	HR	9.682				194		194
8TRPU450	FLATRACK, BAREBED	1.00	20.00	HR	29.277				586		586
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	40.00	MH	45.610	2,826					2,826

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 705000											
Description =	~~Expansion Jt Retrofit			Unit =	LF	Takeoff Quan:		232.000	Engr Quan:		0.000
$4,248.68	0.0862 MH/LF		40.00	MH	[3.932]	2,826			1,423		4,249
20001090	**Sawcut EOD**				**Quan: 464.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**		**Unreviewed
5SAWFW0612	SAW FLAT CONC UP TO	1.00	928.00	INFT	1.000			928			928
50004005	**Buy Expansion Joint Sys**				**Quan: 232.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**		**Unreviewed
2EJSSSCM2	DSB SSCM2-400	1.00	232.00	LF	100.000		23,200				23,200
50004076	**Remove and Inst Exp Jt**				**Quan: 232.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**		**Unreviewed
Remove and install.											
CARP6	Carpenter 6 - S/S		40.00	CH	**Prod:**	**0.9667 UM**	Lab Pcs:	6.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	40.00	HR	29.277				1,171		1,171
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	40.00	MH	64.070	4,007					4,007
CJM	CARPENTER J/M	5.00	200.00	MH	53.700	17,482					17,482
$22,659.90	1.0344 MH/LF		240.00	MH	[57.34]	21,489			1,171		22,660
=====> **Item Totals:**	**705000 - ~~Expansion Jt Retrofit**										
$51,036.58	1.2068 MH/LF		280.00	MH	[65.203]	24,314	23,200	928	2,594		**51,037**
219.985	232 LF					104.80	100.00	4.00	11.18		219.99
BID ITEM = 706000											
Description =	~~Floorbeam Joint Repair			Unit =	LF	Takeoff Quan:		1,682.000	Engr Quan:		0.000
20001032	**Hand Demo EOD**				**Quan: 3,364.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0214**		**Unreviewed
20D2HA	Demo Hand Work		76.00	CH	**Prod:**	**22.1316 UM**	Lab Pcs:	2.00	Eqp Pcs:		4.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	76.00	HR	17.692				1,345		1,345
8GEL2	Light Tower-4kW to 20k	1.00	76.00	HR	14.500				1,102		1,102
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	76.00	HR	9.682				736		736
8TRPU450	FLATRACK, BAREBED	1.00	76.00	HR	29.277				2,225		2,225
A	~~~~~LABOR~~~		0.00	MH	0.000						
LATO	LABORER, AIR TOOL O	2.00	152.00	MH	45.610	10,737					10,737
$16,144.92	0.0451 MH/LF		152.00	MH	[2.061]	10,737			5,407		16,145
20001090	**Sawcut EOD**				**Quan: 3,364.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**		**Unreviewed
5SAWFW0612	SAW FLAT CONC UP TO	1.00	6,728.00	INFT	1.000			6,728			6,728
50004006	**Buy Compression Joint**				**Quan: 1,682.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**		**Unreviewed
2EJBR1.25	1.25" BACKER ROD	1.00	1,682.00	LF	2.000		3,364				3,364
50004076	**Remove and Inst Exp Jt**				**Quan: 1,682.00 LF**		**Hrs/Shft: 8.00**	**Cal: 508**	**WC: WA0201**		**Unreviewed
Remove and install.											
CARP6	Carpenter 6 - S/S		95.00	CH	**Prod:**	**2.9509 UM**	Lab Pcs:	6.00	Eqp Pcs:		1.00
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	95.00	HR	29.277				2,781		2,781
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	95.00	MH	64.070	9,517					9,517
CJM	CARPENTER J/M	5.00	475.00	MH	53.700	41,519					41,519

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 706000
Description = ~~Floorbeam Joint Repair Unit = LF Takeoff Quan: 1,682.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$53,817.25	0.3388 MH/LF		570.00	MH	[18.784]	51,036			2,781		53,817

=====> Item Totals: 706000 - ~~Floorbeam Joint Repair

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$80,054.17	0.4292 MH/LF		722.00	MH	[22.905]	61,773	3,364	6,728	8,189		**80,054**
47.595	1682 LF					36.73	2.00	4.00	4.87		47.59

BID ITEM = 709000
Description = Equipment Support Unit = MO Takeoff Quan: 2.000 Engr Quan: 0.000

90001020 Boom truck Quan: 444.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8CRRT22	==> RT HYD CRANE 22	1.00	444.00	HR	47.305				21,003		21,003
OC	==> OP ENG CRANE 45-9	1.00	444.00	MH	58.800	43,488					43,488
$64,491.85	1.0000 MH/UM		444.00	MH	[58.8]	43,488			21,003		64,492

90001030 Forklift Quan: 2.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8FK9KM	==> FORKLIFT 9K - MO	1.00	2.00	MO	2,576.000				5,152		5,152

90001040 Manlift Quan: 444.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8ML60	==> JLG 60' MANLIFT	1.00	444.00	HR	45.891				20,376		20,376

90001050 Air compressor Quan: 444.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8AC185	==> COMPRESSOR POR	1.00	444.00	HR	17.692				7,855		7,855

90001060 Generator Quan: 444.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEN6	==> ENG DRIVEN GEN 6.	1.00	444.00	HR	9.682				4,299		4,299

90001070 Welders Quan: 444.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8WELD400D	==> WELDER 400 AMP	1.00	444.00	HR	9.420				4,182		4,182

90001080 Light towers Quan: 444.00 UM Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8GEL2	==> Light Tower-4kW to 2	1.00	444.00	HR	14.500				6,438		6,438

=====> Item Totals: 709000 - Equipment Support

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$112,793.95	222.0000 MH/MO		444.00	MH	[13053.6]	43,488			69,306		**112,794**
56,396.975	2 MO					21,744.22			34,652.76		56,396.98

Total of Above Sub-Biditems

=====> Item Totals: 700000 - ~~SUPERSTRUCTURE RETROFIT

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$523,187.46	**3,423.6400 MH/LS**		**3,423.64**	**MH**	**[198554.64]**	**323,808**	**64,160**	**15,656**	**94,563**	**25,000**	**523,187**
523,187.460	**1 LS**					**323,808.37**	**64,160.00**	**15,656.00**	**94,563.09**	**25,000.00**	**523,187.46**

Cost Report

BID ITEM = 800000
Description = Bridge Deck - Grind and Overlay Unit = SY Takeoff Quan: 5,517.000 Engr Quan: 5,517.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
40002080	**HMA milling/plane-SY**		**Quan: 5,517.00**	**SY**	**Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
4GRHMA5711	PLAN'G BITUMINOUS P	1.00	5,517.00	SY	13.500					74,480	74,480
4GRHMA5711M	MOB FOR AC GRINDING	1.00	2.00	EA	5,000.000					10,000	10,000
$84,479.50					[ ]					84,480	84,480
40002082	**Haul/Disp grindings**		**Quan: 61.70**	**LD**	**Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
5TRECYGR	EXPORT T&T - GRINDIN	1.00	459.66	TKYD	50.000			22,983			22,983
40002091	**HMA Machine**		**Quan: 1,034.24**	**TN**	**Hrs/Shft: 10.00 Cal: 510 WC: WA0201**						**Unreviewed
small qty											
4HMA5739	HMA PAVEMENT	1.00	1,034.24	TON	180.000					186,163	186,163
=====> **Item Totals:**	**800000 - Bridge Deck - Grind and Overlay**										
$293,625.70					[ ]			22,983		270,643	**293,626**
53.222	5517 SY							4.17		49.06	53.22

BID ITEM = 900000
Description = Railing and Baluster Repair Unit = EA Takeoff Quan: 22.000 Engr Quan: 22.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
50004002	**Buy Grout**		**Quan: 22.00**	**BAG**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
2GRBNS	GROUT NS .42CF/B	1.10	24.20	BAG	10.000		242				242
50004011	**Buy Lumber/Plywood**		**Quan: 1,408.00**	**SF**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
3LMBR	FORM LUMBER	1.05	3,326.40	BF	1.200			3,992			3,992
3PLY34MDO	3/4" MDO PLYWOOD	1.05	1,478.40	SF	2.000			2,957			2,957
$6,948.48					[ ]			6,948			6,948
50004016	**Buy/Rent Overhang Bracket**		**Quan: 88.00**	**EA**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
3OH8	8,000 PSI BRACKET - RE	1.00	88.00	MO	20.000			1,760			1,760
50004055	**Set Overhang Brackets**		**Quan: 88.00**	**EA**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
CARP6	Carpenter 6 - S/S		44.00	CH	**Prod: 0.3333 UM**	Lab Pcs: 6.00		Eqp Pcs: 1.00			
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	44.00	HR	29.277				1,288		1,288
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	44.00	MH	64.070	4,408					4,408
CJM	CARPENTER J/M	5.00	220.00	MH	53.700	19,230					19,230
$24,925.87	3.0000 MH/EA		264.00	MH	[166.285]	23,638			1,288		24,926
50004056	**S/S Overhang Soffit**		**Quan: 176.00**	**LF**	**Hrs/Shft: 8.00 Cal: 508 WC: WA0201**						**Unreviewed
CARP6	Carpenter 6 - S/S		44.00	CH	**Prod: 0.6667 UM**	Lab Pcs: 6.00		Eqp Pcs: 1.00			
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8TRPU450	FLATRACK, BAREBED	1.00	44.00	HR	29.277				1,288		1,288
A	~~~~~LABOR~~~		0.00	MH	0.000						
CFM	CARPENTER F/M	1.00	44.00	MH	64.070	4,408					4,408
CJM	CARPENTER J/M	5.00	220.00	MH	53.700	19,230					19,230
$24,925.87	1.5000 MH/LF		264.00	MH	[83.143]	23,638			1,288		24,926

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

BID ITEM = 900000
Description = Railing and Baluster Repair Unit = EA Takeoff Quan: 22.000 Engr Quan: 22.000

65001057 Point/Patch Barrier Quan: 66.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINWAL Finish Walls 33.00 CH **Prod: 1.0000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	33.00	HR	17.692				584		584
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	33.00	HR	9.682				319		319
8ML40	JLG 40' MANLIFT	1.00	33.00	HR	34.727				1,146		1,146
8TRPU450	FLATRACK, BAREBED	1.00	33.00	HR	29.277				966		966
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	33.00	MH	62.860	3,257					3,257
CMJM	CEMENT MASON J/M	1.00	33.00	MH	52.600	2,840					2,840
$9,111.82	1.0000 MH/SF		66.00	MH	[57.73]	6,096			3,015		9,112

65001058 Surface Finish Barrier Quan: 66.00 SF Hrs/Shft: 8.00 Cal: 508 WC: WA0201

**Unreviewed

FINWAL Finish Walls 22.00 CH **Prod: 1.5000 UM** Lab Pcs: 2.00 Eqp Pcs: 4.00

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
8A	~~~~~EQUIPMENT~~~		0.00	HR	0.000						
8AC185	COMPRESSOR PORT 185	1.00	22.00	HR	17.692				389		389
8GEN6	ENG DRIVEN GEN 6.5 K	1.00	22.00	HR	9.682				213		213
8ML40	JLG 40' MANLIFT	1.00	22.00	HR	34.727				764		764
8TRPU450	FLATRACK, BAREBED	1.00	22.00	HR	29.277				644		644
A	~~~~~LABOR~~~		0.00	MH	0.000						
CMFM	CEMENT MASON F/M	1.00	22.00	MH	62.860	2,171					2,171
CMJM	CEMENT MASON J/M	1.00	22.00	MH	52.600	1,893					1,893
$6,074.53	0.6666 MH/SF		44.00	MH	[38.487]	4,064			2,010		6,075

=====> Item Totals: 900000 - Railing and Baluster Repair

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$73,988.57	29.0000 MH/EA		638.00	MH	[1618.93]	57,436	242	8,708	7,602		**73,989**
3,363.117	22 EA					2,610.73	11.00	395.84	345.55		3,363.12

PARENT ITEM = 9000000
Description = General Conditions Unit = LS Takeoff Quan: 1.000 Engr Quan: 1.000

Listing of Sub-Biditems of Parent Item 9000000:

BID ITEM = 9000010
Description = Salaried Staff and Admin Unit = MO Takeoff Quan: 12.000 Engr Quan: 0.000

A Salaried and Admin Quan: 12.00 MO Hrs/Shft: 10.00 Cal: 510 WC: WA0201

**Unreviewed

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
ZBUS1	==> CLERICAL OFFICE H	1.00	6.00	MO	9,000.000	58,860					58,860
ZENG1H	==> PROJECT ENGINEER	1.00	12.00	MO	20,000.000	261,600					261,600
ZPM	==> PROJECT MANAGE	1.00	3.00	MO	25,000.000	81,750					81,750
ZSUP1H	==> PROJECT SUPERINT	1.00	12.00	MO	22,000.000	287,760					287,760
$689,970.00					[ ]	689,970					689,970

=====> Item Totals: 9000010 - Salaried Staff and Admin

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
$689,970.00					[ ]	689,970					**689,970**
57,497.500	12 MO					57,497.50					57,497.50

BID ITEM = 9000020
Description = Field Office and Facilities Unit = MO Takeoff Quan: 12.000 Engr Quan: 0.000

Cost Report

BID ITEM = 9000020
Description = Field Office and Facilities — Unit = MO — Takeoff Quan: 12.000 — Engr Quan: 0.000

```
Field Office Accounted for in Estimate as a Bid Item
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Field Office**		**Quan: 12.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
1OFTRRT	Field Office Trailer Rent	1.00	12.00	MO	2,500.000			30,000			30,000
B	**Office Furniture**		**Quan: 12.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
1ITINAC	Internet Air Cards	1.00	12.00	MO	120.000			1,440			1,440
1SPCPMT	Copier/Printer Supplies	1.00	12.00	MO	100.000			1,200			1,200
1SPMO	Monthly Office/Engineering	1.00	33.00	MMO	135.000			4,455			4,455
$7,095.00					[ ]			7,095			7,095
C	**Yard Set-up**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**			**Unreviewed
ZZZZZZ	(Mod) general		20.00	CH	**Prod:**	**20.0000 CH**		Lab Pcs:	5.00	Eqp Pcs:	1.00
3	SUPPLIES & CONSUMA	1.00	12.00	MO	1,000.000			12,000			12,000
8LB426	LDR-BCKHOE CAT 426	1.00	20.00	HR	52.568				1,051		1,051
CJM	CARPENTER J/M	1.00	20.00	MH	53.700	1,871					1,871
LCOM	LABORER, COMMON G#	3.00	60.00	MH	44.530	4,464					4,464
OP4	OPER 4 (EX/BLADE/DOZ	1.00	20.00	MH	53.980	1,963					1,963
$21,349.07	100.0000 MH/LS		100.00	MH	[5307.94]	8,298		12,000	1,051		21,349
D	**Sheds/Storage Facilities**		**Quan: 12.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
1YDSH	Yard/Job Shacks and Sheds	1.00	2.00	EA	3,000.000			6,000			6,000
E	**Drinking Water**		**Quan: 12.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
1SPH2	Drinking Water	1.00	12.00	MO	350.000			4,200			4,200
F	**Final Cleanup**		**Quan: 1.00 LS**		**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**			**Unreviewed
ZZZZZZ	(Mod) general		20.00	CH	**Prod:**	**20.0000 CH**		Lab Pcs:	5.00	Eqp Pcs:	1.00
8LB426	LDR-BCKHOE CAT 426	1.00	20.00	HR	52.568				1,051		1,051
CJM	CARPENTER J/M	1.00	20.00	MH	53.700	1,871					1,871
LCOM	LABORER, COMMON G#	3.00	60.00	MH	44.530	4,464					4,464
OP4	OPER 4 (EX/BLADE/DOZ	1.00	20.00	MH	53.980	1,963					1,963
$9,349.07	100.0000 MH/LS		100.00	MH	[5307.94]	8,298			1,051		9,349
G	**Temp Fence**		**Quan: 300.00 FT**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed
1YDFN	Temporary Fencing	1.00	300.00	LF	15.000			4,500			4,500
=====> **Item Totals:**	**9000020 - Field Office and Facilities**										
$82,493.14	16.6666 MH/MO		200.00	MH	[884.657]	16,595		63,795	2,103		**82,493**
6,874.428	12 MO					1,382.95		5,316.25	175.23		6,874.43

BID ITEM = 9000030
Description = Temporary Utilities — Unit = MO — Takeoff Quan: 12.000 — Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Chemical Toilets**		**Quan: 12.00 MO**		**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**			**Unreviewed

```
2 each- Chemical Toilets
```

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
1UTPT	Portable Toilets	3.00	36.00	EAMO	200.000			7,200			7,200

Cost Report

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 9000030											
Description =	Temporary Utilities				Unit = MO	Takeoff Quan:		12.000	Engr Quan:		0.000
B	**Temp.Water for Office**				**Quan: 1.00 LS**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		
											**Unreviewed
1UTH2HU	Temporary Water Hook-Up	1.00	1.00	LS	6,000.000			6,000			6,000
1UTH2MO	Monthly Water Bill	1.00	12.00	MO	600.000			7,200			7,200
$13,200.00					[ ]			13,200			13,200
C	**Computer Connect**				**Quan: 1.80 LS**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**		
											**Unreviewed
1ITINWF	Pt to Pt Wifi Connection	1.00	12.00	MO	500.000			6,000			6,000
=====> Item Totals:	**9000030 - Temporary Utilities**										
$26,400.00					[ ]			26,400			**26,400**
2,200.000	12 MO							2,200.00			2,200.00
BID ITEM = 9000040											
Description =	Construction Support				Unit = MO	Takeoff Quan:		12.000	Engr Quan:		0.000
A	**Project Signs**				**Quan: 3.00 EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3PROJECTSIGN	Project Sign	1.00	3.00	EA	500.000			1,500			1,500
B	**Photographs**				**Quan: 3.00 WK**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	3.00	WK	1,000.000			3,000			3,000
C	**Insurance Deductable**				**Quan: 1.00 LS**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	15,000.000			15,000			15,000
=====> Item Totals:	**9000040 - Construction Support**										
$19,500.00					[ ]			19,500			**19,500**
1,625.000	12 MO							1,625.00			1,625.00
BID ITEM = 9000050											
Description =	Safety				Unit = LS	Takeoff Quan:		1.000	Engr Quan:		0.000
A	**First Aid Station**				**Quan: 1.00 EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	EA	10,000.000			10,000			10,000
B	**First Aid Kits, Supplies**				**Quan: 52.00 WK**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	52.00	WK	250.000			13,000			13,000
D	**Sbstance Abuse Testing**				**Quan: 6.00 EA**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**		
											**Unreviewed
3	SUPPLIES & CONSUMA	1.00	6.00	EA	250.000			1,500			1,500
=====> Item Totals:	**9000050 - Safety**										
$24,500.00					[ ]			24,500			**24,500**
24,500.000	1 LS							24,500.00			24,500.00

Cost Report

BID ITEM = 9000060
Description = Tools and Equipment Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Staff Pickups**	**Quan: 1.00 LS**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**					**Unreviewed
8TRPU150M	==> C.P.O. VEHICLES -	1.00	27.00	MO	1,600.000				43,200		43,200
B	**Forklift**	**Quan: 2.00 MO**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**					**Unreviewed
8FK9K	==> FORKLIFT VR 9K#	1.00	400.00	HR	49.580				19,832		19,832
OBH	==> OP ENG BACKHOE	1.00	400.00	MH	58.090	38,829					38,829
$58,661.19	200.0000 MH/MO		400.00	MH	[11618]	38,829			19,832		58,661
C	**Small Tools**	**Quan: 5,180.00 HR**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**					**Unreviewed
3SMALLTOOLS	Small Tools	1.00	8,000.00	HR	2.500			20,000			20,000
=====> **Item Totals:**	**9000060 - Tools and Equipment**										
$121,861.19	400.0000 MH/LS		400.00	MH	[23236]	38,829		20,000	63,032		**121,861**
121,861.190	1 LS					38,829.19		20,000.00	63,032.00		121,861.19

BID ITEM = 9000070
Description = Misc.Overtime Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Misc.Overtime**	**Quan: 1.00 LS**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**					**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	50,000.000			50,000			50,000
=====> **Item Totals:**	**9000070 - Misc.Overtime**										
$50,000.00					[ ]			50,000			**50,000**
50,000.000	1 LS							50,000.00			50,000.00

BID ITEM = 9000080
Description = Contingency Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Contingency**	**Quan: 1.00 LS**	**Hrs/Shft: 8.00**		**Cal: 508**	**WC: WA0201**					**Unreviewed
3	SUPPLIES & CONSUMA	1.00	1.00	LS	150,000.000			150,000			150,000
=====> **Item Totals:**	**9000080 - Contingency**										
$150,000.00					[ ]			150,000			**150,000**
150,000.000	1 LS							150,000.00			150,000.00

BID ITEM = 9090000
Description = Bond/Insurance/Tax Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

Activity / Resource	Desc	Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
A	**Bond, Insurance**	**Quan: 1.00 LS**	**Hrs/Shft: 10.00**		**Cal: 510**	**WC: WA0201**					**Unreviewed
1BIBR	Builder's Risk Insurance	1.00	7,300,000.00	DLR	0.004			29,200			29,200
1BICG	Contractor's General Liabili	1.00	7,300,000.00	DLR	0.009			65,700			65,700
1BIPP	P&P Bond	1.00	7,300,000.00	DLR	0.007			51,100			51,100
1BISUB	SUBCONTRCTOR BOND	1.00	2,500,000.00	DLR	0.015			37,500			37,500
$183,500.00					[ ]			183,500			183,500

Cost Report

Activity / Resource	Desc	Quantity Pcs	Quantity	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total
BID ITEM = 9090000											
Description =	Bond/Insurance/Tax			Unit = LS	Takeoff Quan:	1.000	Engr Quan: 0.000				
=====> Item Totals: 9090000	**- Bond/Insurance/Tax**										
$183,500.00					[ ]			183,500			**183,500**
183,500.000		1 LS						183,500.00			183,500.00
BID ITEM = 9100000											
Description =	Escalation			Unit = LS	Takeoff Quan:	1.000	Engr Quan: 0.000				
A	**Labor Escalation**		**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**					**Unreviewed
1	GEN CONDITION/INDIR	1.00	1,500,000.00	LS	0.040			60,000			60,000
B	**Equipment Escalation**		**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**					**Unreviewed
1	GEN CONDITION/INDIR	1.00	500,000.00	LS	0.060			30,000			30,000
C	**Subcontractor-Labor Escalation**		**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**					**Unreviewed
1	GEN CONDITION/INDIR	1.00	2,500,000.00	LS	0.040			100,000			100,000
D	**Subcontractor-Equipment Escalation**		**Quan: 1.00 LS**	**Hrs/Shft: 10.00**	**Cal: 510**	**WC: WA0201**					**Unreviewed
1	GEN CONDITION/INDIR	1.00	500,000.00	LS	0.040			20,000			20,000
=====> Item Totals: 9100000	**- Escalation**										
$210,000.00					[ ]			210,000			**210,000**
210,000.000		1 LS						210,000.00			210,000.00
					Total of Above Sub-Biditems						
=====> Item Totals: 9000000	**- General Conditions**										
$1,558,224.33		**600.0000 MH/LS**	**600.00**	**MH**	**[33851.88]**	**745,395**		**747,695**	**65,135**		**1,558,224**
1,558,224.330		**1 LS**				**745,394.61**		**747,695.00**	**65,134.72**		**1,558,224.33**
$6,023,646.11	***** Report Totals *****		8,413.73	MH		1,462,210	151,825	1,685,824	297,495	2,426,293	**6,023,646**

>>> indicates Non Additive Activity
------Report Notes:------
The estimate was prepared with TAKEOFF Quantities.
This report shows TAKEOFF Quantities with the resources.

'Unreviewed' Activities are marked.

Bid Date: 04/01/24 Owner: Engineering Firm:
Estimator-In-Charge:

JOB DOES NOT HAVE NOTES

* on units of MH indicate average labor unit cost was used rather than base rate.
[ ] in the Unit Cost Column = Labor Unit Cost Without Labor Burdens

Cost Report

Activity Resource	Desc	Quantity Pcs	Unit	Unit Cost	Labor	Perm Material	Constr Matl/Exp	Equip Ment	Sub-Contract	Total

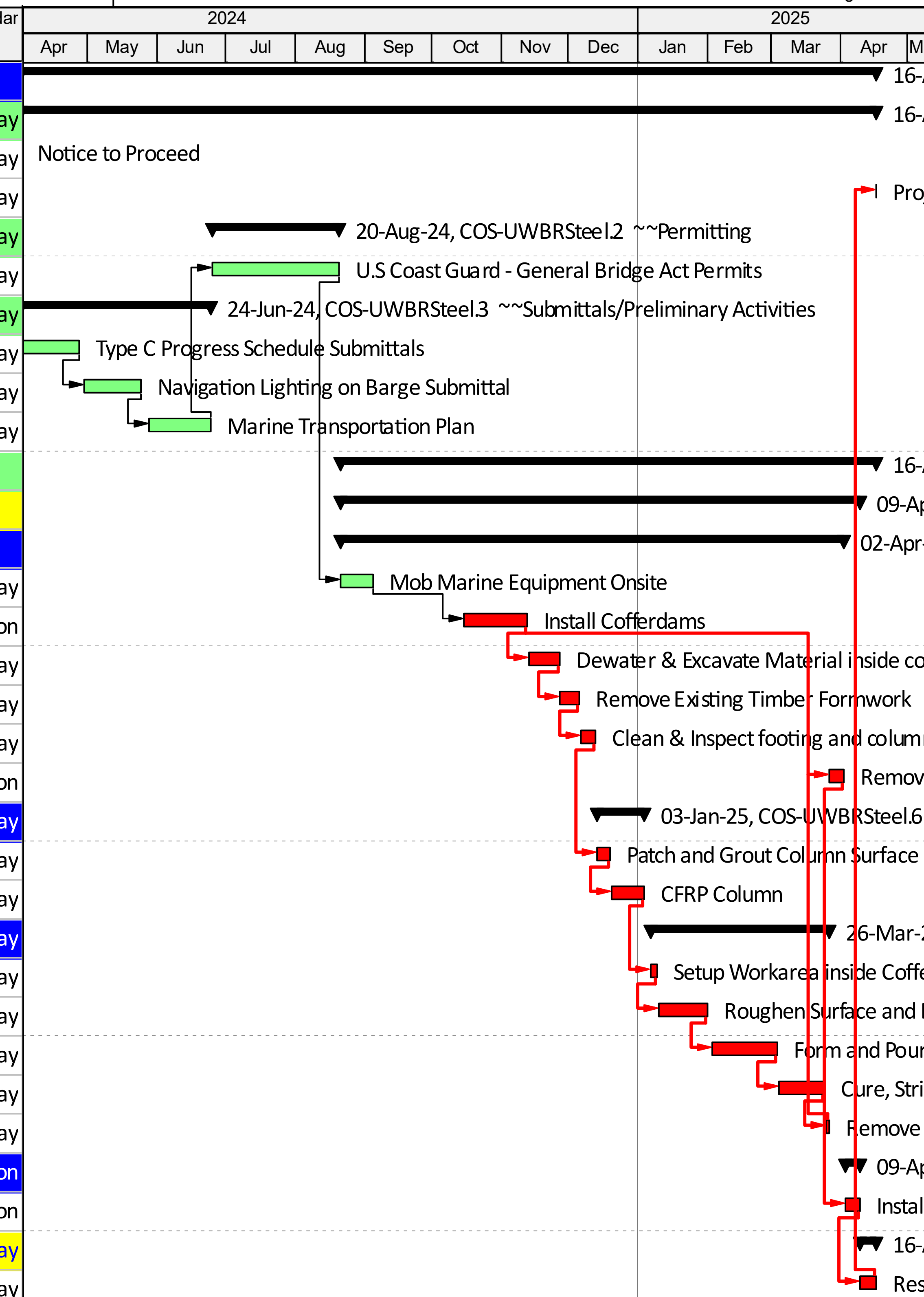
BID ITEM = 9100000
Description = Escalation Unit = LS Takeoff Quan: 1.000 Engr Quan: 0.000

In equipment resources, rent % and EOE % not = 100% are represented as XXX%YYY where XXX=Rent% and YYY=EOE%

------Calendar Codes------

508 5x8 Hr - Single Shift
510 5x10 Single Shift (Default Calendar)
WEK 12 Weekend Closure

University Bridge Steel and Bascule Spans - Rehabilitation		Classic Schedule Layout					12-Aug-23 11:58
#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	COS-UWBRSteel	University Bridge Steel and Bascule Spans - Reha	258	0	01-Apr-24	16-Apr-25	
2	COS-UWBRSteel.1	~~Milestones & Restrictions	258	0	01-Apr-24	16-Apr-25	5x8 w/ Holiday
3	MS-1000	Notice to Proceed	0	27	01-Apr-24	01-Apr-24	5x8 w/ Holiday
4	MS-9990	Project Completion	0	0	16-Apr-25	16-Apr-25	5x8 w/ Holiday
5	COS-UWBRSteel.2	~~Permitting	40	27	25-Jun-24	20-Aug-24	5x8 w/ Holiday
6	PC-1020	U.S Coast Guard - General Bridge Act Permits	40	27	25-Jun-24	20-Aug-24	5x8 w/ Holiday
7	COS-UWBRSteel.3	~~Submittals/Preliminary Activities	60	27	01-Apr-24	24-Jun-24	5x8 w/ Holiday
8	SU-1030	Type C Progress Schedule Submittals	20	27	01-Apr-24	26-Apr-24	5x8 w/ Holiday
9	SU-1060	Navigation Lighting on Barge Submittal	20	27	29-Apr-24	24-May-24	5x8 w/ Holiday
10	SU-1070	Marine Transportation Plan	20	27	28-May-24	24-Jun-24	5x8 w/ Holiday
11	COS-UWBRSteel.6	~Construction	158	0	21-Aug-24	16-Apr-25	
12	COS-UWBRSteel.6.3	~~Retrofit Substructure	153	0	21-Aug-24	09-Apr-25	
13	COS-UWBRSteel.6.3.1	Substructure Containment	148	0	21-Aug-24	02-Apr-25	
14	CN-2100	Mob Marine Equipment Onsite	10	27	21-Aug-24	04-Sep-24	5x8 w/ Holiday
15	CN-2110	Install Cofferdams	20	0	15-Oct-24	12-Nov-24	Inwater 5x8 - Salmon
16	CN-2120	Dewater & Excavate Material inside cofferdams	10	0	13-Nov-24	26-Nov-24	5x8 w/ Holiday
17	CN-2130	Remove Existing Timber Formwork	5	0	27-Nov-24	05-Dec-24	5x8 w/ Holiday
18	CN-2140	Clean & Inspect footing and columns	5	0	06-Dec-24	12-Dec-24	5x8 w/ Holiday
19	CN-2400	Remove Cofferdams	5	0	27-Mar-25	02-Apr-25	Inwater 5x8 - Salmon
20	COS-UWBRSteel.6.3.2	Substructure - Item 4 Column Repair & FRP Jacketing	10	0	13-Dec-24	03-Jan-25	5x8 w/ Holiday
21	CN-2200	Patch and Grout Column Surface	5	0	13-Dec-24	19-Dec-24	5x8 w/ Holiday
22	CN-2210	CFRP Column	5	0	20-Dec-24	03-Jan-25	5x8 w/ Holiday
23	COS-UWBRSteel.6.3.3	Substructure - Item 5 Footing Enlargement	56	0	06-Jan-25	26-Mar-25	5x8 w/ Holiday
24	CN-2300	Setup Workarea inside Cofferdam	4	0	06-Jan-25	09-Jan-25	5x8 w/ Holiday
25	CN-2310	Roughen Surface and Drill & Dowels	15	0	10-Jan-25	31-Jan-25	5x8 w/ Holiday
26	CN-2320	Form and Pour Footing	20	0	03-Feb-25	03-Mar-25	5x8 w/ Holiday
27	CN-2330	Cure, Strip & Finish Footings	15	0	04-Mar-25	24-Mar-25	5x8 w/ Holiday
28	CN-2340	Remove Work Platform	2	0	25-Mar-25	26-Mar-25	5x8 w/ Holiday
29	COS-UWBRSteel.6.3.4	Substructure - Item 6 Riprap Around Footing Seal	5	0	03-Apr-25	09-Apr-25	Inwater 5x8 - Salmon
30	CN-2410	Install Riprap Around Footing Seal	5	0	03-Apr-25	09-Apr-25	Inwater 5x8 - Salmon
31	COS-UWBRSteel.6.8	~~Roadway - Civil	5	0	09-Apr-25	16-Apr-25	5x8 w/ Holiday
32	CN-4000	Restore Area	5	0	09-Apr-25	16-Apr-25	5x8 w/ Holiday

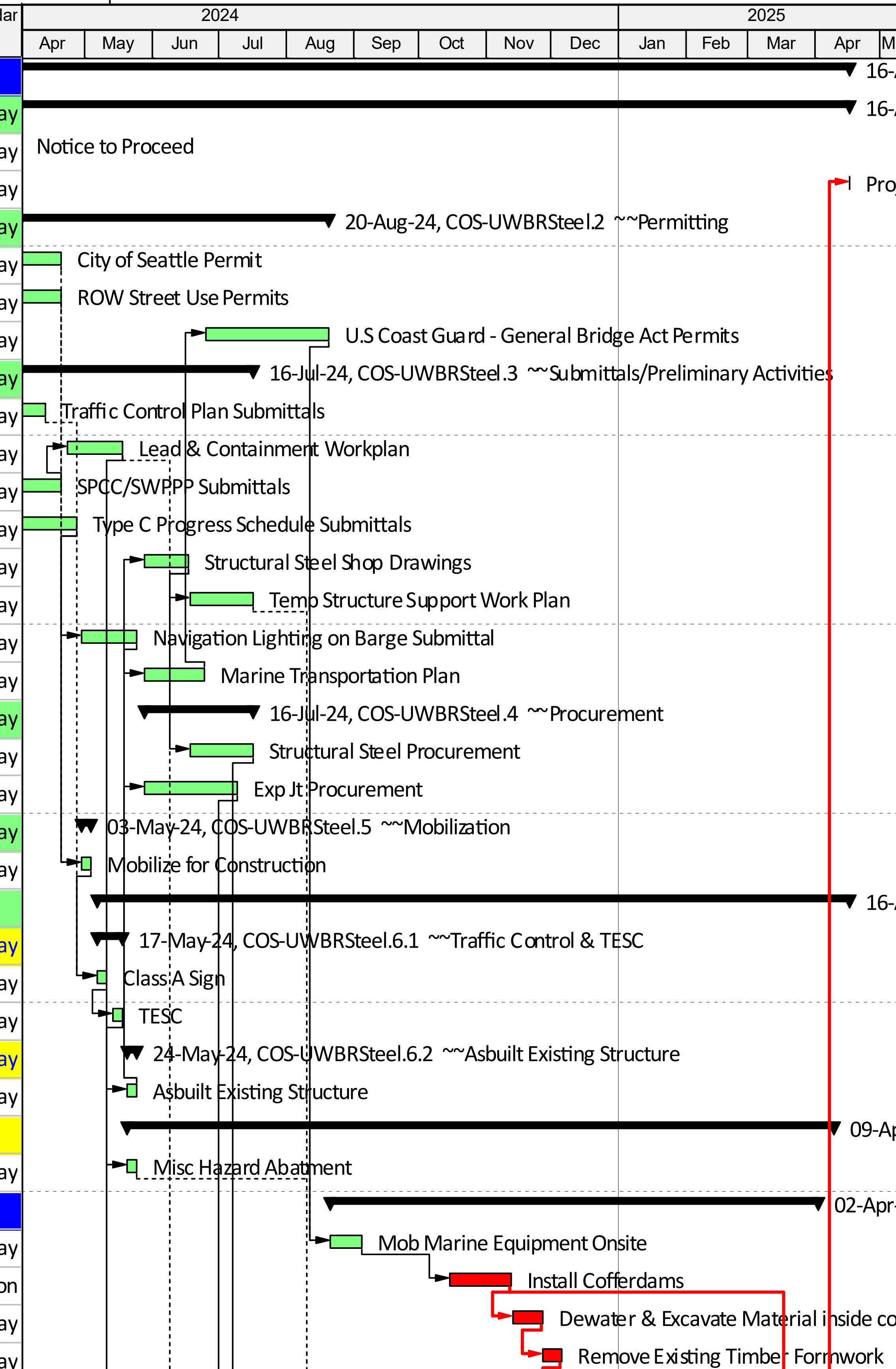


Remaining Level of Effort	Actual Work	Critical Remaining Work
Actual Level of Effort	Remaining Work	◆ Milestone

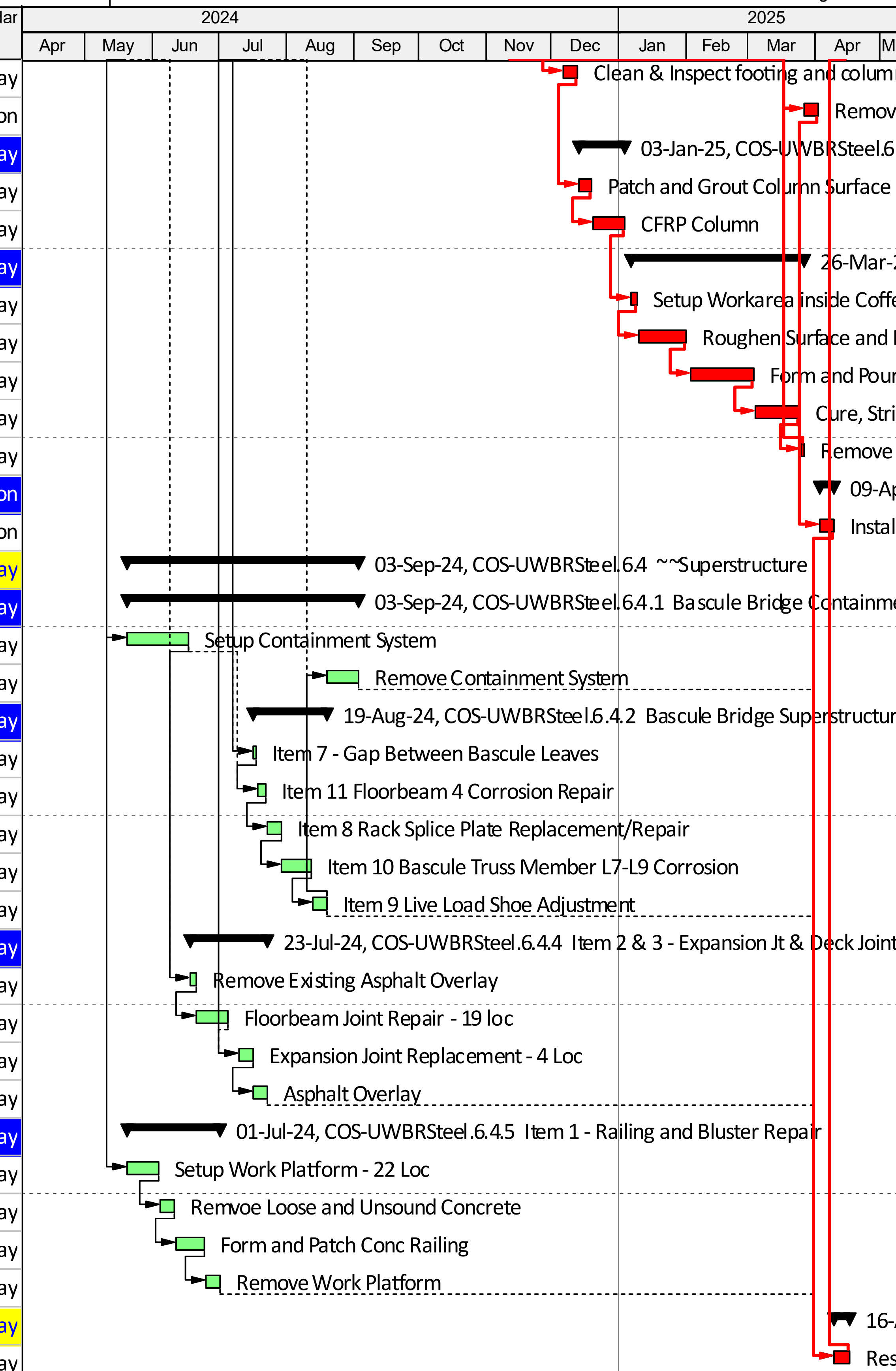
TASK filters: Critical, Longest Path.

University Bridge Steel and Bascule Spans - Rehabilitation | Classic Schedule Layout | 12-Aug-23 11:59

#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
1	COS-UWBRSteel	University Bridge Steel and Bascule Spans - Reha	258	0	01-Apr-24	16-Apr-25	
2	COS-UWBRSteel.1	~~Milestones & Restrictions	258	0	01-Apr-24	16-Apr-25	5x8 w/ Holiday
3	MS-1000	Notice to Proceed	0	27	01-Apr-24	01-Apr-24	5x8 w/ Holiday
4	MS-9990	Project Completion	0	0	16-Apr-25	16-Apr-25	5x8 w/ Holiday
5	COS-UWBRSteel.2	~~Permitting	100	27	01-Apr-24	20-Aug-24	5x8 w/ Holiday
6	PC-1000	City of Seattle Permit	15	92	01-Apr-24	19-Apr-24	5x8 w/ Holiday
7	PC-1010	ROW Street Use Permits	15	92	01-Apr-24	19-Apr-24	5x8 w/ Holiday
8	PC-1020	U.S Coast Guard - General Bridge Act Permits	40	27	25-Jun-24	20-Aug-24	5x8 w/ Holiday
9	COS-UWBRSteel.3	~~Submittals/Preliminary Activities	75	168	01-Apr-24	16-Jul-24	5x8 w/ Holiday
10	SU-1000	Traffic Control Plan Submittals	10	102	01-Apr-24	12-Apr-24	5x8 w/ Holiday
11	SU-1010	Lead & Containment Workplan	20	87	22-Apr-24	17-May-24	5x8 w/ Holiday
12	SU-1020	SPCC/SWPPP Submittals	15	87	01-Apr-24	19-Apr-24	5x8 w/ Holiday
13	SU-1030	Type C Progress Schedule Submittals	20	27	01-Apr-24	26-Apr-24	5x8 w/ Holiday
14	SU-1040	Structural Steel Shop Drawings	15	144	28-May-24	17-Jun-24	5x8 w/ Holiday
15	SU-1050	Temp Structure Support Work Plan	20	168	18-Jun-24	16-Jul-24	5x8 w/ Holiday
16	SU-1060	Navigation Lighting on Barge Submittal	20	27	29-Apr-24	24-May-24	5x8 w/ Holiday
17	SU-1070	Marine Transportation Plan	20	27	28-May-24	24-Jun-24	5x8 w/ Holiday
18	COS-UWBRSteel.4	~~Procurement	35	168	28-May-24	16-Jul-24	5x8 w/ Holiday
19	PR-1000	Structural Steel Procurement	20	144	18-Jun-24	16-Jul-24	5x8 w/ Holiday
20	PR-1010	Exp Jt Procurement	30	173	28-May-24	09-Jul-24	5x8 w/ Holiday
21	COS-UWBRSteel.5	~~Mobilization	5	87	29-Apr-24	03-May-24	5x8 w/ Holiday
22	PC-2000	Mobilize for Construction	5	87	29-Apr-24	03-May-24	5x8 w/ Holiday
23	COS-UWBRSteel.6	~Construction	233	0	06-May-24	16-Apr-25	
24	COS-UWBRSteel.6.1	~~Traffic Control & TESC	10	87	06-May-24	17-May-24	5x8 w/ Holiday
25	SW-1000	Class A Sign	5	87	06-May-24	10-May-24	5x8 w/ Holiday
26	SW-1010	TESC	5	87	13-May-24	17-May-24	5x8 w/ Holiday
27	COS-UWBRSteel.6.2	~~Asbuilt Existing Structure	5	144	20-May-24	24-May-24	5x8 w/ Holiday
28	CN-1000	Asbuilt Existing Structure	5	144	20-May-24	24-May-24	5x8 w/ Holiday
29	COS-UWBRSteel.6.3	~~Retrofit Substructure	218	0	20-May-24	09-Apr-25	
30	CN-2000	Misc Hazard Abatment	5	87	20-May-24	24-May-24	5x8 w/ Holiday
31	COS-UWBRSteel.6.3.1	Substructure Containment	148	0	21-Aug-24	02-Apr-25	
32	CN-2100	Mob Marine Equipment Onsite	10	27	21-Aug-24	04-Sep-24	5x8 w/ Holiday
33	CN-2110	Install Cofferdams	20	0	15-Oct-24	12-Nov-24	Inwater 5x8 - Salmon
34	CN-2120	Dewater & Excavate Material inside cofferdams	10	0	13-Nov-24	26-Nov-24	5x8 w/ Holiday
35	CN-2130	Remove Existing Timber Formwork	5	0	27-Nov-24	05-Dec-24	5x8 w/ Holiday



#	Activity ID	Activity Name	Original Duration	Total Float	Start	Finish	Calendar
36	CN-2140	Clean & Inspect footing and columns	5	0	06-Dec-24	12-Dec-24	5x8 w/ Holiday
37	CN-2400	Remove Cofferdams	5	0	27-Mar-25	02-Apr-25	Inwater 5x8 - Salmon
38	COS-UWBRSteel.6.3.2	Substructure - Item 4 Column Repair & FRP Jacketing	10	0	13-Dec-24	03-Jan-25	5x8 w/ Holiday
39	CN-2200	Patch and Grout Column Surface	5	0	13-Dec-24	19-Dec-24	5x8 w/ Holiday
40	CN-2210	CFRP Column	5	0	20-Dec-24	03-Jan-25	5x8 w/ Holiday
41	COS-UWBRSteel.6.3.3	Substructure - Item 5 Footing Enlargement	56	0	06-Jan-25	26-Mar-25	5x8 w/ Holiday
42	CN-2300	Setup Workarea inside Cofferdam	4	0	06-Jan-25	09-Jan-25	5x8 w/ Holiday
43	CN-2310	Roughen Surface and Drill & Dowels	15	0	10-Jan-25	31-Jan-25	5x8 w/ Holiday
44	CN-2320	Form and Pour Footing	20	0	03-Feb-25	03-Mar-25	5x8 w/ Holiday
45	CN-2330	Cure, Strip & Finish Footings	15	0	04-Mar-25	24-Mar-25	5x8 w/ Holiday
46	CN-2340	Remove Work Platform	2	0	25-Mar-25	26-Mar-25	5x8 w/ Holiday
47	COS-UWBRSteel.6.3.4	Substructure - Item 6 Riprap Around Footing Seal	5	0	03-Apr-25	09-Apr-25	Inwater 5x8 - Salmon
48	CN-2410	Install Riprap Around Footing Seal	5	0	03-Apr-25	09-Apr-25	Inwater 5x8 - Salmon
49	COS-UWBRSteel.6.4	~~Superstructure	74	144	20-May-24	03-Sep-24	5x8 w/ Holiday
50	COS-UWBRSteel.6.4.1	Bascule Bridge Containment & Prep	74	144	20-May-24	03-Sep-24	5x8 w/ Holiday
51	CN-3000	Setup Containment System	20	164	20-May-24	17-Jun-24	5x8 w/ Holiday
52	CN-3010	Remove Containment System	10	144	20-Aug-24	03-Sep-24	5x8 w/ Holiday
53	COS-UWBRSteel.6.4.2	Bascule Bridge Superstructure Repair	24	144	17-Jul-24	19-Aug-24	5x8 w/ Holiday
54	CN-3100	Item 7 - Gap Between Bascule Leaves	2	144	17-Jul-24	18-Jul-24	5x8 w/ Holiday
55	CN-3110	Item 11 Floorbeam 4 Corrosion Repair	2	144	19-Jul-24	22-Jul-24	5x8 w/ Holiday
56	CN-3120	Item 8 Rack Splice Plate Replacement/Repair	5	144	23-Jul-24	29-Jul-24	5x8 w/ Holiday
57	CN-3130	Item 10 Bascule Truss Member L7-L9 Corrosion	10	144	30-Jul-24	12-Aug-24	5x8 w/ Holiday
58	CN-3140	Item 9 Live Load Shoe Adjustment	5	144	13-Aug-24	19-Aug-24	5x8 w/ Holiday
59	COS-UWBRSteel.6.4.4	Item 2 & 3 - Expansion Jt & Deck Joint Repair	25	173	18-Jun-24	23-Jul-24	5x8 w/ Holiday
60	CN-3200	Remove Existing Asphalt Overlay	3	175	18-Jun-24	20-Jun-24	5x8 w/ Holiday
61	CN-3210	Floorbeam Joint Repair - 19 loc	10	175	21-Jun-24	05-Jul-24	5x8 w/ Holiday
62	CN-3220	Expansion Joint Replacement - 4 Loc	5	173	10-Jul-24	16-Jul-24	5x8 w/ Holiday
63	CN-3230	Asphalt Overlay	5	173	17-Jul-24	23-Jul-24	5x8 w/ Holiday
64	COS-UWBRSteel.6.4.5	Item 1 - Railing and Bluster Repair	30	188	20-May-24	01-Jul-24	5x8 w/ Holiday
65	CN-3300	Setup Work Platform - 22 Loc	10	188	20-May-24	03-Jun-24	5x8 w/ Holiday
66	CN-3310	Remvoe Loose and Unsound Concrete	5	188	04-Jun-24	10-Jun-24	5x8 w/ Holiday
67	CN-3320	Form and Patch Conc Railing	10	188	11-Jun-24	24-Jun-24	5x8 w/ Holiday
68	CN-3330	Remove Work Platform	5	188	25-Jun-24	01-Jul-24	5x8 w/ Holiday
69	COS-UWBRSteel.6.8	~~Roadway - Civil	5	0	09-Apr-25	16-Apr-25	5x8 w/ Holiday
70	CN-4000	Restore Area	5	0	09-Apr-25	16-Apr-25	5x8 w/ Holiday



Remaining Level of Effort	Actual Work	Critical Remaining Work
Actual Level of Effort	Remaining Work	Milestone

TASK filter: All Activities

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Attachment C

Utility Exhibits

South Approach - Sewer & Drainage

C-1

50
Feet
N

City Limits
Catch Basin, Junction Box, Sand Box

Maintenance Holes and Other Structures
Maintenance Hole
Other Structure

Ditches and Culverts
Ditch
Culvert

Side Sewers and Laterals
Drainage Lateral
Side Sewer
Drainage Lateral (Not Inspected)
Side Sewer (Not Inspected)
SPU Drainage Lateral
SPU Side Sewer
Phantom Connector
Side Sewer and Lateral (Lined)

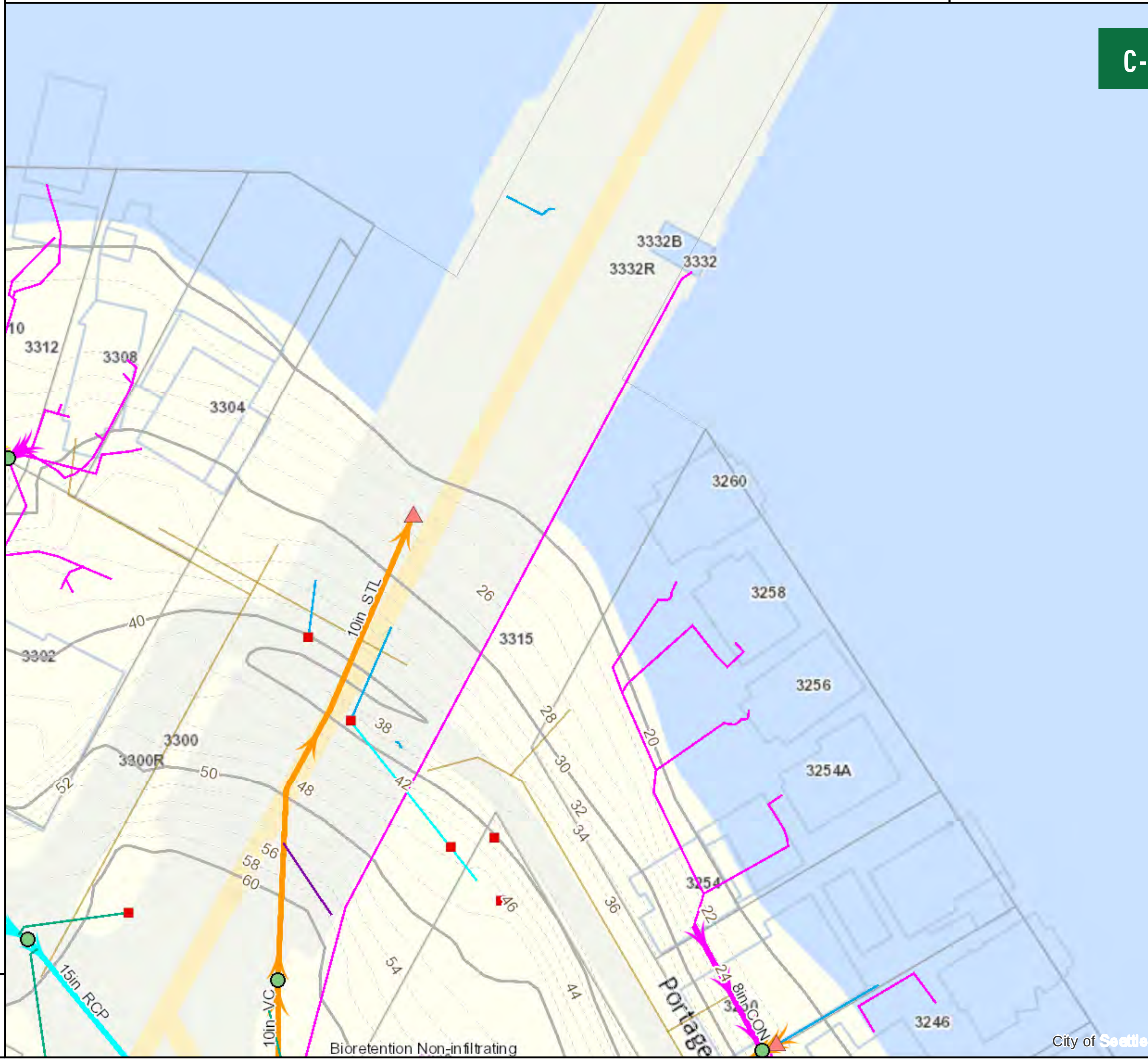
Private Mainlines
Private Drainage Main
Private Sanitary Main
Private Combined Main

Mainlines (Permitted Use)
King County Main
SPU Drainage Main
SPU Combined Main
SPU Sanitary Main

GSI Facility Footprints
Swale
Permeable Pavement
Rain Garden
Non-Mainline Detention Polygons
Mainline Detention Polygons
Peak Control Infrastructure
Repairs and Linings
Water Infrastructure
Water Service

Coord. System: State Plane, NAD83-91, WA North Zone

7/21/2023



South Approach - Water

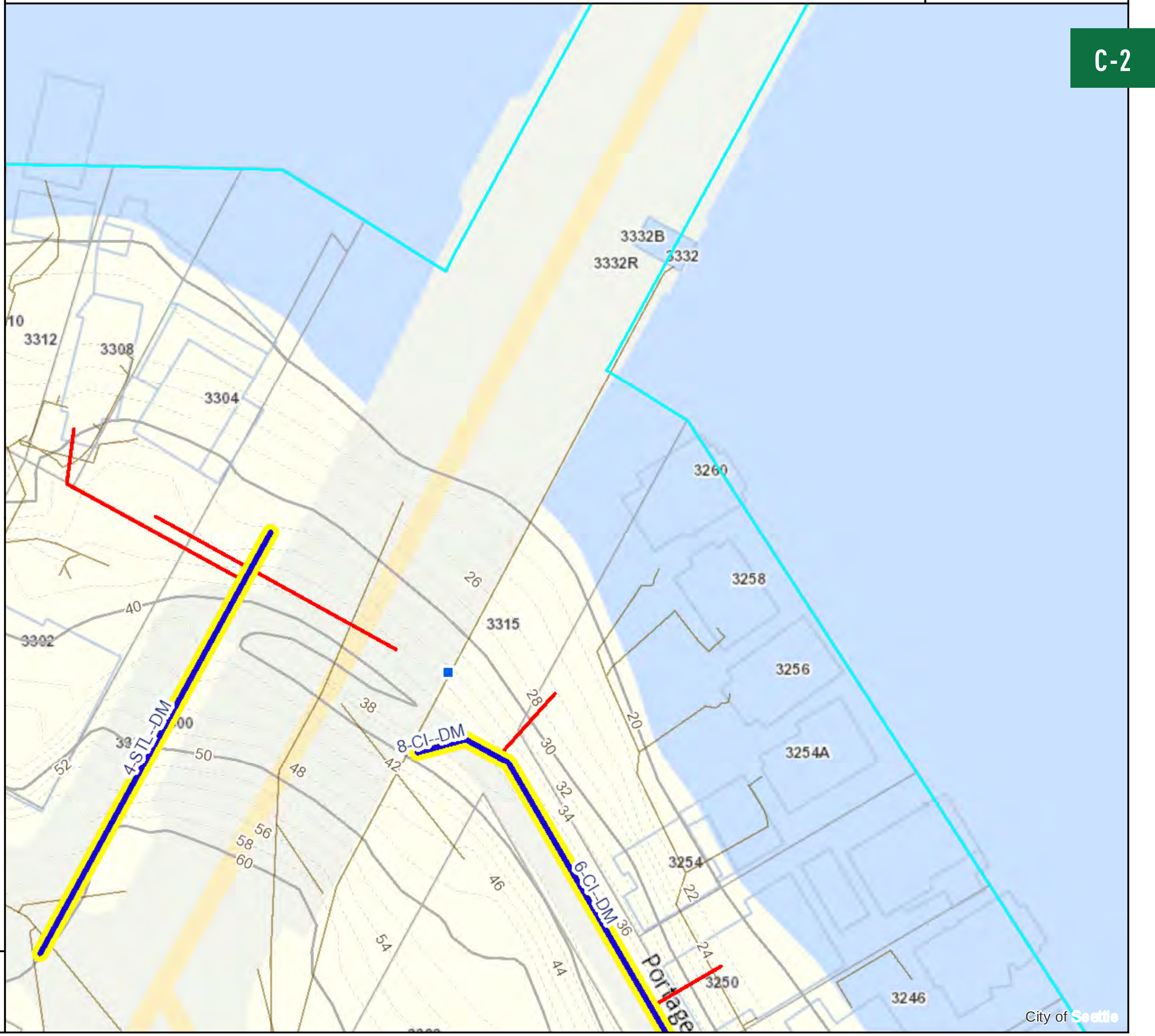
- City Limits
- Hydrant Location
- Water Mains
- Same Side Tap Only
- No New Taps

Water Service

- Header
- Inactive
- Active
- Drainage Infrastructure
- Side Sewers and Laterals

Topography - 2 Foot

- 10ft. contour
- 2ft. contour
- Parcel
- Red: Band_1
- Green: Band_2
- Blue: Band_3



Coord. System: State Plane, NAD83-91, WA North Zone

7/21/2023


North Approach Utilities
South Approach Utilities
PLAN OF EX 48" WATERMAIN
29' Offset Line
Std. Curb Inlet
9" Min
18" Min.
Curb Line
℄ Ex 42" Steel Pipe
Ex. G.V. Chamber
62'-0" ±
29'-0"
℄ Eastlake Ave
35 lin ft 8" P.S. to C.B.
End of Tunnel
℄ Pier
El. 53.90 Curb Grade Line 3.04%
℄ Bearing Appr. Truss
℄ Fuhrman Ave 0+00
Bottom of Truss
40'-0" Roadway
Curb Line Lower Roadway
Curb Line
Proposed Future Roadway
Ex. Ground Line
Abutment
M.H. Tower See Detail to Right
℄ M.H.
Anchor
Top of Ex 42" Steel Pipe
8'-0" ctrs
SECTION THRU ℄ 42" WATERMAIN SHOWING TUNNEL & PIPE PIERS
Scale 1/8" = 1'-0"
Note:-
Contractor will dig holes under 42" Steel Watermain at 8'-0" intervals and build Concrete Piers to support pipe, as shown, keeping the pipe sufficiently supported at all times to avoid damage to pipe.
Contractor will then excavate around pipe and build tunnel as shown before Abutment and Anchor are started.
Contractor will break out side of Ex. Gate Valve Chamber and connect tunnel to it as required by the City Engineer.
Watermain location is approximate only. Contractor is to build tunnel around pipe in Ex. Location with clearances as shown.
Cast Steel Shoes & 3/4" Rods to be paid for as Reinf. Steel.
Move bars #131 & #130 to side of tower Cut off ℄ Spacer at tower
8-1/2"φ #134
℄ Manhole in 42" Pipe
SECTION ON ℄ TUNNEL
8-1/2"φ #135
Pul Bend in 8-#130 Bars on each side of tower
℄ Pipe
SECTION ON ℄ M.H.
DETAIL OF M.H TOWER
Scale 3/8" = 1'-0"
125-#131 @ 6" Ctrs.
31-#130 @ 24" Ctrs
Top of Pipe
Sym about Vert ℄
127-7/8"φ #133 @ 6" ctrs.
31-5/8"φ #130 @ 6" Ctrs.
Inlet See Plan No 112
Piers as shown @ 8'-0" Ctrs.
1'-4"
3'-6"
5/8"φ #130 @ 24" Ctrs
3/4"φ #131 @ 6" Ctrs.
Cast Steel Shoe
3/4" Rod with Square Mach Bolt Head
3/4" Rod Std. Bolt Thread 4 inches Std Nut
Ex 42" Steel Pipe
1-1/2"φ #132 at each Pier
24 Spacers 5/8"φ x 36'-0"
24 Spacers 5/8"φ x 30'-0"
3'-0"
6'-6"
8'-2"
7/8"φ #133 @ 6" Ctrs
DETAIL OF TYPICAL SECTION THRU TUNNEL
Scale 3/4" = 1'-0"
SEE REVISED DRAWINGS FOR SO. ABUT. SHTS. 178/179.
FOR GENERAL NOTE SEE SH. 94.
MAY 19 1977
APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. Jan. 4 1932
ATTEST: SECRETARY CHAIRMAN
THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS CITY ENGINEER
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
WATERMAIN TUNNEL, SO. ABUTMENT
SCALE AS SHOWN
DRAWN Lamb TRACED Sherling CHECKED Gaines O.K.
APPROVED Dec. 4, 1931
BRIDGE NO. 3 FILE NO. 782-59 SHEET NO. 7

— 22857 —


North Approach Utilities
South Approach Utilities
FOOTING ~ GENERAL PLAN
Scale 1" = 50'
ELEVATION
℄ 10TH AVE. N.E.
℄ 9TH AVE. N.E.
℄ N.P.RY. R.o.W.
℄ E. PACIFIC ST.
℄ NORTHLAKE AVE
℄ E. 39TH ST.
℄ EASTLAKE AVE.
℄ FUHRMAN AVE.
HARBOR LINE
108" Trunk Sewer
Ex. 12" C.I.P.
Ex. 6" Gas
42 Steel Pipe
For Map of Utilities see Sheet #112
℄ Tunnel
Curb Grade Line
2.7134%
3.04%
W.S. + 8.0
W.L. of WALL
BENT #18
BENT #17
BENT #16
BENT #15
BENT #14
BENT #13
BENT #12
BENT #11
PIER #10
PIER #9
PIER #8
PIER #7
PIER #6
PIER #5
PIER #4
℄ ANCHOR PIER
℄ Bascule Span
Axis of Canal
℄ ANCHOR PIER
PIER #3
PIER #2
W.L. ABUT. #1
36.96
32.28
50.59
44.47
14.47
35.5
35.5
35.5
35.5
99.963
99.963
101.046
80.554
132.451
80.554
59.40
145.5
145.5
51.18
99.95
51.48
121.89
Sta. 15+90.21
Sta. 15+53.25
Sta. 15+20.97
Sta. 14+70.38
Sta. 14+25.91
Sta. 14+11.432
Sta. 13+75.932
Sta. 13+40.432
Sta. 13+04.932
Sta. 12+69.432
Sta. 11+69.469
Sta. 10+69.506
Sta. 9+68.459
Sta. 8+87.905
Sta. 7+55.454
Sta. 6+74.9
Sta. 6+15.5
Sta. 4+70
Sta. 4+60
Sta. 3+24.5
Sta. 2+73.32
Sta. 1+73.37
Sta. 1+21.89
Sta. 0+00
795 Untreated Timber piles. for spacing see details
Location & Levels on Test Holes F.B. 1630 & plan 782-22
T.H. #1, 1929. F.B. 2104 N, Profile 12-6-29.
T-3, T-4 & T-1 Tunnel plans 48-79.
Anchor Piers F.B. 2104 F, G, H, I.
Public Utilities Maps 107 & 117
MAY 1 9 1977
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THE CITY OF SEATTLE
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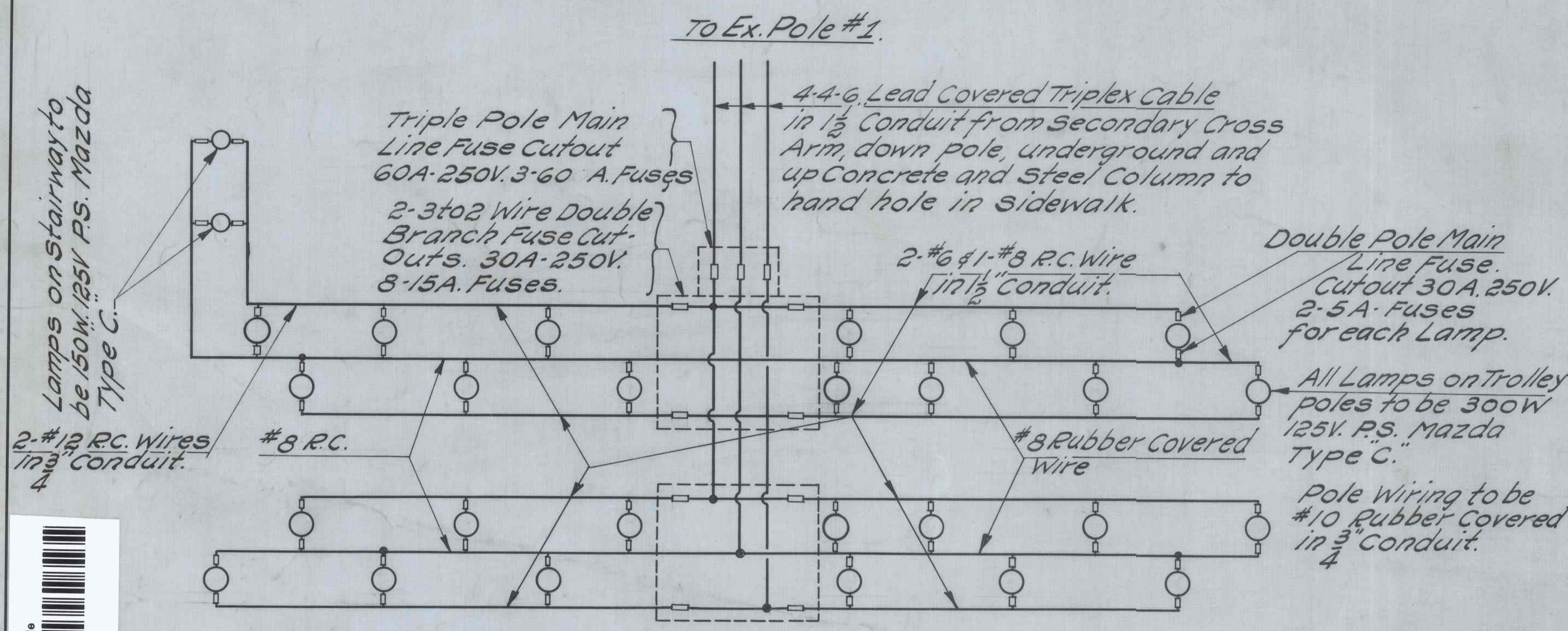
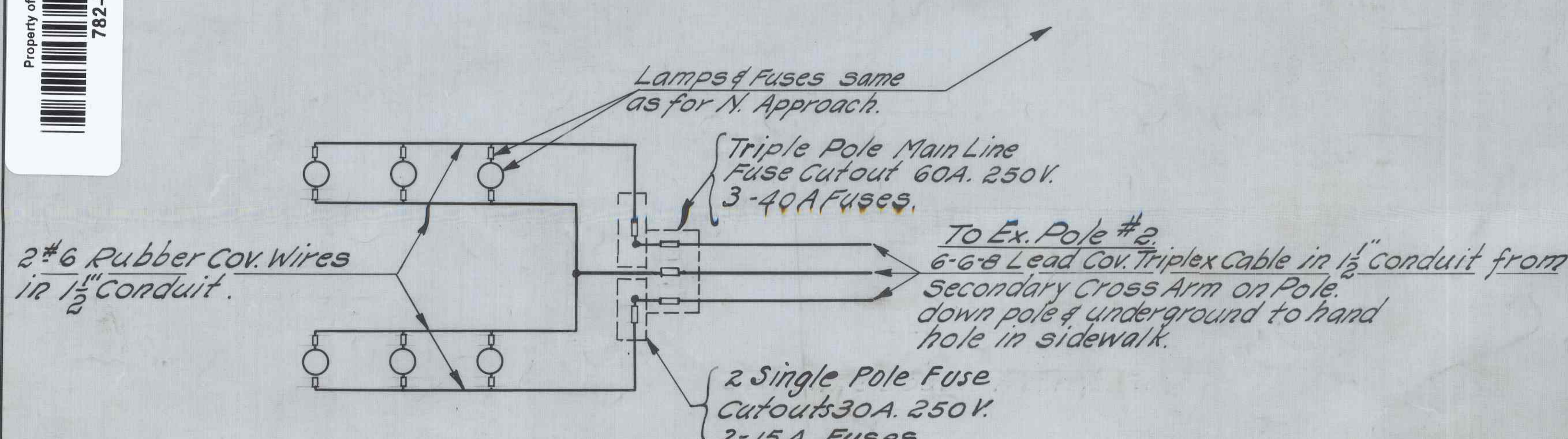
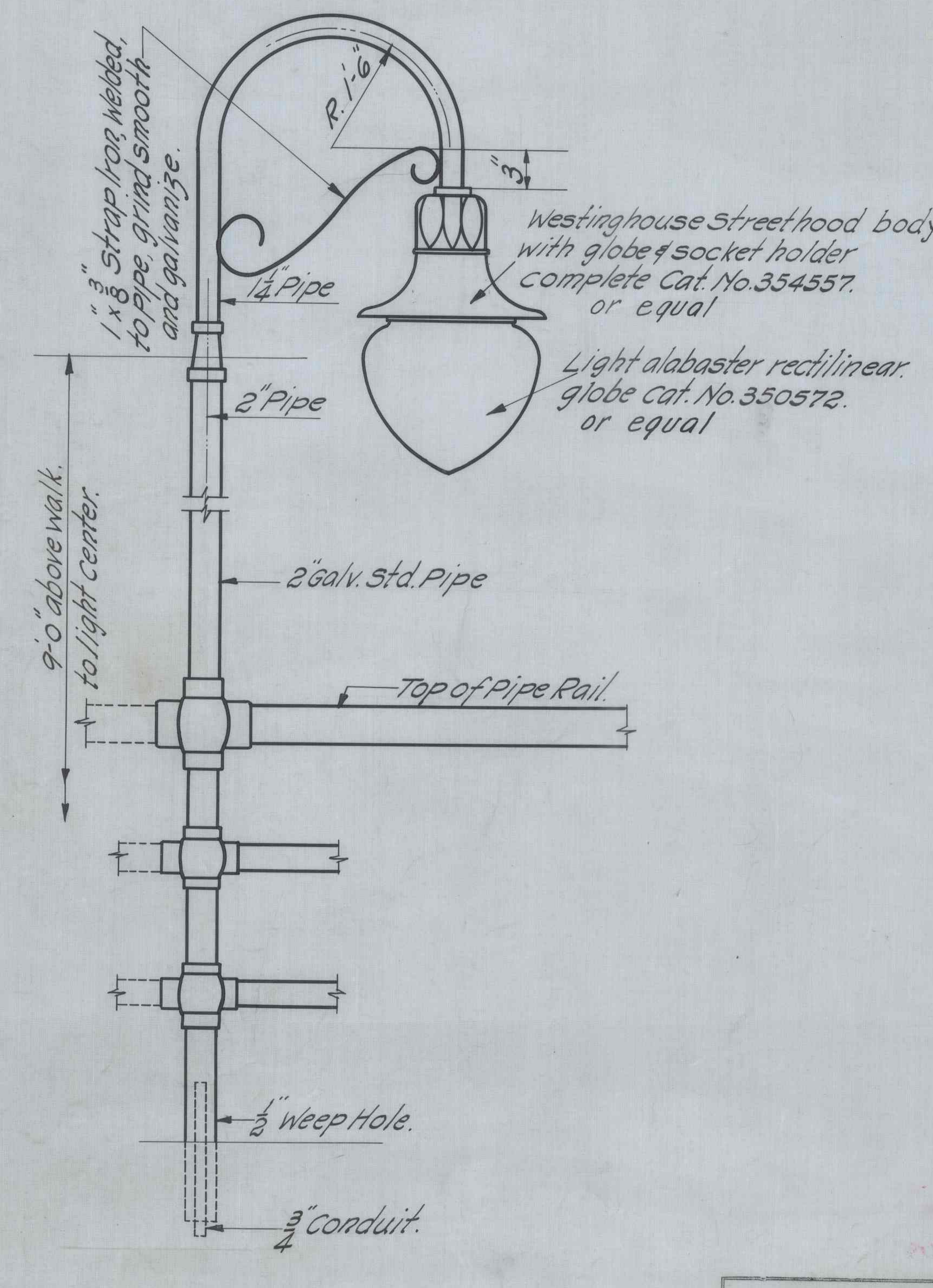
BRIDGE DIVISION
D. W. McMORRIS
CITY ENGINEER
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
GEN. PLAN OF FOOTINGS & SOIL TEST HOLES
SCALE — 1" = 50'-0"
DRAWN H. D. Graves
TRACED H. D. G.
CHECKED E J Legg
APPROVED Dec. 4 - 1931
BRIDGE NO. 3
FILE NO. 782-59
SHEET NO. 9
Property of City of Seattle
782-59-9
— 22859 —



WIRING DIAGRAM - NORTH APPROACH.



WIRING DIAGRAM - SOUTH APPROACH.



PIPE RAILING LAMP POST FOR LOADING PLATFORM AND STAIRS
12 Required.

MAY 19 1977

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THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS
CITY ENGINEER
DATE NOV. 16, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
LIGHTING, GEN. PLAN & WIRING DIAGRAM
SCALE AS SHOWN

DRAWN	TRACED	CHECKED	O.K.
Lamb	Sullivan	Gaines	Clark H. Eldridge

APPROVED Dec. 4, 1931 O. A. Piper

BRIDGE No. 3 FILE No. 782-59 SHEET No. 107

22956

North Approach Utilities
South Approach Utilities


North Approach Utilities
South Approach Utilities
PLAN
Scale-1"=60'-0"
ELEVATION.
1 Layer of water proof felt, 1" of hairfelt, all joints broken, 3 ply J.M. Asbestos Water proof jacket. Pipe to be laid on conduit hangers see sheet 109
Bent #18
Bent #17
Bent #16
Bent #15
Bent #14
Bent #13
Bent #12
Bent #11
Pier #10
Pier #9
Pier #8
Pier #7
Pier #6
Pier #5
Pier #4
Anchor Beam
Pier #3
Pier #2
8"P.S.
See Sheet #112 for Utilities
2 Bridge Inlets 2 Track Inlets
Std. C.B. Type B Trap
2.71%
3.04%
8"P.S. 11.5%
Ex. 12" Watermain
Elev. 8.
El. 10.
NOTE:-
All drainage pipe above ground to be 6" galv. Steel pipe Std. weight with one length of Cast Iron pipe at ground line. All fittings to be Cast Iron drainage fitting for Screw pipe galv. using a Y-branch and brass Cleanout plug at each change in direction unless otherwise noted. Piping underground to be city Standard 8" Sewer pipe. All Galv. pipe to be painted 2 field Coats as required for Structural Steel.
℄ Pier #10
Bridge Inlet
Track Inlet
PLAN.
Curb
6"-60° Branch.
6"-60° Y Branch
2-60° Y Branches.
Symm. about ℄.
ELEVATION
To C.B. Similiar to Bent #15.
SEC. ON ℄.
DRAINAGE AT PIER No. 10.
Scale-1/4"=1'-0"
℄ Bent #15
Track Inlet
Bridge Inlet
PLAN.
A.
6"-45° Y Branch.
2-6"-45° Y Branches
Lead Joint
6" C.I. Pipe
Symm. about ℄ Bridge
Std. C.B.
Elev. 47.00
Proposed Ground Line
8" Sew. Pipe
Plug for Cleanout
6" Galv. Steel Pipe
6"-45° Branch. Brass Cleanout Plug.
Pipe Straps
6"-45° Y Branches. Brass Cleanout Plugs.
ELEVATION.
SEC: A-A.
DRAINAGE AT BENT No. 15.
Scale-1/4"=1'-0"
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THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS CITY ENGINEER
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE, GEN. PLAN; DRAIN AT PIERS 10 & 15
SCALE AS SHOWN
DRAWN Lamb
TRACED Sullivan
CHECKED E.J. Lagg
APPROVED Dec. 4-1931
BRIDGE NO. 3
FILE NO. 782-59
SHEET NO. 111
Property of City of Seattle
782-59-111

22960


North Approach Utilities
South Approach Utilities
PLAN
Bridge Inlet
Track Inlet
℄ Floor Beam
℄ Pier
℄ Bridge
ELEVATION
Support Pipe at 8'-0" Intervals
½" Ø Rod See Detail
6"-90° Y Branch.
6"-5⅝° Ell. 6"-90° Y Branch.
Future Curb Line Elev. 28.88
MAP OF UTILITIES
SOUTH APPROACH
Scale - 1" = 20'-0"
Relay 24" C.I.P.
Take up Ex. 24" C.I.P. Watermain
Kill Ex. 16" C.I.P. Watermain
℄ Bridge
℄ Eastlake Ave.
℄ Fuhrman Ave.
12" Gas Main (Relaid)
Ex. Shaft to Tunnel.
New Curb
TOP VIEW
SEC. ON ℄ OUTLET
SEC. ON ℄ INLET
END VIEW
BRIDGE INLET
Scale - 3" = 1'-0" Material - Cast Iron - 14 - Req'd.
Tap For Standard 1-2⅝" 4" W.I. Pipe
SECTION-A-A
DRAINAGE AT SOUTH ABUT.
Scale - ¼" = 1'-0"
6" C.I. 45° Y Branch
6" Cleanout Plug (Brass)
6" C.I.P.
8" S.P. to C.B.
PIPE STRAP
Scale - 3" = 1'-0"
Galvanized - 22 Req'd.
⅜" Ø x 6" Lag Screw With Expan. Shield
¾" Holes.
PIPE HANGER
Scale - 3" = 1'-0"
24 - Req'd.
Grabler Insert #315.
½" Ø Rod to Hang Vertical
Bend to Fit
Hanger Ring
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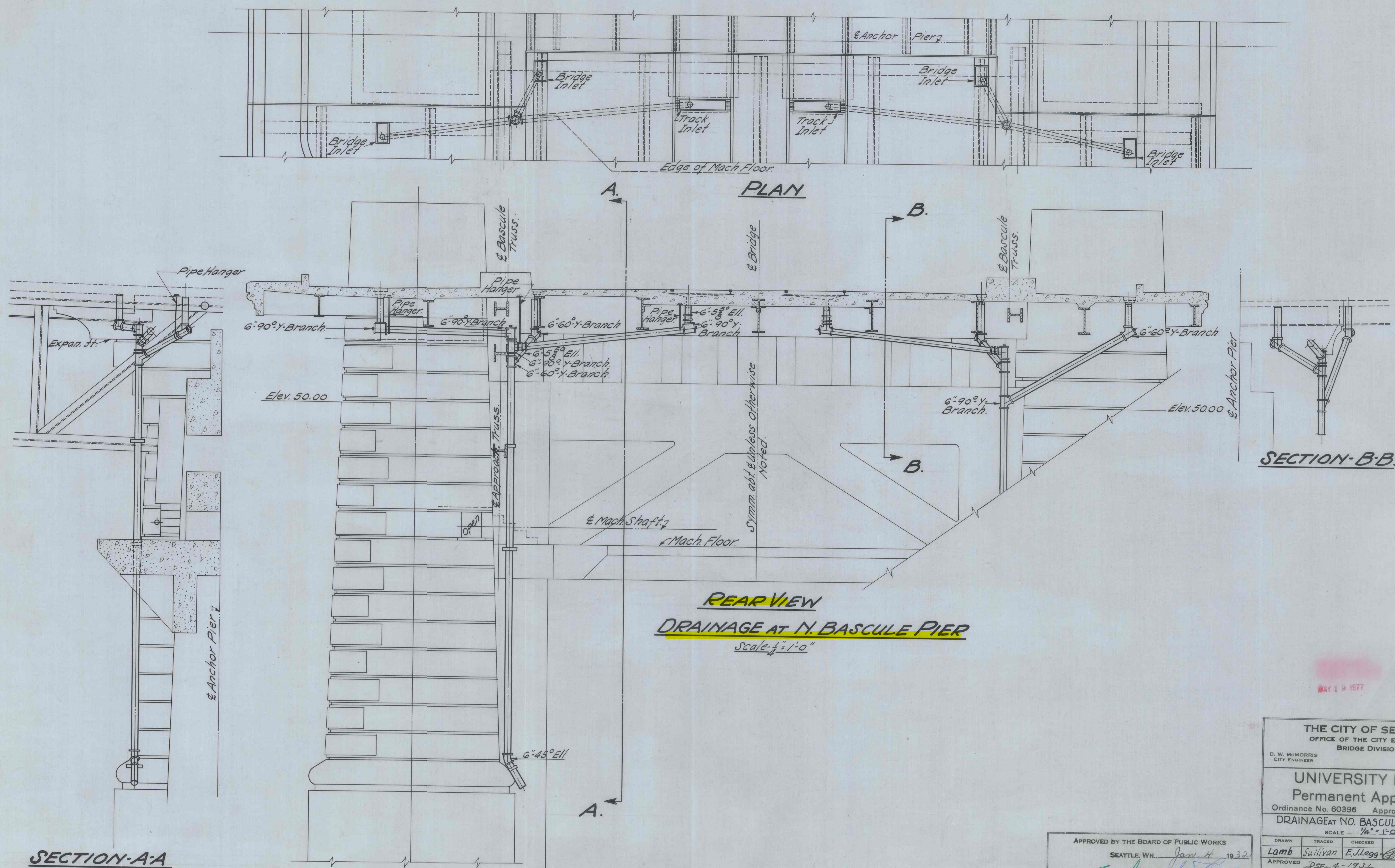
SEATTLE, WN. Jan 4 1932
ATTEST: SECRETARY CHAIRMAN
THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS City Engineer
DATE NOV. 16, 1931
UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE & UTILITIES, SO. ABUT.- BRIDGE INLET
SCALE - As Shown
DRAWN Lamb TRACED Sullivan CHECKED E. Jegg
BRIDGE NO. 3 FILE NO. 782-59 SHEET NO. 112
Property of City of Seattle
782-59-112
— 22961 —

North Approach Utilities
South Approach Utilities



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SEATTLE, WN., Jan. 4 1932
ATTEST: [signature] SECRETARY
[signature] CHAIRMAN

THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS, CITY ENGINEER
DATE NOV. 16, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE AT NO. BASCULE PIER
SCALE ¼" = 1'-0"

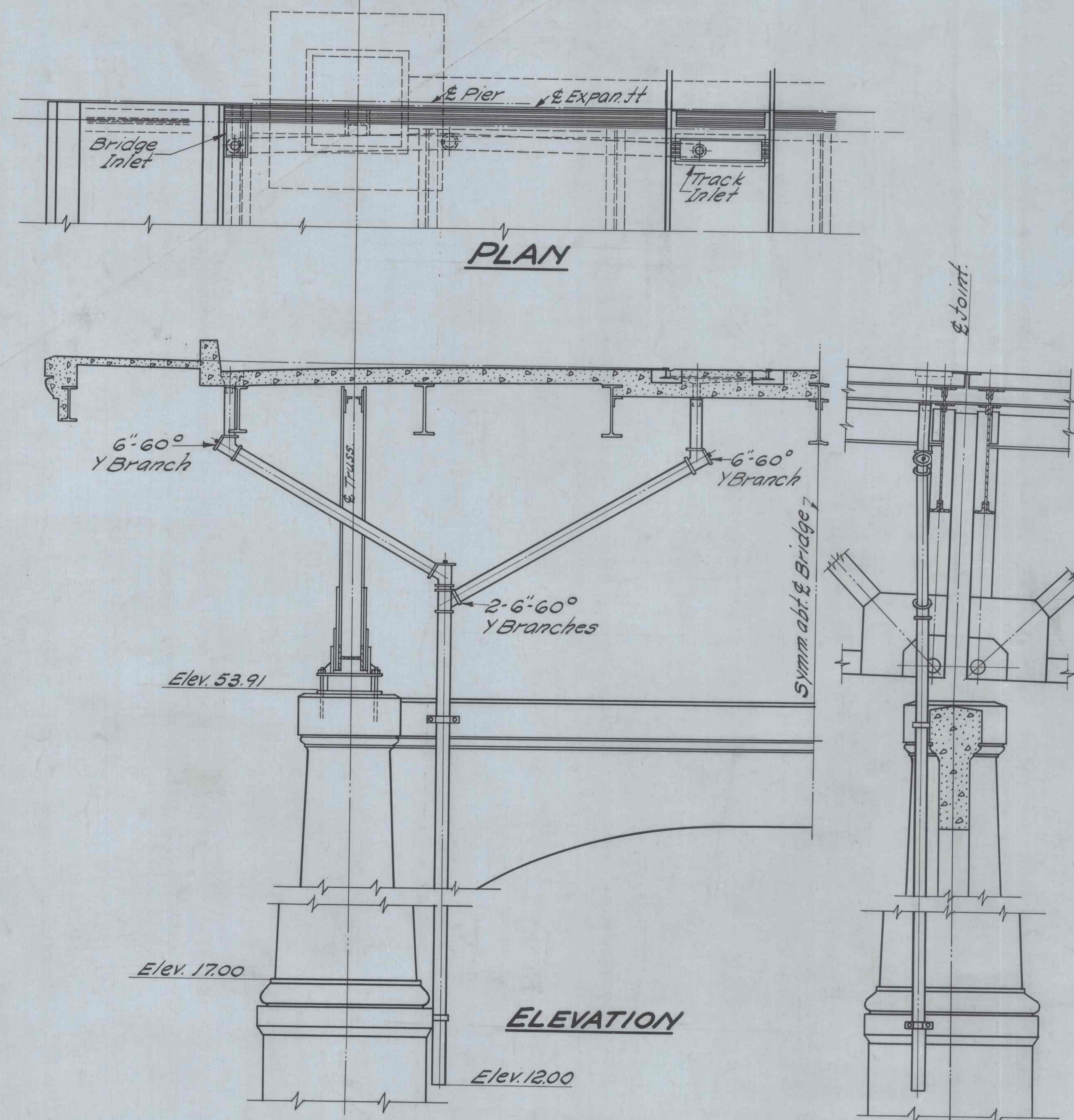
DRAWN	TRACED	CHECKED	O.K.
Lamb	Sullivan	E.J.Legg	Clark H. Eldridge

APPROVED Dec. 4-1931
O. A. Piper

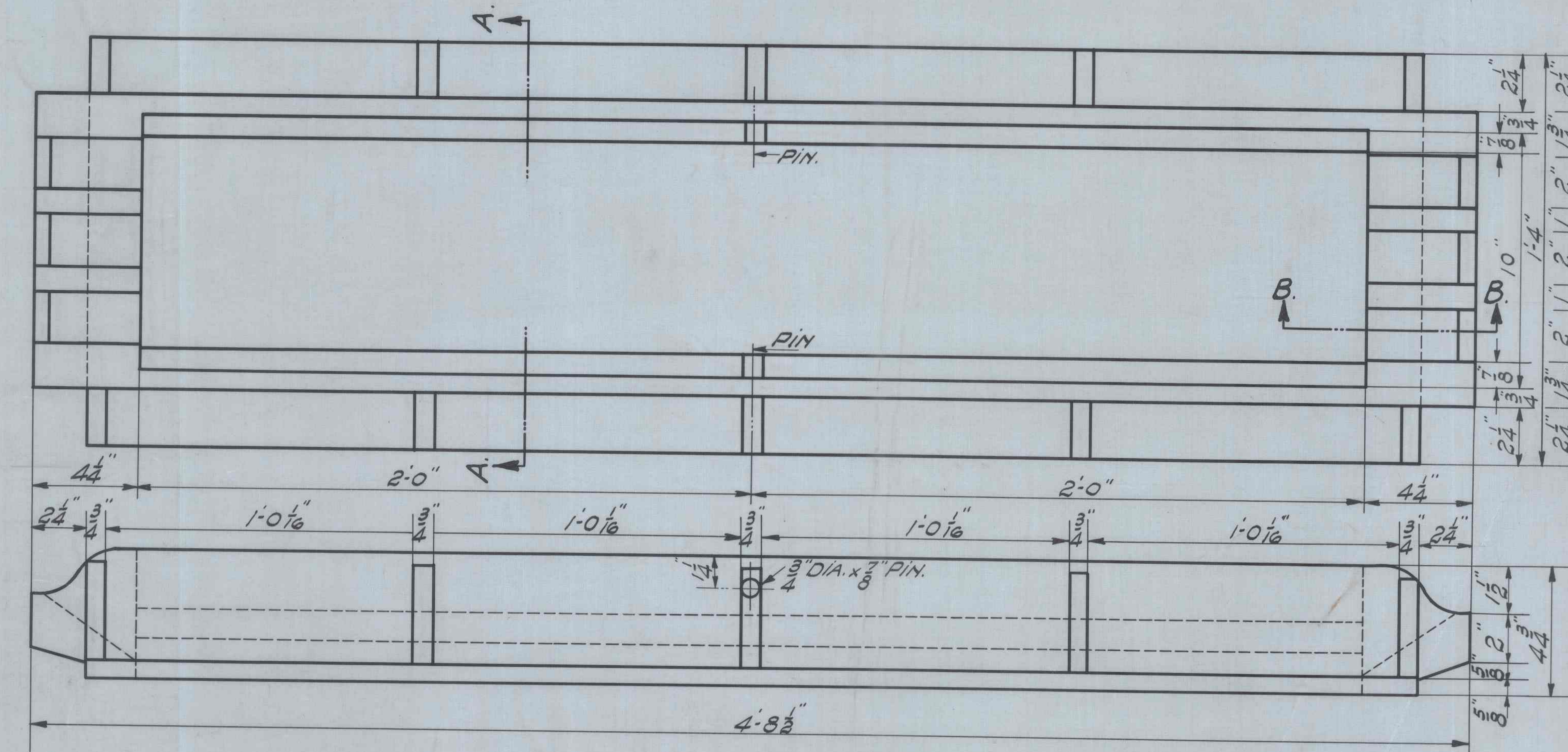
BRIDGE NO. 3 | FILE NO. 782-59 | SHEET NO. 113

— 22962 —

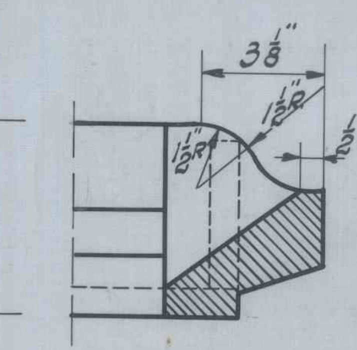
North Approach Utilities
South Approach Utilities



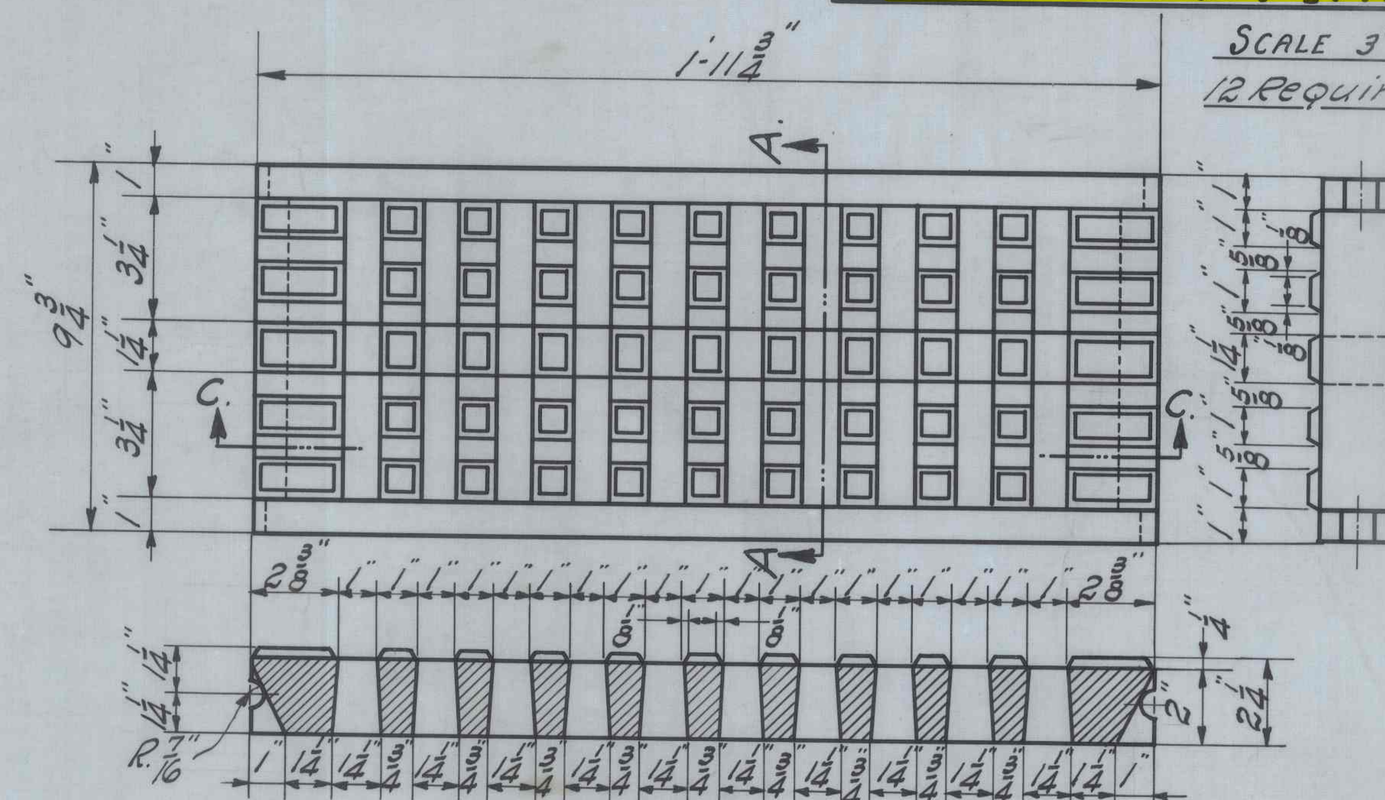
DRAINAGE AT PIER No. 7
DRAINAGE AT PIER No. 4 SIMILAR
Scale - 1/4" = 1'-0"



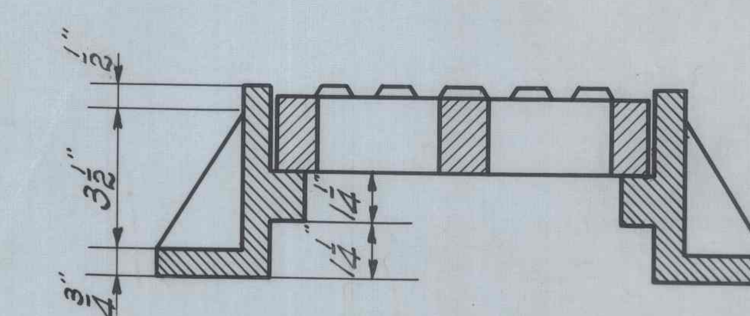
TRACK DRAIN INLET FRAME
SCALE 3" = 1'-0"
12 Required - Cast Iron



SECTION-B-B



TRACK DRAIN INLET GRATE.
SCALE 3" = 1'-0"
Municipal St. Ry. Pattern #4001
Approx. Wt. 81 Lbs. each.
24 Required. Cast Iron



ASSEMBLY SECTION-A-A

APPROVED BY THE BOARD OF PUBLIC WORKS
SEATTLE, WN. Jan 4 1932
ATTEST: SECRETARY CHAIRMAN

THE CITY OF SEATTLE
OFFICE OF THE CITY ENGINEER
BRIDGE DIVISION
D. W. McMORRIS, CITY ENGINEER
DATE NOV. 16, 1931

UNIVERSITY BRIDGE
Permanent Approaches
Ordinance No. 60396 Approved Dec. 4, 1930.
DRAINAGE AT PIER 7 & 4; TRACK INLET
SCALE — AS SHOWN

DRAWN	TRACED	CHECKED	O.K.
Lamb	Sullivan	E. Slagg	Clark H. Eldridge

APPROVED Dec. 4, 1931

BRIDGE NO. 3 FILE NO. 782-59 SHEET NO. 114

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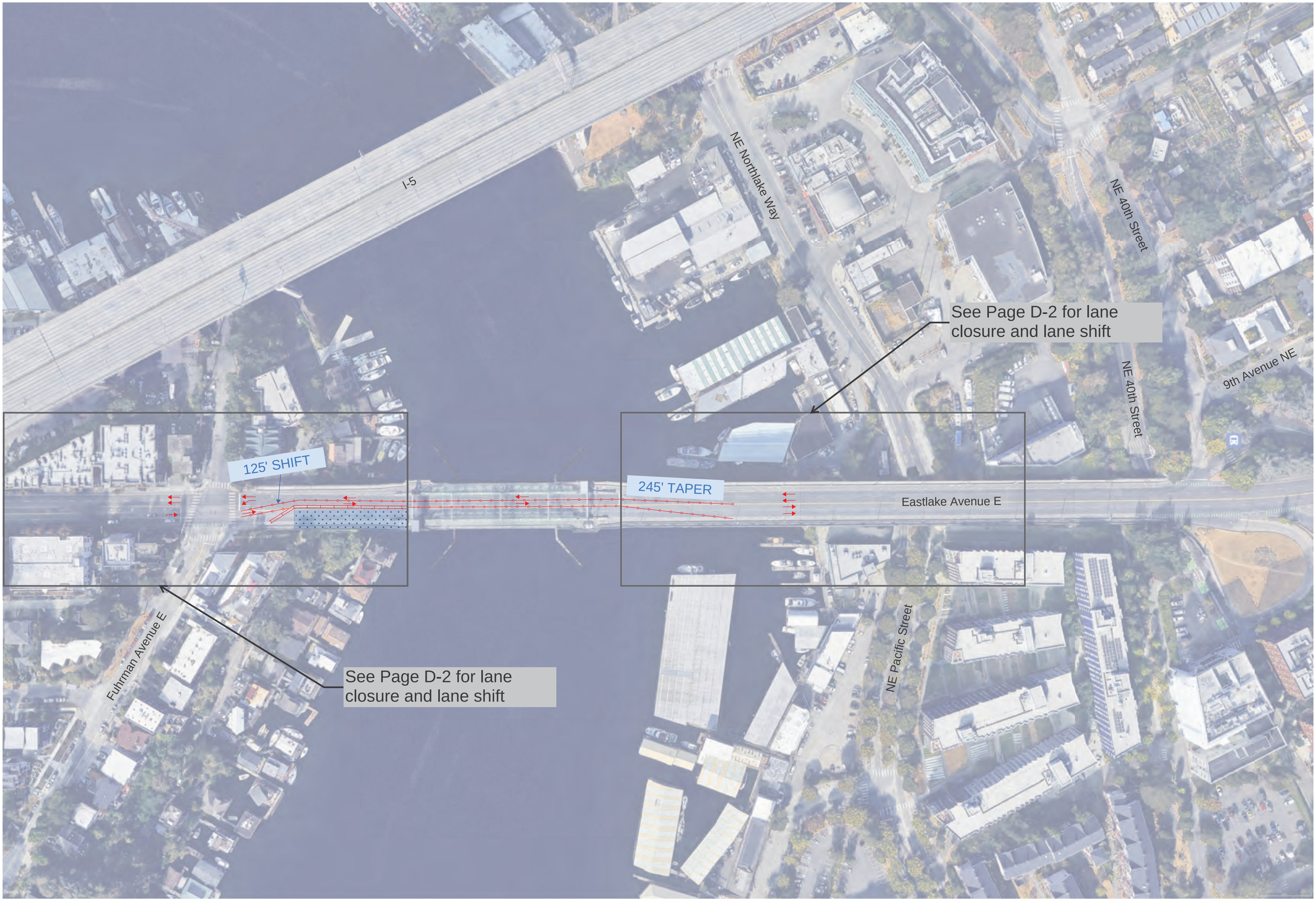
Attachment D

MOT Exhibits

University Bridge North Approach Planning Study

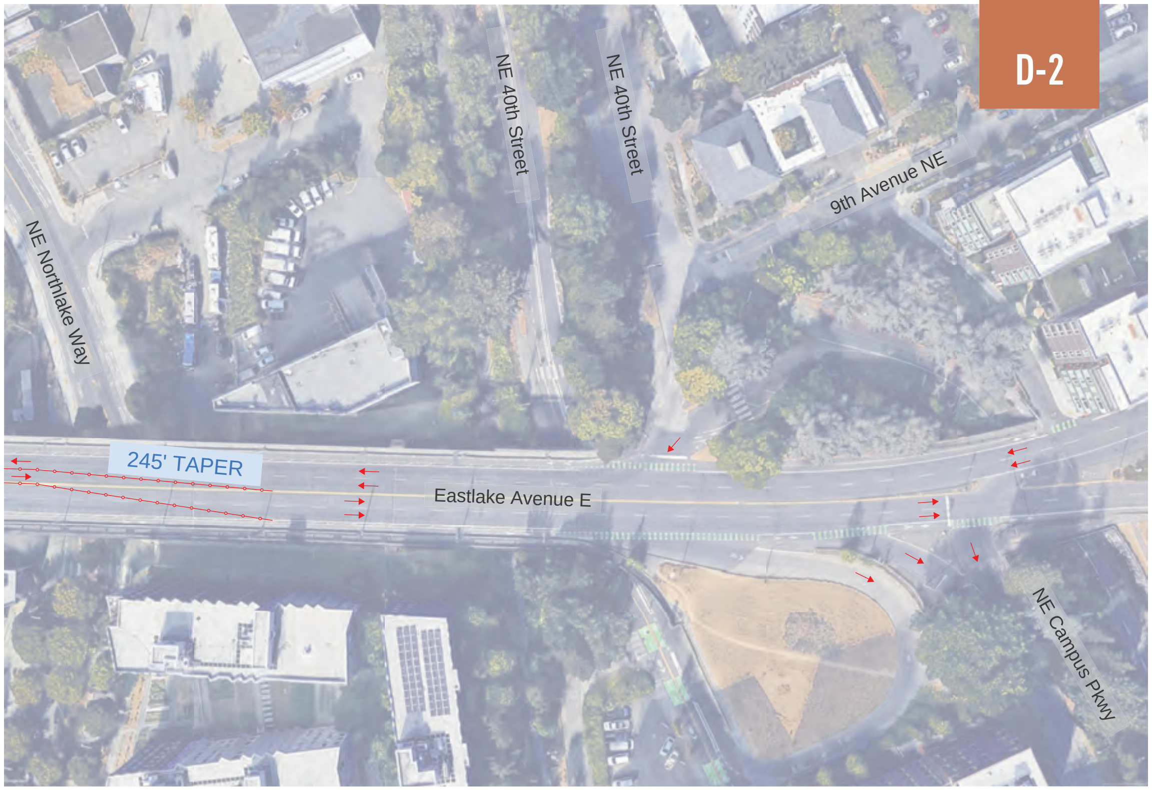
MOT Exhibits: South Spans-East Half



University Bridge North Approach Planning Study

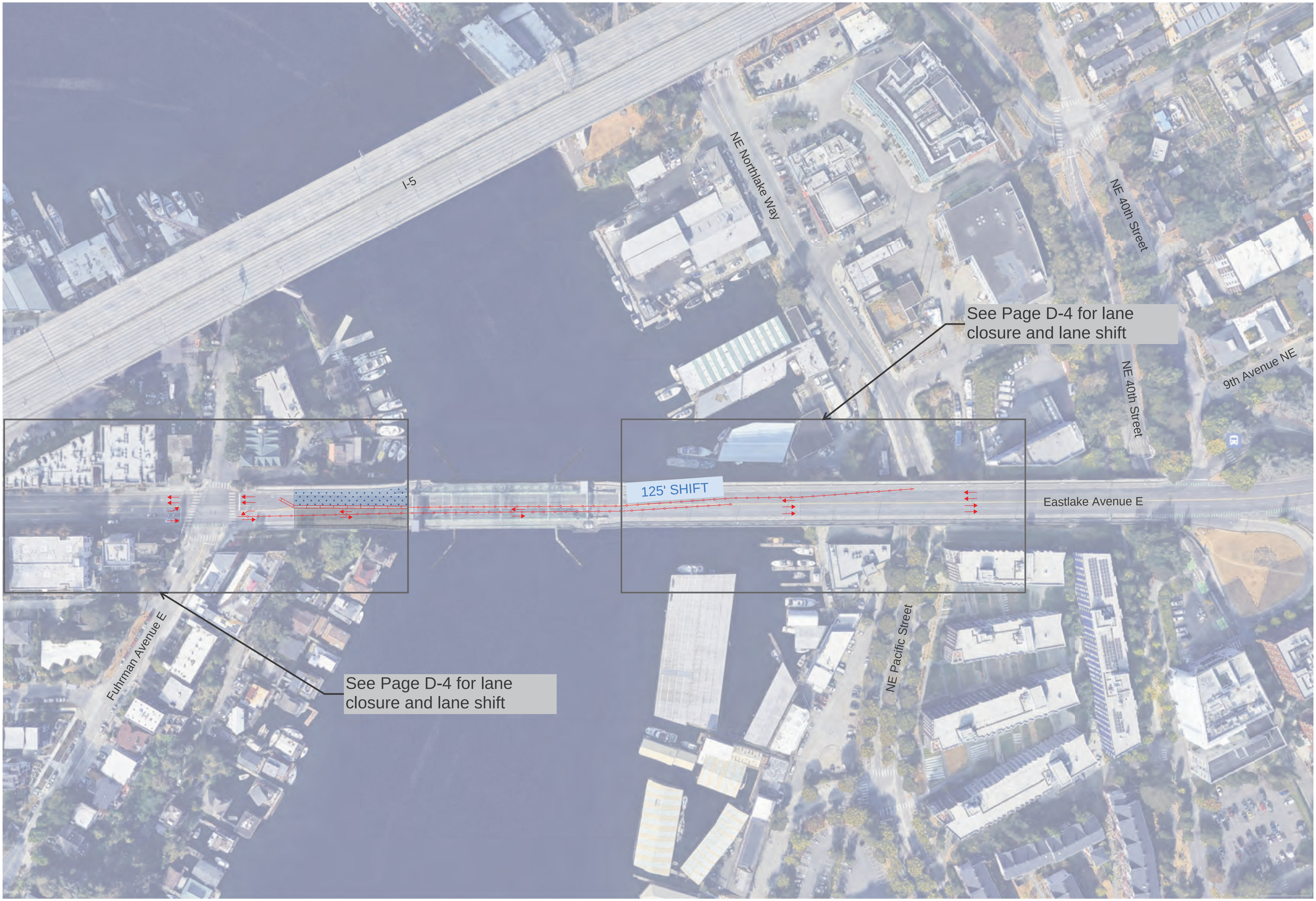
MOT Exhibits: South Spans-East Half

D-2



University Bridge North Approach Planning Study

MOT Exhibits: South Spans-West Half

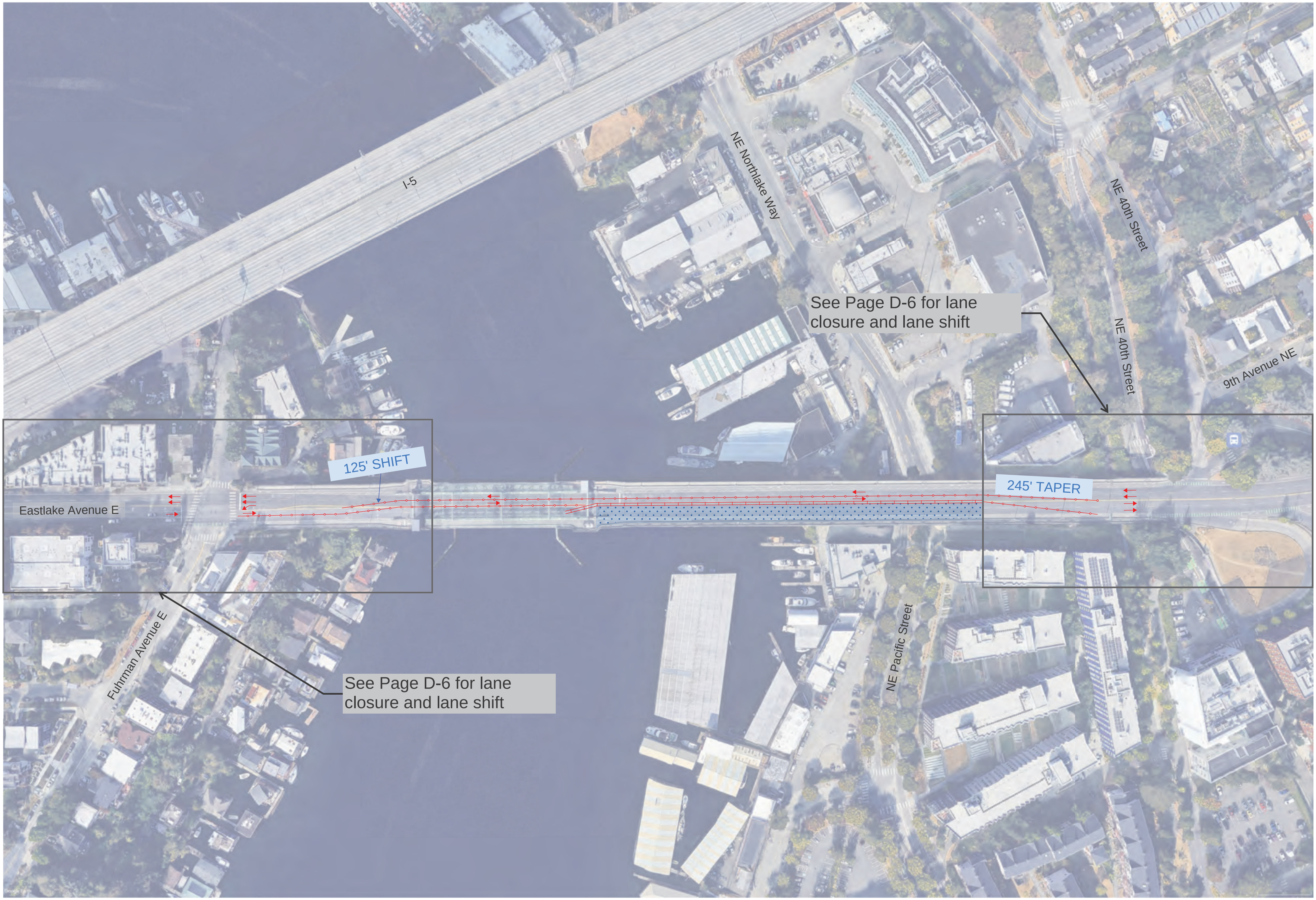


University Bridge North Approach Planning Study
MOT Exhibits: South Spans-West Half

D-4

University Bridge North Approach Planning Study

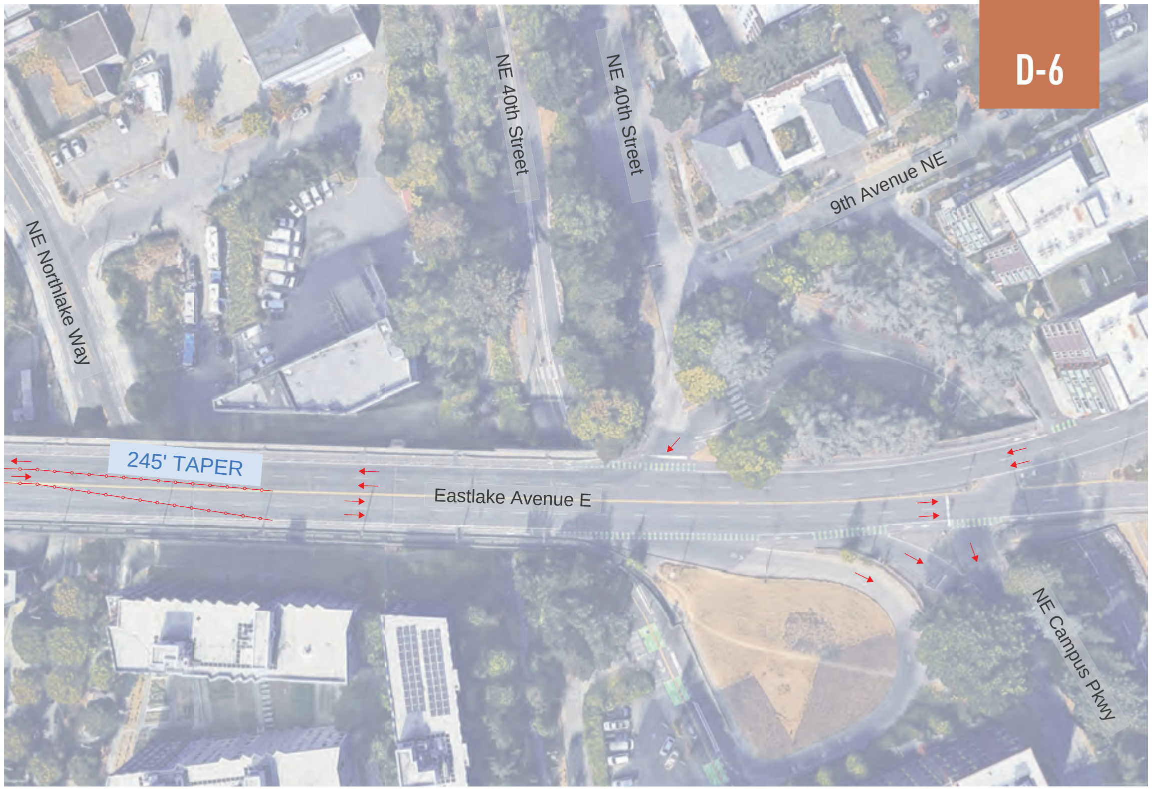
MOT Exhibits: North Spans-East Half



University Bridge North Approach Planning Study

MOT Exhibits: North Spans-East Half

D-6



University Bridge North Approach Planning Study

MOT Exhibits: North Spans-West Half

University Bridge North Approach Planning Study

MOT Exhibits: North Spans-West Half