Construction Approach Technical Report

Multnomah County | Earthquake Ready Burnside Bridge Project

Portland, OR

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Earthquake Ready Burnside Bridge Construction Approach Technical Report

Prepared for

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CERTIFICATION

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Acronyms, Initialisms, and Abbreviations

Couch Extension	Replacement Alternative with Couch Extension
EQRB	Earthquake Ready Burnside Bridge
I-5	Interstate 5
I-84	Interstate 84
IWWW	In-water work window
Long-span Alternative	Replacement Alternative with Long-span Approach
LRT	Light rail train
NEPA	National Environmental Policy Act of 1969
ODOT	Oregon Department of Transportation
Retrofit	Enhanced Seismic Retrofit
ROW	right-of-way
Short-span Alternative	Replacement Alternative with Short-span Approach
UPRR	Union Pacific Railroad
USCG	U.S. Coast Guard

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Executive Summary

The Earthquake Ready Burnside Bridge (EQRB) Project will include complex construction, unique construction techniques, and require extensive planning for many aspects of the project. Several stakeholders with facilities adjacent to or within close proximity to the bridge could be impacted during the Project. With the Project's complexities, the Project team has spent considerable time and effort developing options that could reasonably be built, and within the various bridge alternatives would mitigate large risks typically encountered during construction.

This technical report does not recommend any one specific alternative over another. However, when certain features specific to an alternative are shown, the technical report will specify a feasible and reasonable means and methods approach by which the work could be performed. Means and methods, and features to be included in the final design phase will continue to be refined. The opinions set forth within this technical report are based on information available at this time and may be subject to change.

When applicable, this technical report describes differences in anticipated work, construction techniques, and construction approaches between the various alternatives and their impacts on the various Project stakeholders. The following differences between alternatives will be described in further detail within the technical report. Further, a summary of differences can be found in Appendix H.

The construction schedule for the Project is anticipated to last between 3.5 and 6.5 years. The Enhanced Seismic Retrofit (Retrofit) alternative with no temporary bridge would be completed quickest, while Replacement Alternatives with a temporary bridge would take longest.

For all alternatives, the use of cofferdams is anticipated for river piers. The Replacement Alternative with Long-span Approach (Long-span Alternative) would have the least number of cofferdams because there would be one less pier in the water and ground improvements would not be required at Pier 1. The Replacement Alternative with Short-span Approach (Short-span Alternative) and Replacement Alternative with Couch Extension (Couch Extension) would have 3 full (4-sided) cofferdams and one 3-sided cofferdam adjacent to the harbor wall for anticipated ground improvements at Pier 1. The Retrofit alternative would also require a 3-sided cofferdam at Pier 1 and counting the upstream and downstream 3-sided cofferdams for the main river piers separately, this alternative would require 6 cofferdams.

For the Replacement Alternatives, the river piers could be shifted away from the existing piers and constructed without requiring cofferdams. If this were done, the drilled shafts would be installed in open water (i.e. with no cofferdam). Once all shafts were completed, perched foundations would be constructed on top of the drilled shafts using either a modified cofferdam and/or precast concrete units.

The Retrofit alternative would require substantial work to temporarily relocate the City of Portland's sewer pipes on the west side of the river as well as removing and replacing an approximately 175-feet-long section of harbor wall. All other alternatives mitigate having to perform this work. As part of the mitigation for the sewer line and the harbor wall, the

Short-span Alternative and Couch Extension shift the pier away from the river into Tom McCall Waterfront Park to avoid the sewer and harbor wall impacts. It is noted, however, that all alternatives except for the Long-span Alternative require ground improvements in the vicinity of Pier 1. This poses a risk to the integrity of the timber piles under the harbor wall and Pier 1. If the risk of destroying timber piles during ground improvement operations cannot be reasonably mitigated during design, sewer line relocation and harbor wall replacement would be required for all alternatives excepting the Long-span Alternative.

The Long-span Alternative eliminates the pier in its entirety and spans to just east of Naito Parkway, thus avoiding the sewer lines, harbor wall, and pier placement in Tom McCall Waterfront Park.

For all alternatives except for the Long-span Alternative, substantial ground improvements will be required at Pier 1 on the west side as well as Pier 4 and Bents 22, 24/25, and 26 on the east side. For the Long-span Alternative, ground improvements will only be required at proposed Bent 9.

It is feasible that the Long-span Alternative could be constructed using the existing deck as a work platform. If this were done, weekend closures of Interstate 5 (I-5) and the Interstate 84 (I-84) ramp could be largely reduced and instead, night closures utilized when required for erection work (demolition would still require weekend closures). For all other alternatives, several weekend closures are anticipated to demolish the existing bridge and construct the new.

Eastbank Esplanade closures are expected to be in the range of 2.5 to 3 years for all alternatives with the exception of the Long-span Alternative, which is expected to impact the Eastbank Esplanade for approximately 1.5 years. With construction of pedestrian/bicycle ramps to connect the Eastbank Esplanade to Burnside Bridge, a large portion of the Eastbank Esplanade will need to be removed, stored, and placed back at the end of the project to allow for equipment access. It is anticipated that Eastbank Esplanade usage will be feasible using a portion of the Contractor's work bridge to maintain connectivity through the project.

The Burnside Skatepark would need to be closed for the duration of work for the Retrofit alternative due to work that needs to occur within the skatepark. For all other alternatives, the skatepark could remain open the majority of the time with intermittent closures for overhead work such as demolition and girder erection.

Residences and businesses would largely be unaffected by the bridge replacement work with the exception of the Couch Extension. This alternative would require regrading of E 3rd Avenue as well as relocation of several access points to buildings because of the new bridge construction.

TriMet's light rail train (LRT) tracks would need to be shut down and shifted to bus bridges several times during construction, in order to perform retrofit or replacement work. For all replacement alternatives, the anticipated closure time is 5 weeks (10 weeks if a temporary bridge is used) of cumulative shutdowns to demolish the existing bridge and erect new slab girders. For the Retrofit, the anticipated closure time is 8 weeks (16 weeks if a temporary bridge is used) of cumulative shutdowns.

1 Introduction

As a part of the preparation of the Environmental Impact Statement for the Earthquake Ready Burnside Bridge (EQRB) Project, this technical report has been prepared to identify and evaluate the approach to construction of the various alternatives within the Project Area.

The *EQRB Construction Approach Technical Report* describes the anticipated approach to the work for each bridge alternative. Further, the technical report includes detailed phasing/staging considerations, and anticipated durations of work.

The anticipated alternatives studied include (Figure 1):

1. Enhanced Seismic Retrofit of the Existing Bridge (Retrofit)
2. Replacement Alternative with Short-span Approach (Short-span Alternative)
3. Replacement Alternative with Long-span Approach (Long-span Alternative)
4. Replacement Alternative with Couch Extension (Couch Extension)

Each of the above alternatives was studied with and without a Temporary Detour Bridge Option (Temporary Bridge) for the following modes:

1. All modes
2. Transit, bicycles and pedestrians only
3. Bicycles and pedestrians only

Further, the *EQRB Construction Approach Technical Report* is organized into two major categories for each bridge alternative:

1. Construction Approach and Impacts
2. Construction Schedule

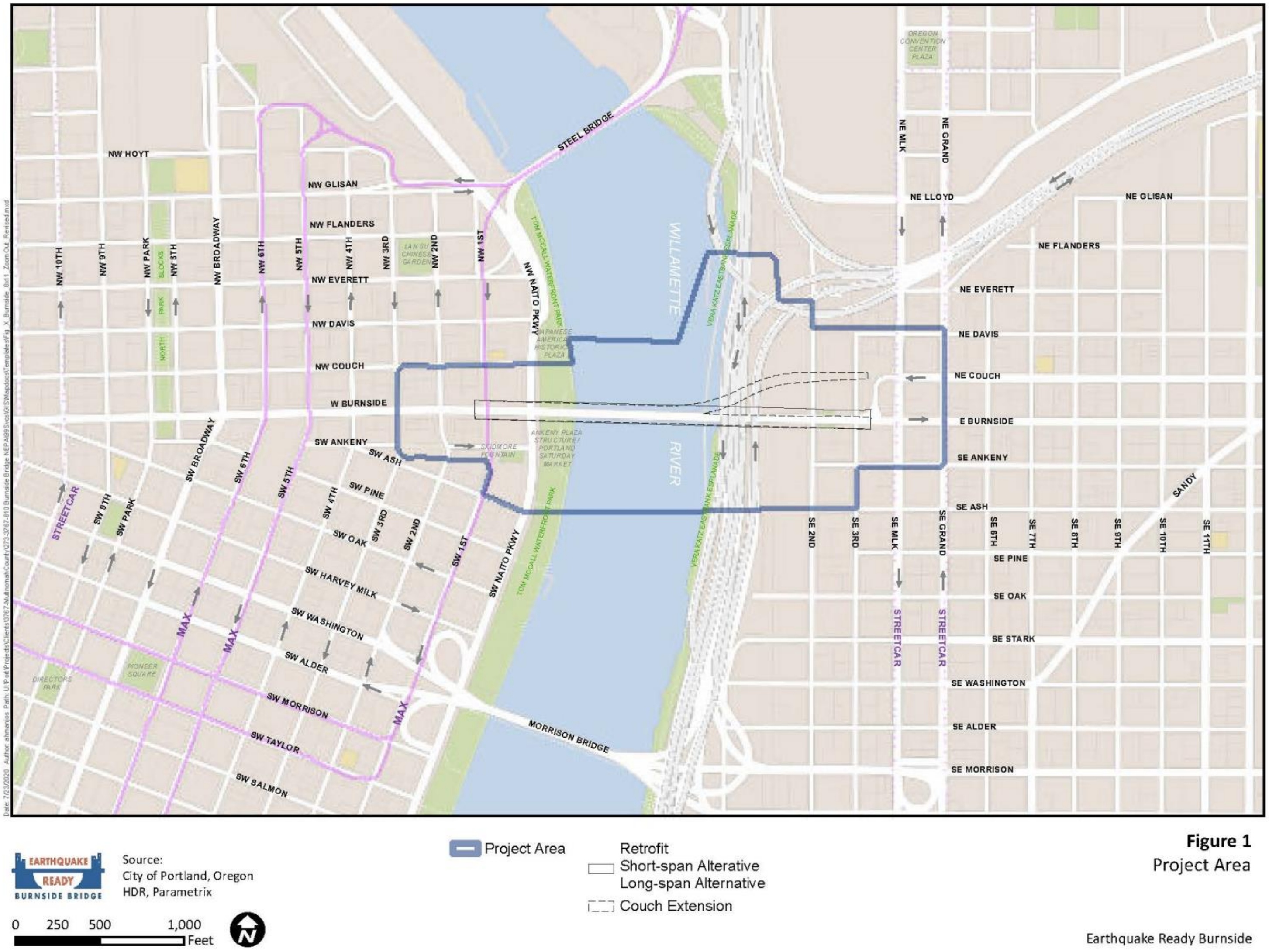
1.1 Project Location

The Project Area is located within the central city of Portland. The Burnside Bridge crosses the Willamette River connecting the west and east sides of the city. The Project Area encompasses a one-block radius around the existing Burnside Bridge and W/E Burnside Street, from NW/SW 3rd Avenue on the west side of the river and NE/SE Grand Avenue on the east side. Several neighborhoods surround the area including Old Town/Chinatown, Downtown, Kerns, and Buckman. Figure 1 shows the Project Area.

1.2 Project Purpose

The primary purpose of the Project is to build a seismically resilient Burnside Street lifeline crossing over the Willamette River that would remain fully operational and accessible for vehicles and other modes of transportation following a major Cascadia Subduction Zone earthquake. The Burnside Bridge would provide a reliable crossing for emergency response, evacuation, and economic recovery after an earthquake. Additionally, the Project would provide a long-term safe crossing with low-maintenance needs for 100 years.

Figure 1. Project Area



Source:
City of Portland, Oregon
HDR, Parametrix

Figure 1
Project Area

2 Construction Approach and Impacts

The EQRB Project poses unique construction challenges for each of the three alternatives. Within these alternatives, many of the construction approaches will be similar, if not identical. However, there will also be differences between the alternatives that would affect the construction approach dramatically.

Similar construction approaches and challenges will be discussed as a whole, while differences in construction approaches will be discussed specific to each alternative. In order to focus construction approaches and challenges, these have been broken down by construction type.

2.1 Construction Access

In order to construct the Project, the contractor would need access alongside the bridge in as many locations as possible. The access needs would be similar for all alternatives along the existing alignment. Additionally, for the Couch Extension, the contractor would need access along the Couch tie-in and the alignment of the Couch couplet. For all cases, the contractor would need additional width outside the bridge footprint, so that equipment such as cranes can service the work. Although preferable to allow the contractor as much room as possible, the Project should allow the contractor 30 feet to 40 feet work areas, where feasible, on each side of the bridge. Where 30 or 40 feet is not available; minimal space, approximately 10 feet, would be required to traverse equipment back and forth. In some cases, where the buildings butt up to the bridge and there is physically no room, the contractor would need to access these points from directly beneath the bridge or from adjacent City of Portland (City) streets.

Access to the Burnside Bridge will be challenging and more complex than typical bridge projects. Access is complex for several reasons:

- Work bridge access on the west side would be from sensitive areas through a Portland Parks facility and near the Japanese American Historical Plaza
- Existing sewer pipes on the west side running adjacent to the harbor wall complicate installation of the work bridge and permanent work
- Low headroom on east side under existing freeway and freeway ramps
- Union Pacific Railroad (UPRR) railroad tracks on east side
- Numerous buildings directly adjacent to the bridge on both east and west approaches
- Truck access is feasible, but constrained on City streets and would need to move through heavy city traffic to access site
- Navigable river with large vessels travelling through the construction site

In order to access the site, several likely means have been developed. For a full layout of access routes, see Appendix A.

- East Side Site Access West of UPRR Tracks: In order to construct the new or retrofitted bridge, either of the properties immediately north or south of the bridge, or both properties, would need to be purchased as part of the project. The Project team assumes that a portion of these properties would be utilized as staging yards during construction. As such, a temporary railroad crossing could be installed from one of the properties to access the Oregon Department of Transportation (ODOT) access road that runs north/south adjacent to UPRR's tracks between SE Stark Street and the bridge site. Once a temporary crossing is installed, the contractor would have direct access over the tracks without having to bring equipment, trucks, etc. into live traffic.
- Willamette River East Work Bridge: The Project team assumes that the eastern piers (existing Pier 3/new Bent 9 (Bent 8 for the Long-span Alternative) and new Pier 4/new Bent 10) would be accessed by a work bridge extending from the east bank. For a detailed description of pier/bent layout and numbers, see the *EQRB Bridge Replacement Technical Report* (Multnomah County 2021a). Work bridge "fingers" would need to be installed around three sides of Pier 3/Bent 9 (Bent 8 for the Long-span Alternative), and one finger would be installed at Pier 4/Bent 10 (for at least the Pier 4 demolition). As studied, the channel side of Pier 3/Bent 9 (Bent 8 for the Long-span Alternative) would need to be kept clear to allow for maximum navigational width. Due to low headroom issues with the Morrison exit ramp off I-5, the work bridge would need to be built several hundred feet to the north of Burnside Bridge to a point where it could turn under the highway with sufficient headroom to install the work bridge and mobilize large equipment in and out. The east work bridge would connect to the ODOT access road, allowing direct connectivity between the east side "storage yard(s)" and the eastern river piers. See Appendix A for more detail.

  As an alternative to an extensive work bridge that provides access from land, the contractor could build a work bridge around the east river pier only. If this were done, the contractor would need to lift pieces of the crane, drill equipment onto the work bridge from a barge, and build the equipment on the work bridge. This process would be tedious but would avoid a lengthy work bridge. With this option, materials would need to be brought in via barge.
- East Approach Access: Access to the east approach work would be accomplished through a combination of property acquisition and temporary construction easements on City streets to allow for space on either side of the bridge for equipment. The contractor would need to bring equipment in, on, and around City streets for accomplishing the work. When girders are erected, large cranes would need to be set up on each end of the span, to lift the girders into place in tight constraints. It is likely that short-term closures would be required on City streets to allow for large equipment such as cranes to stage for specific operations.
- West Side Site Access to Bridge: Access from the west side of the Project would likely be from Naito Parkway. The area around the bridge would be a necessary staging area for equipment and materials. The contractor would need a minimum of 40 feet outside the bridge limits on the north side, in order to gain access to a work bridge in the river. For equipment and material staging, the contractor would need to

use the area encompassing the Japanese American Historical Plaza, the area under the bridge, and a large area south of the bridge in Park property.

- Willamette River West Work Bridge: The Project team assumes that the western river pier (Pier 2/Bent 8 (Bent 7 for the Long-span Alternative)) would be accessed by a work bridge extending from the west bank, just north of the existing bridge. Depending on which alternative is selected, the existing Pier 1 may need to be accessed by a work bridge as well. Work bridge “fingers” would extend around three sides of Pier 2/Bent 8 (Bent 7 for the Long-span Alternative), with the channel side of the pier kept clear for river traffic.
- West Approach Access: The west approach crosses Waterfront Park with active bicycle/pedestrian paths, TriMet’s MAX line, and City streets. The contractor would need to bring equipment in, on, and around City streets and adjacent to TriMet’s tracks to accomplish the work. Additionally, the parking lot adjacent to Mercy Corps would need to be used for equipment placement during work. When girders are erected, large cranes would need to be set up on each end of the span, to lift the girders into place in tight constraints. Access to the various spans would require short-term closures to allow for large equipment such as cranes, to stage for specific operations.
- Barges: Due to limited space available for equipment and material laydown/storage onsite, it is likely that the contractor would need to supplement any available storage yards with barges. Barges provide large areas to store and/or pre-build materials such as rebar cages and allow the contractor the ability to move barges in and around work as needed. Although barges are versatile, moving them around is a cumbersome and arduous task, taking substantial time and typically affecting production while workers wait for barges to be positioned. Further, barges are expensive to keep on hand.
- Offsite Staging Yard: Due to limited storage space onsite, it is anticipated that the contractor would require an offsite storage yard. In order to provide maximum value with the expectation for onsite barges, the Project team expects that an offsite storage yard would need to have a dock or at least have riverfront access with potential to construct a temporary dock. This would allow the contractor to pre-stage materials and equipment at the yard, and then load onto barges as needed, to be shipped to the project. Multnomah County may or may not secure the property, prior to bringing a contractor onboard. Should the Multnomah County elect not to secure a property ahead of time, the contractor would do so during the pre-construction phase in preparation for the work. For potential locations of offsite storage yards, please see Appendix B. Other sites may be available for contractor use, based on contractor’s preference.

2.2 Dredging/Rip Rap Removal

Prior to installing any piling, drilled shafts, or cofferdams, any rip rap in the vicinity of the work, and notably in the areas close to the main river piers, would need to be removed. The rip rap would be removed by using a crane mounted on a barge using a clam shell bucket to remove rip rap and placing it on a barge to be disposed of properly.

There is a strong likelihood that remnants from the first, or existing Burnside Bridge are still present within the channel, as well as potential debris, old cars/pieces, or the like that may have been deposited into the river. These items (such as the foundation for the old swing bridge) would need to be removed or cut down below the "new" riverbed elevation.

In addition to the above-mentioned activities, if the piers are demolished using wire sawing techniques, the area directly around the existing piers would need to be dredged to expose the "cut line" of the wire sawing. As currently envisioned, existing piers would need to be removed to a minimum of three feet below the natural riverbed/bottom, meaning that dredging would need to be done to at least four feet below river bottom to be one foot below the wire saw line.

2.3 Temporary Bridge

A temporary bridge may be constructed in conjunction with any of the bridge alternatives to allow construction of the main river spans to take place while maintaining either vehicular, bicycles and pedestrians traffic (all modes), or bicycles and pedestrians only traffic during construction. A temporary bridge would be constructed to the south of the permanent bridge and tie into both the east and west approach spans (see Appendix A for approximate locations). Due to the tie-in locations, the last several spans of the east and west approaches would need to be constructed in halves to accommodate traffic. See Section 2.3.4 for additional details on this construction.

The temporary bridge would be founded on steel piles, both on land and in the water (Willamette River). Piling would either extend all the way to caps that support the temporary deck girders or would be encapsulated in pile caps with columns constructed on top of the pile caps. Piling would be driven using conventional methods, and it is assumed that vibration monitoring equipment would be placed throughout the site to monitor vibration caused by pile driving. During the final design phase, it may be determined that certain utilities are more vulnerable or sensitive to vibration, in which case, the pile holes could be pre-drilled to avoid vibratory installation techniques.

Over the active navigation channel (between Piers 2 and 3), the temporary bridge would need to be constructed to accommodate river traffic up to 147 feet tall. This would be accomplished by installing a movable lift section in the temporary bridge that would raise to Elevation 167.1 (NAVD 88) when needed to accommodate river traffic. Although several options would be feasible for a temporary lift bridge, the Project has shown a modular truss as a feasible option for spanning the channel and being able to provide enough width to carry all modes. The modular bridge would be pre-constructed on a barge, then floated into place on a barge and hoisted into position using the temporary bridge's lifting cables. A temporary closure of the navigation channel would be required to hoist the temporary lift bridge into place.

Water that falls on the temporary bridge will need to be collected and treated prior to being released either into the river or into an appropriate drainage facility. To do this, several options would be available to the contractor including treatment catch basins on the temporary bridge, temporary detention swales, or other temporary treatment facilities. It is likely that the contractor would install temporary piping on the temporary bridge and pipe the runoff water to either side of the river to Baker tanks. The water would then be filtered, tested, and released.

If a temporary bridge were incorporated into the project, there would be several complications associated with completing the work, as described in more detail in the following sections.

For a temporary bridge accommodating all modes, either the alignment of the temporary bridge would need to be significantly shifted to accommodate constructing the second half of the approach, or the Project would need to wait for the main spans to be completed. Once the main spans are complete, there would be sufficient space for traffic to occupy approximately half of the newly built bridge allowing the temporary bridge to be disconnected and the second half of the approaches constructed. The schedules in Appendix G assume that the main spans would be completed prior to shifting traffic.

For a temporary bridge accommodating bicycles and pedestrians only, the alignment could potentially be adjusted to intersect the completed portion of approach span to allow construction of the second half of the approach spans prior to the main spans being complete. Further, the construction of a temporary bridge accommodating bicycles and pedestrians only would be narrower, thus allowing for more of the approach spans to be built during the initial phase.

2.3.1 In-Water Temporary Bridge Piers/Piling

A temporary bridge would require a substantial number of piles to support not only the approach spans and in-water spans, but also to support a movable portion of the temporary bridge to allow for river traffic to continue to traverse the river.

Any of the in-water piles would need to be installed within the in-water work window established for the Willamette River using barge-mounted equipment (cranes) to access the work. The in-water pile driving and vibratory window starts on July 10 and concludes October 15 each year. In addition to the window being fairly short, the contractor would also be limited to a certain number of blows (impact hits) and a limited number of piles per day when driving piles. This restriction does not apply to vibratory installation methods, only to driving piles with impact hammers. Because of this restriction, a contractor would likely need to use a combination of vibratory and driving methods to attain required embedment and stay in compliance with limitations on pile driving. Typically, and in order to maximize pile installation production, this is accomplished by using a vibratory hammer to install a pile as deep as possible and then driving the pile the remainder of the way to refusal. Actual restrictions on pile driving (in terms of number of blows and number of piles) are still in development. For planning purposes, the Sellwood Bridge Project completed by Multnomah County in 2016, had restrictions of 1,000 blows and/or a maximum of 5 piles per day, whichever was reached first.

Once several piles are “pre-driven” using a vibratory hammer, the contractor would then use a pile hammer to drive the piles to refusal. The goal for the contractor would be to maximize the number of blows per day and ensure installing the maximum number of piles to refusal. As such, it would be important for the contractor to pre-drive several piles ahead of the pile driving each day to ensure that they have sufficient time each day to complete impact driving. Typically, a contractor would have enough piles pre-driven such that they could begin the day driving piles to refusal. Once they exhaust the number of blows or number of piles for the day, the contractor would then switch to vibratory methods to install as many as possible for the next day's work. This process would continue until all piles are driven.

One complication experienced during pile driving in water is the need to use barge-mounted equipment to drive piles. Using barges creates inefficiencies because moving between stations can be slow and cumbersome. This process results in driving downtime and, if not planned well, could result in the contractor missing days of potential driving time. The in-water work window does not allow much time for mishaps. The number of in-water piles estimated for the temporary bridge is 350 and the number of piles estimated for the work bridge is 300. This means that in a standard pile/vibratory in-water work window, the contractor would need to impact 10 piles per day to refusal to install all piles in one in-water work window.

For a temporary bridge accommodating bicycles and pedestrians only, the number of piles would be less than for a temporary bridge that included vehicles because a temporary bridge accommodating bicycles and pedestrians only would be narrower.

2.3.2 Movable (Lift) Truss

One of the unique features of the EQRB Project is the possibility of installing a temporary lift bridge over the navigable channel. Installation of the lift truss would require the navigable channel to be shut down while the truss is barged into place and then hoisted into position. The Project team assumes the cables and winch system used to raise and lower the bridge in place would be used to hoist the truss into position. Performing this operation would require substantial planning and coordination with the U.S. Coast Guard (USCG) to ensure a proper window is selected that results in minimal disruption to marine traffic.

A similar closure window would be required at the end of the project in order to remove the temporary lift span, in which the operation would be performed in reverse.

2.3.3 Temporary Bridge Installation over I-5, I-84, and UPRR

The temporary bridge would need to span over mainline I-5, the Morrison off-ramp, the I-84 westbound to I-5 southbound on-ramp, and the I-5 northbound to I-84 eastbound ramp in a single span. This long-span (in the range of 170 feet) would need to be set during a full closure of I-5, I-84 ramps, and the Morrison exit. Due to an assumed limited closure window, it is likely that the temporary bridge would need to be pre-built and launched or lifted into place.

The temporary bridge must also span over UPRR's railroad tracks. Setting the temporary bridge over these tracks would involve coordination with UPRR to ensure that there is a long enough track window to lift the span into place with a crane, which would likely be set up on the ODOT access road adjacent to UPRR tracks.

In addition to affecting I-5, I-84, and UPRR, the City of Portland's Eastbank Esplanade would need to be shut down with Eastbank Esplanade users temporarily detoured, and the Eastbank Esplanade temporarily moved out of its location to allow barge access to set the temporary bridge. Elsewhere in this report, it is noted that other operations on the

Project would also impact the Eastbank Esplanade, which would require intermittent and/or long-term (minimum one month) closures.

2.3.4 Temporary Bridge Impact on Permanent Construction

There are several temporary bridge considerations being evaluated. These include accommodations for: a) all modes of traffic, b) transit, bicycle, and pedestrian traffic only, or c) bicycle and pedestrian traffic only. Option c) would be approximately half the width of alternatives a) and b). The temporary bridge alignments do not extend beyond the existing abutments on the east and west approaches, due to the close proximity of several existing buildings at either end of the bridge. This would otherwise require large right-of-way (ROW) purchases the entire length of the bridge, which is not practical.

Instead, the temporary bridge would extend beyond the main spans and tie in within the east and west approach spans. The consequence of this is that the east and west approaches would need to be staged in order to complete the work. For the Long-span Alternative, the temporary bridge tie-in is located a little further east in order to clear the end of the long-span terminus.

With this scenario, and the assumption that the temporary bridge would be on the south side of the existing bridge, the north half of the approach (both east and west) would be built first. The south half of the approach could be accomplished in one of three ways:

1. After the north side is constructed, the temporary bridge would be removed, and the bridge effectively shut down to all modes of traffic. This would allow for the south half of the approach spans to be constructed during the same time frame that the main river piers were being constructed by building the south half of the approach spans including the area that had previously been used to accommodate traffic. Of the options involving a temporary bridge, this method would be the most straightforward for the contractor and the least costly option for constructing the south half of the approach spans. This option is not advanced because it would require a lengthy traffic detour (6-12 months) to adjacent bridges.
2. After the north side is constructed, it may be feasible that the temporary bridge could be realigned to move the tie-in point to a section of bridge that had just been constructed/rehabilitated. This would allow for the south side of the approaches to be constructed. Although this option would result in additional cost to relocate the tie-ins and would be dependent upon which alternative was selected, the work could be accomplished within the time the river spans are being constructed given that the river spans would take substantially longer to construct than the approach spans. This option is not considered the baseline because it is dependent on many unknown factors at this time. It is recommended that this approach be investigated during the design phase.
3. After the north side is constructed, the traffic would remain on the temporary alignment until the river spans are completed. After the river spans are complete, traffic is shifted to the north half of the newly constructed bridge, the temporary bridge is removed, and the south half of the approaches are constructed. This option is shown as the baseline assumption in the schedules in Appendix G.

In addition to the above, constructing the new/retrofitted bridge in halves adds inefficiency and subsequent cost to the project. If the entire bridge footprint was available for the contractor to build in one continuous phase, it would be able to construct more at one time; resulting in better production, a shorter project duration, and lower total cost. A feasible east approach temporary bridge tie-in and east side construction sequence has been developed and can be found in Appendix I.

2.4 Demolition

The following subsections will give a summary of the various features to be demolished, along with a feasible explanation (when applicable) of how the items would be demolished.

2.4.1 Building Demolition

Several buildings would be demolished to allow for bridge expansion and the temporary bridge to be used during construction. The buildings range from an office/storage-type building to warehouses with office space attached. For a full description of properties that would be acquired permanently or properties that would require temporary construction easements, see the *EQRB Right-of-Way Technical Report* (Multnomah County 2021f). The buildings most likely to be demolished as part of this project are:

- Tax Lot 1N1E34DC 800: Due to its age, it is assumed that the building touching the south side of the bridge on the West Approach could contain large amounts of asbestos and lead (paint, piping, etc.) that would need to be remediated prior to demolition. It may be necessary to perform some “pre-demolition” to expose the asbestos and lead materials. Once asbestos/lead has been removed, the primary demolition could begin.

  Soft demolition would be done first to remove interior (plaster or sheet rock) walls, furniture, cabinets, doors, etc. This material would be loaded out and disposed of at a landfill. Once the soft demolition is complete, the remaining structure (CMU block, concrete, steel, brick, etc.) would be demolished. The demolition contractor would need to break the building down in manageable, safe sizes, as not to destroy surrounding buildings, the existing bridge, or cause safety implications for the public. It is likely that a single lane or multi-lane bridge closure would be necessary when hard demolition is occurring.

- Tax Lots 1N1E34DA 1900 and 1N1E34DD 1000: These two buildings are warehouse style buildings, with office space included at the far south end of both buildings. There is a possibility for asbestos and lead materials within the buildings. The demolition approach would be very similar to the West Approach building demolition with the exception that the warehouse space is only a single story and thus, the demolition of these structures would be fairly straightforward. One complication for demolishing these buildings would be related to the railroad (UPRR). Because the buildings are adjacent to UPRR’s tracks, demolition would need to be coordinated with the railroad and would likely require a railroad flagger be present during demolition.

2.4.2 Bridge Deck Demolition

Bridge demolition would be employed for the deck work (superstructure) and parts or the entire substructure, depending on the alternative.

- For all alternatives, the bridge deck, including bascule spans would be removed. For the Retrofit alternative, the bascule spans may be reused or replaced. Deck demolition, when over land, would be accomplished by placing an excavator on the deck of the bridge and using a processing attachment to break the deck into small pieces, dropping onto the surfaces below. When surfaces need to be protected (such as City streets), sand or other protective measures would be placed along the area to be protected prior to demolishing the deck. Over water, the contractor would stage barges under the deck areas to be demolished. When the deck is broken into pieces, the pieces would fall onto the barges. Once demolition is completed, the barges would be offloaded, and the material recycled or disposed of properly. Close to banks where barges cannot reach all the way to land, the contractor may use fabric, road plates, or other materials that would act as a ramp to divert broken concrete pieces to the barge or to land, such that no concrete debris falls into the water.

2.4.3 Bridge Demolition over I-5, I-84 Ramps, and UPRR

Regardless of alternative, the existing bridge spans over I-5, I-84 ramps, and UPRR would be replaced with new superstructure and substructure. Demolishing the existing bridge would need to be done in several stages, in order to safely demolish the bridge and work around traffic operations for the freeways and UPRR.

In order to demolish the bridge superstructure over I-5 and I-84 safely, freeway weekend closures would be necessary. The Project team envisions that a contractor would use a processing approach to the bridge deck demolition, meaning that the contractor would break the superstructure concrete into small pieces onto the surfaces below. This approach would require pre-planning and extensive coordination with ODOT for appropriate closure windows.

The contractor's demolition approach would likely be approximately as follows for these spans:

- Place sand on highway for protection of existing structures and break Burnside bridge deck and sidewalk, then roadway stringers into small pieces onto the highway bridge deck below using an excavator.
- Chip away concrete encasement on main steel girders and floor beams. Cut and lift off floor beams, then main girders using a crane sitting atop the Burnside bridge deck adjacent span.

For a more detailed sequence of operations, see Appendix C.

See Sections 2.4.4 and 2.4.5 for substructure demolition.

For demolition over the railroad tracks, the contractor would need to coordinate carefully with UPRR. Due to the frequency of trains, the Project team anticipates that the contractor would not be able to secure extended windows for demolition. As such, the work would need to take place around UPRR's operations. This would likely mean the contractor would need to sawcut and lift off the deck in larger pieces with a crane or excavator. This method of demolition is slower but does not result in falling concrete pieces that need to be cleaned up. Depending on the size of crane or excavator, pieces could be cut into manageable sizes (typically between 6 feet and 12 feet long by 12 feet to 20 feet wide). Once the deck and roadway stringers have been cut and lifted off, the procedure for floor beam and girder removal would likely be the same as used for the spans over I-5 and I-84 ramps.

2.4.4 Remaining Bridge Demolition (Retrofit)

Several parts of the existing bridge would be demolished as part of the retrofit design. Features that would need to be demolished include the deck, removal of the bascule spans, a portion of the east truss, and portions of substructure that would be replaced by new spans. Additionally, a portion of the harbor wall would need to be removed to accommodate Pier 1 construction.

Deck Demolition: The deck would be demolished in a similar fashion to the deck over I-5 and I-84. Local City streets, Burnside Skatepark, Saturday Market, the portion of Waterfront Park under the bridge, and any accessible points to the bridge would need to be closed during demolition. Where the bridge crosses TriMet's light rail tracks, MAX operation would need to be temporarily shut down and the catenary cables would need to be protected or removed during deck removal.

Bascule Span Demolition: The Project team understands that the USCG will not allow extended duration closures of the navigational channel. As such, the assumptions herein are based on allowable closures in the range of several days to a week or two (although there remains potential for the USCG to relax these requirements in the future). Based on this, rehabilitating the bascule spans cannot be performed in place. Instead, a short-term closure of the channel would be needed to lock the counterweights in place, and then lift off each bascule span onto a barge. Due to its size, this lift would require special jacking equipment to lift off and support the span. Once on a barge, the bascule span would be hauled to an offsite yard and rehabilitated. The deck would be removed, the existing steel rehabilitated and/or strengthened where required, and a new deck installed. See Section 2.8 for additional details.

Truss Demolition: As part of the plan for the Retrofit, the existing Pier 4 would be removed and a new Pier 4 constructed further west. Moving the pier west would result in establishing a new bearing point on the truss and would require removing the eastern portion of the truss that extends beyond the new Pier 4 location. To remove the portion of truss, a barge would need to be positioned under the work area to accept the truss. From then, a couple options could be employed to remove the truss:

1. The most likely method of truss removal would be cutting and lowering the truss in pieces. This would be done using a cutting torch or lance and severing pieces from the truss (temporarily held by a crane). When each piece is cut, it would be lowered to the barge and the process repeated. After all pieces were lowered, the barge would take them to a scrap yard to be recycled.

2. An alternative method would be to cut and lower the truss portion as one larger piece. To do this, larger equipment would need to be mobilized to hoist and lower the truss. Some type of jacking system would likely be needed on the barge that would rise into place and push up on the portion of truss until the weight was shifted

onto the barge. Then, the truss would be severed, and the large piece of truss would be barged to a scrap yard to be recycled.

Substructure Demolition: The following substructure units would need to be removed completely or partially as part of the project:

- Full demolition: Pier 4, Bents 21, 22, and 24
- Partial demolition: Bents 25, 26, and 27

For Pier 4, a cofferdam would likely be needed around the pier foundation in order to remove the pier in the dry. Dry demolition would be accomplished by using large excavators mounted on barges to hammer and process pier concrete into smaller pieces. Once the pier demolition was underway, it is likely that a smaller excavator would be lowered into the cofferdam to break up concrete and help load out. Instead of demolishing the pier within a cofferdam, if found acceptable by the USCG and environmental agencies, a wire saw could be used to saw the pier into pieces. With this method, the pier would be sawn into manageable blocks. The blocks would be lifted by a crane onto a barge and shipped off to be broken into smaller pieces and recycled. For either of these two methods used, it is expected that the USCG would require the existing substructure to be removed to 3 feet below grade (below riverbed).

Bents 21 and 22 are within extremely close proximity to I-5. The Project team expects that these bents would be removed with the superstructure during weekend closures. The bent columns are concrete encased steel and would need to be removed by cutting and lifting the pieces out. To do this, a crane would need to be stationed on the adjacent span. The concrete encasement would be chipped away exposing the steel to be cut. The crane would grab hold of individual pieces or, if the crane were large enough, would lift the entire column as a unit. The bottom of the column to be lifted would be cut and the piece would be lifted out, loaded onto a truck, removed from the site, and recycled.

The remaining bents on land would be removed with conventional equipment. As with the bents near I-5, these bents are concrete encased steel and would be removed in similar fashion. In lieu of a crane being stationed on the deck, the pieces would be lifted by a crane or excavator located on the access road or City streets below.

Harbor Wall Demolition: Demolition of portions of the harbor wall to accommodate Pier 1 foundation widening would be a risky operation. The sidewalk behind the harbor wall would need to be partially removed and the area shored to allow excavation/harbor wall removal. Once the area is shored and an isolation cofferdam is installed on the riverside of the harbor wall, the portion of harbor wall to be removed could be sawcut to sever it from the remainder of the harbor wall to remain. Once the portion of harbor wall has been cut from the remainder, the contractor could then use an excavator with shears and processing tools to break the concrete into small pieces, and then excavate that material from the cofferdam. Alternatively, the contractor could continue to use a sawcutter to cut the wall into manageable pieces and remove with a crane or large excavator.

After the harbor wall removal has been completed, the contractor would need to attempt to pull the wood piling under the harbor wall. If the piling does not pull, or break during pulling, the remainder of the pile would need to be cut off a minimum of three feet below grade.

2.4.5 Remaining Bridge Demolition (Replacement Alternatives)

Demolishing the various elements for the Replacement Alternatives would be very similar in nature to that described above for the Retrofit for the land piers. The means and methods and general approach would be practically identical. The largest difference between the Retrofit and Replacement Alternatives is the amount to be removed. Where the Retrofit removes limited bents, the Replacement Alternatives would demolish the entire existing structure. Where bents do not conflict with future work, those bents would be demolished to two feet below grade. Where new features conflict with the existing bents, the bents would be removed in either their entirety, or the contractor would need to install the new piers through the existing bents.

The primary difference between the Retrofit demolition and Replacement Alternatives demolition is that the Replacement Alternatives with river piers in the same location as existing piers require complete demolition of the river piers above foundation level, while the Retrofit would not. See below for details when new river pier locations are shifted away from the existing piers.

Main River Pier Demolition: Where the new river piers would be built on top of the existing piers, the Project team anticipates that the demolition of the river piers would need to take place within cofferdams. Once the contractor has the cofferdams in place (see Section 2.5 for more detail), demolition could commence on the upper piers. The contractor would begin demolition on anything that could be processed into smaller pieces within the main pier walls. Once the cofferdam was dewatered, the contractor would begin main pier demolition using large excavators with processing tools to break the walls into smaller pieces. The excavator(s) would likely be mounted on barges with smaller equipment lowered into the cofferdam to assist loading and break up concrete. As demolition progressed, concrete rubble would be loaded out either by clam bucket with a crane, or by using excavators with large buckets to load concrete rubble onto barges to be barged offsite and recycled.

The main piers would need to be removed in their entirety down to the seal pour elevation.

For the Replacement Alternatives, it is feasible that the new pier locations are shifted away from the existing river piers. If this were done, demolition of the existing piers would be performed without a cofferdam. The contractor would likely use mechanical demolition processes for above-water sections of the pier and process material into the existing pier box. Once the contractor reached water level, the remaining portion of the pier would be wire sawn into manageable pieces and lifted onto barges to be transported off site and disposed of properly. The existing piers would need to be removed to a minimum of three feet below the river mudline.

Beyond the potential cost savings of not having to install and remove a cofferdam, the Project schedule would be enhanced since demolition could be performed concurrently with drilled shaft installation for the new piers. The critical interaction between existing pier demolition and new pier construction would be ensuring that both activities had ample access to the area away from the active navigation channel.

2.5 Cofferdam and Seal Construction

The assumed cofferdams for the EQRB Project would need to encapsulate both the proposed pier locations and the existing piers, resulting in large and deep cofferdams to facilitate demolition of existing structures and new construction. Further, the cofferdams would need to be driven within close proximity to existing pier foundations, producing significant risk of encountering differing site conditions associated with larger than known foundations, old cofferdams left in place, and/or other manmade “features” that could conflict with the construction.

Regardless of bridge alternative, it is assumed that standard installation techniques would be used to install (and remove) cofferdams using barge mounted equipment (cranes) for access. This work (installation and removal) would need to take place during the in-water work window (IWWW). The installation would be accomplished by first installing a sheet pile driving template. This is done by installing the top bracing ring (large W-beam on its side that will act as a brace for the sheet piles). Once the ring/template is installed, the contractor would install sheet piles using a vibratory hammer to advance the sheets past the bottom of the pier seal. For EQRB, the bottom of seal elevation is estimated at El -72.5 (NAVD 88), meaning that the sheet pile length would be approximately 100 feet long. If a vibratory hammer cannot advance the sheet pile the entire way, a diesel impact hammer can be used to drive the sheet pile further. If cobbles are encountered, it is likely that the sheet pile would need to be driven through the cobbles but could meet refusal. Should refusal occur or a large boulder be encountered, the contractor would need to excavate inside the cofferdam to expose the boulder/cobble and then remove it underwater to allow cofferdam installation to continue.

Although the basic cofferdam installation methods would be similar, regardless of bridge alternative, the cofferdam type would vary for each alternative, as detailed in the following subsections.

Construction of the seal would generally take place in a similar fashion for each of the various bridge alternatives, but there would be differences in construction approach for each alternative. The basic construction of the seal begins with excavating the existing material from the river. Contaminated soils are expected from the riverbed elevation to approximately 20 feet below riverbed. Any contaminated soil excavated would need to be disposed of properly at a certified landfill. For cofferdams as large as these, the contractor would likely use a barge mounted crane with a large clam bucket (assuming the work bridge(s) are not installed yet) to remove material from the cofferdam and place the material in a barge to be shipped off site and disposed of. The clamming would need to occur underwater to avoid inducing pressure on the unbraced cofferdam.

Once the cofferdam is excavated to the bottom of seal elevation, the contractor could either proceed with drilled shaft installation (see Section 2.6 for details), or would pour the concrete seal next. The seal would need to be tremie poured underwater.

Once the seal has cured for a few days, the contractor would begin to dewater the cofferdam. As the dewatering commences, the contractor would install bracing as the water level is dropped. Water would be drained until the contractor reaches the “next” bracing point, at which time, the dewatering would stop, the bracing would be installed, and the dewatering would continue. This process would be repeated until the contractor reaches the top of seal.

When the seal is exposed, the contractor would need to clean the top of the seal of latent material, uneven surfaces, and any ridges that may protrude into the new footing.

2.5.1 Main River Piers (Retrofit)

For the Retrofit alternative, the cofferdams need to be driven outside the drip line of the existing structure to avoid overhead conflicts between the bridge and the sheet piles with vibratory hammer and crane boom/hook atop the sheet pile. To accomplish this, part of the sidewalk near the piers would need to be removed to allow the sheet piles to be driven close to the edge of the existing pier wall(s) to tie the sheet piles and existing pier walls together to make a watertight seal.

The cofferdam would require several bracing rings to keep it stable. Additionally, due to the size of the cofferdams, internal braces would be required. The internal braces would need to be spaced to miss drilled shafts and depending on the location of the brace(s) relative to the top of footing elevation, it may be necessary to encase the lower brace(s) in the footing.

2.5.2 Main River Piers (Replacement Alternatives)

The details below assume the new river piers would be constructed in approximately the same location as the existing river piers. If the new river pier locations were shifted, this section would not apply.

For the Replacement Alternatives, the existing pier would need to be demolished before the new pier can be built since the location of the new river piers overlap the existing. However, the existing pier could not be demolished until a cofferdam is built around the existing pier. Further complicating matters, the new pier footprint is much larger than the existing pier footprint, requiring an offset cofferdam that would encompass the old and new foundations for demolition and new construction.

The bridge superstructure, including bascule span and land connection truss would need to be removed prior to the cofferdam being constructed. Once the superstructure is removed, the cofferdam could be driven around the entire perimeter of the new footing that also encloses the existing pier within the cofferdam. Because the existing pier is still in place, there would be a u-shaped area around the existing footing and seal that would need to be excavated and prepared for a new seal to be poured. The top of new seal course elevation nearly matches the top of the existing seal.

After the seal is poured, the contractor would dewater the cofferdam and install bracing rings in a similar fashion to that described in Section 2.5.1. The major difference for dewatering the cofferdam for this scenario is that bracing rings would need to brace off/from the existing pier walls. Later, as the pier is demolished, the bracing would need to be sequentially reset/replaced as demolition continues. For the assumed demolition sequence, see Section 2.4.5. The bracing would most likely conflict with constructing the new pier footing and stem walls. The contractor would need to either encase the bracing in the new footings or block out wall pours around the bracing. Later, once the pier work is complete and the cofferdam is flooded, the bracing through the stem walls could be removed and the walls patched. This work would need to take place sequentially, as the water level is raised. To do this, the contractor would need to pump water into the cofferdam until the water level is close to the bottom of a brace. The brace would then be removed, the stem wall patched and cured, and then cofferdam flooding could continue until the next brace. This process would continue until all braces were removed and the water is at the same elevation as the river.

2.5.3 Pier 1 (Retrofit)

The existing Pier 1 is constructed under the existing bridge truss, adjacent to the City's harbor wall, and also has City sewage pipes running along and adjacent to it. These conditions pose challenges for constructing a cofferdam for this pier:

- Headroom: For the Retrofit, the existing trusses would remain in place, posing a significant challenge for installing sheet pile. Due to low headroom, it is not practical to assume that a crane with vibratory hammer could fit under the existing truss to drive sheet piling. As such, an alternative means of installing sheet pile or other cofferdam material would need to be developed during design to create a dam to keep out water. Examples of alternative cofferdams are:
  - Bolted connection: In lieu of driving sheets, the sheets are threaded together and bolted to the foundation using structural angles or similar type connections.
  - Bio-bag or sandbag wall: For shallower conditions (the Willamette River is fairly shallow in the vicinity of Pier 1), a large bio-bag or sandbag wall could be placed in front of the area to be dewatered and act as a dyke.
- Harbor Wall: The harbor wall is an old structure, built on wooden piles. As with any old structure built in water, it is likely that the cofferdams and/or formwork used to construct the original wall were left in place, in part or in whole. As such, unknown manmade objects may impact anything that is built within close proximity to the harbor wall.
- It is unknown how vulnerable the harbor wall may be to vibration. Since the harbor wall is founded on wooden piles, the wall may experience settlement if vibratory installation and retrieval methods are used for cofferdam sheets. As such, an alternative to driven piles for creating a cofferdam is suggested.
- Existing Sewer Pipes: The City owns and operates two known sewage pipes that run from the pump station (just south of the bridge) along the Pier 1 wall to the north, and then turn east across the Willamette River on the north side of the bridge. Any work involving cofferdam installation would conflict with the existing sewage pipes near the north side of the pier. In order to avoid the conflict, a couple of mitigation measures could be employed:
  - The sewage pipes could be temporarily relocated during construction. The most likely place to run the sewage pipes would be along the waterfront park. Performing this work would require dewatering the tie-in, cleaning out and disposing of the existing piping, and installing temporary piping that would bypass the Pier 1 work area. At the end of construction, the temporary pipe would be replaced by permanent pipe in the original or accepted alternative locations, and the connection point would again need to be connected to attach

the new pipe. This operation would be expensive and risky for several reasons, including having to dewater and connect to an existing (old) system and risking damage to the existing pipe, having to clean/pump out the effluent within a dewatered area in the river, the pipe's proximity to the harbor wall, and risk of temporary pipe vandalism.

  - If an alternative system to sheet piling is used (such as sandbags, bio-bag, or similar), it is feasible that the existing pipes could be left in place for dewatering to commence. Leaving the existing pipes in place for this operation may not preclude having to remove them for other operations on the bridge (such as jet-grouting, drilled shaft installation, or other items of work that involve vibration or ground displacement).

2.5.4 Bent 7 (Replacement Alternatives)

For the Short-span Alternative and the Couch Extension, Bent 7 would be relocated further to the west away from Pier 1, or in the case of the Long-span Alternative, eliminated in its entirety. If this were done, the need for a cofferdam would be minimized or eliminated completely. The exception to this is the need to contain ground improvement grout from entering the river. This would be accomplished by either driving sheet piling (or similar) measures within the Waterfront Park or placing a more traditional cofferdam in the water to ensure no grout migration.

2.5.5 Bent 10 (Short-span Alternative and Couch Extension)

For the Short-span Alternative and Couch Extension, Bent 10 has a shaft cap that would need to be placed near the bottom of the river, necessitating a cofferdam. Whereas the cofferdams for Piers 1, 2, and 4 have been described above to be quite difficult due to extenuating circumstances, the cofferdam required for Bent 10 would be quite straightforward in relative terms and the most like a traditional cofferdam. Ground improvements would be required adjacent to Bent 10, which would necessitate installing an oversized cofferdam to contain the ground improvement work. In order to minimize the seal to allow dewatering, an interior cofferdam wall could be installed between the location of the ground improvements and the location of the Bent 10 drilled shafts/substructure.

The general cofferdam construction would be similar to that mentioned above, but would be accomplished in a more traditional order, when incorporating drilled shafts. The likely sequence of installation would be to:

- Vibrate/drive a frame/ring that would be used as the cofferdam template as well as a pressure brace
- Vibrate/drive sheet piles around the frame
- Install interior cofferdam wall between ground improvements & shaft/shaft cap location
- Install ground improvements
- Excavate (dredge) inside cofferdam on side of drilled shafts until the elevation of soils was roughly at finished grade

- Install drilled shafts
- Install cofferdam seal on side of drilled shafts
- Dewater cofferdam on side of drilled shafts and install remainder of substructure

2.6 Drilled Shafts

The drilled shaft construction for the river piers would require careful planning and execution. Multiple rows of 12-foot-diameter shafts are expected at the main piers for all bridge alternatives. This would require the contractor having to build access on top of the cofferdams in order to reach the shaft locations. For a detailed drilled shaft sequence inside cofferdams, see Appendix D. For a detailed drilled shaft sequence in open water, see Appendix E.

The general shaft installation procedure would be fairly similar for all alternatives. Significant differences will be discussed below within each alternative. In general, however, the Project team envisions one of two ways to install the shafts:

1. Conventionally augered shafts: With this method, a temporary casing is vibrated/driven as far as practical into the ground. Typically, a casing slightly larger than the shaft size is inserted into the ground first and a second casing matching the diameter of the shaft is inserted inside the oversized casing. This method of telescoping casing allows contractors to install casing twice as deep as just installing one casing. Once the casing cannot be vibrated or driven any further, drilling fluids such as bentonite slurry is used to stabilize the hole below where the casing can be driven. A drill with an auger is used to excavate soil and drill to the rock layer. Once the rock layer is reached (or if a boulder/harder material is encountered along the way), a core barrel is used to core through the boulder/rock.

   For this method, typical equipment includes a drill, a support crane (or two, depending on rebar cage length), a spin-off box or barge for excavated material, and a slurry mixer/pump. Depending on contractor preference, conventional drilling could be performed with a barge-mounted drill.

2. Oscillated Casing method: This method utilizes a large oscillating machine that rotates a temporary casing back and forth, pushing it into the ground as it oscillates. The casing is typically inserted to the tip elevation of the shaft, thus eliminating the need for slurry. As the casing is advanced, a crane is used to remove material using a clam bucket. During concrete placement, the casing is extracted and removed in sections, unless specified that the casing or a portion of it remains as permanent.

   Typical equipment for this method includes an oscillator, a crane for clamming, a support crane for the rebar cage, and a compressor to power the oscillator). Drilling with an oscillator requires a work bridge with significant lateral bracing to resist the oscillator’s torque.

For either method, once the hole is drilled, the contractor would insert the rebar cage using the support crane, and then concrete would be placed using the tremie method (typically using a concrete pump). During the pour as the concrete is filled into the drilled shaft, the temporary casing would be raised and picked out of the hole.

Drilled shaft construction, especially over water, requires careful planning around containment of drilling spoils and slurry (if used). Further, with large shafts such as the ones on this project, it would be very important for the contractor to adequately brace the work bridge (if used) laterally to resist the large torques induced by the oscillator.

2.6.1 Main River Piers (Retrofit)

For the main piers, there would be 9 drilled shafts on either side of the existing pier, totaling 18 shafts at each pier. To avoid impacts to the navigation channel during construction, it is assumed that the shafts would only be accessed from the "non-channel" side. This means that the shafts closest to the navigational channel would need to be accessed from a temporary platform built over the cofferdam. This platform would act as an extension of the work bridge. As the shafts are constructed, the temporary platform could be removed or "peeled" back until all shafts are constructed.

If the Retrofit shafts were constructed with a conventional drilling method, it is feasible that the shafts could be installed using a barge mounted drill before the cofferdam is in place, which would preclude needing a temporary platform. This would require that all shafts be installed during the in-water work window, or at least isolated from the river to allow construction outside the in-water work window.

For the Retrofit, the shafts would be placed outside the drip-line of the existing deck, meaning that the shafts can be installed relatively early in the schedule. It is currently assumed that the contractor would install shafts after the seal is poured and the cofferdam is dewatered. In this scenario, the contractor would have to drill shafts through the existing seal. This would take additional time, however, would allow for shaft installation outside of the in-water work window once the cofferdam is dewatered. For more detail, see Appendix D.

2.6.2 Main River Piers (Replacement Alternatives) Within Cofferdams

Each replacement main river pier would contain 18 drilled shafts, 12 feet in diameter. Similar to the Retrofit, the contractor would need to build a temporary access platform from the work bridge to access the shafts nearest to the navigation channel. The platform would be partially removed as the contractor completes shafts from the channel moving towards the riverbank.

The drilled shafts for the main river piers of the Replacement Alternatives could not be drilled until the existing piers are demolished. In order to demolish the piers completely, the cofferdams would need to be dewatered. This means that the cofferdams would need seal pours, which in turn means that the drilled shafts would need to be cored through the seal. See Appendix D for a more detailed description of the drilled shaft sequence. It is likely that an oversized casing would be cored through the seal and then the cofferdam filled with water for the actual shaft installation, followed by dewatering of the cofferdam a second time to construct the remainder of the pier. It is feasible that a contractor would want to install oversized casings prior to pouring the new seal around the existing pier.

It is possible that a contractor will want to demolish a portion of the existing piers above water and drill shafts prior to installing a cofferdam. If this were done, the contractor could devise a plan to use a barge-mounted drill and drill through the existing pier floor to install shafts within the existing foundation footprint. Then, once complete with those shafts, continue to install the remaining shafts outside the existing pier footprint. After all shafts were installed, the contractor would continue with cofferdam installation and later, demolition of the remainder of the pier after the cofferdam was dewatered. For this plan to work well, the contractor would need to check to ensure the shaft locations did not conflict with the existing pier walls or that the installed shafts did not cut off access for demolition.

If pier protection is required, it could be accomplished by drilling several additional drilled shafts along the main channel side of the river piers or adding a fender system. These would likely be installed at the same time the pier shafts are being installed in order to utilize the same work platform and also to keep out of the main navigation channel.

2.6.3 Main River Piers (Replacement Alternatives) In Open Water

If the new river pier locations were shifted away from the existing piers, the drilled shafts could be installed in a more conventional manner primarily by not having to core through the existing foundations. This would mitigate a lot of schedule and cost risk. With this approach, a cofferdam would not be needed, and the shafts would be installed in the open water. The drilled shaft casing would provide containment during shaft excavation and concrete placement.

The contractor would likely build a work bridge over the “entire” pier that encompassed the area of the drilled shafts. This would allow the contractor to install shaft casings, shaft reinforcing cages, and pour concrete from the work bridge. This scheme would be very similar to the platform required over a cofferdam but would be a traditional work bridge instead of a post-up platform that would be required for a cofferdam.

The time required to install drilled shafts in the open water would likely go beyond the standard in-water work window for the Willamette River. If this option was selected, it would be advantageous to install shafts in a longer in-water work window (if granted) without affecting the overall schedule.

If pier protection is required, it could be accomplished by drilling several additional drilled shafts along the main channel side of the river piers or adding a fender system. These would likely be installed at the same time the pier shafts are being installed in order to utilize the same work platform and also to keep out of the main navigation channel. For a detailed sequence of drilled shaft installation, see Appendix E.

2.6.4 Abutment 1 (Retrofit)

Based on the current plans, the existing span configuration would be preserved. This would create a conflict with maintaining access to the Portland Rescue Mission (PRM) entrance on Burnside, which will be discussed later in this report. The construction enhancements to Abutment 1 will entail conventional methods to expose footings and construct enlargements, accessed from Burnside Street and from the University of Oregon classroom location.

2.6.5 Abutment 1 (Replacement Alternatives)

For the Replacement Alternatives, the team envisions moving Abutment 1 and eliminating the first span. Doing this would accomplish two major things:

1. In order to maintain access to PRM through their existing entrance, a temporary "platform" would need to be available. The current sidewalk is actually elevated and is part of the bridge structure. Moving the abutment east would place the entryway to PRM on grade and allow for the contractor to construct the abutment fill while still maintaining access to PRM through their existing entryway.
2. Shifting the abutment east would eliminate one span, saving cost and allowing for easier construction adjacent to PRM.

Prior to demolishing the existing span 1, an infill wall would be built between the PRM building columns to enclose the PRM building. This wall would be formed between the columns and poured to the top/fascia beam using pressurized concrete pumping techniques to ensure the pour went all the way to the top. Once the wall was built, the building would be isolated from the bridge and future work could take place relatively independently, as long as access is maintained.

The sequence of operations for eliminating the span and constructing the fill while maintaining full access is addressed elsewhere in the report.

The abutment would be likely constructed using drilled shafts with a perched footing and a mechanically stabilized earth (MSE) wall to retain abutment fill. The abutment shafts would be constructed from the Skidmore Fountain MAX Station, while the MSE wall would be constructed from Skidmore Fountain heading west.

2.6.6 Pier 1 (Retrofit)

Similar to the main river piers for the Retrofit, the shafts at Pier 1 would be drilled to either side of the existing bridge. Although the shaft work would be very similar to that for the main piers, the difficulty associated with this pier relates to installing a cofferdam under the existing bridge, removing a portion of the harbor wall, removing a large area of sidewalk to make room for the retrofit footing, shoring the area, and temporarily relocating the City's sewage pipes that run along Pier 1.

Installing the shafts themselves would likely take place from land. This would require building a temporary platform over the cofferdam and accessing it via Waterfront Park. Due to the large equipment that would need to be located adjacent to the shafts, Saturday Market would need to be shut down for an extended period. Additionally, the bicycle and pedestrian path under the bridge would need to be temporarily relocated away from Pier 1.

2.6.7 Bent 7 (Short-span Alternative and Couch Extension)

As currently designed, Pier 1 would remain in place, and a new bent would be constructed west of Pier 1. With this scheme, no shafts would be necessary at Pier 1.

At Bent 7, a single line of shafts would be constructed. The shafts would be built on land using conventional methods described above.

2.6.8 Bent 6 (Long-span Alternative)

Bent 7 would be eliminated entirely. If this were the case, the long-span (as shown, a tied arch) would terminate at Bent 6 (see Appendix F and *EQRB Bridge Replacement*

Technical Report (Multnomah County 2021a) for more detail). This bent would encompass a double-row of 10-foot diameter drilled shafts constructed on land. Due to the western shafts' location, the outside lane of SW Naito Parkway northbound would need to be closed during shaft (and footing) construction.

2.6.9 Bent 9 (Long-span Alternative)

Similar to the elimination of Bent 7 on the west approach as described in Section 2.6.8, if a Long-span Alternative was chosen for the east approach, Bents 10, 11, and 13 included with the Short-span Alternative would be eliminated (see *EQRB Bridge Replacement Technical Report* (Multnomah County 2021a) for more detail). For the other alternatives, Bent 10 shafts would be constructed inside a cofferdam or during in-water work windows, and Bent 11 would be constructed between the I-84 ramp and the UPRR railroad. Eliminating these two piers would mitigate substantial risk.

2.7 Pier Construction

Depending on the location of the new river piers for the Replacement Alternatives, or if the Retrofit Alternative is selected, the construction of the pier footings and towers could differ. For both the Retrofit and the Replacement Alternatives with piers in the same location as the existing piers, a large cofferdam will be constructed around the work. This will allow for piers to be built conventionally in the dry within cofferdams.

For Replacement Alternatives where the new pier locations are shifted away from the existing piers, a perched foundation would be constructed. Perched foundations, as the name implies, are placed above the river bottom and rest (or perch) on the drilled shafts. Perched foundations can be built without having to install traditional cofferdams, saving large excavations, large seal pours, and not having to place structure down to the river bottom.

The perched foundation needs to be lowered into place in the water to create a dry space to continue the remainder of the construction. There are two primary ways that perched foundations can be constructed:

- Method 1 involves constructing a modified floating cofferdam that would be lowered around the group of shafts. In order to the box to fit over the shafts, the floor would need to have a hole at each shaft location. These holes would later be sealed up. The box would be brought into location by either prebuilding and using float in methods or by building the box in place above water and jacking the box down into the water. This method would likely utilize cofferdam sheet piling anchored into a temporary floor. Once the box was lowered into the water, the space between the box floor holes and drilled shaft casings would be grouted and sealed using divers. Then, the perched cofferdam would be dewatered, and the remainder of construction occur. The cofferdam sheets would later be cut off and removed.
- Method 2 involves utilizing precast flooring/sides to create the perched box. In this case, the floor of the box would be made up of multiple precast slab pieces that would be incrementally installed over the drilled shafts. Like method 1, the space between the shaft casings and holes would need to be grouted and sealed. Once all

the precast sections were placed and post-tensioned together to form a singular unit, the box would be dewatered, and construction could commence in the dry.

2.8 Ground Improvements

Ground improvements are currently anticipated in the areas of the existing Pier 1, Pier 4, Bent 22, between Bents 24 and 25, and at Bent 26. The anticipated ground improvement method is jet grouting.

Access for jet grouting could be accomplished using the same general access as used for drilled shafts and other aspects of the project. The largest implications to jet grouting within close proximity to existing features relates to potential damage to structures on wood piling and causing settlement to adjacent structures.

To protect the existing bridge, jet grouting can be completed after the new foundations have been completed, reducing risk to the Burnside Bridge. However, there is still a risk that adjacent facilities could be damaged. Structures potentially vulnerable to settlement damage and/or foundation damage from jet grouting include the harbor wall, Ankeny Pump Station, Eastbank Esplanade, I-5 mainline structures, I-84 ramps, UPRR, private property (if building left in place), and Rose City Transportation (if building left in place).

It is currently assumed that jet grouting would occur at Bent 7 for the Short-span Alternative and Couch Extension. Jet grouting would be performed within very close proximity to the existing harbor wall, the existing Pier 1, and the Ankeny Pump Station. These facilities would be vulnerable to damage and carry a risk of settling. The Project would carry a risk of costly repairs and schedule impacts if damages are found to existing structures and repairs are necessary before work could continue. Further, the Project would need to ensure that pressurized grout from the operation did not migrate into the river. During the final design phase, careful consideration would need to be given to performing isolation work and/or providing other means of protecting the existing structures from potential damage and ensuring that grout would not migrate into the river. If reasonable mitigation measures cannot be implemented, it is likely that portions of the harbor wall would need to be replaced, creating the need to relocate City of Portland sewer lines and install a cofferdam.

2.8.1 Long-span Alternative

If a long-span solution is chosen for both approaches, a large portion of the ground improvements could be eliminated. As currently shown in the concept plans (see *EQRB Bridge Replacement Technical Report* (Multnomah County 2021a), long-span approaches eliminate the need to perform ground improvements at existing Pier 1, Pier 4, Bent 22, and Bent 24. Ground improvements are likely still required at Bent 25, which would be the eastern terminus of the east long-span (tied arch as shown).

2.9 Superstructure Construction

Although the scopes of the alternatives vary, the general approach to work would be similar. The contractor would need to gain access to each span with large cranes to set girders, hoist form materials into place and form decks, pour decks, and then strip out the form materials to move to other parts of the project. This approach is fairly standard and would be accomplished using conventional equipment, tooling, and approaches to the work.

For the Long-span Alternative, the contractor would likely bring in structural steel via barge and as such, it is possible that the contractor could either use barge-mounted equipment to erect the long-span superstructure or a combination of work bridge accessed equipment and barge mounted equipment.

Along the approaches, the bridge would come within two feet of existing buildings. With virtually no space to work alongside the bridge, the contractor would need to have equipment placed at the nearest City street or opening. For erecting girders, trucks would need to pull in on the portion of structure in place (for alternatives with the temporary bridge option) or in line with the bridge (for alternatives with no temporary bridge). Two cranes, one on each side of the span to be erected, would need to pick girders into place starting at the tightest point and working their way backwards. Thus, for an alternative with temporary bridge, the girder closest to the middle of the bridge would be set first, repeating the steps working towards the outside of the bridge.

For the bascule spans over the navigational channel, it is assumed that the channel could only be fully closed for short durations (i.e. a weekend or a week). With this, it is not practical to assume that the bascule spans could be poured in place. Instead, the bascule spans would need to be pre-built offsite and barged in as one piece (with the deck poured on the span or precast pieces installed after the span was in place). Large hydraulic jacks would be mounted on a barge or strand jacks mounted to the pier to allow the span to be lifted into place. Once the barge has been floated into place and anchored, the hydraulic jacks would raise the bascule span until the trunnion holes align with the bearings. The trunnions would need to be installed quickly before the tides change and the river elevation fluctuates.

Beyond the bascule spans, the contractor would need to coordinate carefully with ODOT and UPRR for setting girders over their respective infrastructure. Once girders are erected, the contractor would need to build false deck containment along the bottom flange of the girders. After this is in place, the contractor could progress with deck work in the same fashion as other spans and allow for full use of both facilities.

2.9.1 Span 1 Reconstruction (Retrofit)

Partial demolition and reconstruction of Span 1 for the Retrofit would be done very similarly to the remainder of the approach work. The primary difference is not in how the bridge work would occur, but rather in required temporary works to accommodate PRM ingress for its patrons. Based on the location of the existing entryway and the fact that the entry is located in Span 1 of the existing bridge, the entry point would need to be relocated during structural upgrade work.

In order to accommodate PRM's security and crowd control process, there would be two feasible options to maintain access to PRM's building:

1. Option 1 would be creating a structural opening through PRM's east wall that would enter the building inside the security checkpoint area. This would be accomplished by installing a header beam and cutting out the existing wall. A temporary staircase and elevator (for ADA) would need to be installed on the outside of the building to

provide access from 1st Avenue (alongside Skidmore Fountain LRT Station) to the side of the building.

2. Option 2 would be utilizing the existing window within the secured area and converting it into a door. In order to maintain security, the existing partition wall would need to be demolished and new partition walls constructed around the window such that patrons were still entering the building through the existing security checkpoint. Like Option 1, this option would require constructing a temporary staircase and elevator on 1st Avenue for ingress.

2.9.2 Span 1 Elimination (Replacement Alternatives)

In order to maintain access through the existing PRM entryway, the existing span 1 (adjacent to PRM and encompassing the University of Oregon classroom) would be eliminated, and instead, the new abutment would be constructed just outside the limits of the Skidmore Fountain LRT station, approximately in line with the PRM building east wall. Eliminating the span has several advantages, with the primary advantage being that the work in front of PRM would be on grade (earthwork) in lieu of structure work. This will allow for the Project to maintain daily access using the existing entryway.

The sequence of construction would occur approximately as follows. For a full sequence, see Appendix K:

1. Construct infill walls between PRM and existing bridge
2. Mobilize rolling/moveable scaffold under the bridge (inside the university of Oregon classroom area). Scaffold should be capable of moving side to side as well as vertically.
3. Begin demolition of existing bridge. At the end of each shift, move scaffold into place such that PRM patrons can safely walk from the existing sidewalk on grade to the main entryway. Per PRM, the entryway can be shut down during the day between the hours of 9 am to 5 pm.
4. Install drilled shafts and columns (or blockouts for columns) from Skidmore Fountain Station while maintaining scaffolding for ingress to PRM.
5. Begin MSE wall construction starting at the abutment face and placing aggregate base/straps from the abutment back to the west. As work encroaches on the entry scaffold, the scaffold will be moved out of the way for the days' work and then placed back each day for PRM to use. This process would be repeated until the earthwork was brought up to final grade.
6. Construct a temporary access adjacent to the permanent sidewalk to allow patrons safe ingress while the permanent sidewalk is constructed.
7. At the actual entry (doorway) to PRM, high-early concrete would likely need to be placed to allow sidewalk placement that morning and be in use later that afternoon.

2.9.3 Burnside Skatepark Span (Replacement Alternatives)

For all Replacement Alternatives, the Burnside Skatepark will need to be spanned over with minimal impacts allowed to the skatepark. The girder erection process would largely depend on whether a temporary detour bridge was built as part of the project or not as this would affect how the contractor would bring in girders and where the cranes would pick the girders off trucks.

- For the temporary detour bridge option, the contractor would need to phase superstructure construction and would need to install pre-built girders on half the bridge per phase. A temporary bent would likely be required just east of the skatepark, or could be situated within the skatepark, to allow for shorter pieces to be erected. See Appendix I for a construction sequence.
- For the no temporary detour bridge option, the contractor would need to pre-build girders at least long enough to span over the skatepark. A temporary bent would likely be required just east of the skatepark but could be situated within the skatepark to allow for shorter pieces to be erected. See Appendix J for a construction sequence.

2.9.4 Long-span Alternative

For the Long-span Alternative, the contractor would likely need to build the superstructure using temporary supports until the structure was self-supporting. In the case of an arch structure, temporary stays or false work would need to be employed during piece erection. After all the pieces were erected and the arch tie connected, the structure would be self-supporting and the temporary stays/false work could be removed. For more detail, see Appendix F.

An option that exists only for the Long-span Alternative is the possibility to leave the existing Burnside deck in place and use it as a temporary work access and protection platform. Once the new structure was assembled and self-supporting, the existing bridge could be demolished. Proceeding in this manner would significantly reduce impacts to the I-5 mainline, I-84 ramp, UPRR tracks, and potentially other parts of the structure.

2.10 Water Treatment

Any water that falls onto the bridge will need to be captured, treated, and then released appropriately. Depending on the alternative, this will likely be handled slightly differently.

For the Retrofit, the deck will be replaced in-kind, and existing catch basins will be utilized where possible. It is anticipated that any water captured will be captured and discharged through the existing water treatment system.

For the Replacement Alternatives, treatment vaults will likely be added at each side of the river to capture runoff water and then discharge into either the river, or a City of Portland sewer. Depending on the location of the treatment vaults, piping may need to be installed under TriMet tracks and Naito Parkway on the west side, and UPRR tracks on the east side. When design progresses, a suitable location for treatment vaults should be selected that result in the shortest possible discharge pipe lengths. This will avoid risk of damage to other infrastructure and reduce cost by decreasing pipe lengths and minimizing work.

2.11 Construction Impacts and Mitigation

Regardless of mitigation strategies implemented, there would still be some impacts to the public and stakeholders as a result of construction. The following categories encompass likely impacts that would affect the public users of the bridge and various stakeholders within close proximity to the bridge. This report provides a general description of potential construction impacts. Additional details relative to individual resource impacts can be found within the accompanying technical reports.

2.11.1 Noise

The scope of this Project and the need for large machinery would result in the contractor mobilizing equipment that generates a large amount of noise. Several examples that are expected to generate the most noise are listed below with related activities/scopes of work. See the *EQRB Noise and Vibration Technical Report* (Multnomah County 2021d) for additional details:

- Pile installation: pile hammer, crane, vibratory hammer
- Drilled shaft installation assuming an oscillated method: oscillator, air compressor, crane with clam bucket
- Jet grouting: crane with jet grouting equipment, air compressor
- Earthwork/paving: Roller compactors
- Demolition: Excavator with hammer, processing attachment/tools, jackhammers, crane

Work would be accomplished during the daytime hours. However, nighttime and weekend work would be required when working around I-5, I-84, and other roadways that have restrictions on when work can be performed. The contractor should anticipate applying for noise variances for work that could not be performed during daytime hours.

2.11.2 Vibration

The following equipment would likely cause a lot of vibration during the Project. At a minimum, when these pieces of equipment are operating, the contractor should maintain vibration-monitoring equipment to ensure no adjacent properties are affected. See the *EQRB Noise and Vibration Technical Report* (Multnomah County 2021d) for additional details:

- Pile driving hammer and vibratory hammer used for driving and extracting piles and cofferdam sheets
- Oscillator for installing and extracting drilled shaft casings (when vibrator is activated)
- Roller compactors for earthwork and paving operations

In areas where vibration may cause damage to adjacent structures, the contractor may need to pre-bore pile holes, thus mitigating the need for pile hammers. Additionally, vibratory techniques of installing drilled shafts could be limited or avoided when close to vulnerable structures. If it is determined that vibratory techniques for installation must be limited or avoided, the Project Specifications should explicitly list the restrictions.

2.11.3 Temporary Right-of-Way Impacts/Temporary Construction Easements

Section 2.1 describes the necessary construction access needs and likely impacts to stakeholders, adjacent properties, and areas of likely impact. See the *EQRB Right-Of-Way Technical Report* (Multnomah County 2021f) for additional ROW details.

2.11.4 Stakeholder Facilities

Several stakeholders would be affected by the project during construction. Major stakeholder facilities include the Portland Parks and Recreation's Eastbank Esplanade and Waterfront Park, Saturday Market, Burnside Skatepark, as well as several businesses and residences adjacent to the bridge.

Further, several transportation related stakeholder facilities would be impacted by the Project, namely ODOT I-5 mainline and I-84 ramps, UPRR tracks, Willamette River (river users), TriMet's bus and MAX operations, as well as vehicles, bicycles, and pedestrians traversing Burnside Bridge. The following sections detail expected construction impacts to the various stakeholder facilities. For additional details and potential mitigations, see the individual technical report focused on each facility.

Eastbank Esplanade: The Eastbank Esplanade travels directly beneath the east fixed truss of the Burnside Bridge on floating structure and continues north towards Lloyd Boulevard. Where the esplanade crosses under the bridge, there are several construction activities that would impact the esplanade. Based on the construction that needs to occur, primarily the ramps connecting the Eastbank Esplanade with Burnside Bridge, it is likely that the Eastbank Esplanade will be relocated for the duration of the project. Temporary relocation of the Eastbank Esplanade would likely be accomplished in the following manner:

Eastbank Esplanade sections in the river are essentially floating docks that are held in place by piling and are likely interconnected with bolts or the like. To move the Eastbank Esplanade sections out of the way, the following steps will need to be taken: first, the bolts between the section remaining in place and the sections to be removed will need to be cut or pulled. Once the bolts are removed, piling would need to be extracted while a tug held the Eastbank Esplanade sections in place. Once the piling is pulled, the tug would move the sections of esplanade out of the way and place them slightly upstream or downstream as not to impact the remaining construction work. Piling that is extracted would be re-driven in a temporary location close to the remaining Eastbank Esplanade to hold the sections in place for the duration of construction. Once construction impacting the Eastbank Esplanade was completed, the sections would be returned to their original location and the piling re-driven and bolts reconnected. Any materials that were damaged during the initial removal or while temporarily storing the Eastbank Esplanade sections would be replaced like-in-kind.

For all Replacement Alternatives, the Eastbank Esplanade between the southern landing and approximately the Kevin Duckworth Memorial Dock would need to be relocated. There is a section of Eastbank Esplanade towards the south that is founded on permanent pile, which would need to be demolished and rebuilt at the end of the project.

The relocation/demolition is necessary to allow for contractor's equipment access to construct the assumed pedestrian/bicycle ramps.

In order to minimize disruptions to the Eastbank Esplanade, the contractor's work bridge would likely be over-built to the west and that portion of work bridge fenced off and used for pedestrian/bicycle access. The west portion of the work bridge would connect to the southern landing and continue north through the work site. The existing three truss pontoons would be relocated north and used to connect the work bridge to the existing floating section of Eastbank Esplanade. Pedestrian/bicycle access would be maintained the majority of the time but would be intermittently closed for various construction activities considered too dangerous to occur around the public. Where the temporary Eastbank Esplanade path crosses the work access to the main pier, the public would be given the right of way by default. When equipment or contractor's personnel crossed the temporary Eastbank Esplanade path, flaggers would need to be stationed each side of the crossing and stop the public for several minutes while the equipment moved across.

See the *EQRB Parks and Recreation Technical Report* (Multnomah County 2021e) and *EQRB Draft Section 4f Analysis* (Multnomah County 2021b) for additional details:

- In order to construct and deconstruct the east work bridge, the Eastbank Esplanade would need to be disconnected and temporarily moved out of the way to allow barge equipment to enter the space between the existing Eastbank Esplanade alignment and the east bank.
- Bent 10 (or the new Pier 4 in the Retrofit) is within very close proximity to the Eastbank Esplanade. In order to build the pier (shafts, columns, and cap), the Eastbank Esplanade would need to be temporarily relocated or shut down to allow for equipment on barges to access the work. If the Long-span Alternative was selected, this impact would no longer exist.
- Ground improvements are needed for pier construction directly below the Eastbank Esplanade. The Eastbank Esplanade would likely need to be temporarily relocated or shut down to allow for barge-mounted equipment to perform the work safely. If the Long-span Alternative was selected, this impact would no longer exist.
- For the Retrofit, the east truss would be cut back to the new Pier 4. During truss demolition, the Eastbank Esplanade would need to be temporarily relocated or shut down due to safety implications.
- For the Replacement Alternatives, the east truss would be removed in its entirety. The Eastbank Esplanade would need to be temporarily moved from its location or closed to public access for this operation.
- For all alternatives with the exception of the Long-span Alternative, during girder erection over I-5, it is expected that the girders would need to be erected from the river. To do this, the Eastbank Esplanade would need to be shut down and temporarily relocated to allow barge access close to the east bank.
- For the Long-span Alternative, a temporary tower would likely be erected adjacent to the Eastbank Esplanade. During erection of the arch pieces and deck, the Eastbank Esplanade would need to be shut down and temporarily relocated to allow barge access close to the east bank.

For all replacement options, ramps connecting the Esplanade to Burnside Bridge are assumed. Ramps would be connected to Burnside Bridge's westbound and eastbound sidewalks and tied into the existing Esplanade alignment near the southern landing/connection point. In order to construct the ramps, the entire Esplanade section between the southern landing and approximately the Kevin Duckworth Memorial Dock would need to be relocated/demolished to allow for equipment access. As currently envisioned, the Eastbank Esplanade would need to be taken out of service while work bridge was installed for equipment access. The work bridge would be over-built to allow the western portion to be used for public pedestrian/bicycle access Multiple options for this ramp connection are being evaluated. **Saturday Market:** Saturday Market operates directly beneath the west approach, within Waterfront Park. During construction, it would not be safe or practical for Saturday Market to continue to occupy the area. Complete relocation of Saturday Market to another location would be the safest and best option for a contractor. This would allow the contractor to perform necessary work that would otherwise require extensive phasing to accomplish.

See the *EQRB Parks and Recreation Technical Report* (Multnomah County 2021e) for additional details. Items of work that would directly impact Saturday Market are:

- Existing substructure demolition (Replacement Alternatives) or rehabilitation (Retrofit)
- Installation and removal of shoring for Pier 1 work (Retrofit)
- Pier 1 shaft and shaft cap installation (Retrofit)
- Existing superstructure demolition (Replacement Alternatives)
- Deck reconstruction (Retrofit)
- Substructure installation for new bents (Replacement Alternatives)
- Jet grouting/ground improvements (all alternatives except the Long-span Alternative)
- Girder erection (Replacement Alternatives)
- Superstructure construction (all alternatives)
- Work bridge installation and daily access to/from work bridge (all alternatives)
- Material storage and laydown (all alternatives)

Burnside Skatepark: The skatepark is situated directly beneath the bridge on the east side. For the Retrofit alternative, the skatepark will need to be evacuated and demolished during construction for the pier strengthening that needs to occur. For the Replacement Alternatives, the skatepark can remain relatively unaffected during construction since the work occurring would be over the skatepark, however intermittent skatepark closures will still be required for overhead work.

For any alternative that includes a temporary bridge, the tie-in location of the temporary bridge would be within very close proximity to the skatepark and the alignment of the temporary bridge is directly over the skatepark. For liability reasons, it is likely that the southern fifteen to twenty feet of skatepark would need to be closed for the duration of the Project to ensure that the joint between existing bridge and temporary bridge did not allow any debris to fall below, which could negatively affect skateboarding. If conventional, shorter spans were utilized for the temporary bridge, the skatepark would be impacted by construction to install, maintain, and remove the temporary pier. As an alternate, a longer span should be studied during design to determine if the skatepark could be spanned over without additional impacts. See Appendix I and the *EQRB Parks and Recreation Technical Report* (Multnomah County 2021e)for additional details.

The following list of activities would directly impact the skatepark:

- Deck demolition (Retrofit)
- Complete structure demolition while leaving existing Bent 25 in place (Replacement Alternatives)
- Installation of longitudinal struts (Retrofit)
- Girder erection on east approach (Replacement Alternatives)
- Superstructure construction on east approach (all alternatives)
- If a conventional, shorter span temporary bridge is used, a temporary pier would be constructed within the skatepark (all alternatives that include a temporary bridge)

Business Access: Several businesses operate within very close proximity to the bridge. Further, several residences have recently been constructed at the east bridgehead at NE 3rd Avenue and Couch Street. Depending on the alternative selected, several businesses would be impacted permanently or temporarily. For additional details, see the *EQRB Right-of-Way Technical Report* (Multnomah County 2021f). Temporary impacts from day to day construction activities would be in the form of equipment staging for work and multiple short-term road closures to allow for substructure work and girder erection. When City streets are closed to traffic, detour routes and/or flagging would need to be provided to redirect the public. Continual outreach to neighborhood stakeholders would be needed throughout the project to provide sufficient notice of detours, closures, and other impacts to local residents and businesses. During the design phase, the specifications will need to explicitly identify allowable closure times, closure windows, and other restrictions. Placing timing restrictions on areas the contractor can occupy would reduce the contractor's flexibility, but would also mitigate impacts to local businesses by requiring the contractor to focus on limited areas of work and complete the entire scope of work rather than spread out its crews over a larger area.

Although not the only business affected by the Project, the Portland Rescue Mission is referenced specifically in this report due to the unusual nature of the bridge work's impact on the PRM. Due to the nature of PRM's business, ingress must be maintained at all times, except between 9:00 am and 5:00 pm. The existing entryway is adjacent to Span 1 of the existing bridge, meaning that if the existing bridge were demolished and replaced by conventional methods, the entryway could not remain open. If the Retrofit Alternative is selected, the entryway will need to be closed and a new entryway installed along the east wall of the building. If a replacement alternative is selected, the new abutment will be relocated ahead of the entryway, thus converting the access to be on grade. Doing this will allow for the entryway to be maintained using a moveable scaffold or the like while an MSE wall fill is constructed in front of PRM's entryway. See Appendix K for a sequence of construction in front of PRM. See the *EQRB Economics Technical Report* (Multnomah County 2021c) for additional details.

I-5 Mainline and I-84 Ramps: As part of the Project, irrespective of which alternative is selected, the existing structure over I-5 mainline and I-84 ramps would be removed and replaced. The demolition, girder erection, and false deck installation/removal activities would require lane/full closures. Typically, highway closures are only feasible at night for limited hours or on weekends. In order to complete work efficiently and with minimal closures, it would be best if the contractor were granted full weekend closures of the freeway and ramps for demolition activities. Girder erection (including bolt tightening) could be performed over several nights or in one weekend closure. Installation and removal of false deck containment could take place under single lane closures if necessary.

If the existing bridge deck was left in place to be used as a temporary false deck for the Long-span Alternative, the I-5 mainline and I-84 ramps could be kept operational even when much of the work is performed overhead. For safety reasons, it would be expected that when upper arch rib sections were lifted into place, the freeway would be shut down. Additional closures, subject to the construction method and exact bridge type selected, could also be required. The closures could feasibly be done using overnight closures in lieu of weekend closures. Ultimately, when the existing bridge was demolished, the freeway would need to be shut down. See the *EQRB Transportation Technical Report* (Multnomah County 2021g) for additional details.

UPRR Tracks: The contractor would need temporary access across the railroad tracks to connect the east side of the east approach to the river and the piers between the railroad and highway. Although having a crossing would be beneficial to the contractor in not having to go out on public roads to access the project, the railroad crossing adds a safety concern for the railroad when their tracks become accessible by anyone other than railroad employees. The railroad may require a flagger since the rail line is used several times daily. UPRR would also be impacted by construction work over and adjacent to the tracks including deck demolition, existing column and foundation demolition, new girder erection, and false deck installation/removal. See the *EQRB Transportation Technical Report* (Multnomah County 2021g) for additional details.

River Users: There are several commercial river users that navigate the river regularly and numerous recreational vessels that are on the river primarily in the summer months. Although the Project team has developed ways to largely mitigate affecting river traffic, there are certain times when impacts to river traffic will be unavoidable. The existing bascule span demolition and new span construction could not be performed without impacting the navigation channel. As soon as demolition begins on the bascule span, the counterweight needs to be locked in place to avoid an unbalanced condition. In order to reduce impacts to river traffic, the contractor would need to lift off the existing bascule span in one piece. Performing this operation could take a few days to complete beyond what would be necessary to shore up the counterweight. As such, there would be a limited period of approximately a week where the navigation channel would be closed. A similar procedure would be needed when the rehabilitated span (Retrofit) or new span (Replacement Alternatives) is erected.

For all alternatives, it is likely that the contractor will need a “no wake” zone through the Project Area. This is done for safety of the workers who are using marine equipment to access the bridge. Although river users will still be able to traverse through the project, the vessels will need to be slowed down as not to create a wake.

For all alternatives, it is likely that the contractor will request exclusion zones around the work bridges and other “sensitive” areas that may not be safe for the general public. Although the exclusion zones are not expected to impact most river users, some users such as kayaks, standup paddleboards, and jet skis, etc. will need to use the main channel to move through the Project Area. See the *EQRB Transportation Technical Report* (Multnomah County 2021g) for additional details.

TriMet Operations: TriMet has bus operations on and around Burnside Bridge. During construction, if no temporary bridge is constructed or a temporary bridge accommodating bicycles and pedestrians only is selected, the bridge would be closed to all vehicular traffic. This would require TriMet to redirect its bus service to adjacent bridges during construction. If a temporary bridge is constructed for all modes as part of the Project, bus service can be maintained for the majority of the work. However, even with a temporary bridge, there would be intermittent closures of the bridge for tie-ins that would need to occur near the beginning of the schedule, in the midst of work to switch traffic from the south side of the approaches to the north side of the approaches, and near the end of work when traffic is switched to the new or rehabilitated structure. These intermittent closures would be in the range of one week each. See the *EQRB Transportation Technical Report* (Multnomah County 2021g) for additional details.

During construction of the west approach, TriMet’s MAX operations would be affected around Skidmore Fountain:

- For the Retrofit, the deck will need to be removed, which would require a closure of TriMet’s station and LRT movements. Additionally, the catenary system would need to be shut down and the lines protected or removed and reinstalled. Further, foundation widening work is shown to extend under the existing tracks, meaning that the tracks will need to be removed and reinstalled or replaced with new. Since the tracks will be removed for foundation enhancement, a bus bridge will need to be utilized. After the foundations are widened, the tracks can be reinstalled. However, due to the proximity of the existing piers to the tracks and more importantly catenary wires, the system will need to be shut down and a bus bridge utilized for column and cap enhancements.
- For the Replacement Alternatives, TriMet’s LRT operations would need to be shut down to allow for superstructure and substructure demolition. A temporary catenary system would need to be set up to keep LRT operational after the superstructure was demolished, but before the new slab girders were erected. The shafts, columns, and caps for the new bridge could be installed during operation since the substructure elements are outside of the 10 feet minimum distance from the OCS system.
- For any alternative using a temporary bridge, TriMet’s operations would be impacted at least twice (once for each phase and dependent on allowable length of shut down and how much work could be completed). The reason for this is that if traffic were maintained across the approach, only half the bridge could be demolished and rebuilt at a time. Thus, a bus bridge or other accommodation would need to be implemented for each half of the bridgework.

Bridge Users: The impact to bridge users depends largely on whether or not a temporary bridge is constructed as part of the Project. If a temporary bridge is constructed, it would not be as wide as the existing bridge, meaning that the number of vehicular lanes would be reduced. Additionally, during traffic switches onto the temporary bridge, between north/south phases of the approaches, and near the end of the project, there would be approximate one week-long closures to complete tie-in work on the bridge.

If no temporary bridge were constructed, bridge users would need to find another bridge to cross. There are several options, with the nearest bridges being the Steel Bridge to the north, and the Morrison Bridge to the south. See the *EQRB Transportation Technical Report* (Multnomah County 2021g) for additional details.

2.12 Restrictions/Limitations Affecting Construction

There would be several restrictions placed on the contractor for when and how work can be accomplished. The contractor would need to plan work accordingly to account for the various permit conditions, moratoriums, and limitations that would affect work. Current known restrictions on work are as follows:

I-5 Mainline and I-84 Ramps: Work over the freeways would generally be limited to night work during the week and pre-determined, limited weekends. It would be imperative to coordinate during design with ODOT to determine which weekends would be available for a complete closure of the freeways. These should be scheduled to limit conflicts with Moda Center events as well as other events in the City, such as the Portland Rose Festival, Cinco de Mayo, Oregon Brewers Festival, and Waterfront Blues Fest).

If the existing bridge deck was left in place temporarily to act as a false deck for the Long-span Alternative, the bulk of the work could be performed without impacting the freeway and could therefore be performed unimpeded. For safety reasons, it would be expected that when large steel sections were lifted into place, the freeway would be shut down. This could feasibly be done using overnight closures in lieu of weekend closures. Ultimately, when the existing bridge was demolished, the freeway would need to be shut down, and thus being performed during weekend or night closures. Additional closures, subject to the construction method and exact bridge type selected, could also be required but is unknown at this time.

UPRR Tracks: Work over the railroad would be similar in nature to work over the freeway in that limited work windows will be available. However, the railroad would not necessarily limit work to weekends or nights. Instead, the railroad would likely demand that the contractor performs work around the railroad’s schedule; in other words, work must stop when trains are approaching. The contractor would need to be in a position to stop work and let the train through. As such, the contractor’s work would be less efficient with the expectation that it would have to pause work several times a day when working within close proximity to the tracks.

The railroad may require that no work is performed between October and the end of the year as that is the busy time for the railroad. Conversations with the railroad have not yet begun, thus this assumption has not been incorporated into the schedule. Because the approach work is not on the critical path of the project, this is not expected to drive the Project’s schedule. If a temporary bridge is constructed and the second half of the new bridge/retrofitted bridge is not built until the end of the project (i.e. after traffic is moved to the north side of the reconstructed/new bridge), a railroad moratorium could affect the overall Project schedule.

In-Water Work: The EQRB Project would need to adhere to environmental regulations, in part requiring work below ordinary high water to be completed between July 10 and October 15 for vibratory or pile driving operations. Once isolated from the river, additional operations could be performed within dewatered cofferdams; however, in-water work restrictions require extensive planning and resource allocation from the contractor to ensure that the Project can complete the required in-water work within the window.

If cofferdams are not utilized for the main river piers, the drilled shafts could be installed within temporary casings in open water reducing overall impacts to the river. If this were done, it would be advantageous to be able to install drilled shafts in an extended in-water work window to enhance the project schedule.

Sewage Lines and Ankeny Pump Station: Sewage lines from the pump station cross the Willamette River to the east bank. The location of these lines would need to be identified and labeled on the plans. When the contractor is working with barges in the area, it would be important to avoid anchoring the barges close to the sewage line to avoid risk of damaging the sewage line. A “no spud zone” would need to be established such that the contractor does not accidentally drive an anchoring spud through the sewage line in the river.

The sewage lines and associated Ankeny Pump Station have to remain operational throughout the project. Any temporary works to relocate piping would need to be done utilizing a temporary workaround to pump sewage. Further, any work occurring on the project would need to be done in a manner as not to negatively impact the sewage pumping operation.

City of Portland Holiday Moratorium: Each year, the City imposes a moratorium during the holiday season with the expectation that all traffic lanes are open and shoppers are not impeded by construction. Due to the EQRB Project being a multi-year project, an exemption from the moratorium would need to be obtained to allow the Project to continue construction year-round. The contractor would have the opportunity to plan work to minimize further impacts to traffic (such as avoiding major traffic shifts, keeping equipment clear of City streets when feasible, and the like).

Rose Festival Moratorium: Each year, the City imposes a moratorium during the Rose Festival with the expectation that all traffic lanes are open. Due to the EQRB Project being a multi-year project, an exemption from the moratorium would need to be obtained to allow the Project to continue construction year-round. The contractor would have the opportunity to plan work to minimize further impacts to traffic (such as avoiding major traffic shifts, keeping equipment clear of City streets when feasible, and the like).

Fleet Week occurs along with the Rose Festival. This results in several large ships docking within close proximity to the Burnside Bridge. Not only would it be necessary to accommodate the ships through the project by ensuring that the navigation channel is open, but further, the contractor may need to provide access to the ships docked at the harbor wall. The contractor should also not plan major harbor wall construction work or bascule replacement/removal work during the Portland Rose Festival.

The Grand Floral Parade is part of the Portland Rose Festival and crosses the Burnside Bridge. If a temporary bridge is incorporated into the Project, it is feasible that the parade could be accommodated. If, however, the bridge was closed to all traffic, the parade would need to detour to another bridge.

Other Projects: There are several projects within the region that will potentially be constructed during the Project timeline, including the I-5 Rose Quarter Improvement Project, which is a major project adjacent to the Burnside Bridge site. Other major projects that could potentially occur include ODOT's I-205: I-5 – OR 213 Project, ODOT's OR 217: Auxiliary Lanes Project, and TriMet's Southwest Corridor Light Rail Project.

Additionally, other currently unknown projects may be performed during the Project timeline. With more competition for resources from other projects, several impacts could be realized, including labor, material, and equipment shortages, and lack of subcontractor interest, all of which could negatively affect project cost and schedule.

2.13 Value Engineering Opportunities

For the NEPA phase, several assumptions have been made in the design, as documented in this report and other documents in arriving at a constructible solution, given the constraints associated with the various aspects of the Project. Several constraints would add complexity (and ultimately cost) to the work, which, if alleviated, would allow for a less risky approach to work, and a less costly Project. Below are several ideas that could be explored further during a Value Engineering session to determine whether feasible to develop further:

1. For the Retrofit alternative, review whether to replace the bascule spans in lieu of retrofitting. This is not expected to result in a significant cost change.
2. Review whether to explore asking the USCG to allow partial navigation channel clearance for longer periods, allowing for a more conventional approach to bascule span deconstruction/re-construction.
3. Review alternatives to ground improvements to isolate piers and/or revise span lengths to avoid placing piers within geotechnically-sensitive areas.
4. Similar to #3, review potential long-span superstructure bridge options such as an arch, cable-stayed, or similar that would allow for spanning over UPRR, I-5, and geotechnically-sensitive areas with relatively shallow superstructure depth.
5. Review options to isolate superstructure (including bascule or lift spans) from substructure (isolation bearings, hydraulics, or similar) to avoid/mitigate large substructure requirements.
6. For bascule options, review potential to construct shafts outboard of the existing bridge to allow for constructing the majority, if not all of the deep foundation work, prior to having to take the existing bridge out of service. Constructing shafts outside of the existing foundation footprint would also mitigate large risks of drilling through the existing foundations.
7. Similar to #6, review potential to install a "delta pier" in lieu of a more traditional pier box. Using a delta pier would allow the drilled shafts to be installed away from the existing piers, but still maintain a feasible bascule span length.
8. For lift bridge options, review potential to construct deep foundations outside of the limits of the existing foundations. Doing this would mitigate large risks of drilling through the existing foundations.

9. Review options to shift a temporary bridge for all modes during the project to a portion of the structure that is built for potential schedule savings.
10. Review potential to use a lower elevation bridge with a lift bridge or removable section for navigation if a temporary bridge accommodating bicycles and pedestrians only was used. As part of this, alternative landing spots on the east and west sides would need to be reviewed (for instance, the Tom McCall Waterfront Park on the west side and the Eastbank Esplanade on the east side).
11. Evaluate means and methods of construction, particularly related to accelerated construction of the main (movable) piers and steel erection (arch, float-in or launching portions).
12. For the long-span construction sequence, evaluate the movable bridge construction methods to accelerate the overall completion date; specifically, the shaft construction without cofferdam and/or outside IWWW, precast pier walls, some amount of perched construction that seems viable given final built configuration of the movable pier foundations.
13. Consider utilizing the existing truss spans for a portion of the temporary bridge.
14. In terms of specifically accelerating the long-span construction path, consider:
    a. Float-in of a west arch span (possibly combined with launching)
    b. Float-in of a west arch and stick-build an east arch.
    c. Modify the construction sequence to have the critical path go through the west arch instead of the east arch; switch the construction sequence of pier demo/new bent construction for movable span piers.
    d. Utilize full-depth precast deck panels in lieu of cast-in-place deck that are very compatible with tied arches.
    e. Avoid pier wall by using stick erection of arches from towers.
    f. For float-in or stick construction, use precast or large diameter concrete-filled steel tube columns at bearing locations to expedite setting arches. Pier walls (in-fill) could be constructed around columns.
    g. Extend concrete-filled steel tube directly from shafts could be used at the arch’s two bearing locations, possibly decoupling arch erection from most of the new bent construction.

2.14 Early Work Packages

The County is currently contemplating administering the EQRB Project as a CM/GC Project. With this contracting model, the contractor will be brought on early in the design process to provide input into the design and perform several other functions. An advantage to the CM/GC model is that early work packages can be designed and constructed while the bulk of the project is still being designed. This allows for the overall project schedule to be shortened in duration.

Within the EQRB Project, there will be numerous opportunities to advance certain aspects of the design towards early work packages. Ideally, an early work package would help advance the critical path (i.e.: shorten the overall project duration), help mitigate risk and inflation impacts, and be completely severable such that if the County does not reach agreement on a guaranteed maximum price for the work, the overall contract can be cancelled, but the early work can complete without consequence to the remainder of work. Several potential early work packages are listed below for consideration:

1. Utility relocation
    a. For example, for alternatives that require relocating the City's sewer lines along the harbor wall, this work could be performed as early work.
2. Demolition packages
    a. Several buildings will likely be demolished as part of the project. These parcels can be demolished early to clear the sites while design progresses.
3. Portland Rescue Mission (PRM) infill walls
    a. The existing bridge and PRM are built somewhat integrally in that PRM's south building edge is not separated from the bridge and once the existing bridge is (partially or fully) removed, PRM's building would be open. In order to create a separation and enclose the PRM building, infill walls would be placed between the PRM building columns. The infill walls could be an early work package to ensure that the building envelope was completed, after which time, the bridge could be demolished.
4. Project office co-located space
    a. Of the buildings to be demolished, a portion of the American Medical Response (AMR) building could potentially be used as a co-located office space for either the design phase, the construction phase, or both.
    b. Regardless of whether the AMR building is chosen as an office, a potential early work package could be securing an office space and performing necessary tenant improvements to ready the office for the design phase.
5. Temporary detour bridge
    a. If incorporated into the project, a temporary detour bridge could be built while design progresses on the replacement bridge.
6. Dredging
    a. Dredging, rip rap removal, and potential obstruction removal such as the old swing bridge foundation or unknown items could be removed as early work. This would mitigate long term potential schedule delay risk of other in-water work items. As part of this work, the existing pier debris dolphins (on the south side of the existing piers) would be removed at the same time.
7. River foundations
    a. If a design is progressed that moves foundation elements outside of the existing foundations to the south & north (outboard of the existing bridge), the shafts/deep foundations could be packaged, and work started while the design is completed on the remainder of the bridge. Feasibility of this package would

   be dependent on contractor means and methods for installation for severability reasons (i.e.: if using a cofferdam, it would not be recommended, but if using a sunk cofferdam method or shaft installation in open water, this early work package could save substantial time).

8. UPRR temporary crossing
   a. Unless the cost of the temporary UPRR crossing is dependent upon in-place duration, it would be advantageous to install the crossing early while design work is occurring.
9. Temporary electrical service
   a. If a temporary bridge is utilized, it will be necessary to deliver power to the bridge in order to operate the lift span. This electrical service could be delivered to the site prior to being required for the temporary bridge.
10. Early material procurement
    a. For example, structural steel and/or machinery design could be advanced, and the materials procured through early work packages.
11. Work bridges
    a. Installing work bridges ahead of the main work would enhance the project schedule, however, could be problematic from a severability standpoint.

3 Construction Schedule

A preliminary construction schedule has been generated for the three alternatives, all with and without the inclusion of a temporary bridge. The following sections will describe the assumed sequencing of the work. When a contractor is chosen for the work, that contractor may have a preferred sequence that differs from that shown here based on equipment, resource availability, or preferred means and methods.

For all three alternatives, it is assumed that building demolition would likely occur in an early work package or be completed in conjunction with other set up work, so it would not drive the Project schedule.

For all three alternatives, the addition of a temporary bridge would add a year of construction on each end of the Project. The first IWWW is taken up by constructing in-water piles for the temporary bridge. After the piles are in, the bridge superstructure must be put in place and tied in to the east and west approaches before traffic can be shifted off the existing bridge and the “primary work” begun. The reverse is true at the completion of work. Once the permanent work is complete, traffic would be shifted onto the permanent bridge and the temporary bridge superstructure would be removed. During the following IWWW, piles would be removed from the river.

For scheduling purposes, the assumed notice to proceed date for the construction phase would be in March 2024.

3.1 General Phasing (Retrofit)

The Retrofit alternative would take approximately 5 years to construct assuming a temporary bridge is incorporated into the Project, and approximately 3.5 years to construct assuming no temporary bridge. The following is a general sequence of events by year. For more detailed schedules, see Appendix G.

- **Enhanced Retrofit with Temporary Bridge**
  - Year 1 (2024)
    - Install piles for temporary bridge during first IWWW
    - Install temporary bridge superstructure
    - Begin work bridge installation (complete west work bridge)
    - Perform substructure retrofit on west approach spans
  - Year 2 (2025)
    - Switch traffic to temporary bridge (March 2025)
    - Complete work bridge installation
    - Remove bascule leaves
    - Install cofferdams for Piers 1 and 2
    - Complete substructure and foundation retrofit on west approach spans
    - Remove and replace north side of west approach deck
    - Begin shaft installation at Pier 1 and Pier 2
    - Perform substructure and foundation retrofit on east approach spans
  - Year 3 (2026)
    - Install Pier 3 cofferdam
    - Reinstall bascule leaves
    - Ground Improvements approaches
    - Remove and replace north side of east approach deck
    - Complete Pier 1 and Pier 2 substructure retrofits
    - Begin shaft installation at Pier 3
  - Year 4 (2027)
    - Complete Pier 3 substructure retrofits
    - Install Pier 4 drilled shafts
    - Demolish and replace spans over I-5, I-84 ramps, and UPRR
    - Install main spans ground Improvements
    - Pour replacement deck in main spans from west approach to west bascule span

  - Year 5 (2028)
    - Pour replacement deck in main spans from east approach to east bascule span
    - Switch traffic to retrofitted bridge (August 2028)
    - Remove and begin replacement of south side of east and west approach decks
    - Remove temporary bridge
  - Year 6 (2029)
    - Complete replacement of south side of east and west approaches
    - Complete Project (May 2029)
- **Retrofit with No Temporary Bridge**
  - Year 1 (2024)
    - Install cofferdams for Pier 1 and Pier 2
    - Install west work bridge
    - Perform substructure retrofit on west approach spans
    - Begin shaft installation at Pier 1 and Pier 2
  - Year 2 (2025)
    - Complete work bridge installation
    - Install Pier 3 cofferdam
    - Complete substructure retrofit on west approach spans
    - Close bridge to traffic (September 2025)
    - Remove and begin replacement of west approach deck
    - Begin substructure retrofit on east approach spans
    - Complete Pier 1 and Pier 2 substructure retrofits
    - Begin shaft installation at Pier 3
  - Year 3 (2026)
    - Install ground Improvements
    - Complete replacement of west approach deck
    - Complete Pier 3 substructure retrofits
    - Demolish and replace spans over I-5, I-84 ramps, and UPRR
    - Pour replacement deck in main spans from west approach to west bascule span
    - Complete substructure retrofit on east approach spans
    - Remove and replace east approach deck

  - Year 4 (2027)
    - Pour replacement deck in main spans from east approach to east bascule span
    - Open retrofitted bridge to traffic (August 2027. Total closure: 2 years)
    - Complete Project (September 2027)

3.2 General Phasing (Short-span Alternative)

The Short-span Alternative would take approximately 6.5 years to construct assuming a temporary bridge is incorporated into the Project, and approximately 4.5 years to construct assuming no temporary bridge. The following is a general sequence of events by year. For detailed schedules, see Appendix G.

- **Short-span Alternative with Temporary Bridge**
  - Year 1 (2024)
    - Install piles for temporary bridge during first IWWW
    - Install temporary bridge superstructure
    - Begin work bridge installation
  - Year 2 (2025)
    - Switch traffic to temporary bridge (March 2025)
    - Complete West work bridge
    - Remove bascule spans and trusses
    - Continue work bridge installation
    - Install cofferdams for Bents 8 and 9
    - Complete substructure on northwest approach spans
    - Demolish Piers 1, 2, and 4
    - Complete substructure on northeast approach spans
    - Install main spans and north approaches ground Improvements
  - Year 3 (2026)
    - Complete work bridge installation
    - Erect north half of east and west approach girders and pour decks
    - Demolish Pier 3
    - Install shafts at Bent 8 and begin shafts at Bent 9
  - Year 4 (2027)
    - Complete Bent 8 substructure
    - Float in and install west bascule span
    - Complete shaft installation and begin constructing Bent 9

        - Pour decks from west approach to west bascule span
    - Year 5 (2028)
        - Complete substructure for east and west approaches
        - Complete decks for east and west approaches
        - Construct Bent 10
        - Float in and install east bascule span
    - Year 6 (2029)
        - Pour deck from east approach to east bascule span
        - Switch traffic to new bridge (July 2029)
        - Demolish existing and begin new construction of south approaches.
        - Remove temporary bridge
    - Year 7 (2030)
        - Install south approaches ground improvements
        - Complete construction of south approaches
        - Complete Project (June 2030)
- **Short-span Alternative with No Temporary Bridge**
    - Year 1 (2024)
        - Install west work bridge
        - Demolish bascule spans and trusses
        - Install Bent 8 and Bent 9 cofferdams
        - Close bridge to traffic (May 2024)
        - Demolish east and west approaches and begin substructure
        - Demolish Pier 2
    - Year 2 (2025)
        - Complete work bridges
        - Complete Bent 7
        - Demolish Pier 3
        - Install Bent 8 shafts
        - Complete Bent 8
        - Complete east and west approach substructure
        - Install ground improvements
    - Year 3 (2026)
        - Place new east and west approach decks

        - Float in and install west bascule span
        - Install Bent 9 and Bent 10 shafts
        - Complete Bent 9 and Bent 10
        - Pour west approach to west bascule span
    - Year 4 (2027)
        - Pour east approach to east bascule span
        - Float in and install east bascule span
    - Year 5 (2028)
        - Open new bridge to traffic (March 2028. Total closure: 4 years)
        - Remove work bridges
        - Complete Project (August 2028)

3.3 General Phasing (Long-span Alternative)

The Long-span Alternative would take approximately 6.5 years to construct assuming a temporary bridge is incorporated into the Project, and approximately 4.5 years to construct assuming no temporary bridge. The following is a general sequence of events by year. For detailed schedules, see Appendix G.

- **Long-span Alternative with Temporary Bridge (Note: arch bridge type assumed; overall cable-stayed construction duration expected to be similar)**
    - Year 1 (2024)
        - Install piles for temporary bridge during first IWWW
        - Install temporary bridge superstructure
        - Begin work bridge installation
        - Begin structural steel procurement
    - Year 2 (2025)
        - Switch traffic to temporary bridge (February 2025)
        - Complete West work bridge
        - Remove bascule spans and trusses
        - Install ground improvements at Bent 9
        - Install Bent 6 and 9 drilled shafts
        - Continue work bridge installation
        - Install cofferdams for Bents 7 and 8 (assumed pier replacement in approximately the same location as the existing piers)
        - Complete substructure on northwest approach spans
        - Demolish Piers 1, 2, and 4

        - Complete substructure on northeast approach spans
    - Year 3 (2026)
        - Complete work bridge installation
        - Erect north half of east and west approach girders and pour decks
        - Demolish Pier 3
        - Install shafts at Bent 7 and begin shafts at Bent 8
        - Complete Bents 6 and 9
    - Year 4 (2027)
        - Complete Bent 7 substructure
        - Erect west long-span
        - Float in and install west bascule span
        - Complete shaft installation and begin constructing Bent 8
        - Pour decks from west approach to west bascule span
    - Year 5 (2028)
        - Complete substructure for east and west approaches
        - Complete Bent 8 Substructure
        - Erect east long-span
        - Float in and install east bascule span
    - Year 6 (2029)
        - Pour deck from east approach to east bascule span
        - Switch traffic to new bridge (June 2029)
        - Demolish existing and begin new construction of south half of approach spans
        - Remove temporary bridge
    - Year 7 (2030)
        - Complete construction of south half of approach spans
        - Complete Project (August 2030)
- **Long-span Alternative with No Temporary Bridge (Note: arch bridge type assumed; overall cable-stayed construction duration expected to be similar)**
    - Year 1 (2024)
        - Install west work bridge
        - Demolish bascule spans and trusses
        - Install Bent 7 and Bent 8 cofferdams (assumed pier replacement in approximately the same location as the existing piers)

        - Close bridge to traffic (May 2024)
        - Demolish east and west approaches and begin substructure
        - Demolish Pier 2
        - Begin procuring long-span structural steel
    - Year 2 (2025)
        - Complete work bridges
        - Complete Bent 6
        - Demolish Pier 3
        - Install Bent 7 shafts
        - Complete Bent 7
        - Complete east and west approach substructure
        - Install ground improvements
    - Year 3 (2026)
        - Erect west long-span
        - Place new east and west approach decks
        - Float in and install west bascule span
        - Install Bent 8
        - Complete Bent 9
        - Pour west approach to west bascule span
    - Year 4 (2027)
        - Erect east long-span
        - Pour east approach to east bascule span
        - Float in and install east bascule span
    - Year 5 (2028)
        - Open new bridge to traffic (August 2028. Total closure: 4 years)
        - Remove work bridges
        - Complete Project (October 2028)

3.4 General Phasing (Couch Extension)

The Couch Extension would take approximately 6.5 years to construct assuming a temporary bridge is incorporated into the Project, and approximately 4.5 years to construct assuming no temporary bridge. The following is a general sequence of events by year. For detailed schedules, see Appendix G.

- **Couch Extension with Temporary Bridge**
    - Year 1 (2024)

    - Install piles for temporary bridge during first IWWW
    - Install temporary bridge superstructure
    - Begin work bridge installation (complete west work bridge)
- Year 2 (2025)
    - Switch traffic to temporary bridge (March 2025)
    - Continue work bridge installation
    - Remove bascule spans and trusses
    - Install cofferdams for Bents 8 and 9
    - Complete substructure on northwest approach spans
    - Begin substructure on Couch Couplet
    - Demolish Piers 1, 2, and 4
    - Complete substructure on northeast approach spans
    - Install main spans and north approaches ground Improvements
- Year 3 (2026)
    - Complete work bridge installation
    - Erect north half of east and west approach girders and pour decks
    - Complete substructure on Couch Couplet
    - Demolish Pier 3
    - Install shafts at Bent 8 and begin shafts at Bent 9
- Year 4 (2027)
    - Shift east and west approach traffic to north side
    - Complete substructure for east and west approaches
    - Complete Bent 8 substructure
    - Float in and install west bascule span
    - Complete shaft installation and begin constructing Bent 9
    - Pour decks from west approach to west bascule span
- Year 5 (2028)
    - Complete decks for east and west approaches
    - Construct Bent 10
    - Float in and install east bascule span
    - Construct Couch Couplet Superstructure
    - Pour deck from west approach to west bascule span
- Year 6 (2029)

    - Pour deck from east approach to east bascule span
    - Switch traffic to new bridge (August 2029)
    - Demolish existing and begin new construction of south approach spans
    - Install south approaches ground Improvements
    - Remove temporary bridge
  - Year 7 (2030)
    - Complete south half of approach spans
    - Complete Project (October 2030)
- **Couch Extension with No Temporary Bridge**
  - Year 1 (2024)
    - Install west work bridge
    - Demolish bascule spans and trusses
    - Install Bent 8 and Bent 9 cofferdams
    - Close bridge to traffic (May 2024)
    - Demolish east and west approaches and begin substructure
    - Begin Couch Couplet substructure
    - Demolish Pier 2
  - Year 2 (2025)
    - Complete work bridges
    - Complete Bent 7
    - Demolish Pier 3
    - Install Bent 8 shafts
    - Complete Bent 8
    - Complete east and west approach substructure
    - Complete Couch Couplet substructure
    - Install ground Improvements
  - Year 3 (2026)
    - Erect new east and west approach girders and place decks
    - Float in and install west bascule span
    - Place Couch Couplet deck
    - Install Bent 9 and Bent 10 shafts
    - Complete Bent 9 and Bent 10
    - Pour west approach to west bascule span

- Year 4 (2027)
  - Pour east approach to east bascule span
  - Float in and install east bascule span
- Year 5 (2028)
  - Open new bridge to traffic (March 2028. Total closure: 4 years)
  - Remove work bridges
  - Complete Project (August 2028)

4 References

Multnomah County

2021a EQRB Bridge Replacement Technical Report. https://multco.us/earthquake-ready-burnside-bridge/project-library.

2021b EQRB Draft Section 4(f) Analysis. Attachment M to the EQRB Draft Environmental Impact Statement. https://multco.us/earthquake-ready-burnside-bridge/project-library.

2021c EQRB Economics Technical Report. https://multco.us/earthquake-ready-burnside-bridge/project-library.

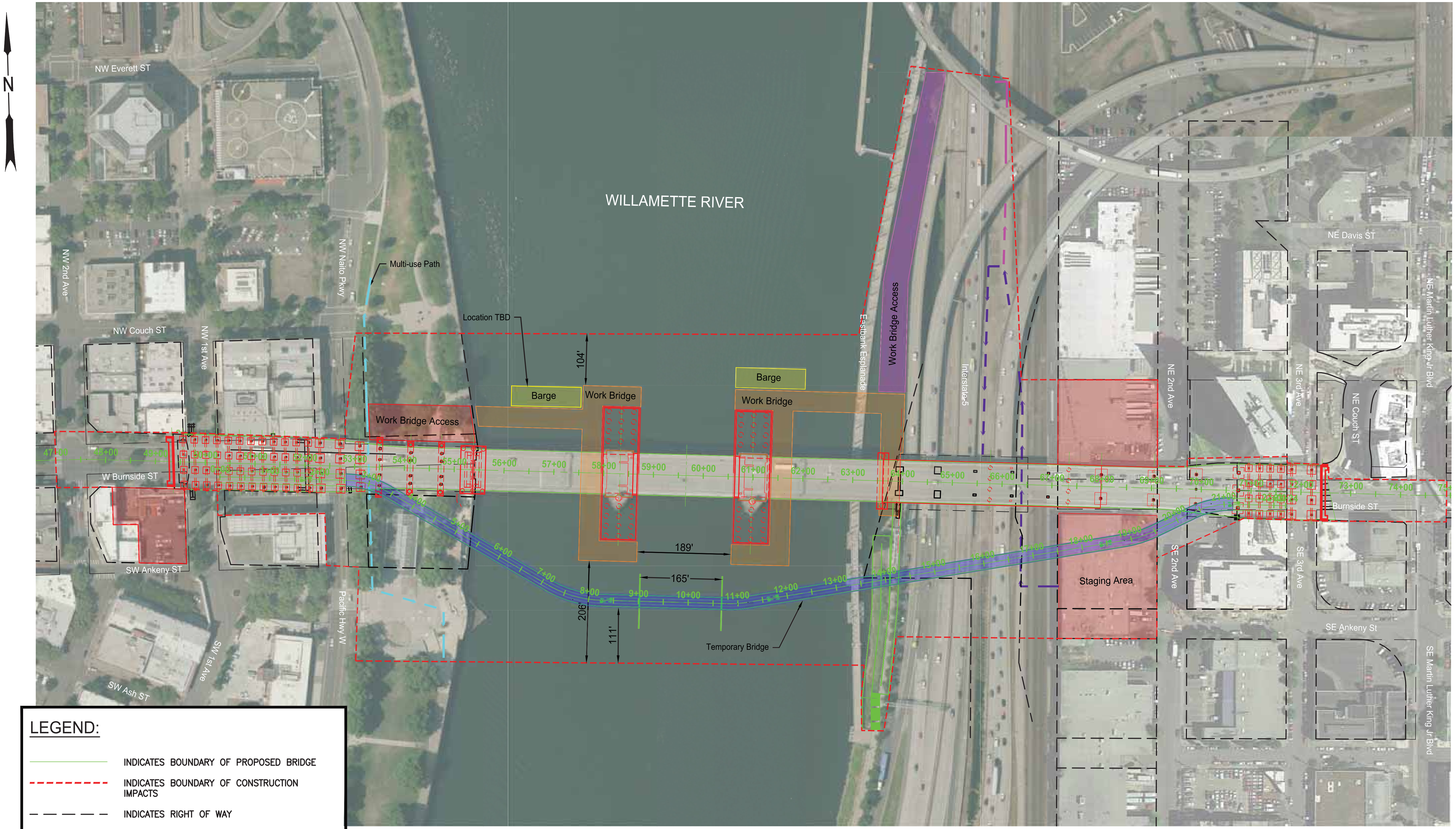
2021d EQRB Noise and Vibration Technical Report. https://multco.us/earthquake-ready-burnside-bridge/project-library.

2021e EQRB Parks and Recreation Technical Report. https://multco.us/earthquake-ready-burnside-bridge/project-library.

2021f EQRB Right-of-Way Technical Report. https://multco.us/earthquake-ready-burnside-bridge/project-library.

2021g EQRB Transportation Technical Report. https://multco.us/earthquake-ready-burnside-bridge/project-library.

Appendix A. Access Plan and Temporary Bridge Layout



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— — —	INDICATES RIGHT OF WAY
━ → ━	INDICATES PROPOSED MULTI–USE PATH
━ → ━	INDICATES PROPOSED CONSTRUCTION ACCESS
━ → ━	INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Enhanced Retrofit (w/ Temporary Bike/Ped Bridge)
MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233–5999

IAN B. CANNON P.E.
COUNTY ENGINEER

DESIGNED BY: DESIGNER
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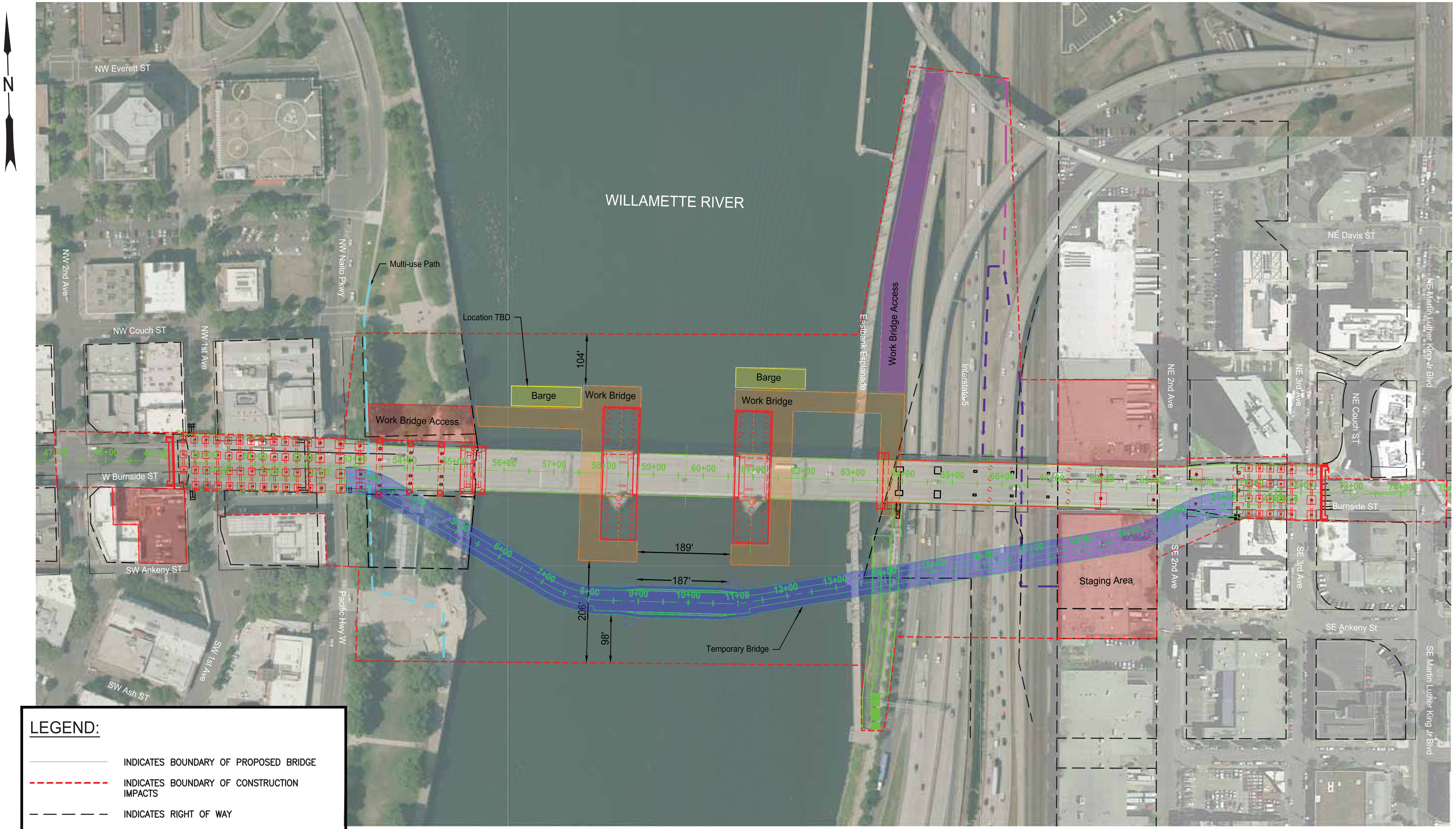

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EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout

Enhanced Retrofit

MULTNOMAH COUNTY

PROJECT NO.: *Proj No*

DATE: *Date*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

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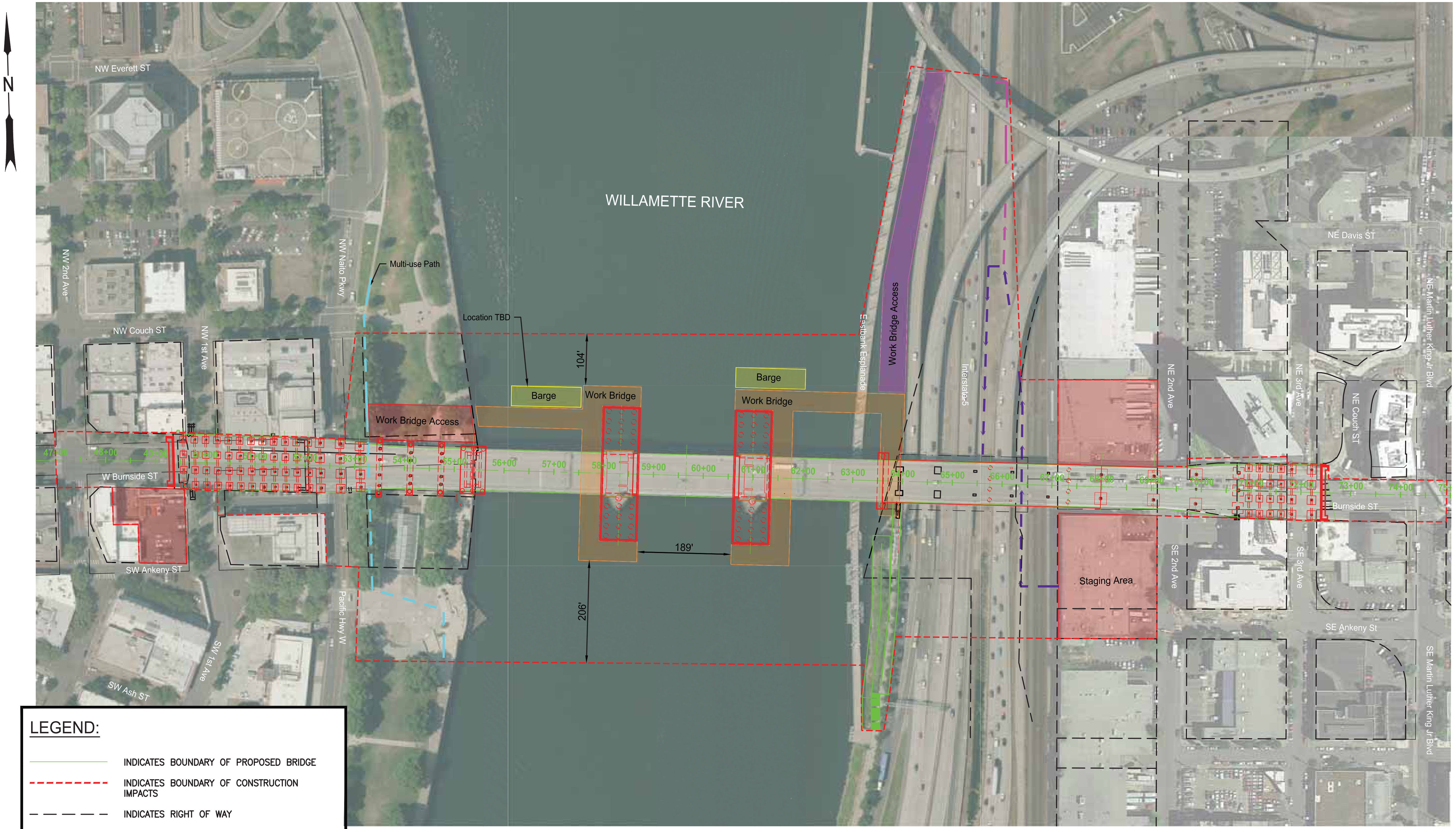

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— → — (cyan)	INDICATES PROPOSED MULTI–USE PATH
— → — (purple)	INDICATES PROPOSED CONSTRUCTION ACCESS
— → — (magenta)	INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan Layout
Enhanced Retrofit
MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
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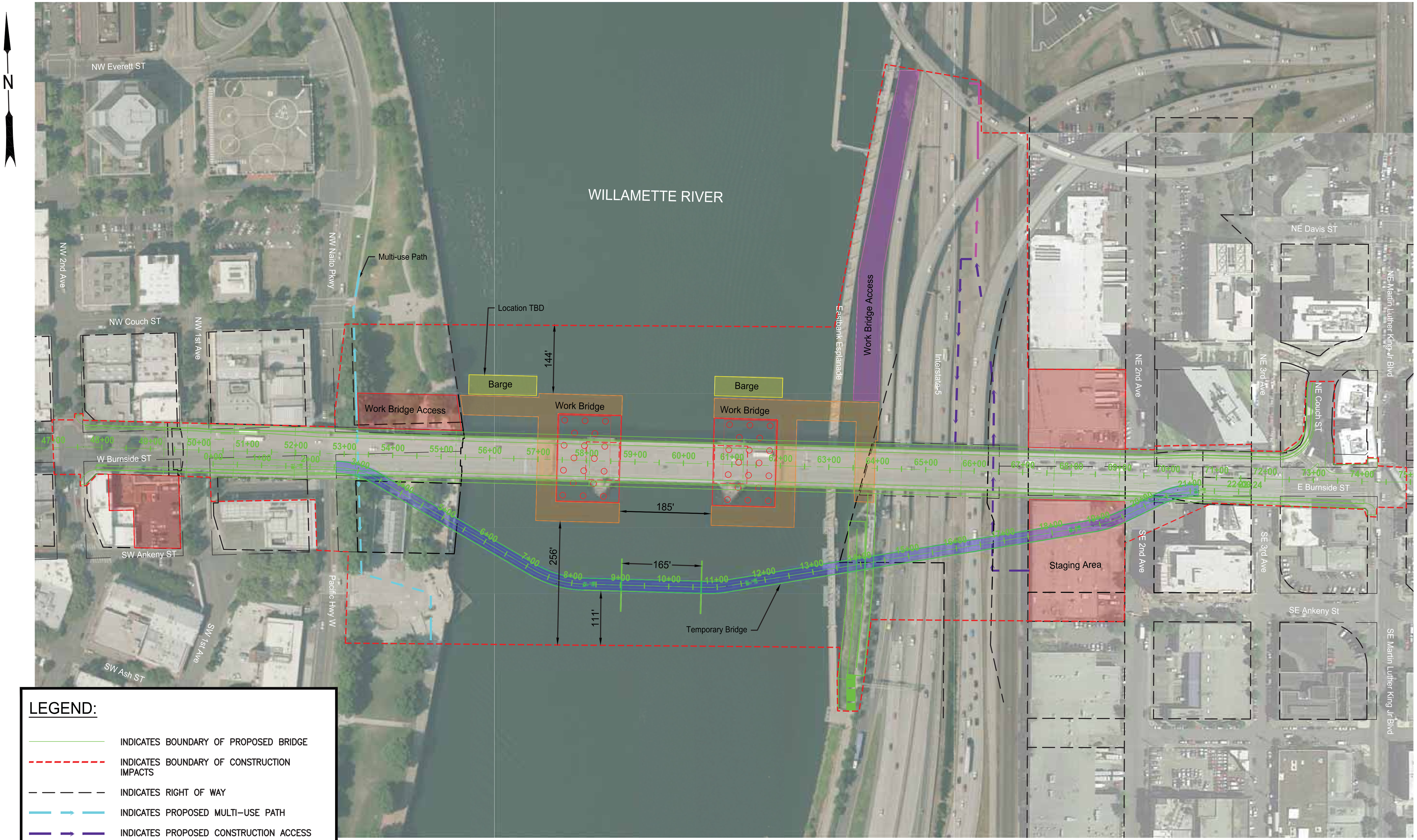

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EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Replacement Movable Bridge on Existing Alignment
(w/ TemporaryBike/Ped Bridge)
MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
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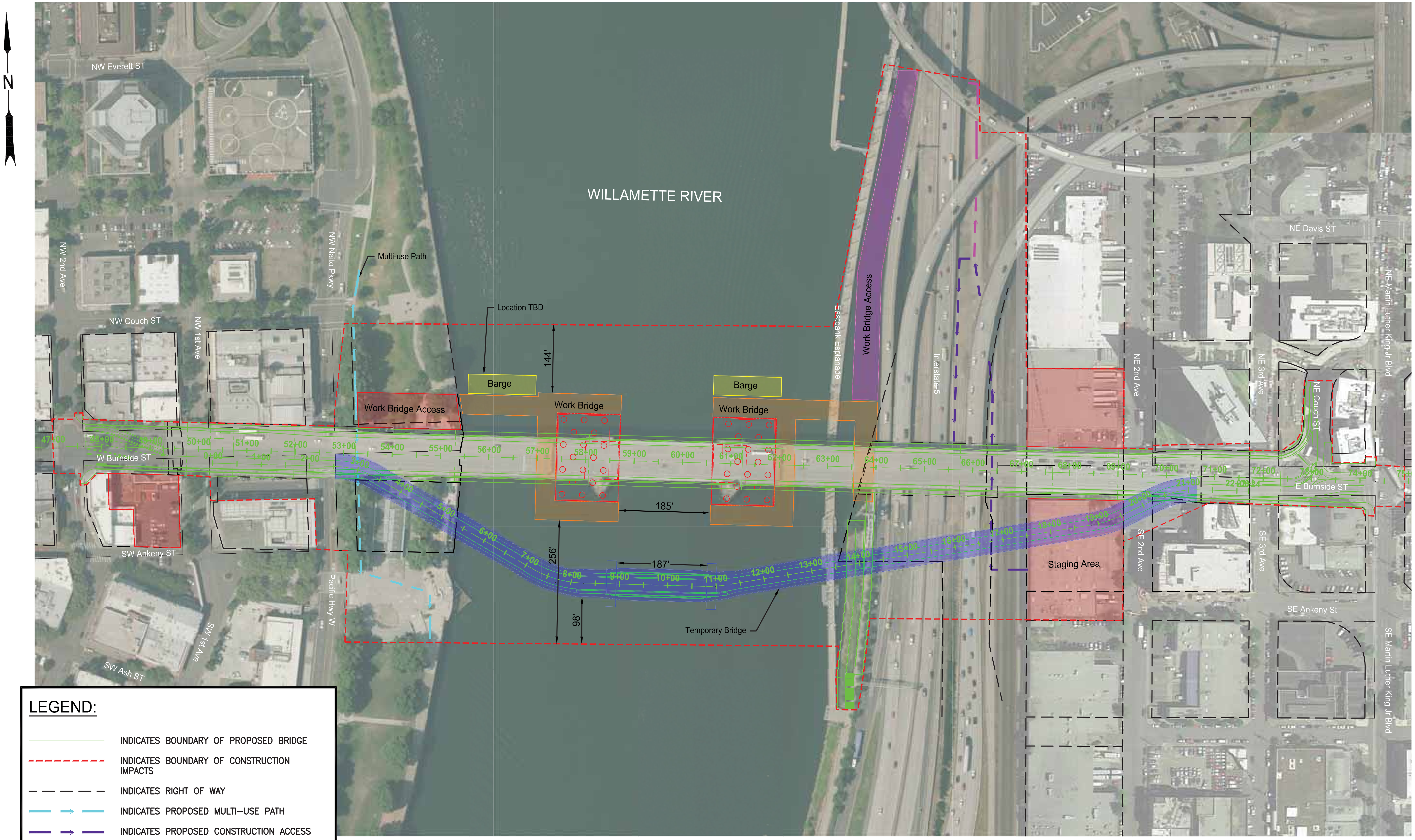

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— → —	INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Replacement Movable Bridge on Existing Alignment

MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
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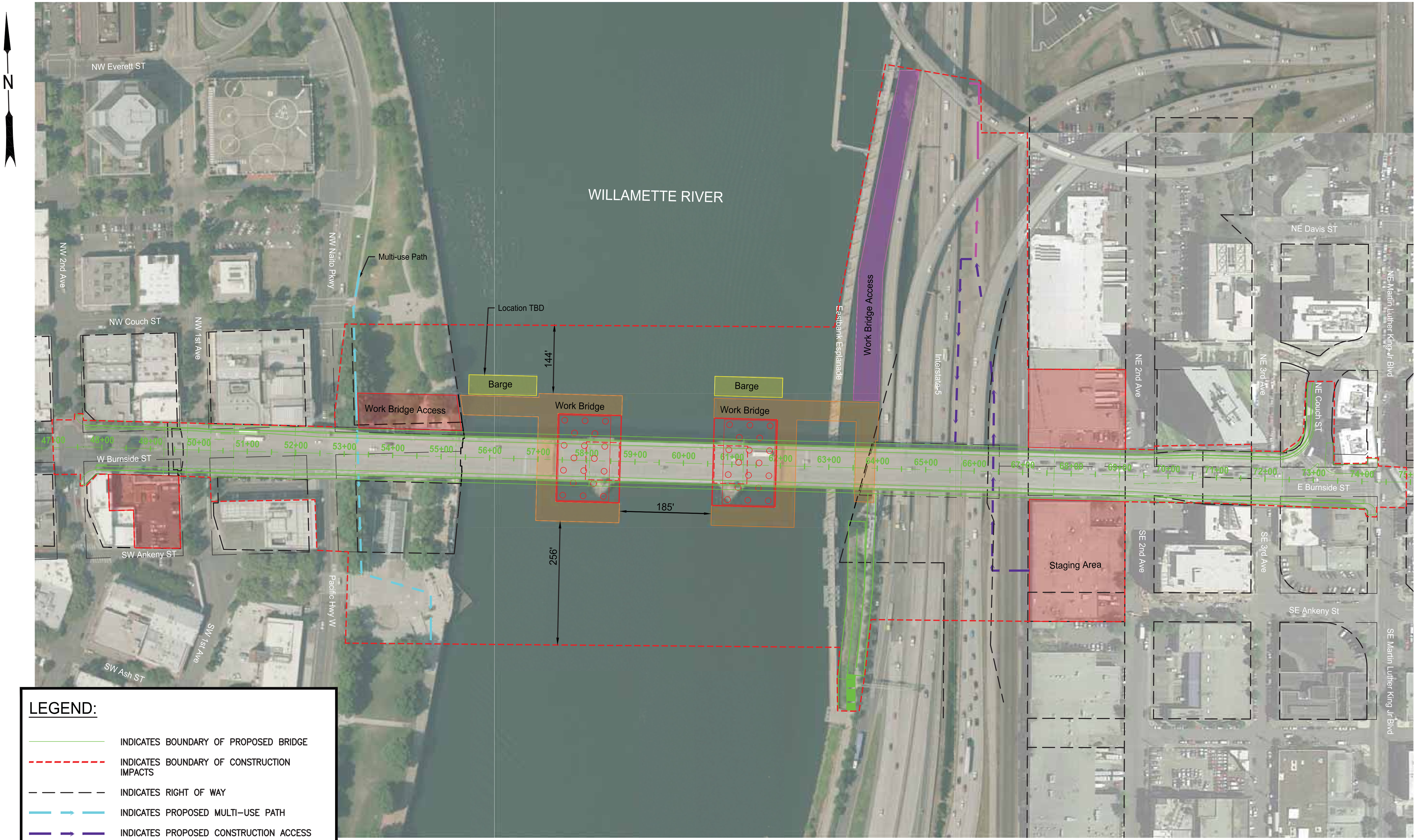

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EarthQuake Ready Burnside Bridge

Access Plan Layout

Replacement Movable Bridge on Existing Alignment

MULTNOMAH COUNTY

PROJECT NO.: *Proj No*

DATE: *Date*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
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1620 S.E. 190th AVE. PORTLAND, ORE. 97233–5999

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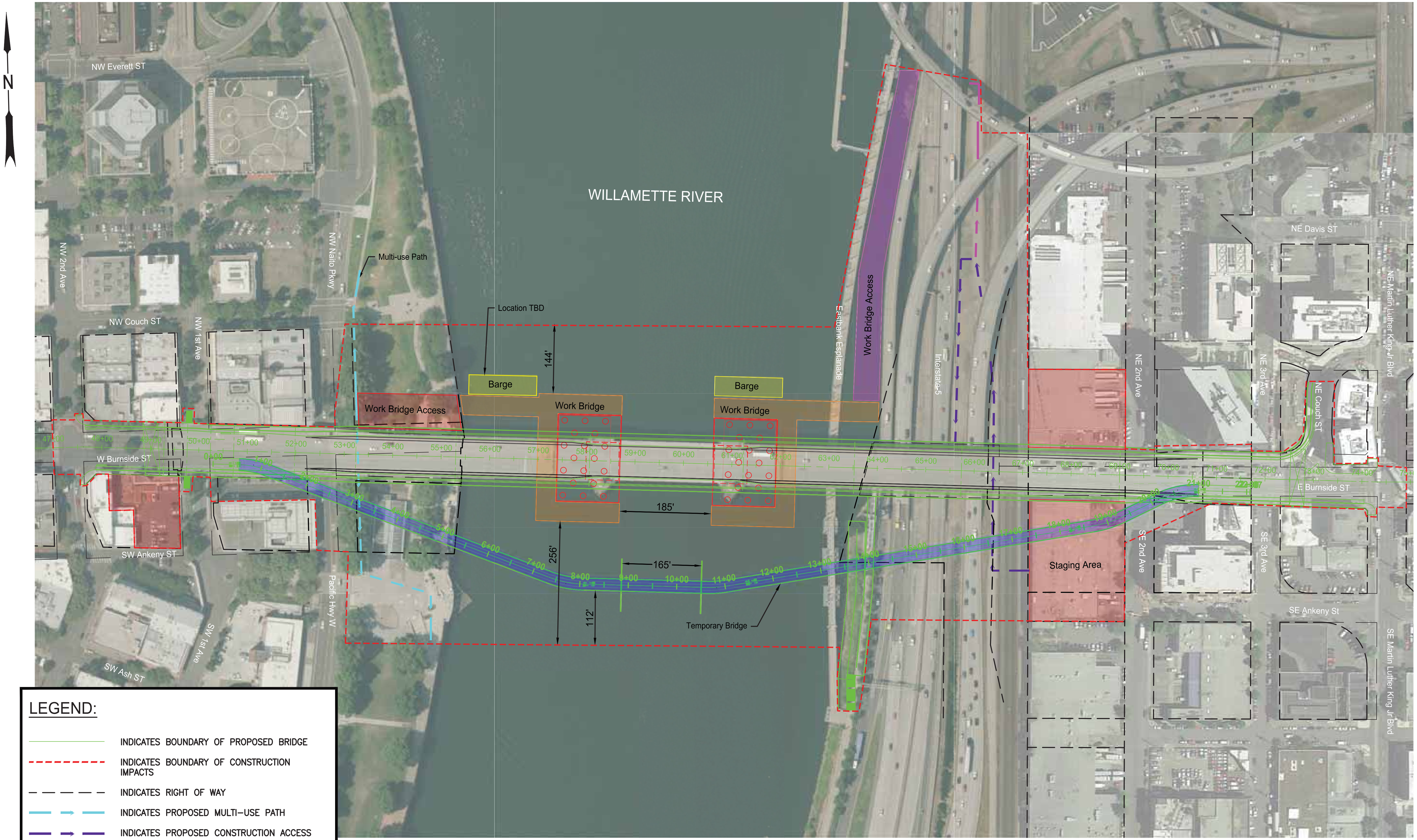

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- INDICATES PROPOSED MULTI-USE PATH
- INDICATES PROPOSED CONSTRUCTION ACCESS
- INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Replacement Movable Bridge with Long Span Approaches
on Existing Alignment (w/Temporary Bike/Ped Bridge)
MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
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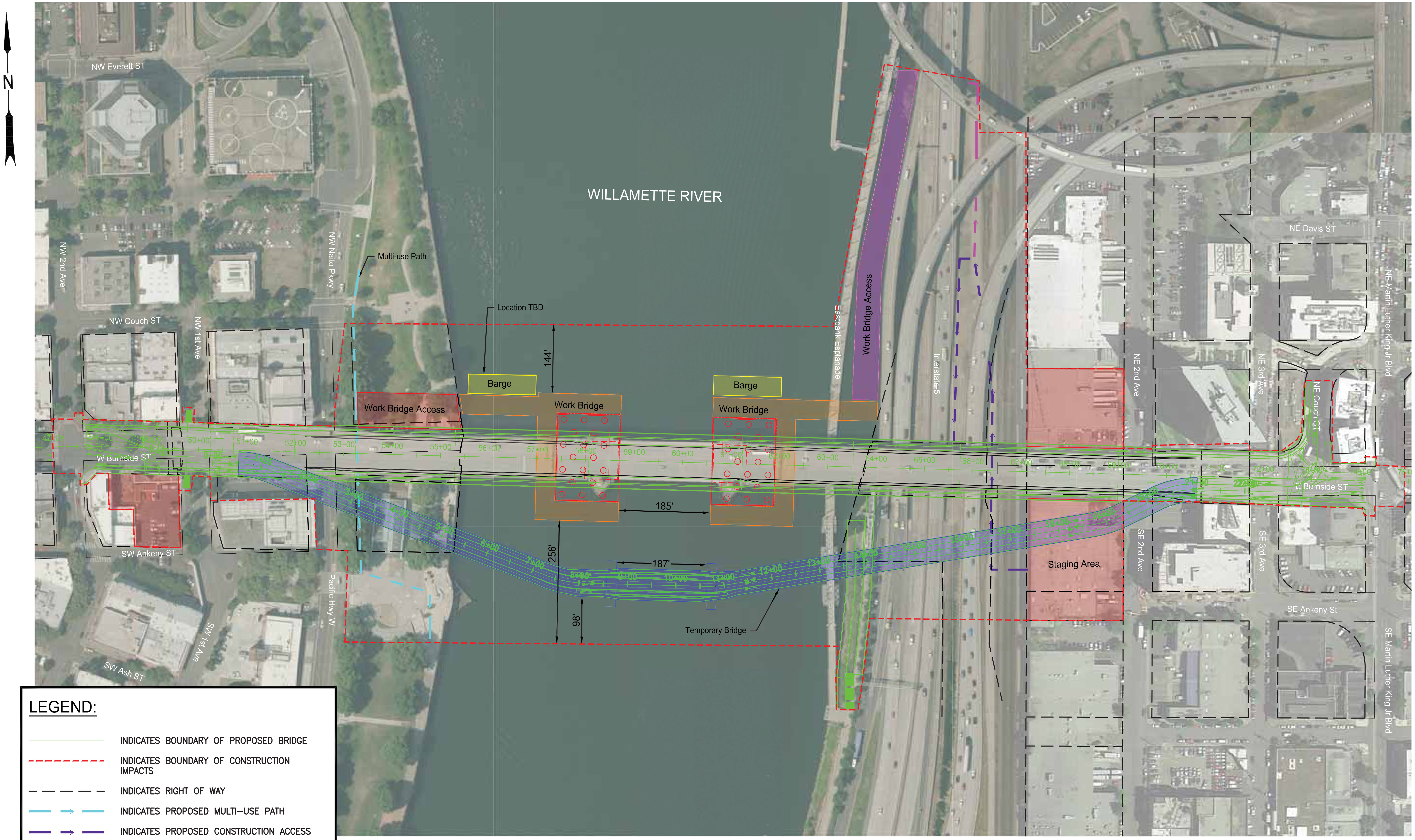

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- INDICATES PROPOSED CONSTRUCTION ACCESS
- INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Replacement Movable Bridge with Long Span
Approaches on Existing Alignment
MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
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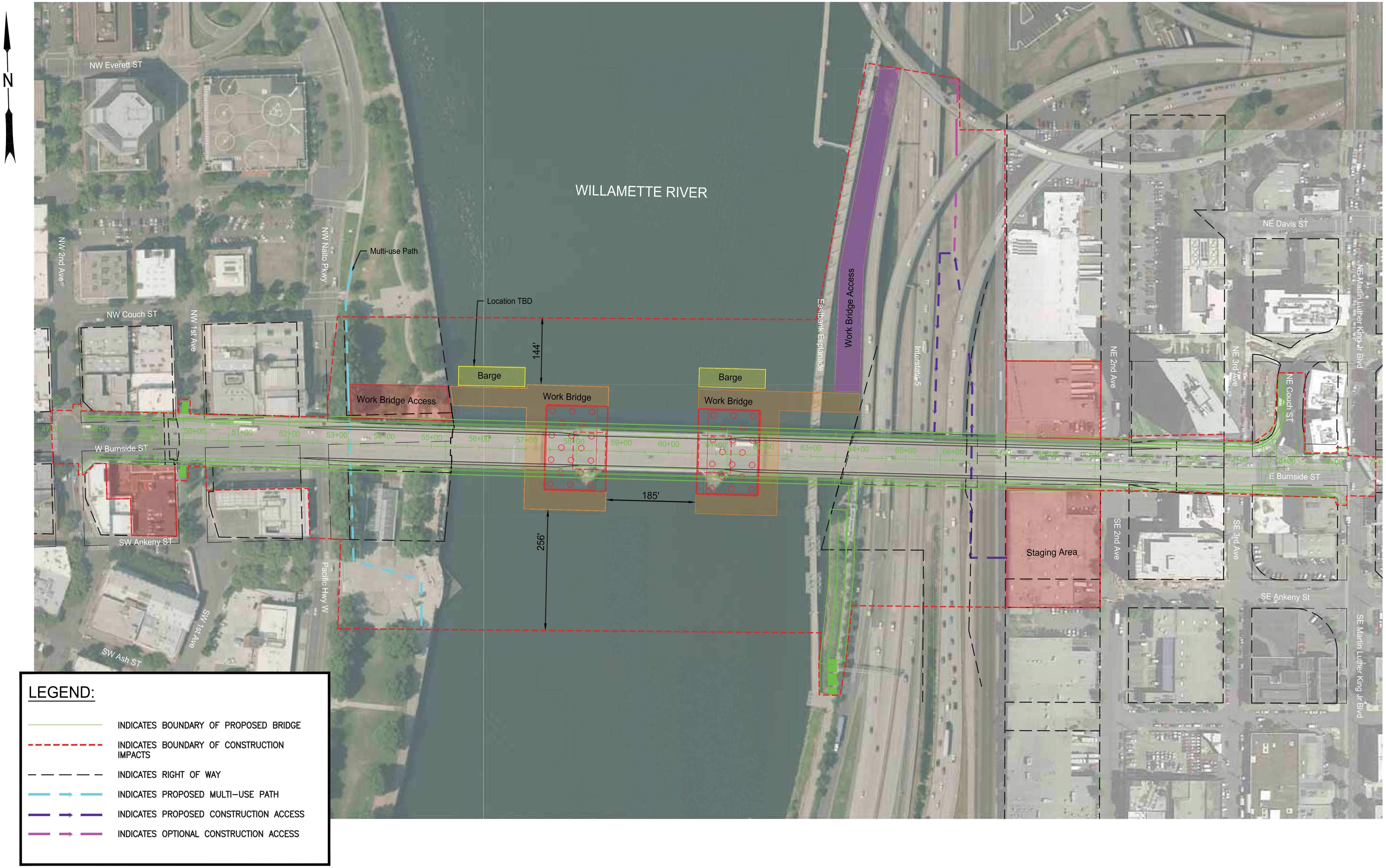

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EarthQuake Ready Burnside Bridge

Access Plan Layout

Replacement Movable Bridge with Long Span
Approaches on Existing Alignment
MULTNOMAH COUNTY

DATE: *Date*

PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
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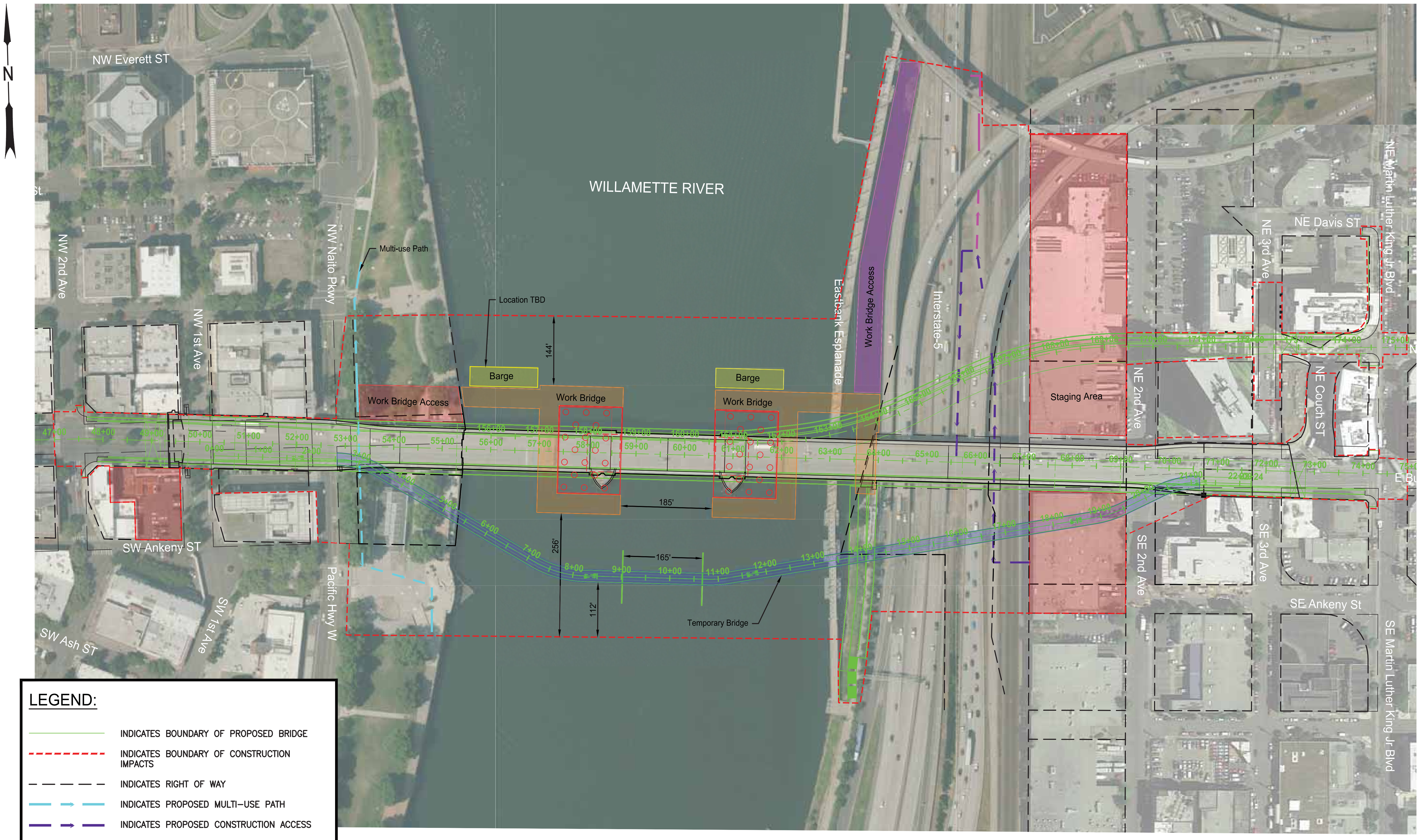

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EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Replacement Movable Bridge w/ Couch Connection
(w/ Temporary Bike/Ped Bridge)
MULTNOMAH COUNTY

DATE: *Date*

PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
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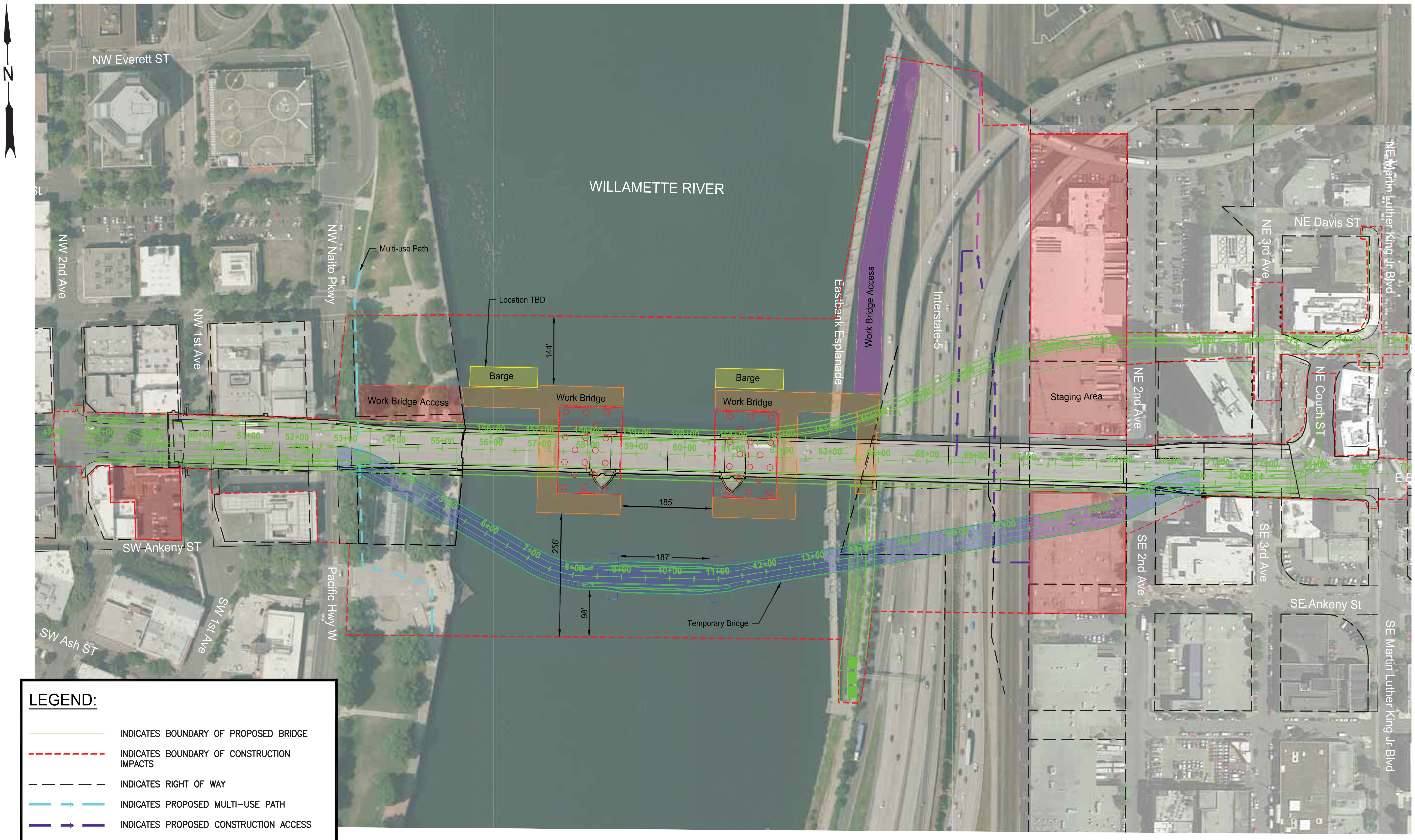

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— → —	INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan and Temporary Bridge Layout
Replacement Movable Bridge w/ Couch Connection

MULTNOMAH COUNTY

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233–5999

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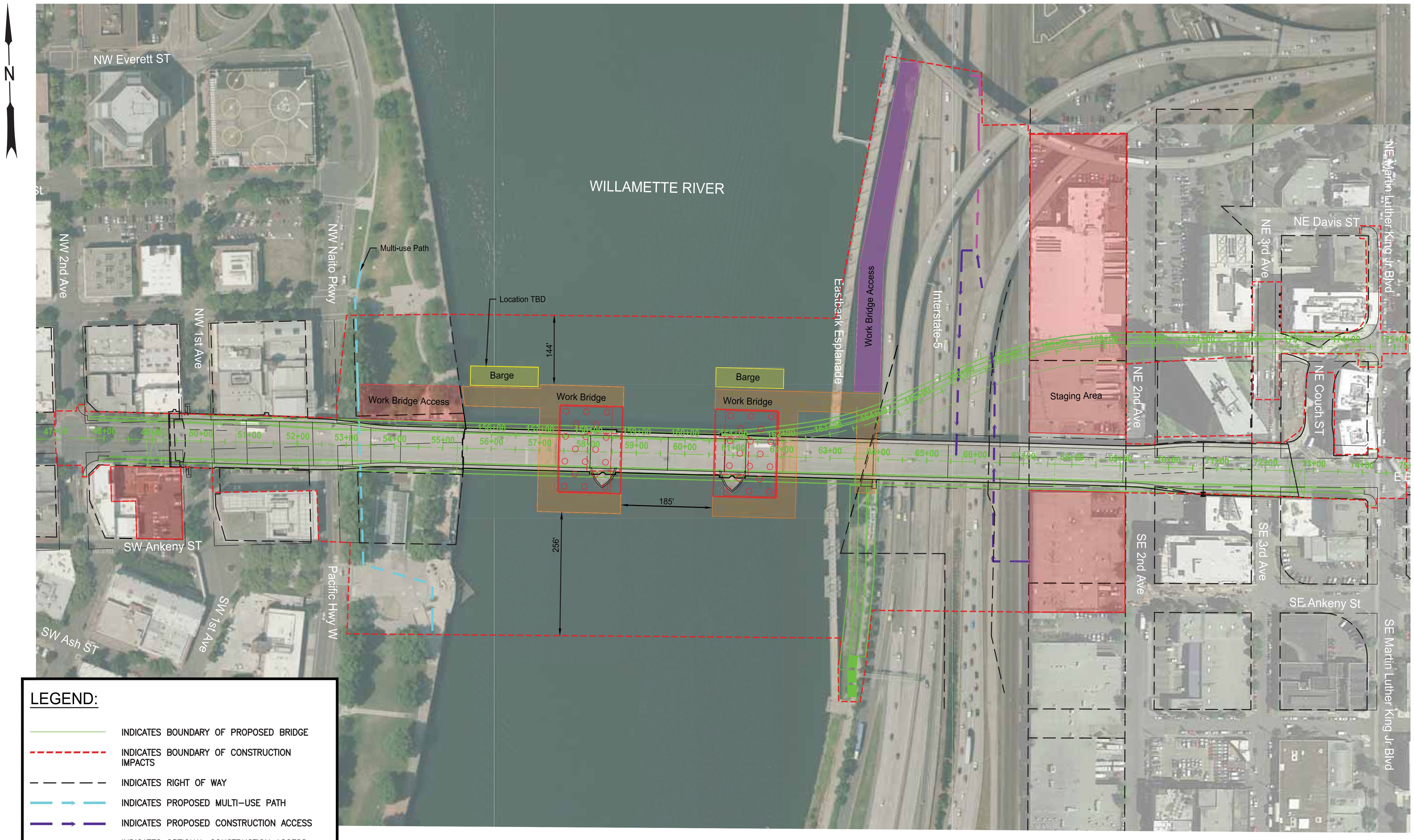

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— → — INDICATES OPTIONAL CONSTRUCTION ACCESS

EarthQuake Ready Burnside Bridge

Access Plan Layout

Replacement Movable Bridge w/ Couch Connection

MULTNOMAH COUNTY

PROJECT NO.: *Proj No*

DATE: *Date*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

COUNTY ENGINEER
IAN B. CANNON P.E.

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REVISIONS

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Appendix B. Potential Offsite Storage Yards


USACE Portland Terminal 2
Willamette Staging Option Near Project
Willamette Staging Option
Old Ross Island Sand & Gravel Yard (for Sale)
Project Site
University of Portland
Legacy Medic
Overlook Park
Old Ross Island Sand & Gravel Yard (For Sale)
Willamette Staging Optic
USACE Portland Terminal 2
Willamette Staging Option
Willamette River
405
5
Projec
Mill Ends Pa

Site Map

Imagery ©2019 Google, Map data ©2019 Google 200 ft

USACE Portland Terminal 2

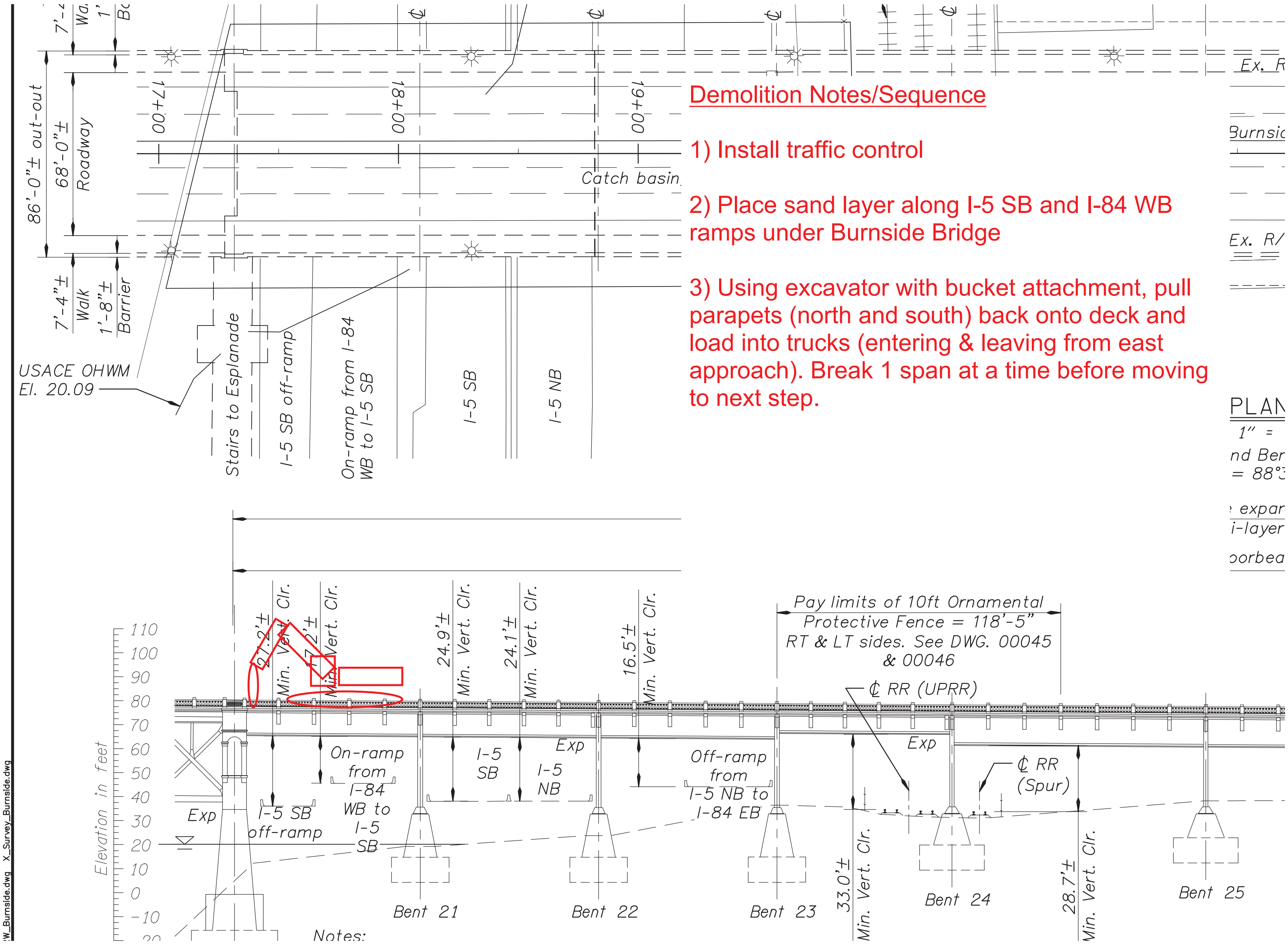
Willamette Staging Option

Imagery ©2019 Google, Map data ©2019 Google 200 ft

Willamette Staging Option Near Job

Old Ross Island Sand & Gravel Yard

Appendix C. Demolition Sequence over I-5 Mainline, I-84 Ramps, and UPRR

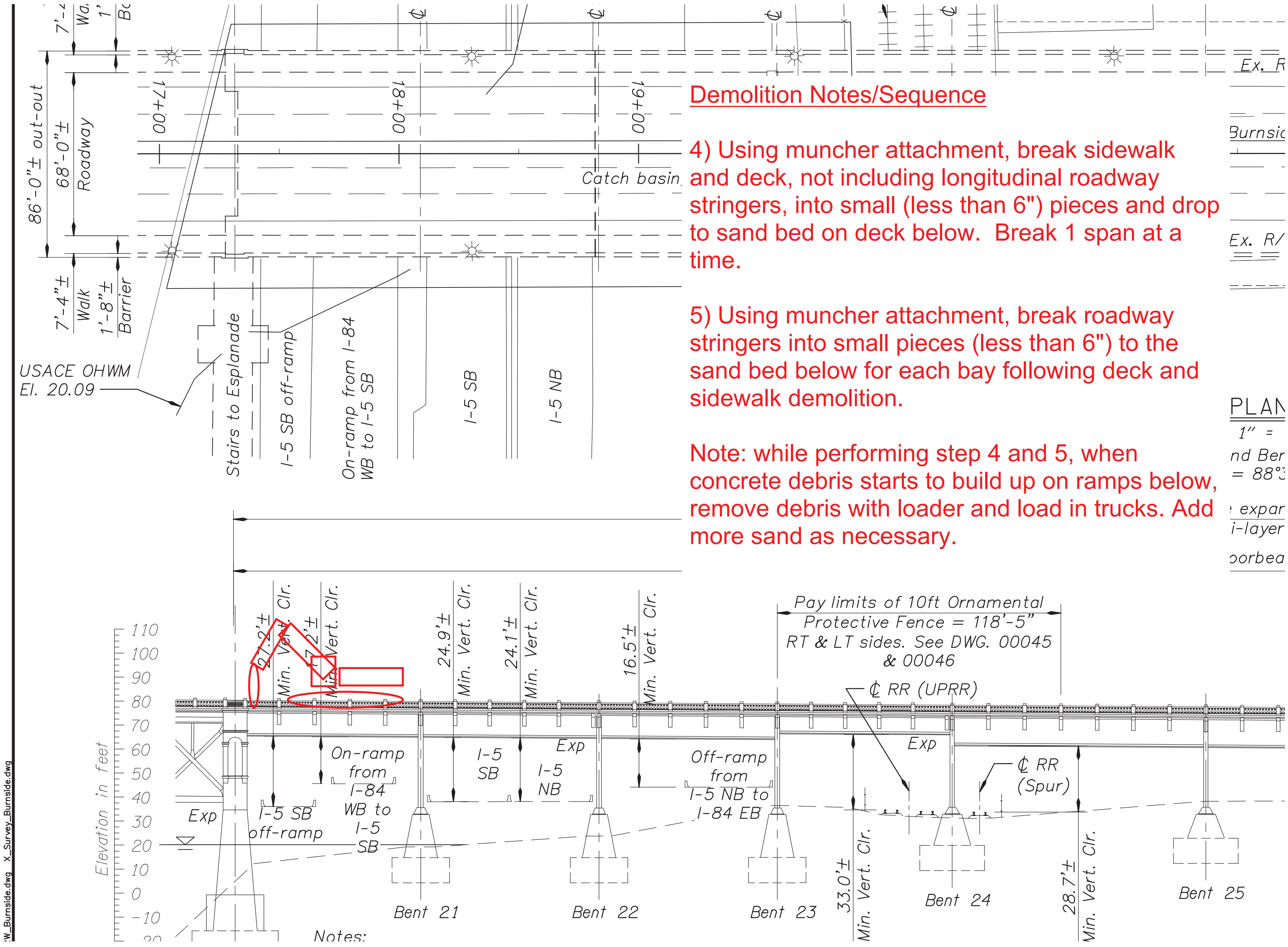


Demolition Notes/Sequence

1) Install traffic control

2) Place sand layer along I-5 SB and I-84 WB ramps under Burnside Bridge

3) Using excavator with bucket attachment, pull parapets (north and south) back onto deck and load into trucks (entering & leaving from east approach). Break 1 span at a time before moving to next step.



Demolition Notes/Sequence

4) Using muncher attachment, break sidewalk and deck, not including longitudinal roadway stringers, into small (less than 6") pieces and drop to sand bed on deck below. Break 1 span at a time.

5) Using muncher attachment, break roadway stringers into small pieces (less than 6") to the sand bed below for each bay following deck and sidewalk demolition.

Note: while performing step 4 and 5, when concrete debris starts to build up on ramps below, remove debris with loader and load in trucks. Add more sand as necessary.

Demolition Notes/Sequence

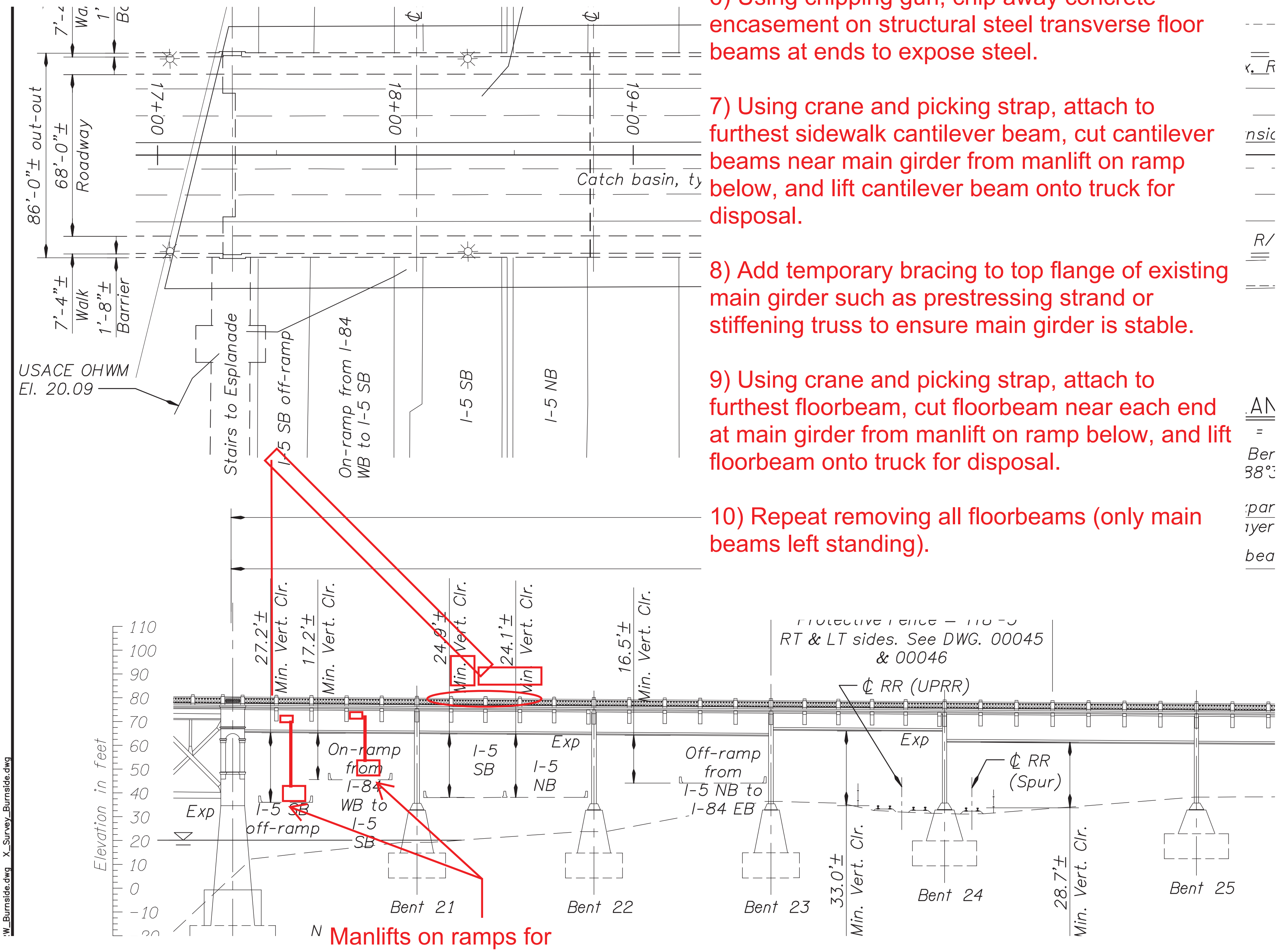
6) Using chipping gun, chip away concrete encasement on structural steel transverse floor beams at ends to expose steel.

7) Using crane and picking strap, attach to furthest sidewalk cantilever beam, cut cantilever beams near main girder from manlift on ramp below, and lift cantilever beam onto truck for disposal.

8) Add temporary bracing to top flange of existing main girder such as prestressing strand or stiffening truss to ensure main girder is stable.

9) Using crane and picking strap, attach to furthest floorbeam, cut floorbeam near each end at main girder from manlift on ramp below, and lift floorbeam onto truck for disposal.

10) Repeat removing all floorbeams (only main beams left standing).

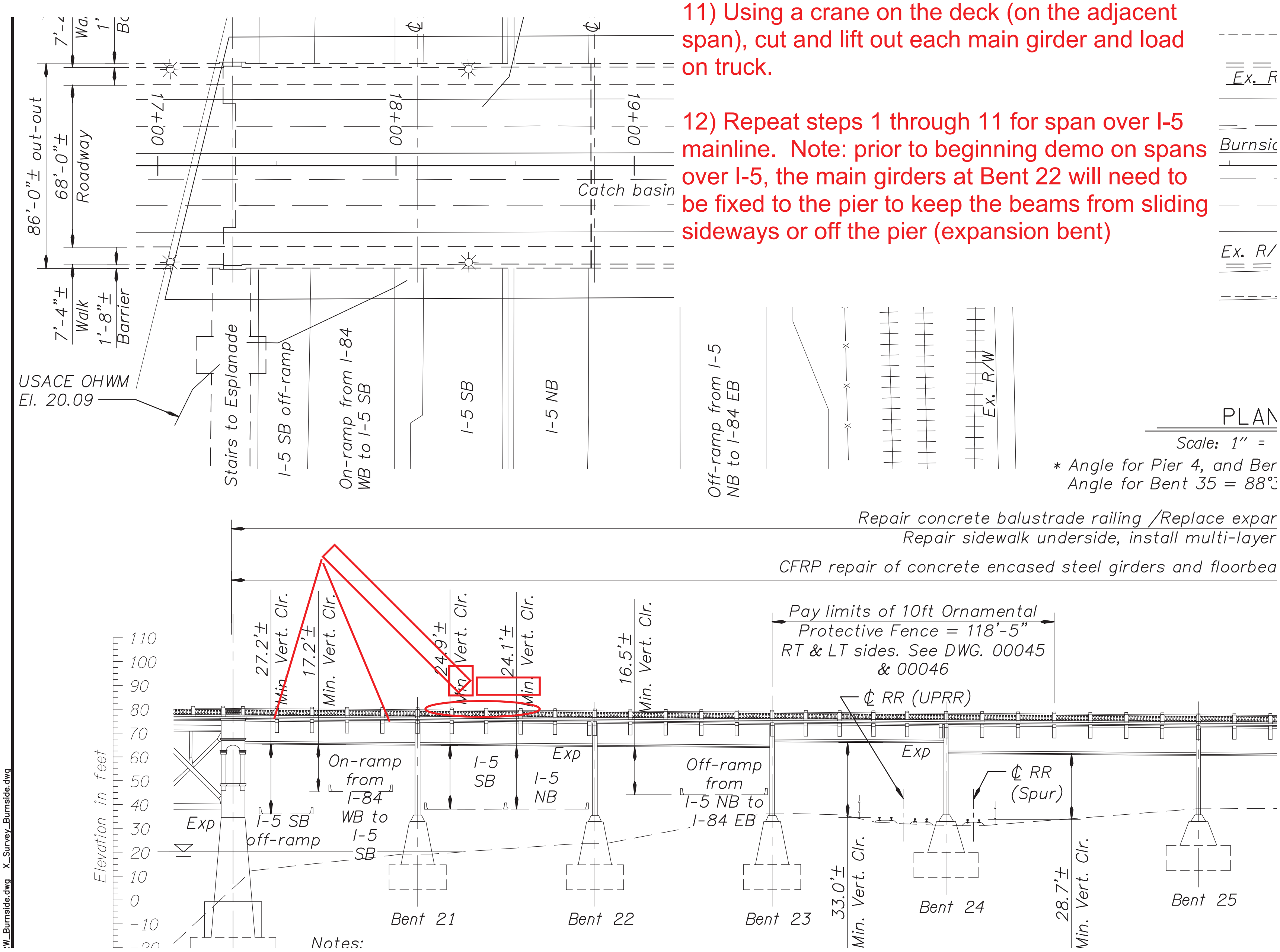


Manlifts on ramps for chipping & burning girders (will be on mainline and I-84 ramp during Span 21 & 22 removal)

Demolition Notes/Sequence

11) Using a crane on the deck (on the adjacent span), cut and lift out each main girder and load on truck.

12) Repeat steps 1 through 11 for span over I-5 mainline. Note: prior to beginning demo on spans over I-5, the main girders at Bent 22 will need to be fixed to the pier to keep the beams from sliding sideways or off the pier (expansion bent)



Demolition Notes/Sequence

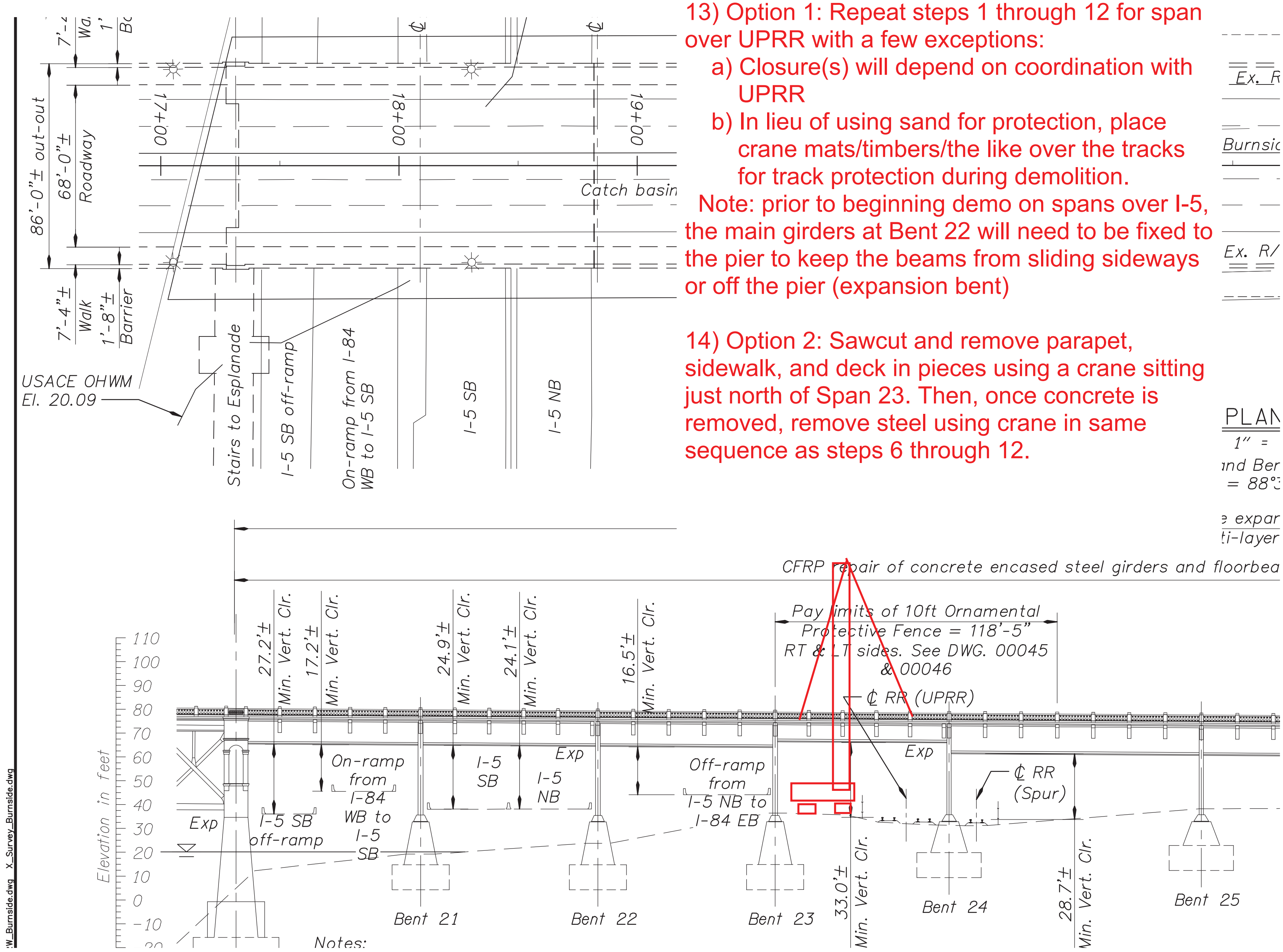
13) Option 1: Repeat steps 1 through 12 for span over UPRR with a few exceptions:

   a) Closure(s) will depend on coordination with UPRR

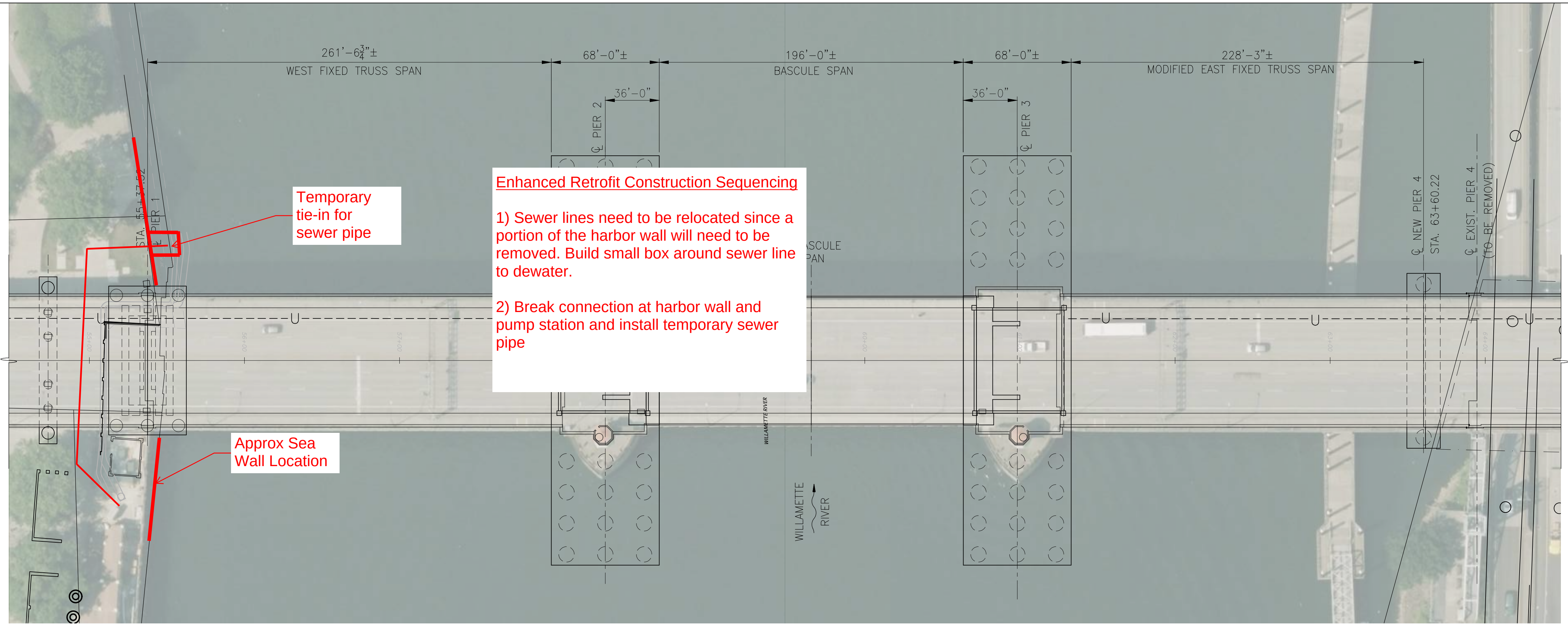
   b) In lieu of using sand for protection, place crane mats/timbers/the like over the tracks for track protection during demolition.

Note: prior to beginning demo on spans over I-5, the main girders at Bent 22 will need to be fixed to the pier to keep the beams from sliding sideways or off the pier (expansion bent)

14) Option 2: Sawcut and remove parapet, sidewalk, and deck in pieces using a crane sitting just north of Span 23. Then, once concrete is removed, remove steel using crane in same sequence as steps 6 through 12.



Appendix D. Cofferdam and Drilled Shaft Installation Sequence



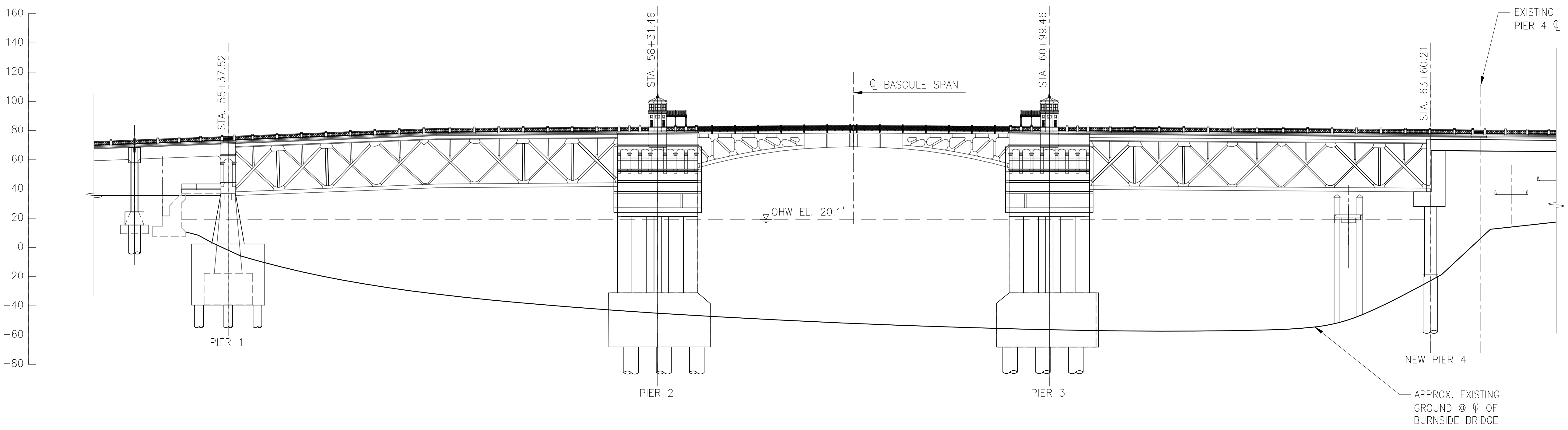
Enhanced Retrofit Construction Sequencing

1) Sewer lines need to be relocated since a portion of the harbor wall will need to be removed. Build small box around sewer line to dewater.

2) Break connection at harbor wall and pump station and install temporary sewer pipe

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

DATE: Date
PROJECT NO.: Proj No

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

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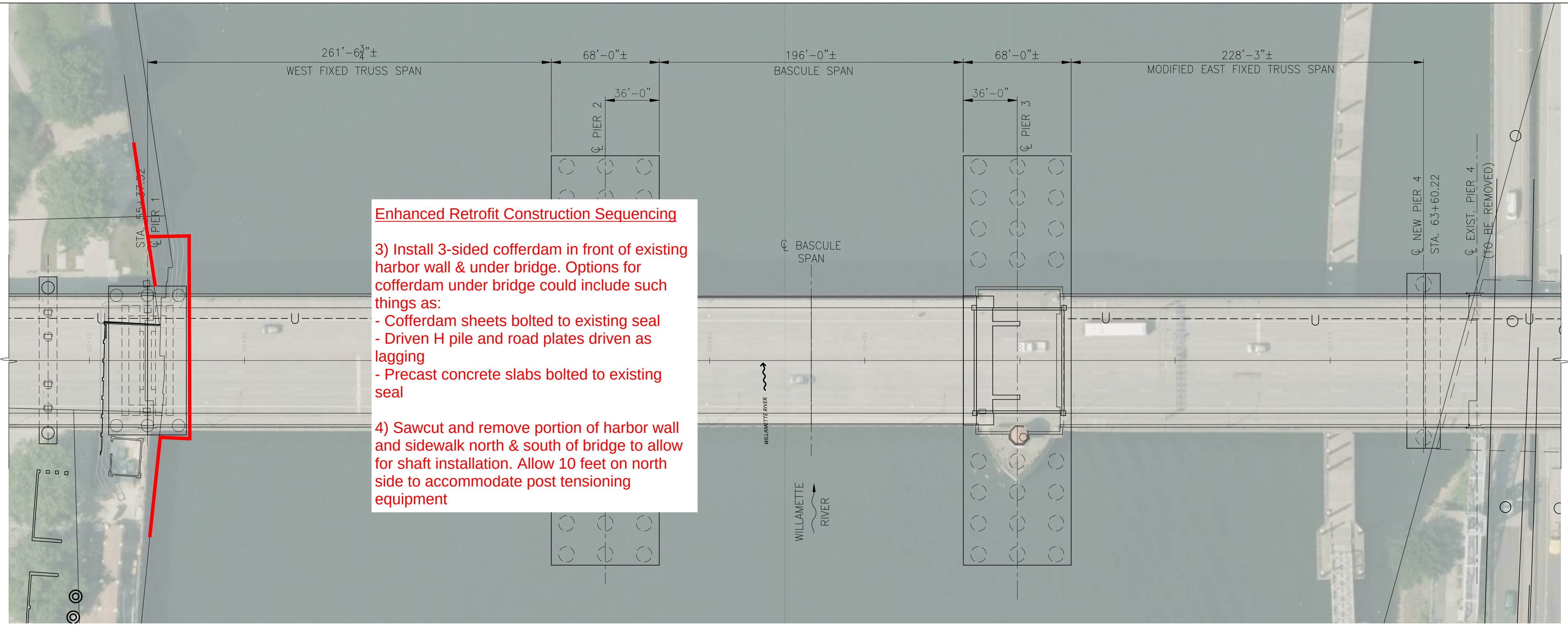


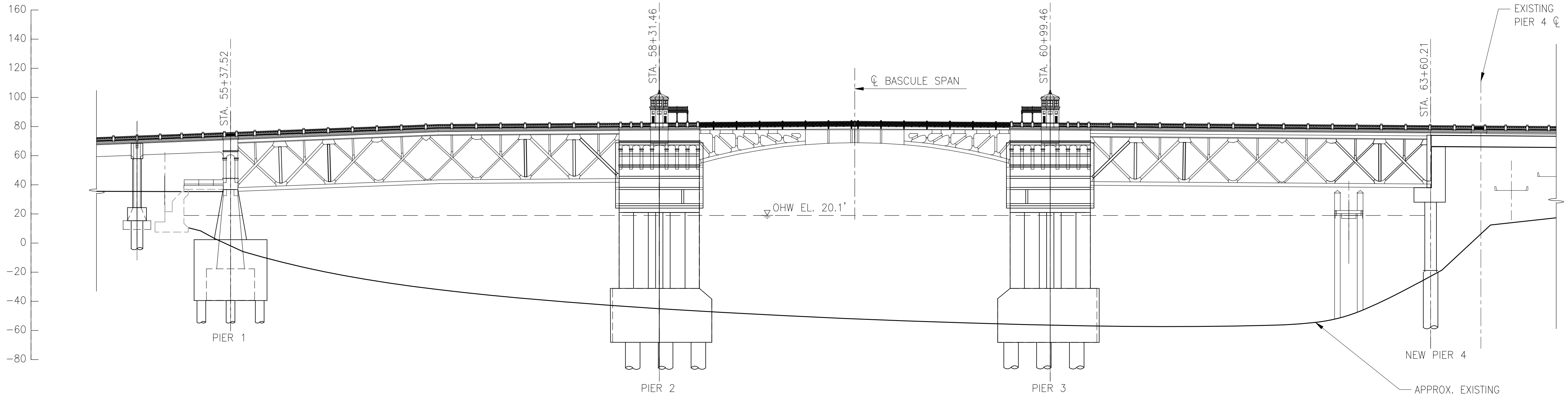
Enhanced Retrofit Construction Sequencing

3) Install 3-sided cofferdam in front of existing harbor wall & under bridge. Options for cofferdam under bridge could include such things as:
- Cofferdam sheets bolted to existing seal
- Driven H pile and road plates driven as lagging
- Precast concrete slabs bolted to existing seal

4) Sawcut and remove portion of harbor wall and sidewalk north & south of bridge to allow for shaft installation. Allow 10 feet on north side to accommodate post tensioning equipment

PLAN

SCALE: 1" = 40'



LEGEND

————	EXISTING
————	RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

REVISIONS

NO.	DATE:

DESIGNED BY: BJS
DRAFTED BY: CRK
CHECKED BY: YY

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233–5999

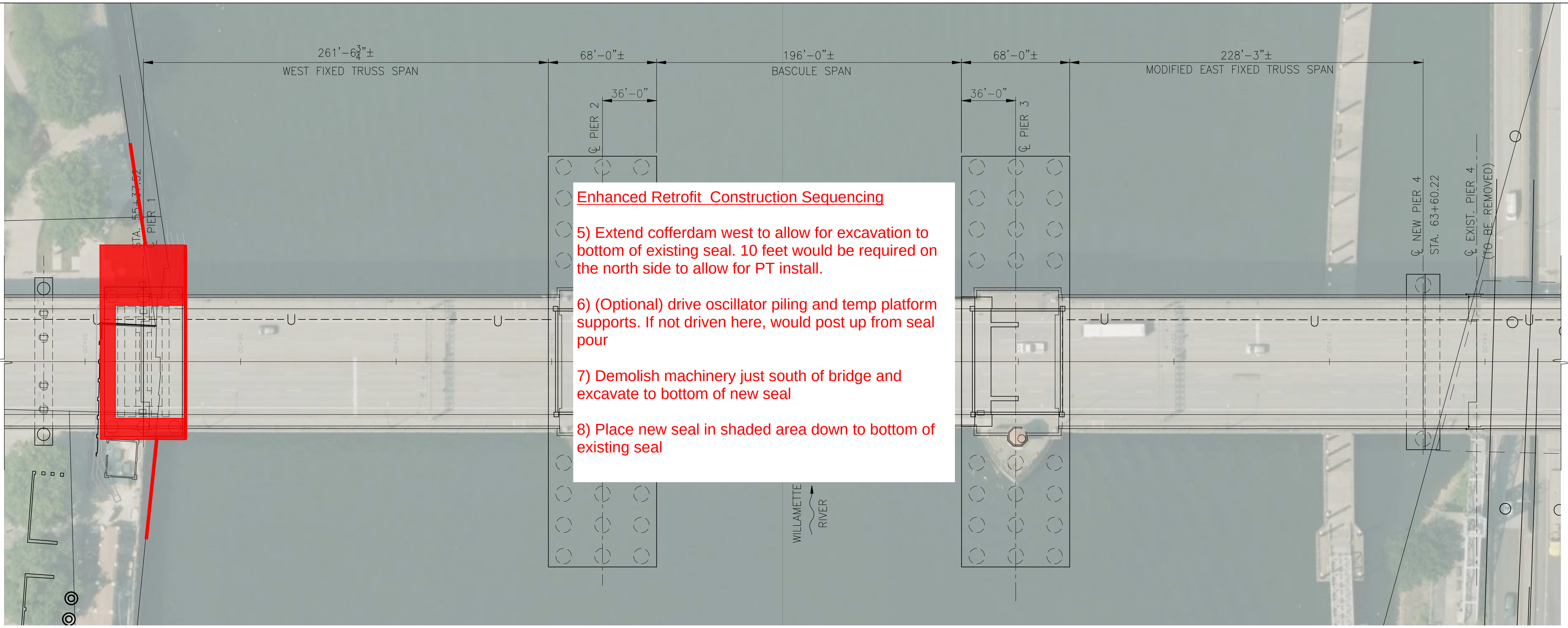
IAN B. CANNON P.E.
COUNTY ENGINEER

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

DATE: Date
PROJECT NO.: Proj No

Sheet No.
D-2



Enhanced Retrofit Construction Sequencing

5) Extend cofferdam west to allow for excavation to bottom of existing seal. 10 feet would be required on the north side to allow for PT install.

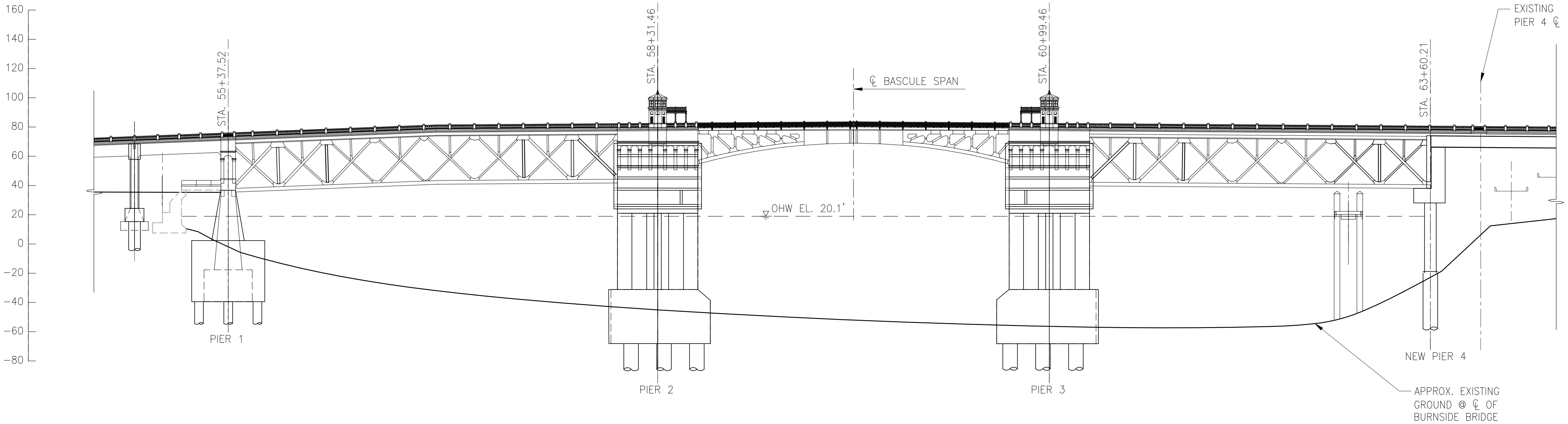
6) (Optional) drive oscillator piling and temp platform supports. If not driven here, would post up from seal pour

7) Demolish machinery just south of bridge and excavate to bottom of new seal

8) Place new seal in shaded area down to bottom of existing seal

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

DATE: Date
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IAN B. CANNON P.E.
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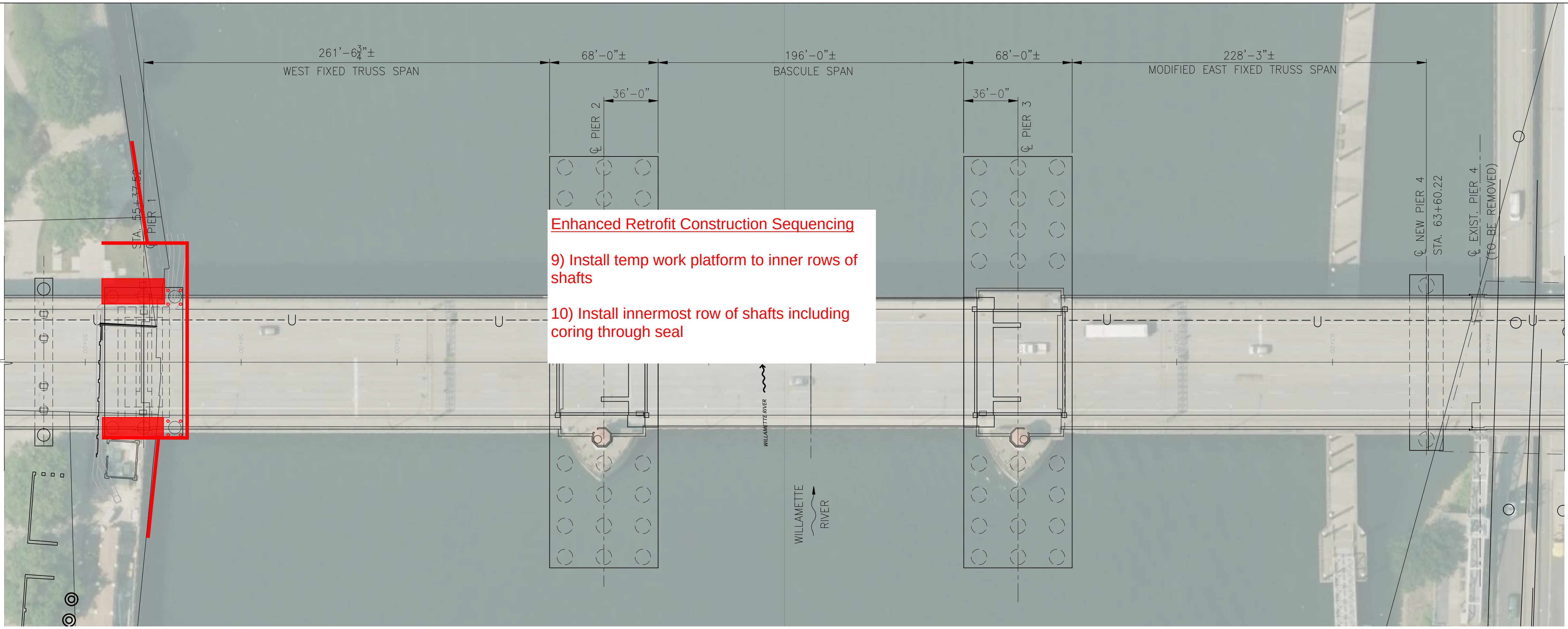
D-3



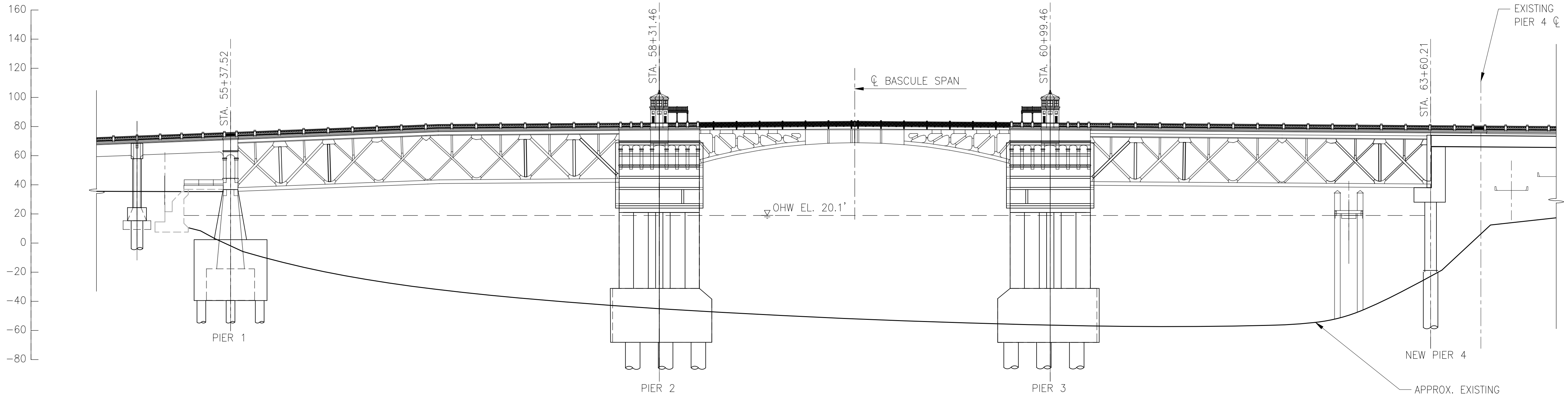
Enhanced Retrofit Construction Sequencing

9) Install temp work platform to inner rows of shafts

10) Install innermost row of shafts including coring through seal

PLAN

SCALE: 1" = 40'



ELEVATION

SCALE: 1" = 40'

LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE
ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

PROJECT NO.: Proj No
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MULTNOMAH COUNTY
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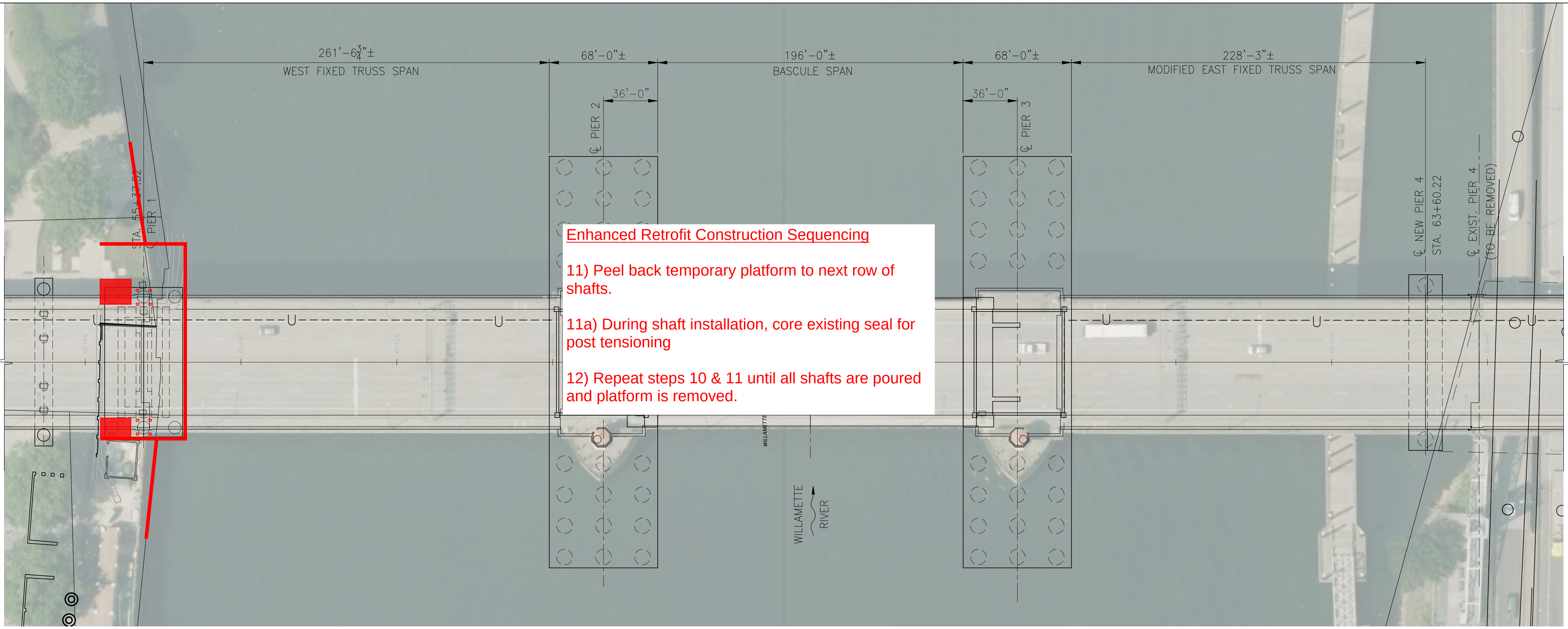


Enhanced Retrofit Construction Sequencing

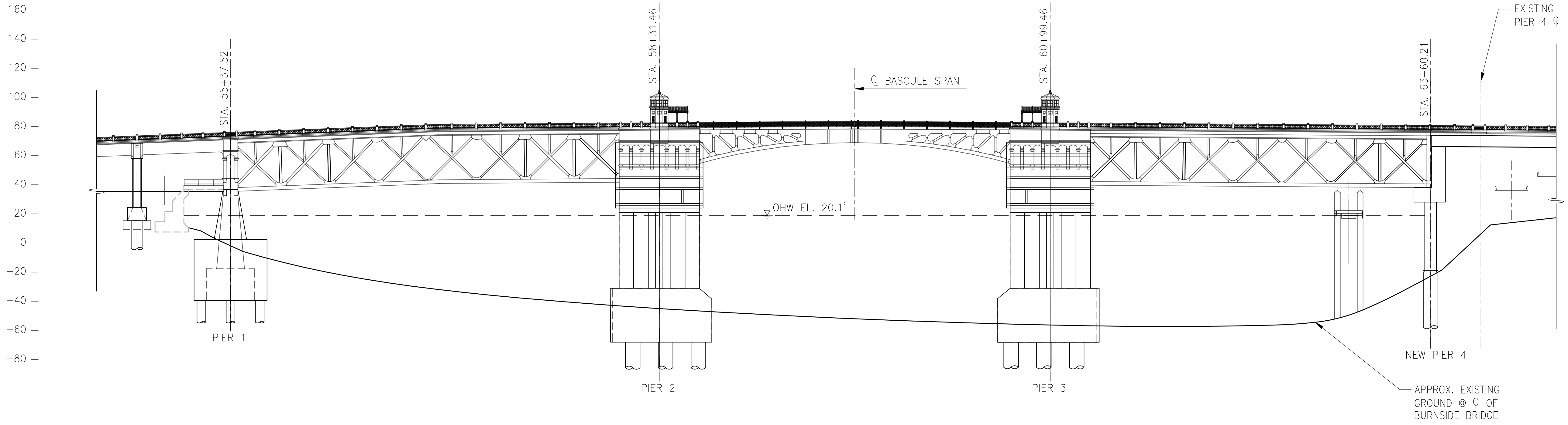
11) Peel back temporary platform to next row of shafts.

11a) During shaft installation, core existing seal for post tensioning

12) Repeat steps 10 & 11 until all shafts are poured and platform is removed.

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE
ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

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MULTNOMAH COUNTY
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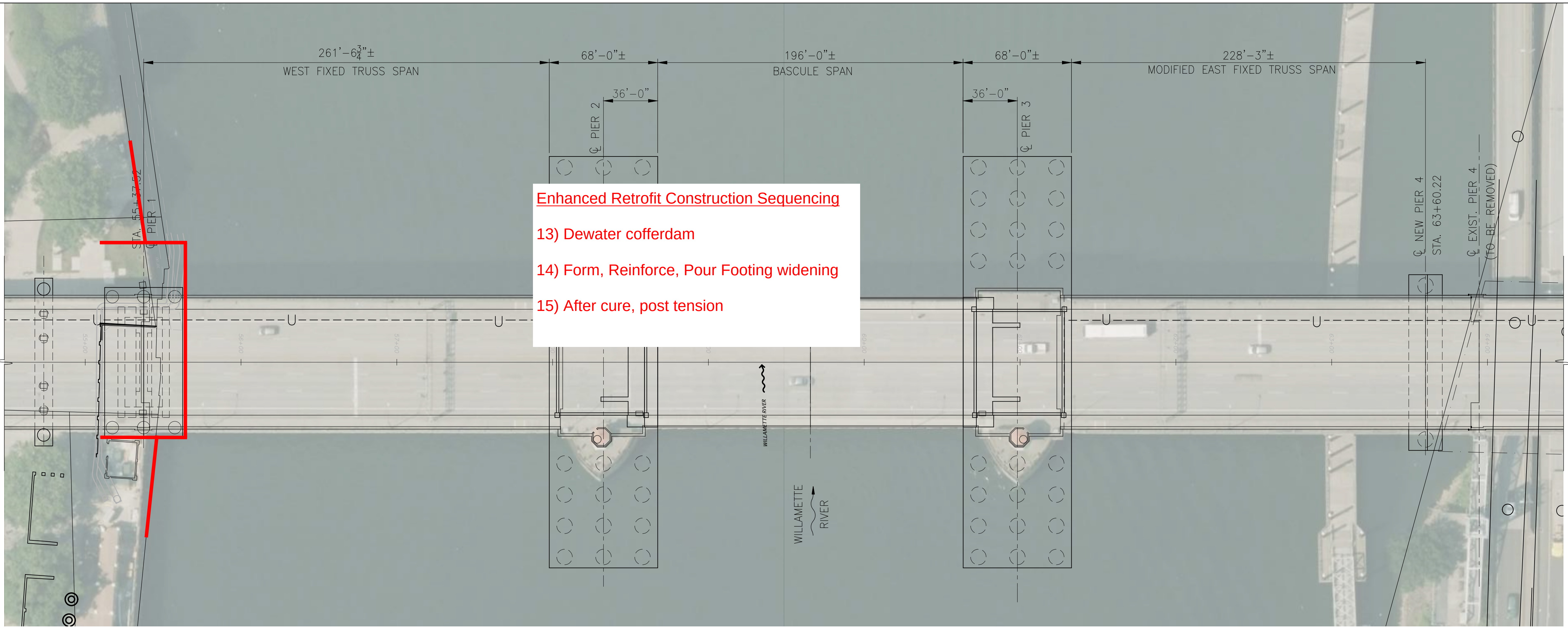
D-5



Enhanced Retrofit Construction Sequencing

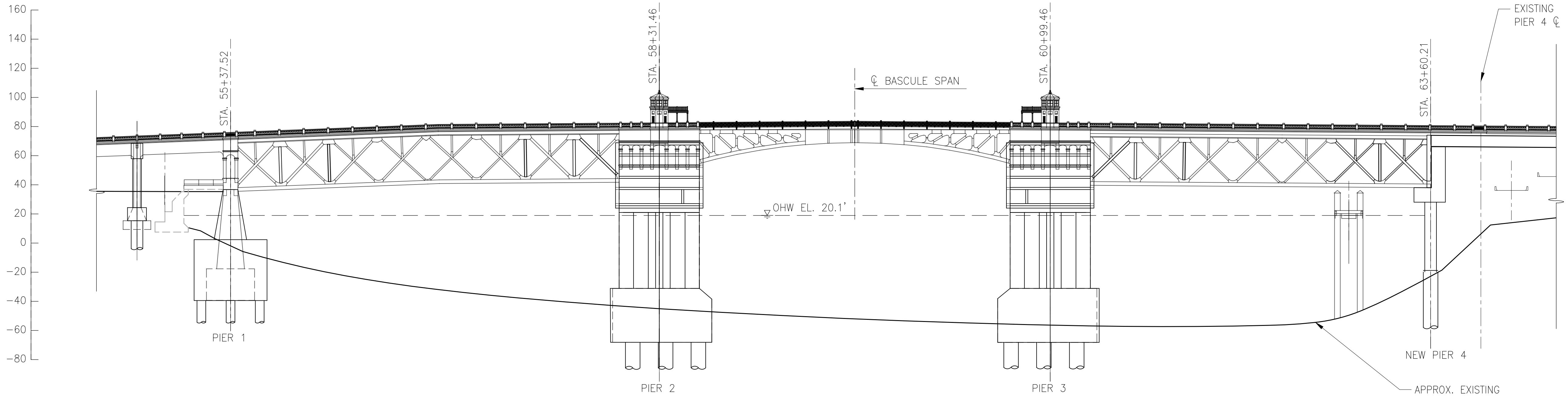
13) Dewater cofferdam

14) Form, Reinforce, Pour Footing widening

15) After cure, post tension

PLAN

SCALE: 1" = 40'



LEGEND

——	EXISTING
——	RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

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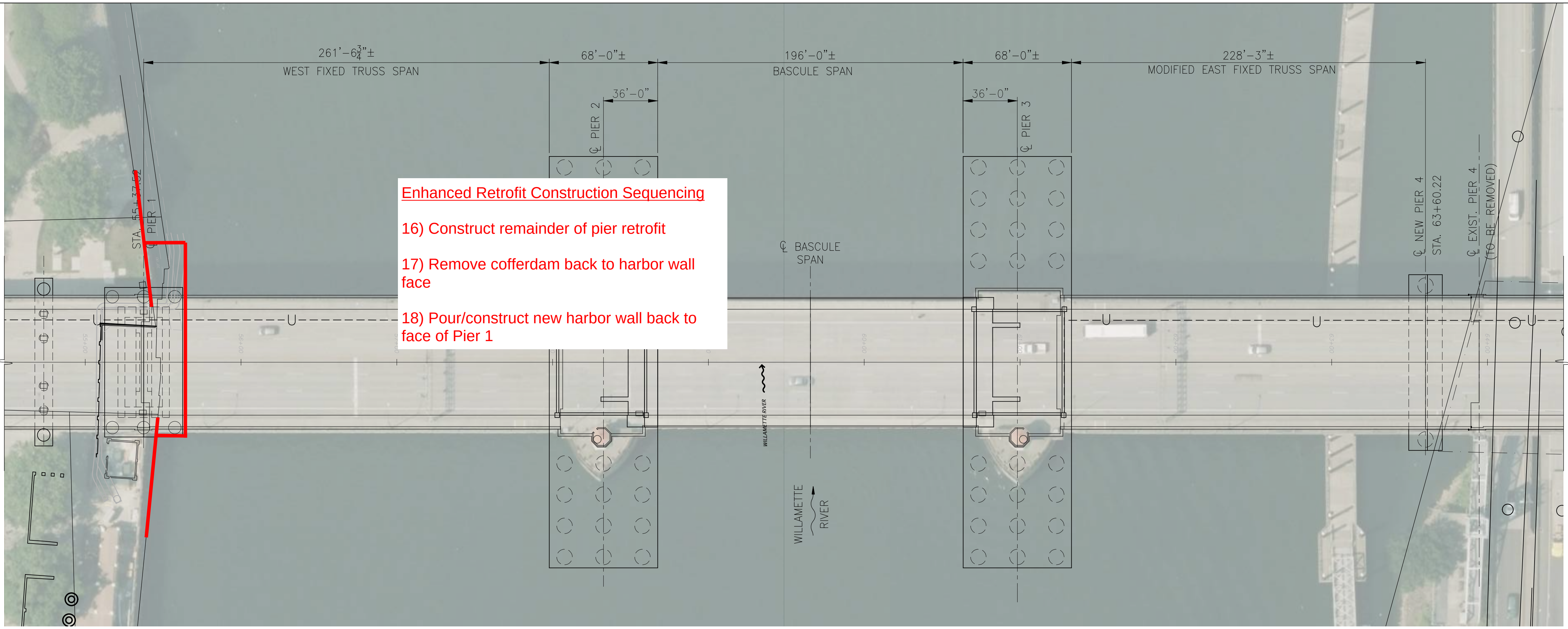
D-6



Enhanced Retrofit Construction Sequencing

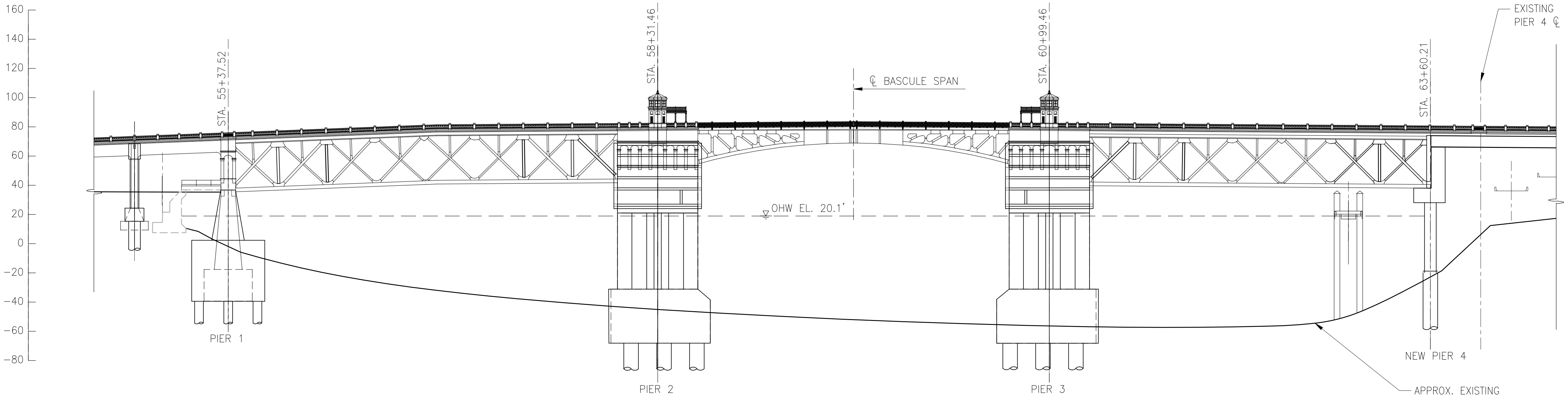
16) Construct remainder of pier retrofit

17) Remove cofferdam back to harbor wall face

18) Pour/construct new harbor wall back to face of Pier 1

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

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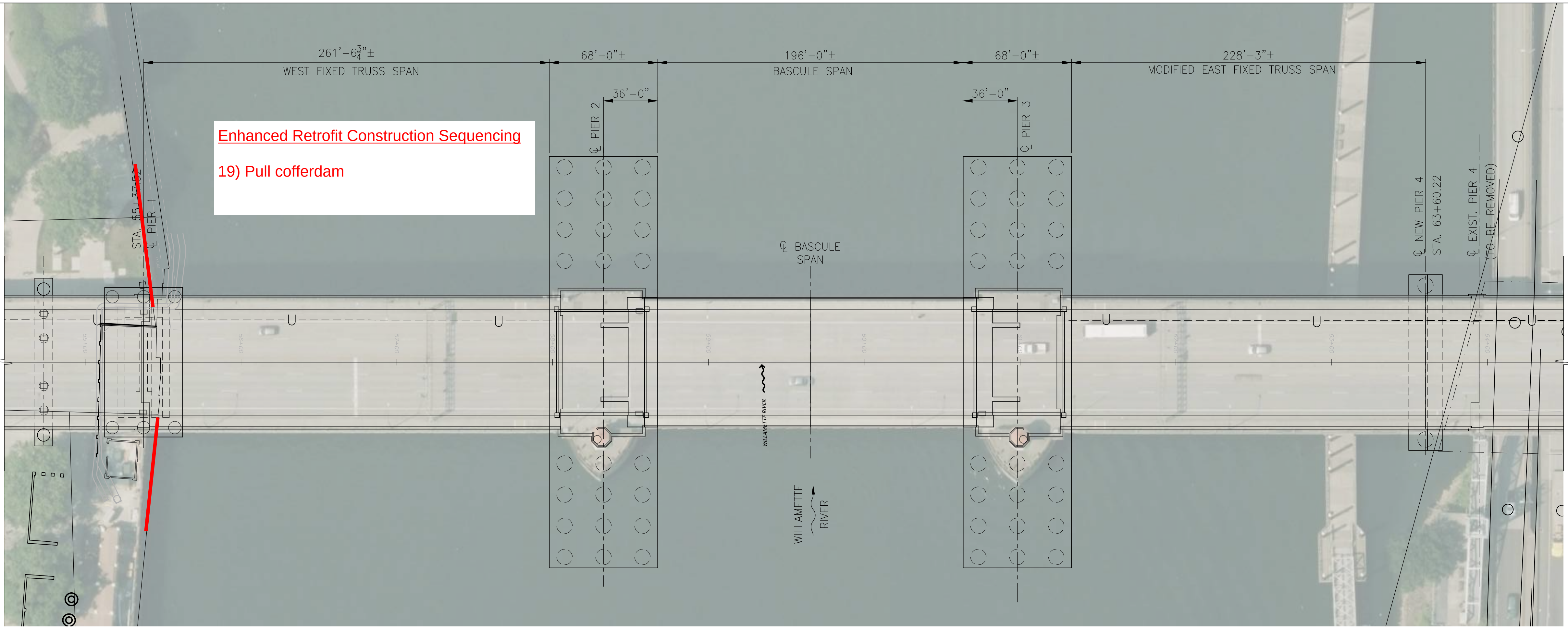
D-7

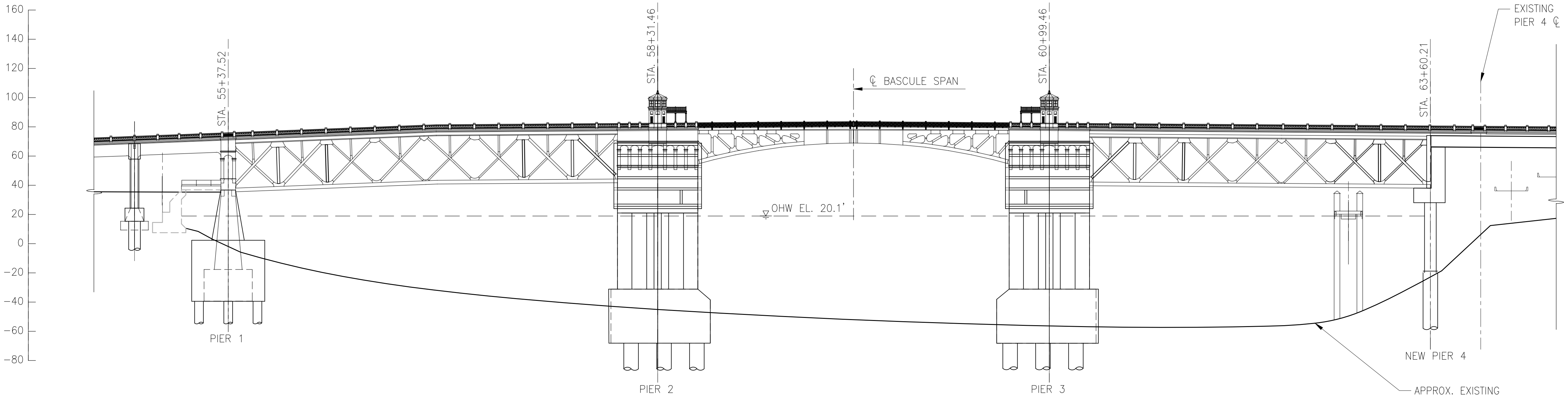


Enhanced Retrofit Construction Sequencing

19) Pull cofferdam

PLAN

SCALE: 1" = 40'



LEGEND

———	EXISTING
———	RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE
ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

PROJECT NO.: *Proj No*

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MULTNOMAH COUNTY
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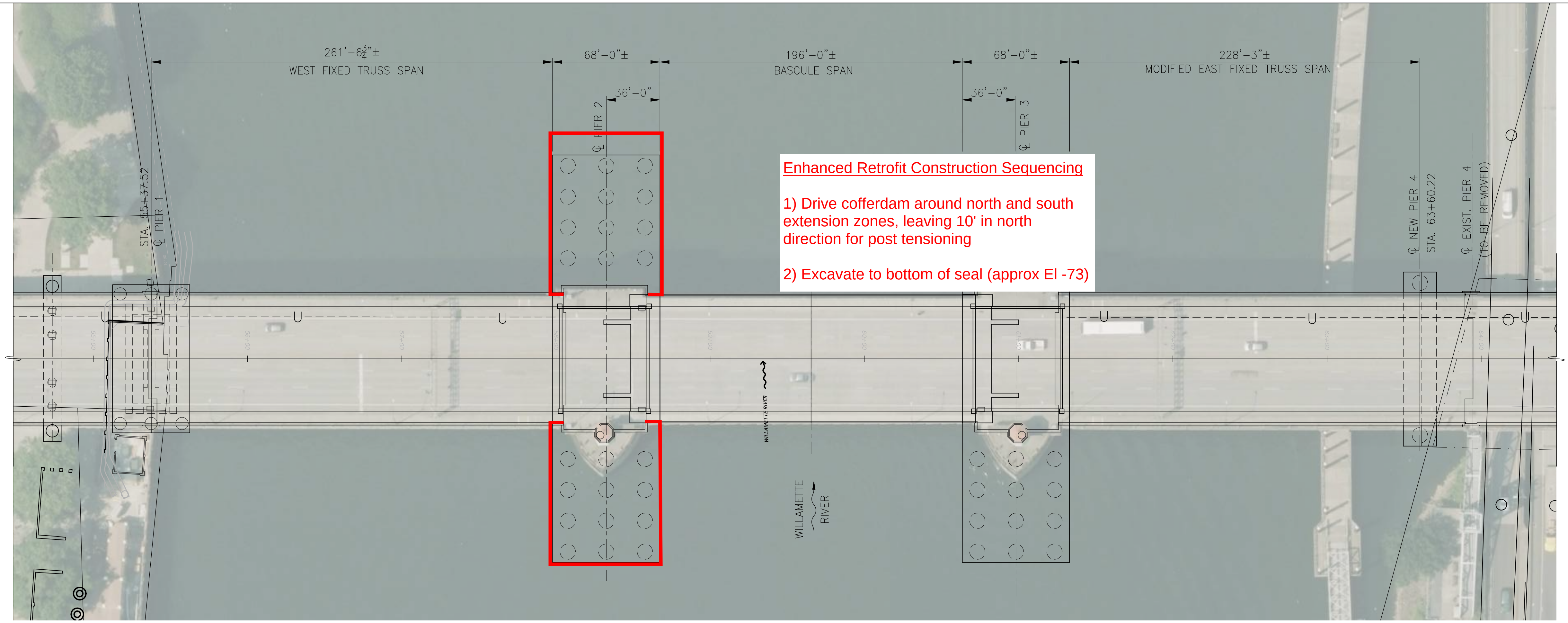


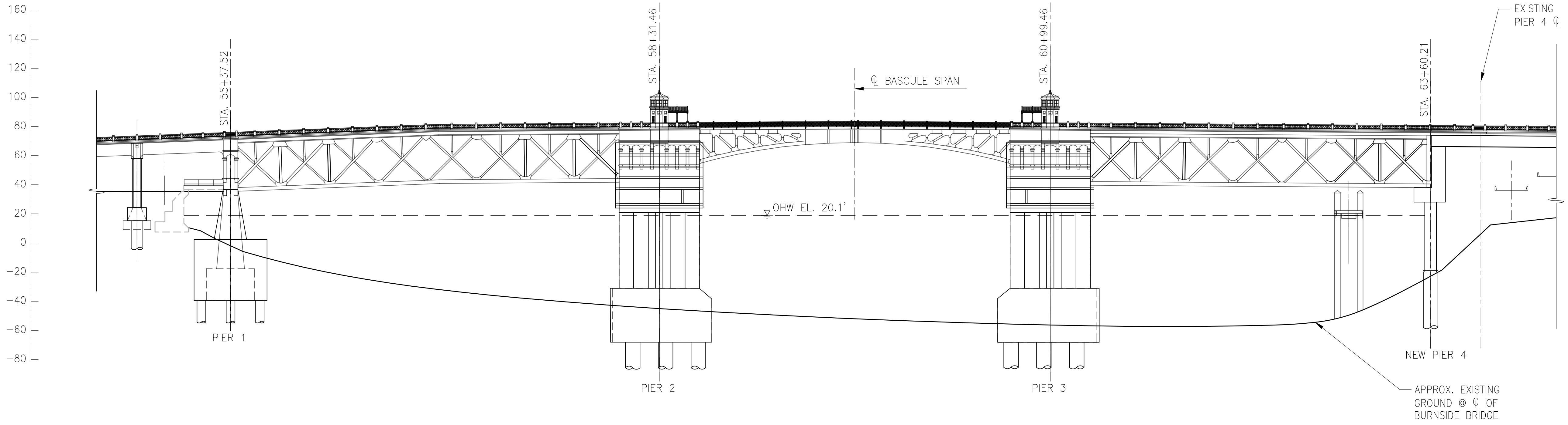
<u>Enhanced Retrofit Construction Sequencing</u>

1) Drive cofferdam around north and south extension zones, leaving 10' in north direction for post tensioning

2) Excavate to bottom of seal (approx El -73)

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233–5999

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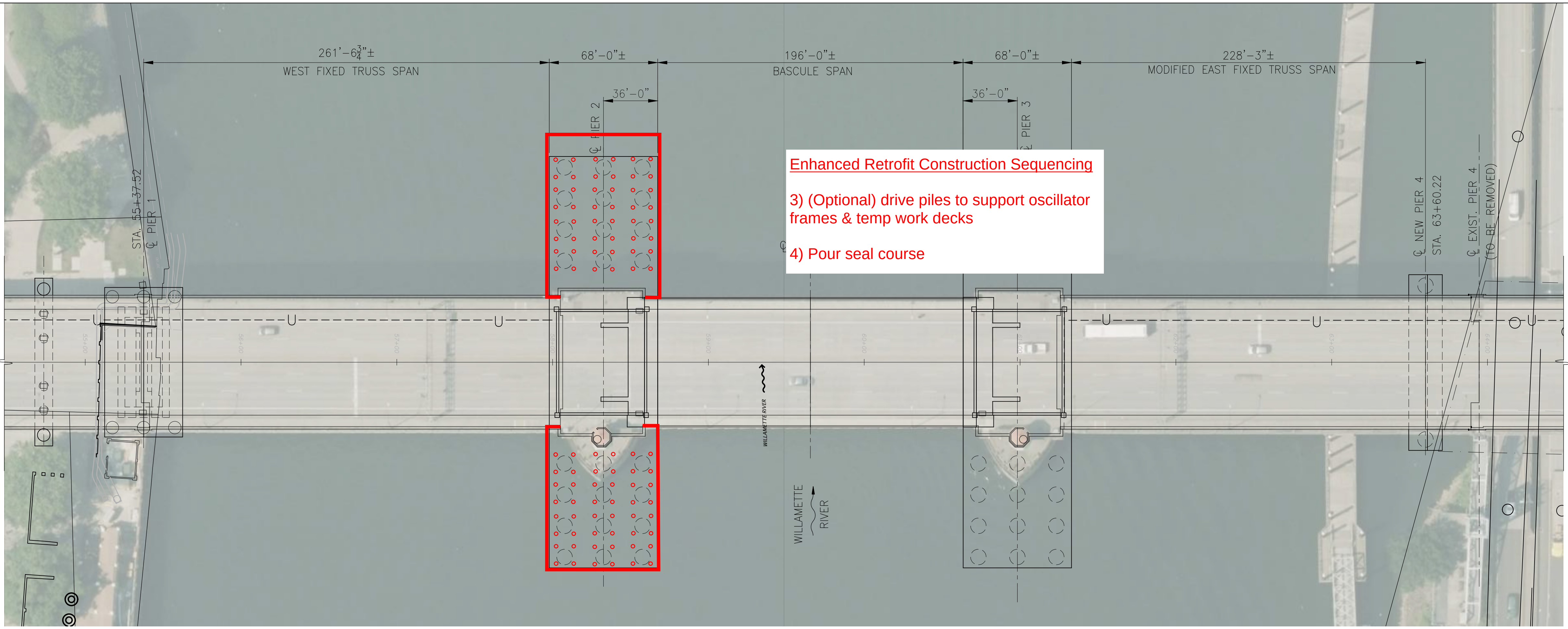
D-9



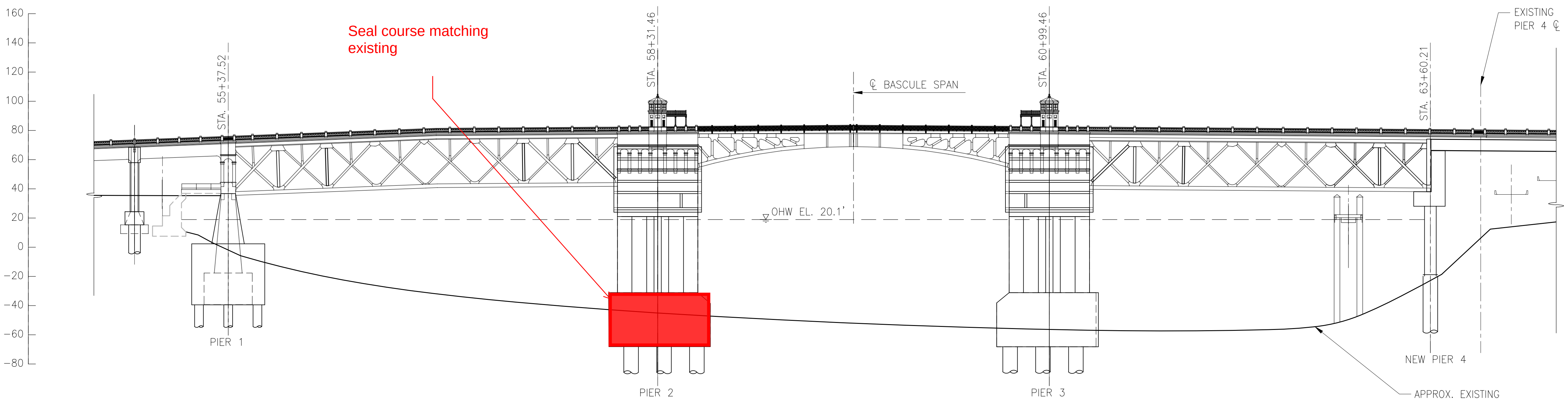
Enhanced Retrofit Construction Sequencing

3) (Optional) drive piles to support oscillator frames & temp work decks

4) Pour seal course

PLAN

SCALE: 1" = 40'



Seal course matching existing

ELEVATION

SCALE: 1" = 40'

LEGEND

───	EXISTING
───	RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE
ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

PROJECT NO.: Proj No
DATE: Date

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

IAN B. CANNON P.E.
COUNTY ENGINEER

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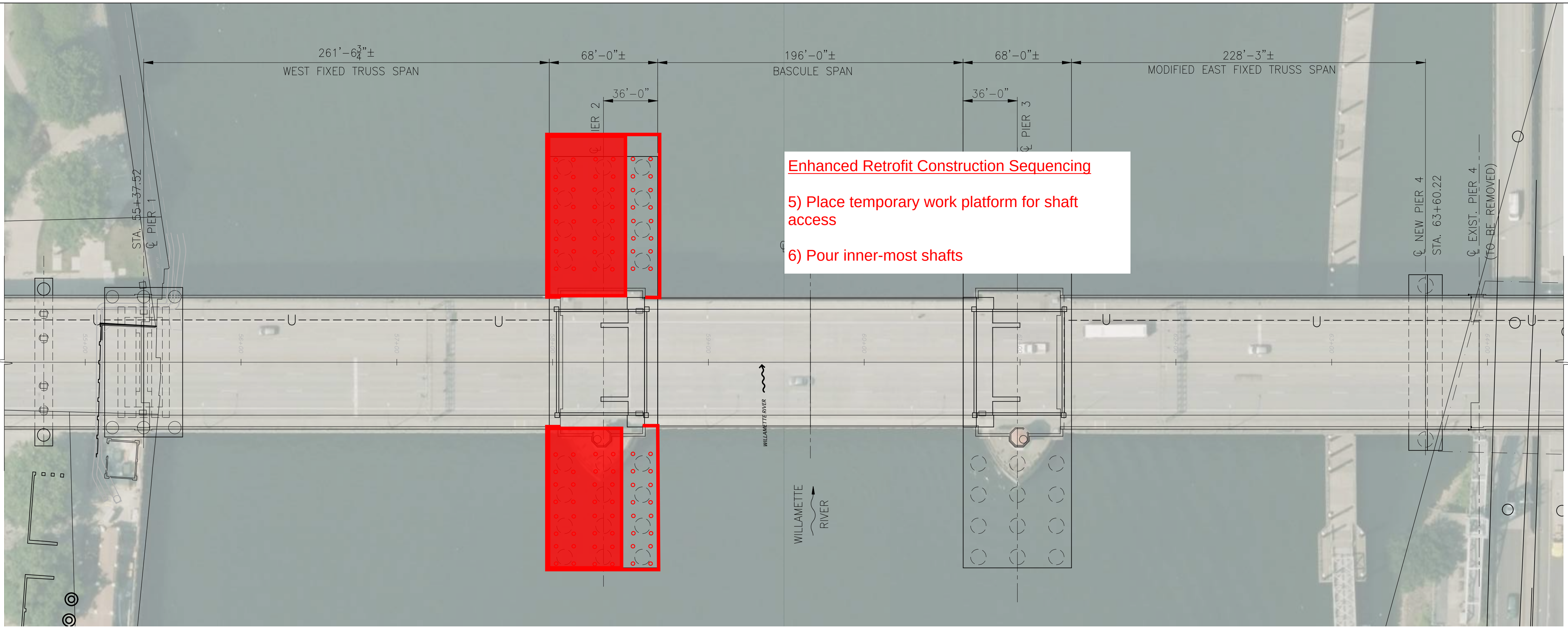
D-10



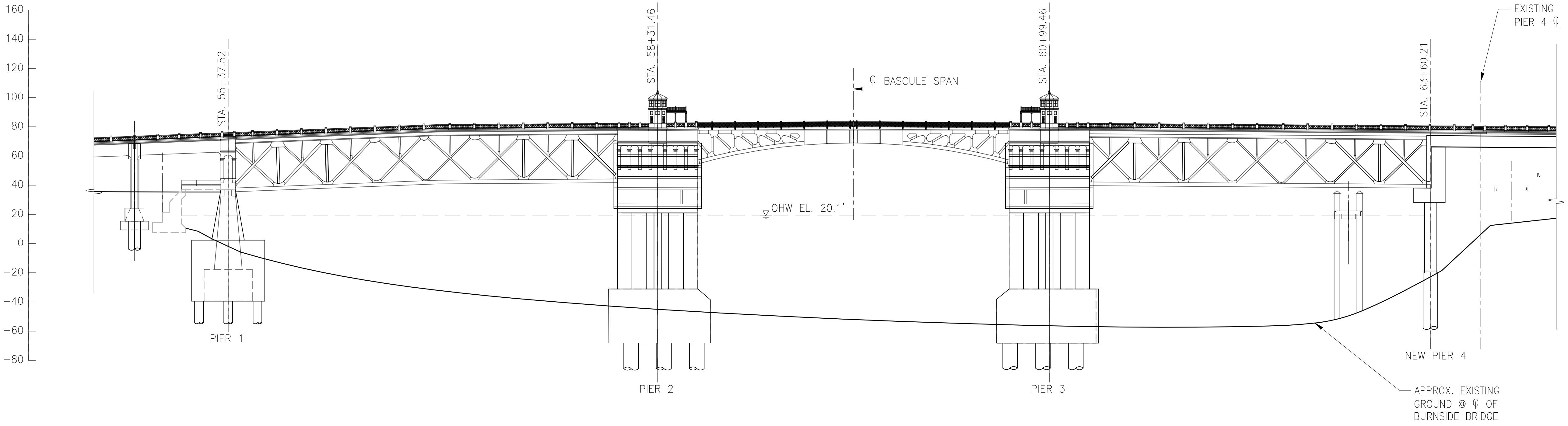
Enhanced Retrofit Construction Sequencing

5) Place temporary work platform for shaft access

6) Pour inner-most shafts

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

PROJECT NO.: Proj No

DATE: Date

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

IAN B. CANNON P.E.
COUNTY ENGINEER

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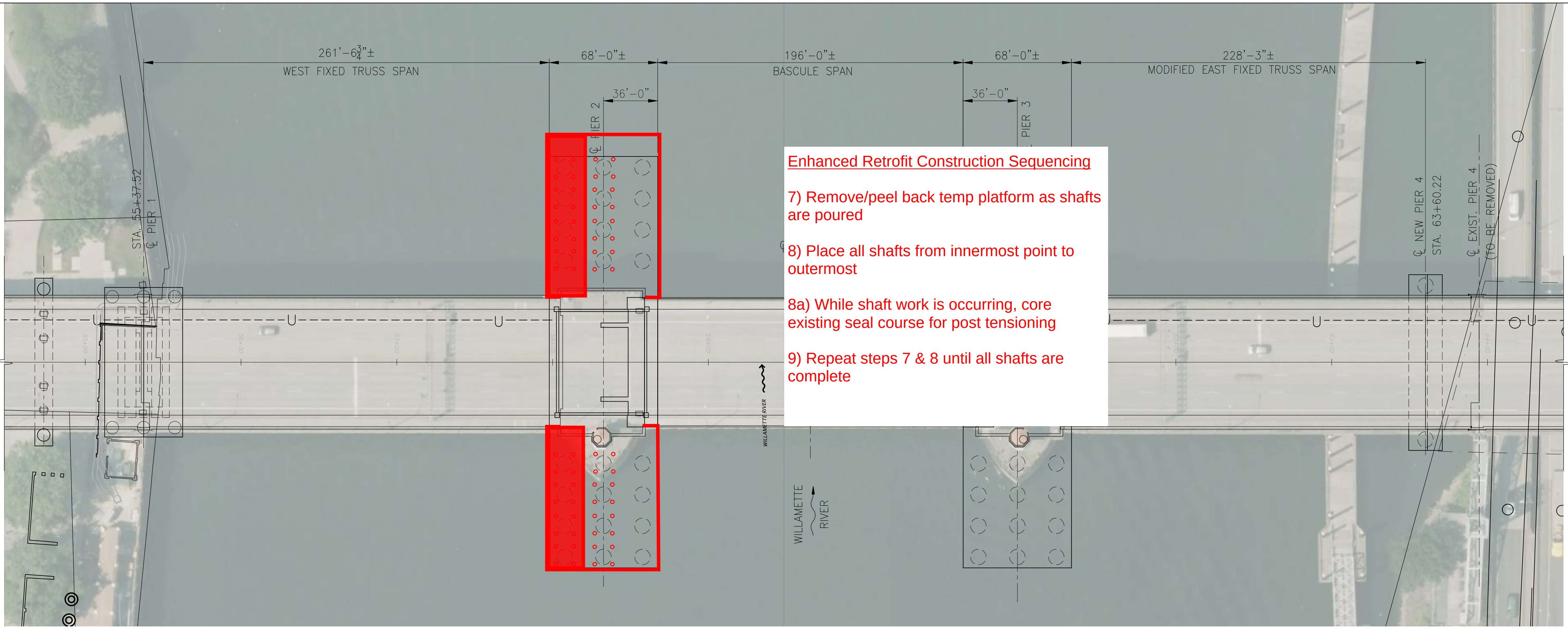
D-11



Enhanced Retrofit Construction Sequencing

7) Remove/peel back temp platform as shafts are poured

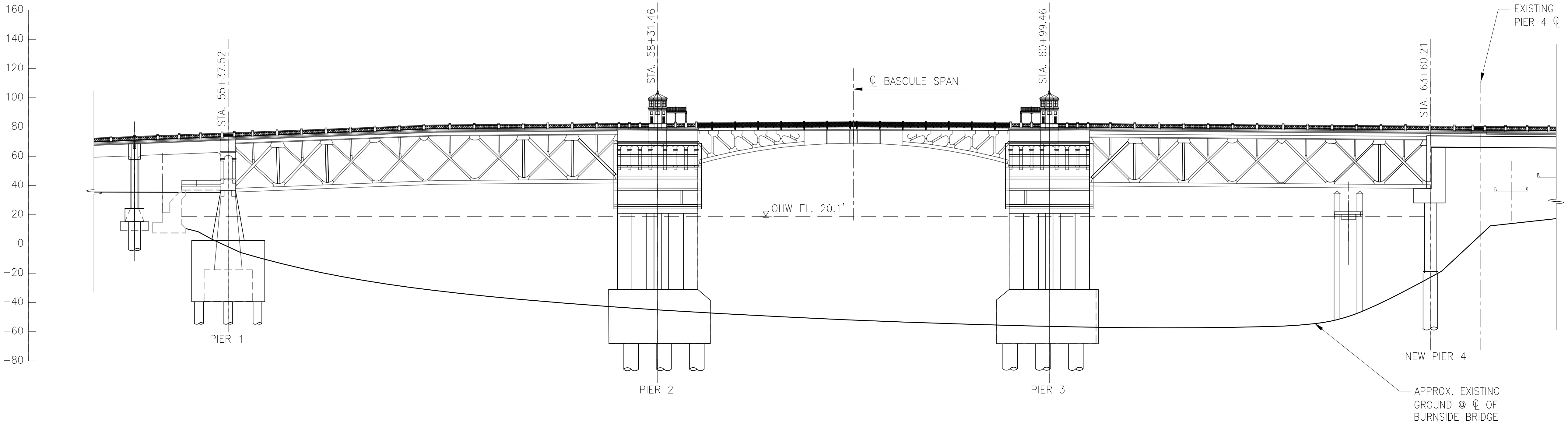
8) Place all shafts from innermost point to outermost

8a) While shaft work is occurring, core existing seal course for post tensioning

9) Repeat steps 7 & 8 until all shafts are complete

PLAN

SCALE: 1" = 40'



LEGEND

EXISTING

RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE
ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

PROJECT NO.: *Proj No*

DATE: *Date*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

IAN B. CANNON P.E.
COUNTY ENGINEER

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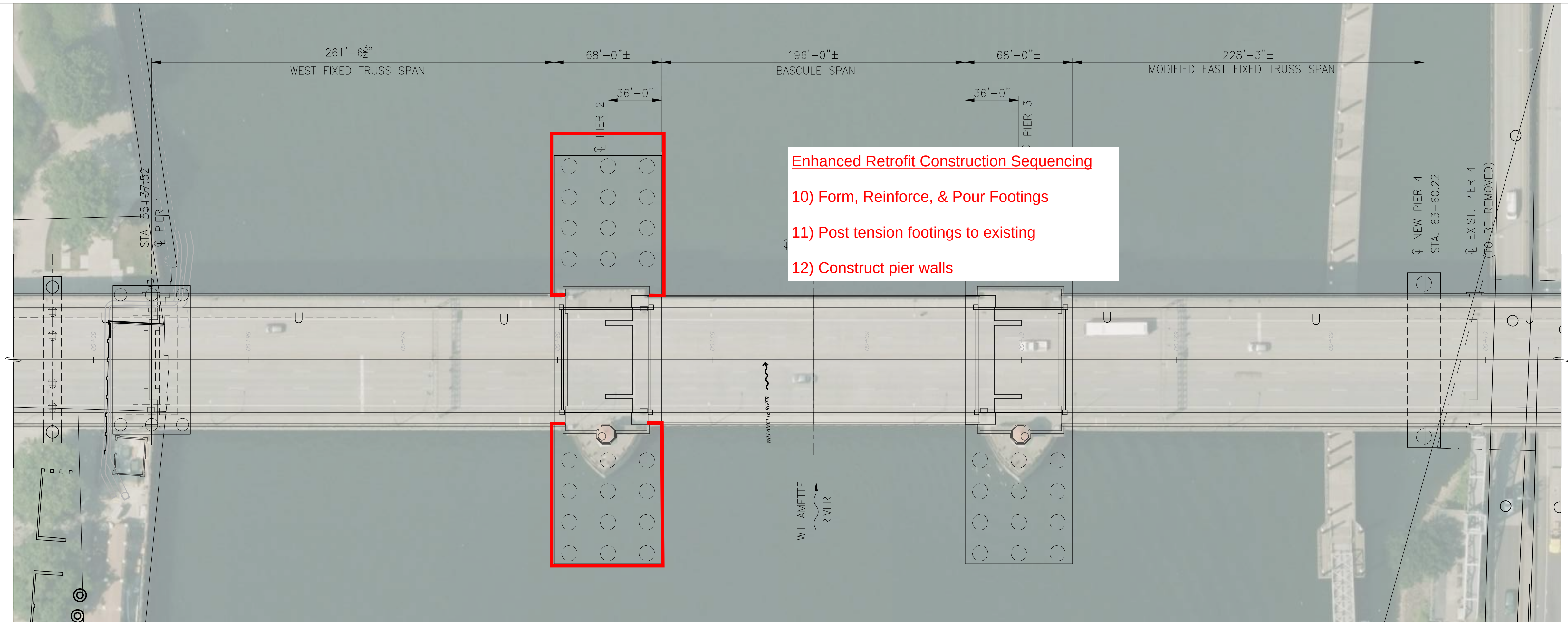
D-12



Enhanced Retrofit Construction Sequencing

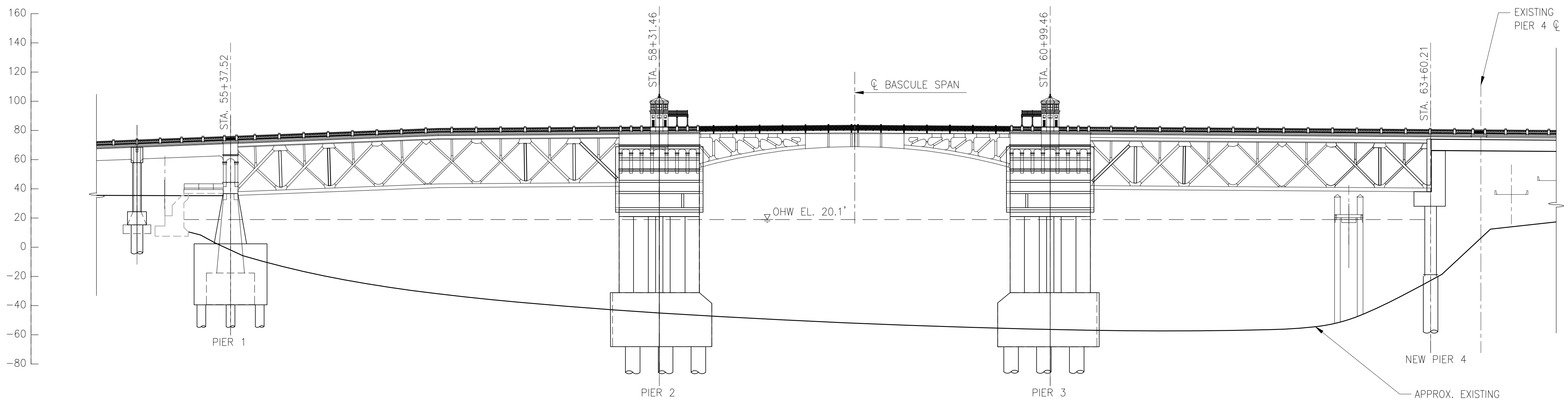
10) Form, Reinforce, & Pour Footings

11) Post tension footings to existing

12) Construct pier walls

PLAN

SCALE: 1" = 40'



ELEVATION

SCALE: 1" = 40'

LEGEND

——— EXISTING

——— RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE

ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

DATE: *Date*
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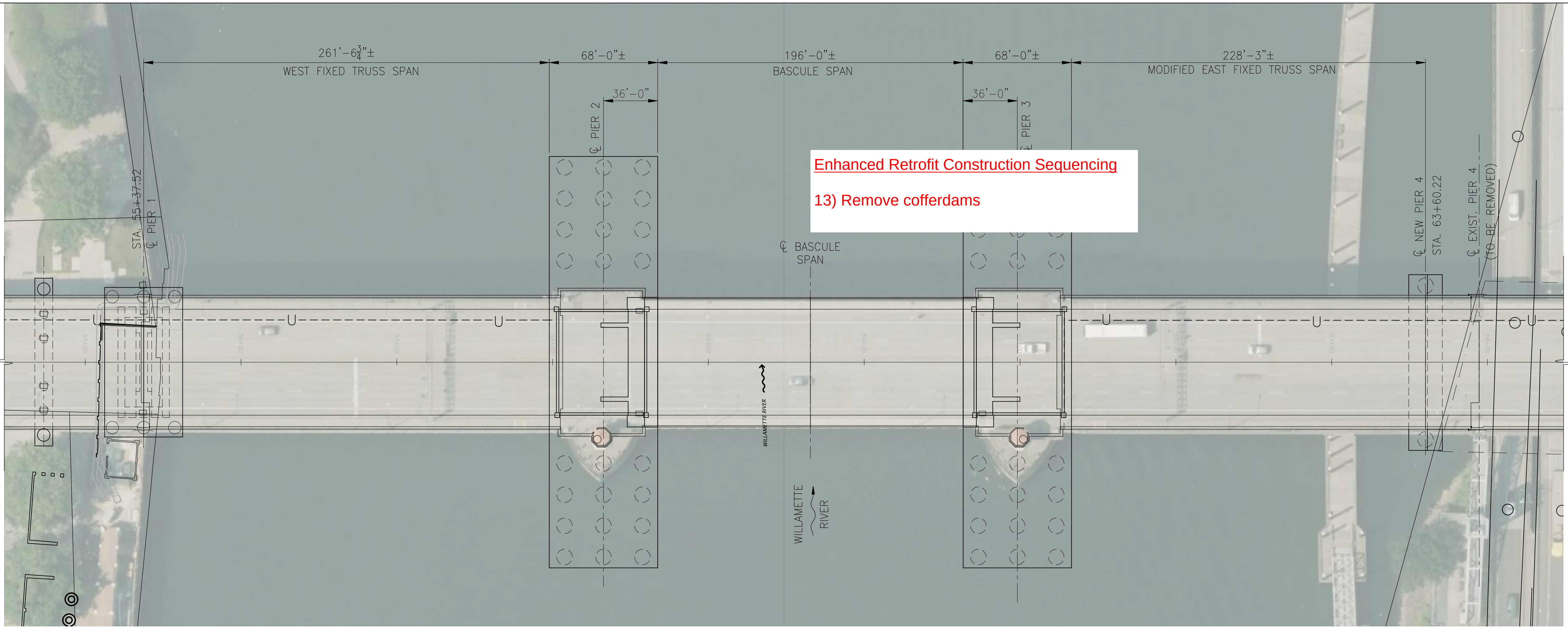
NO.	DATE:

Sheet No.
D-13

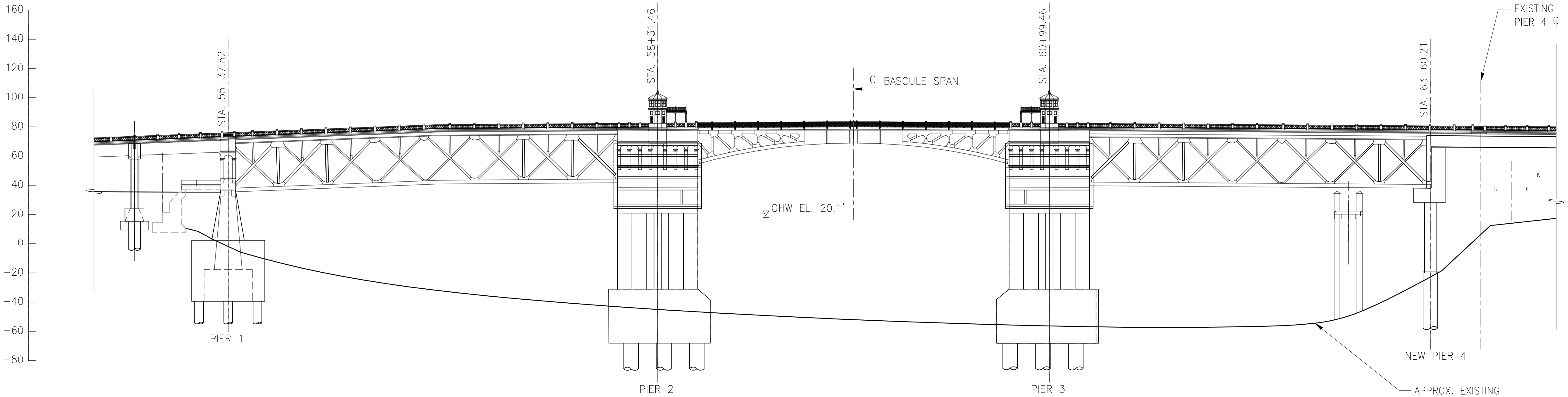


Enhanced Retrofit Construction Sequencing

13) Remove cofferdams

PLAN

SCALE: 1" = 40'



LEGEND

———	EXISTING
———	RETROFIT

NOTES

1. BASCULE LEAVES RETROFIT NOT SHOWN FOR CLARITY

ELEVATION

SCALE: 1" = 40'

CONCEPTUAL PLANS
FEBRUARY 2020

EARTHQUAKE READY BURNSIDE BRIDGE
ENHANCED RETROFIT OF EXISTING CONDITION
SUBSTRUCTURE RETROFIT LAYOUT
RIVER SPANS

DATE: Date
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1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

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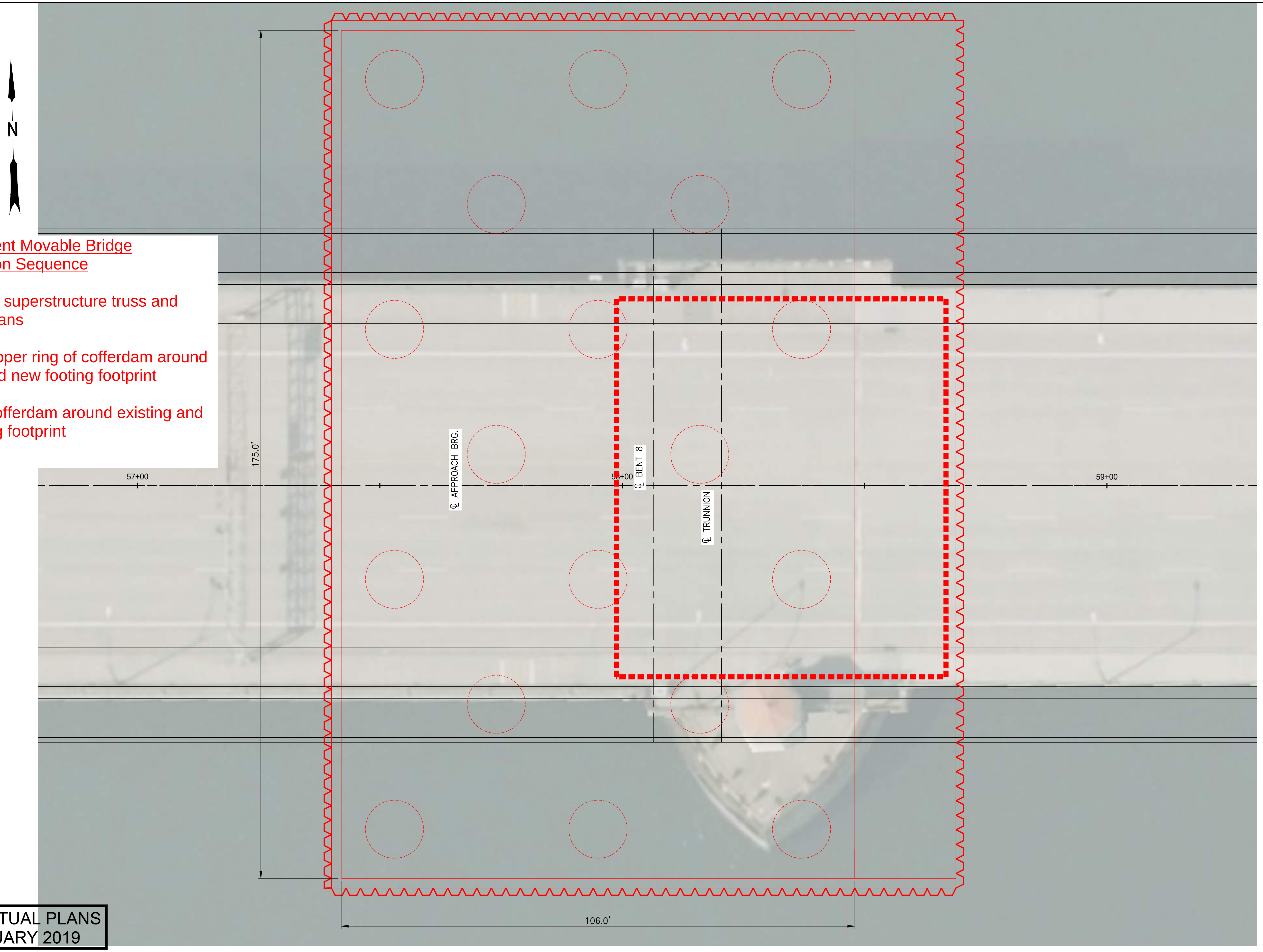
D-14



Replacement Movable Bridge Construction Sequence

1) Remove superstructure truss and bascule spans

2) Install upper ring of cofferdam around existing and new footing footprint

3) Install cofferdam around existing and new footing footprint

CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge

Replacement Movable Bridge

MULTNOMAH COUNTY

DATE: *Date*

PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
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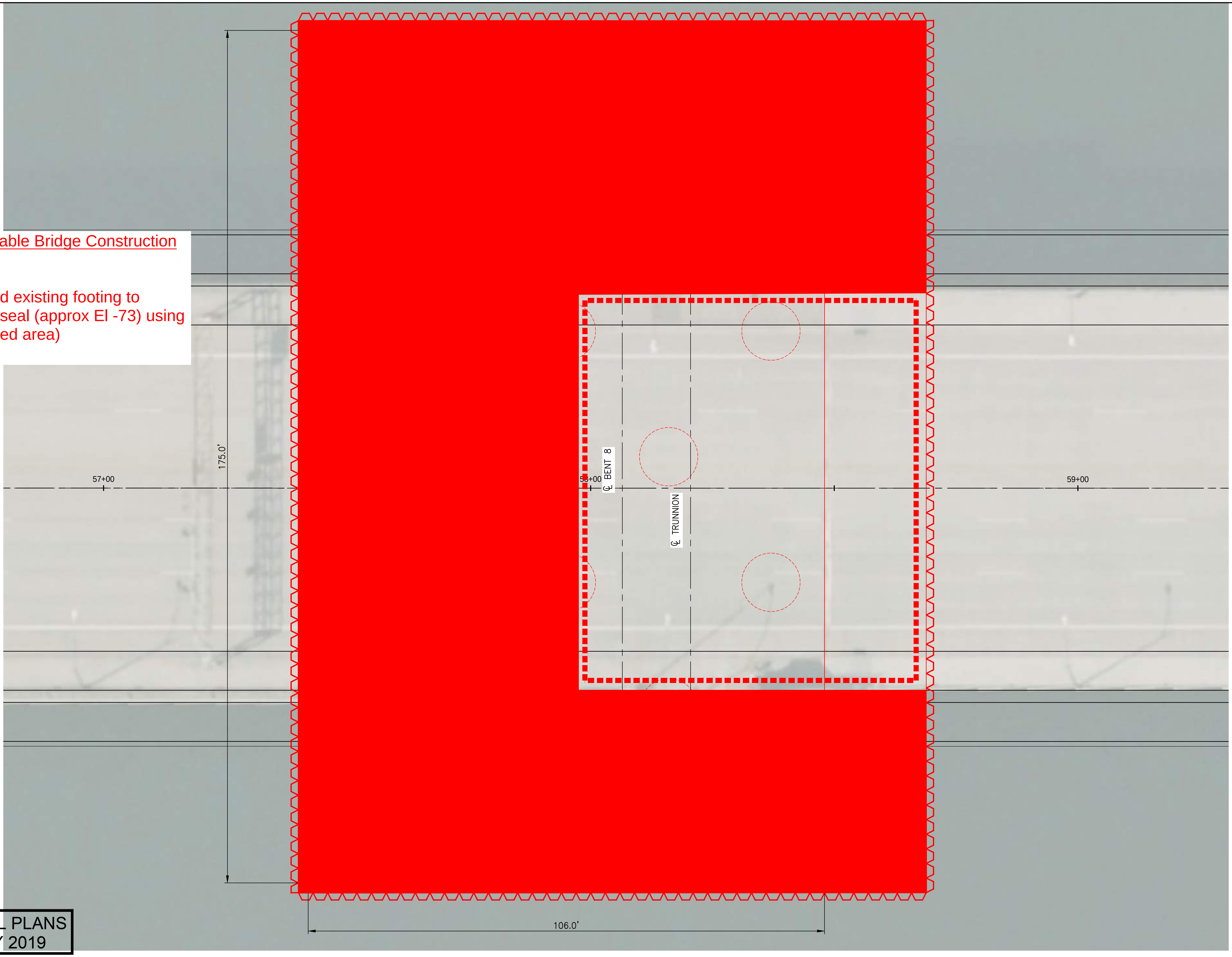
Replacement Movable Bridge Construction Sequence

4) Excavate around existing footing to bottom of existing seal (approx El -73) using clam bucket (shaded area)



CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge

Replacement Movable Bridge

MULTNOMAH COUNTY

PROJECT NO: *Proj No*

DATE: *Date*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
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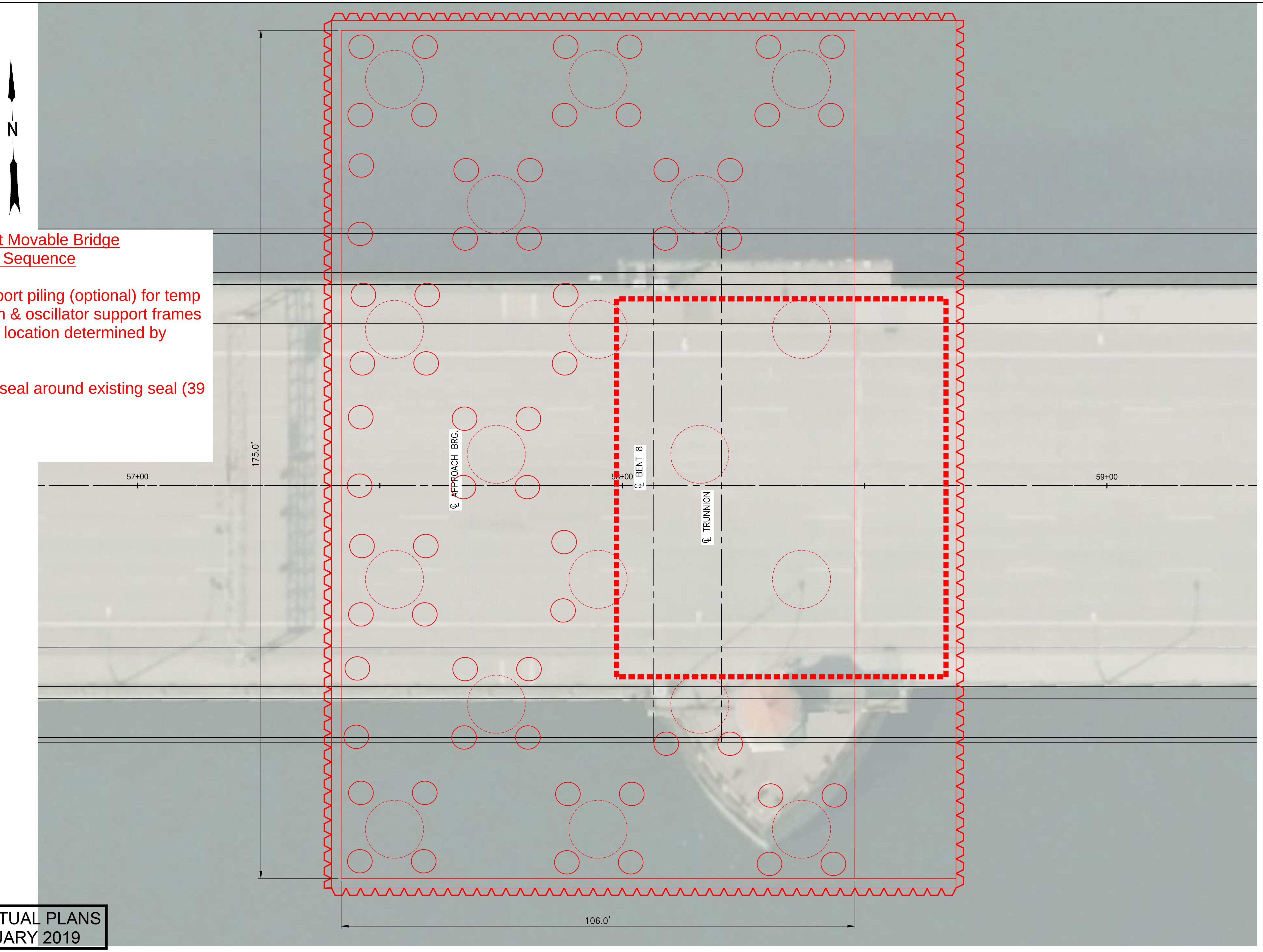
Sheet No.
D-16

Replacement Movable Bridge Construction Sequence

5) Drive support piling (optional) for temp shaft platform & oscillator support frames (number and location determined by contractor)

6) Pour new seal around existing seal (39 feet thick)



CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge
Replacement Movable Bridge
MULTNOMAH COUNTY
PROJECT NO: *Proj No*
DATE: *Date*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

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NO.	DATE:

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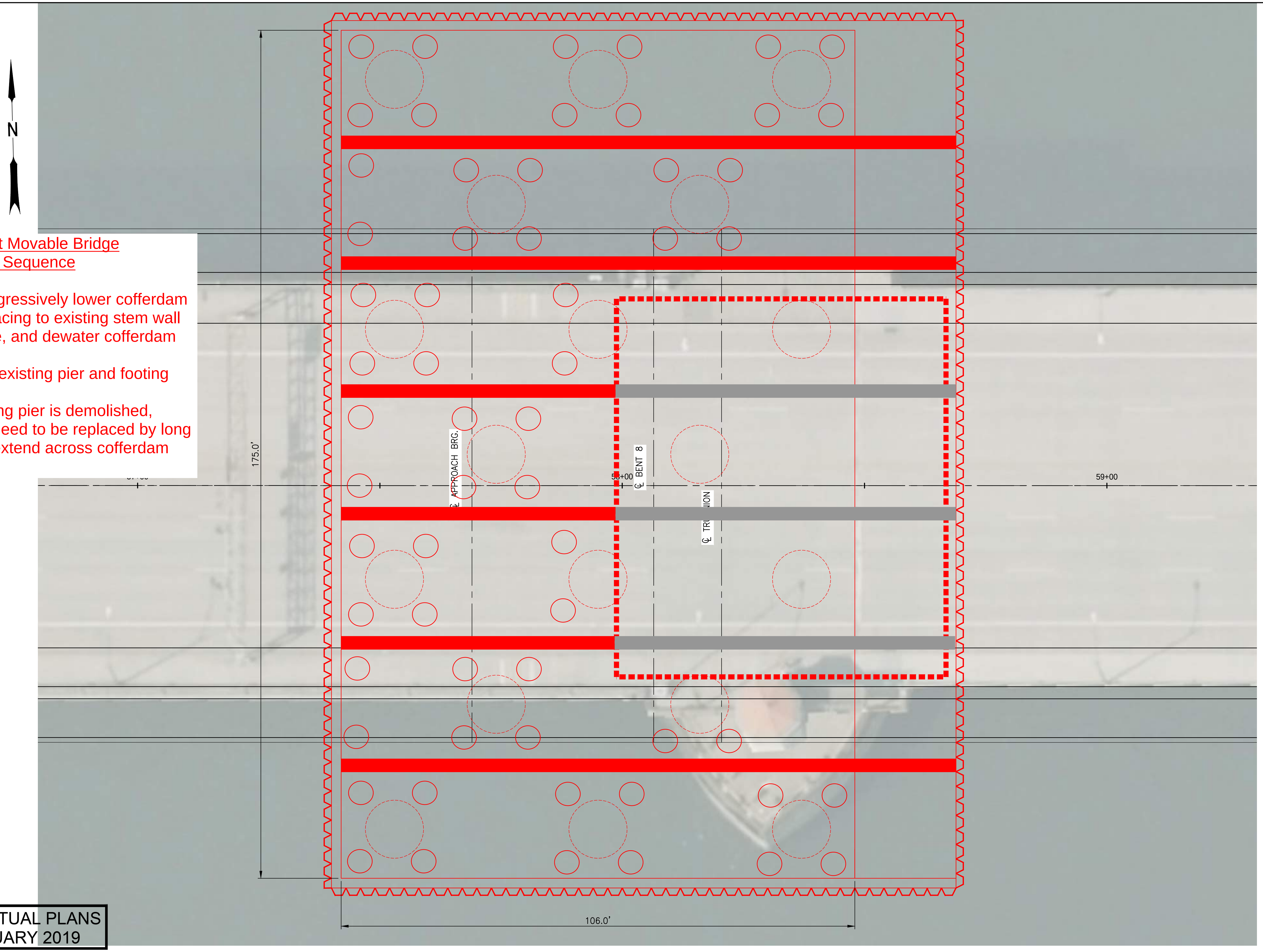

Replacement Movable Bridge Construction Sequence

7) Install progressively lower cofferdam rings and bracing to existing stem wall as applicable, and dewater cofferdam

8) Demolish existing pier and footing

8a) As existing pier is demolished, bracing will need to be replaced by long braces that extend across cofferdam

CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge
Replacement Movable Bridge
MULTNOMAH COUNTY
DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
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COUNTY ENGINEER

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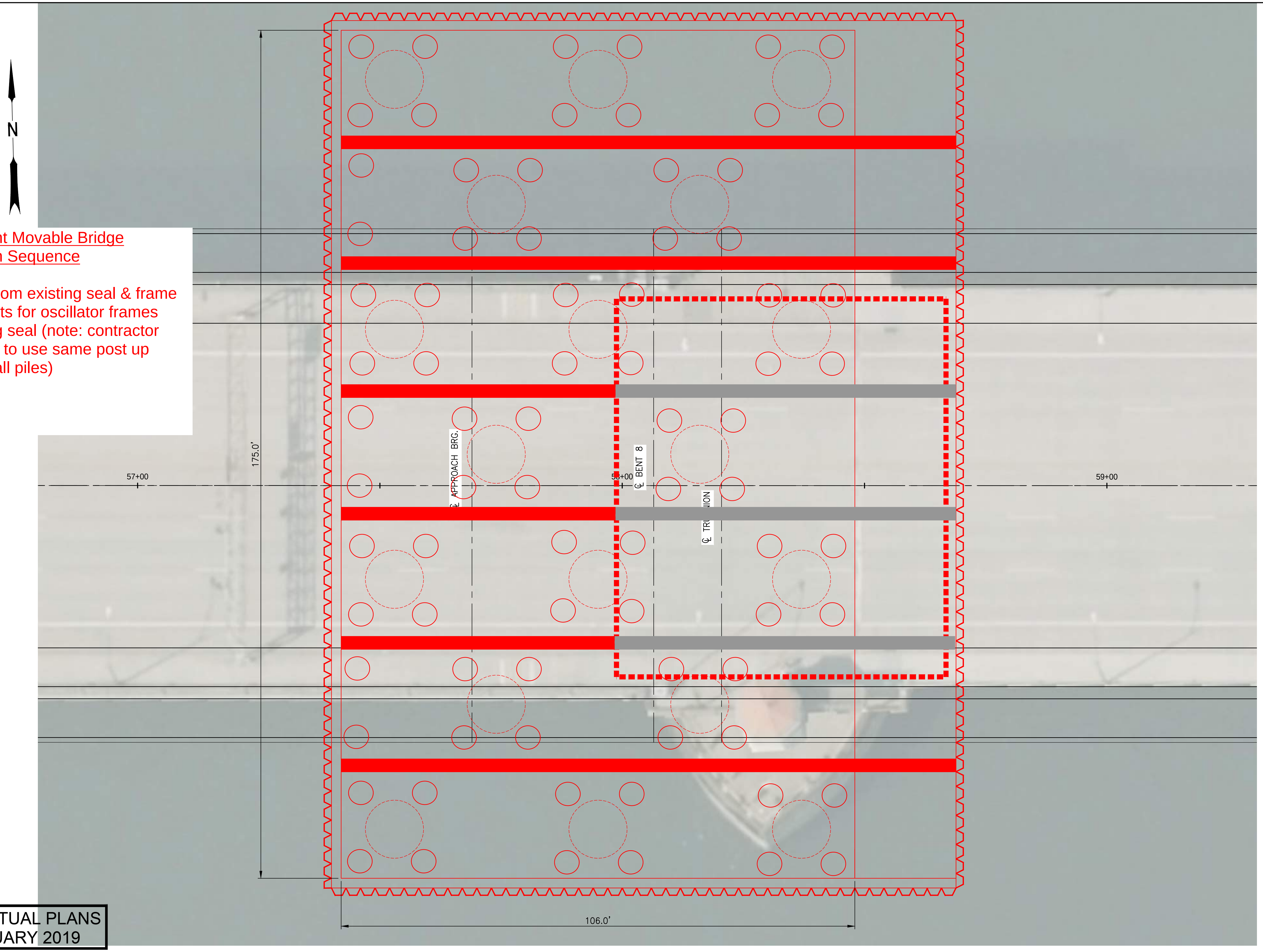
Sheet No.
D-18



Replacement Movable Bridge Construction Sequence

9) Post up from existing seal & frame in/brace posts for oscillator frames over existing seal (note: contractor may choose to use same post up method for all piles)

CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge
Replacement Movable Bridge
MULTNOMAH COUNTY
PROJECT NO: *Proj No*
DATE: *Date*

MULTNOMAH COUNTY
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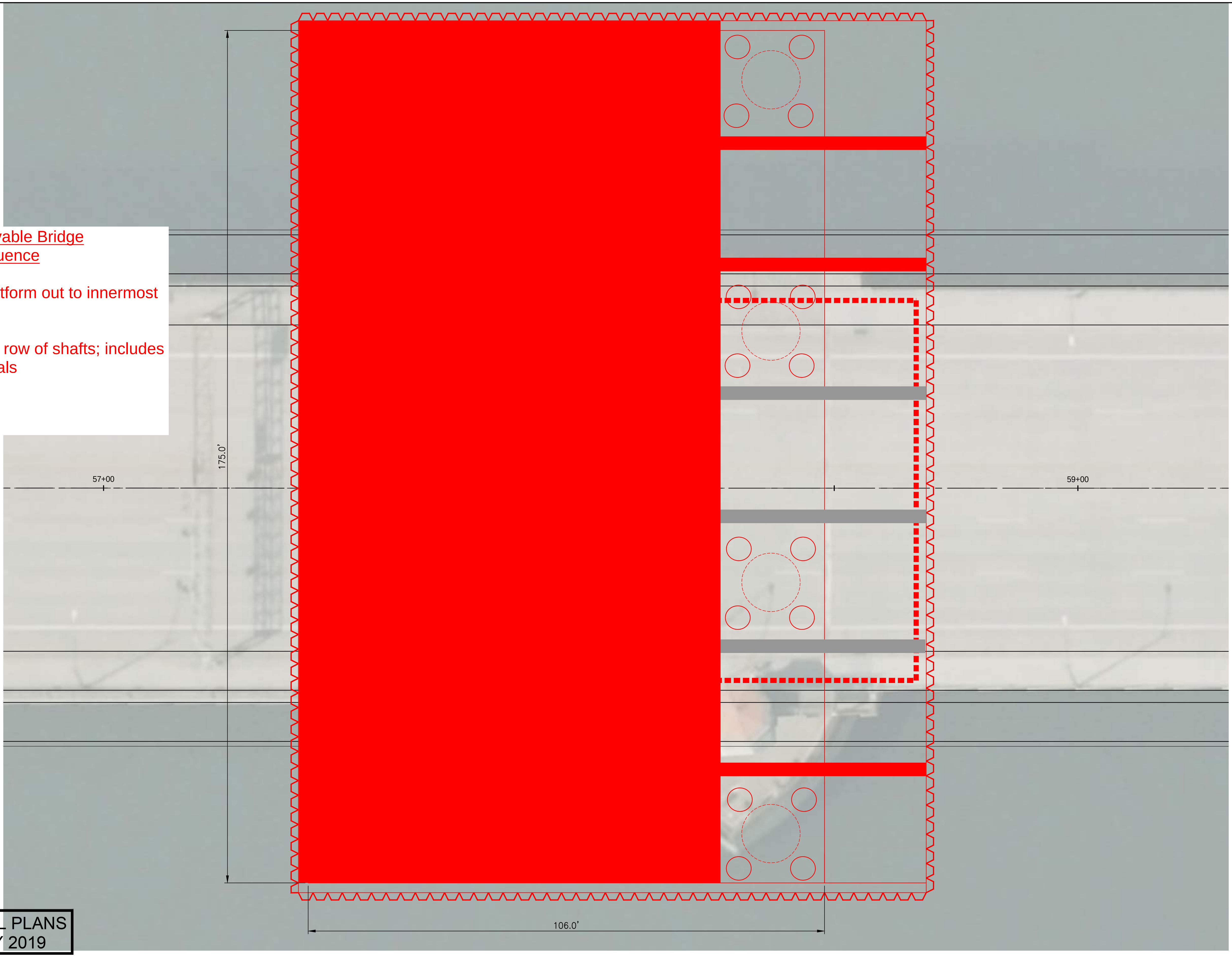

Replacement Movable Bridge Construction Sequence

10) Build work platform out to innermost shafts

11) Construct first row of shafts; includes coring through seals

CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge
Replacement Movable Bridge
MULTNOMAH COUNTY
PROJECT NO: Proj No
DATE: Date

MULTNOMAH COUNTY
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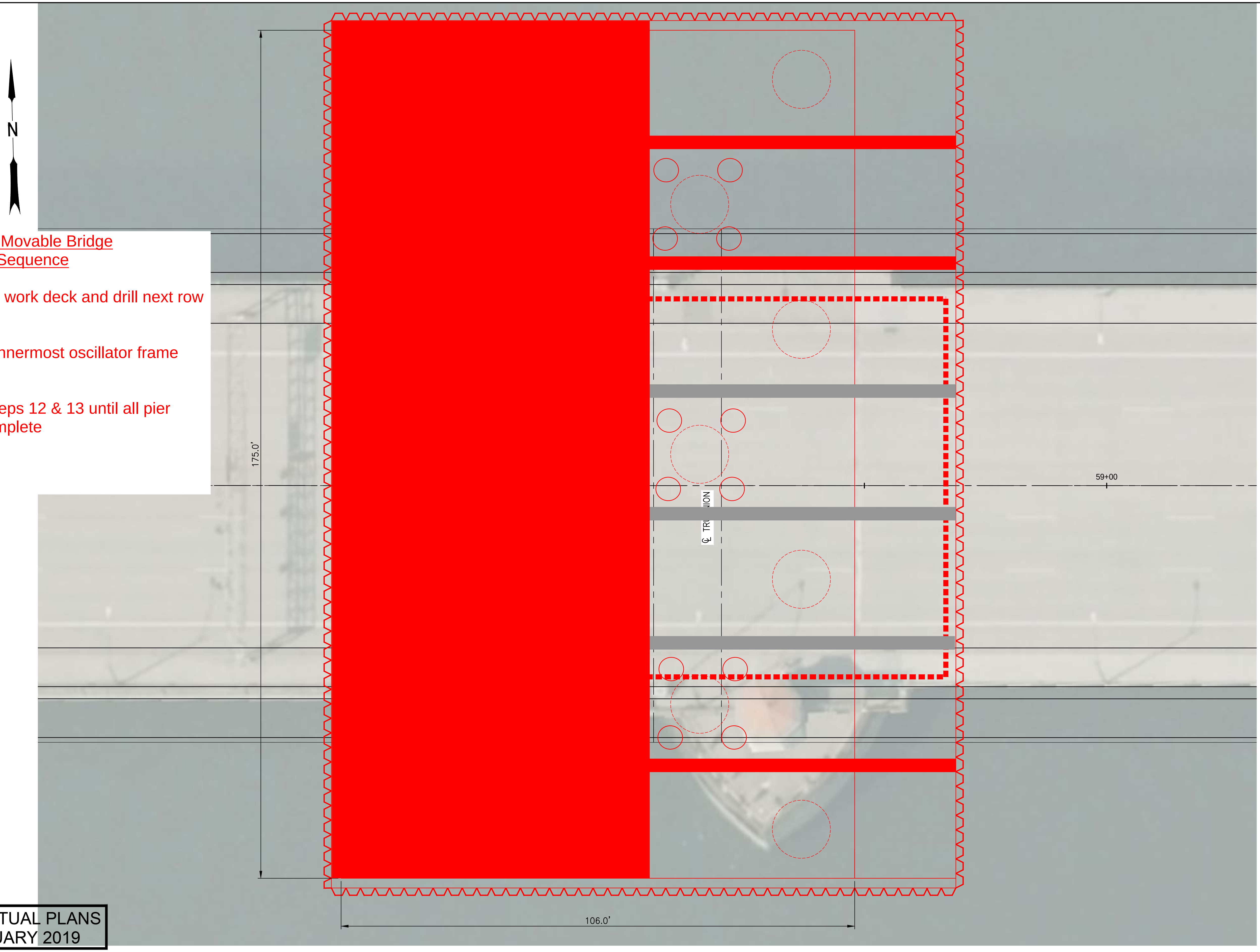
D-20



Replacement Movable Bridge Construction Sequence

12) Peel back work deck and drill next row of shafts

13) Remove innermost oscillator frame piles

14) Repeat steps 12 & 13 until all pier shafts are complete

CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge
Replacement Movable Bridge
MULTNOMAH COUNTY
PROJECT NO: *Proj No*
DATE: *Date*

MULTNOMAH COUNTY
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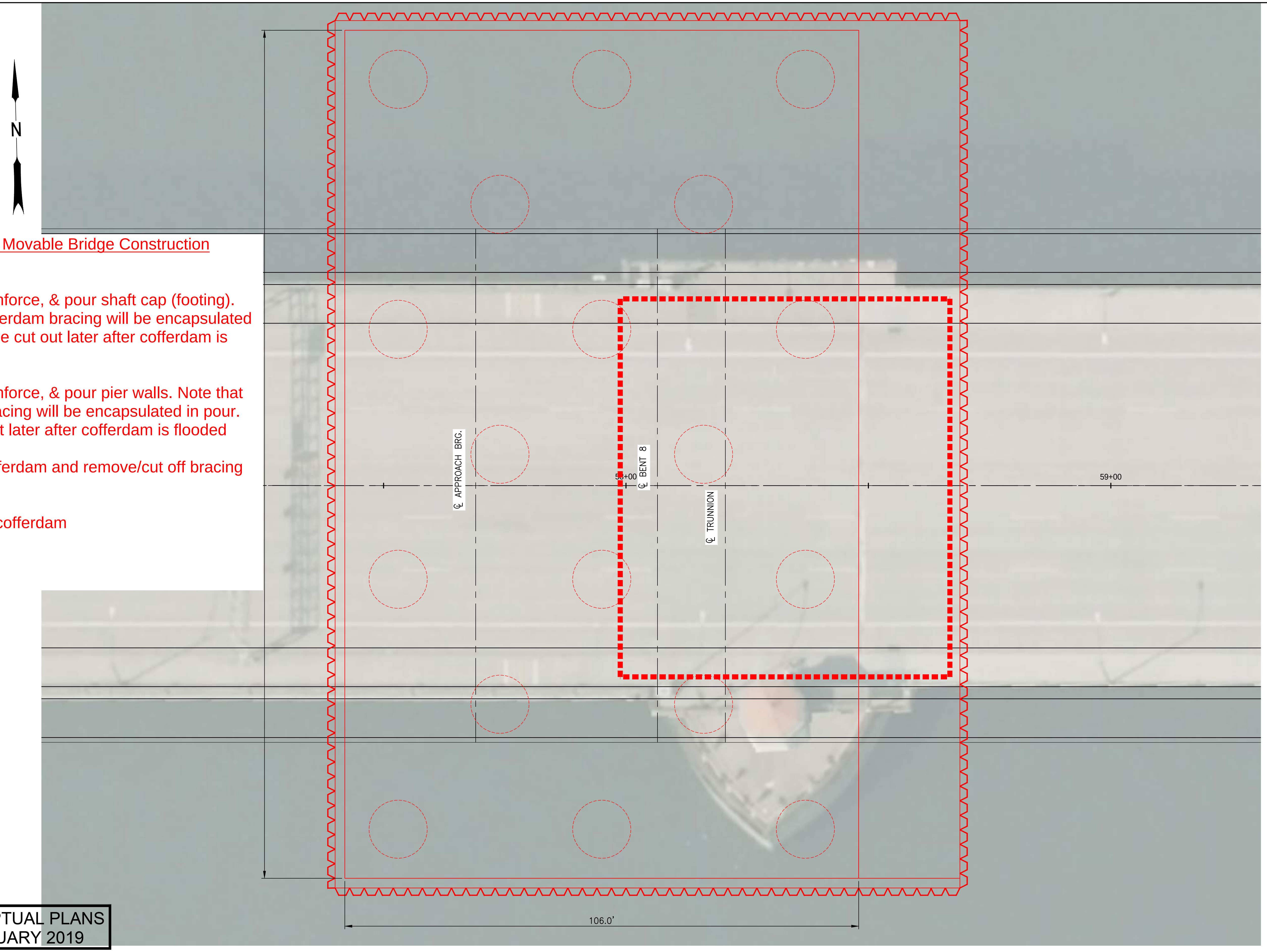
Replacement Movable Bridge Construction Sequence

15) Form, reinforce, & pour shaft cap (footing). Note that cofferdam bracing will be encapsulated in pour. Will be cut out later after cofferdam is flooded

16) Form, reinforce, & pour pier walls. Note that cofferdam bracing will be encapsulated in pour. Will be cut out later after cofferdam is flooded

17) Flood cofferdam and remove/cut off bracing and patch

18) Remove cofferdam



CONCEPTUAL PLANS
FEBRUARY 2019

Earthquake Ready Burnside Bridge
Replacement Movable Bridge
MULTNOMAH COUNTY
DATE: *Date*
PROJECT NO.: *Proj No*

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
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1620 S.E. 190th AVE. PORTLAND, ORE. 97233-5999

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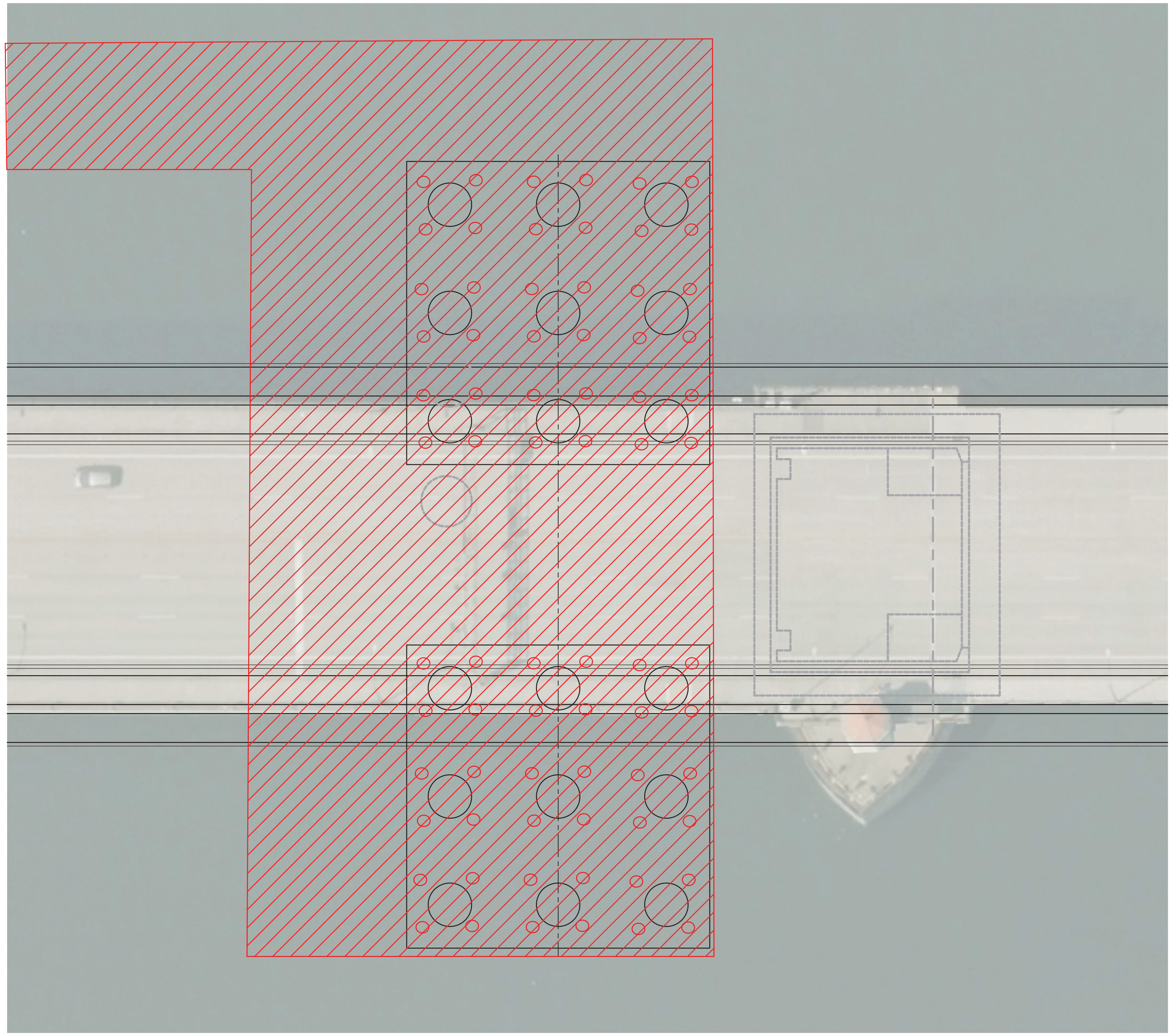
Appendix E. Drilled Shaft Installation Sequence In Open Water

Open Water Shaft Construction Sequence

1) Work bridge would be built (west side shown) alongside pier locations and extending over pier locations to access shafts (hatched area).

During pile installation for work bridge, additional oscillator frame piles around each shaft would be installed (assuming oscillated shafts)



BENT 5 PLAN - MOVEABLE LIFT - BASCULE DELTA

SCALE: 1" = 10'–0"

CONCEPTUAL PLANS
SEPTEMBER 2020

Earthquake Ready Burnside Bridge

Sheet_Title

MULTNOMAH COUNTY

DATE: *January 2021* PROJECT NO.: --

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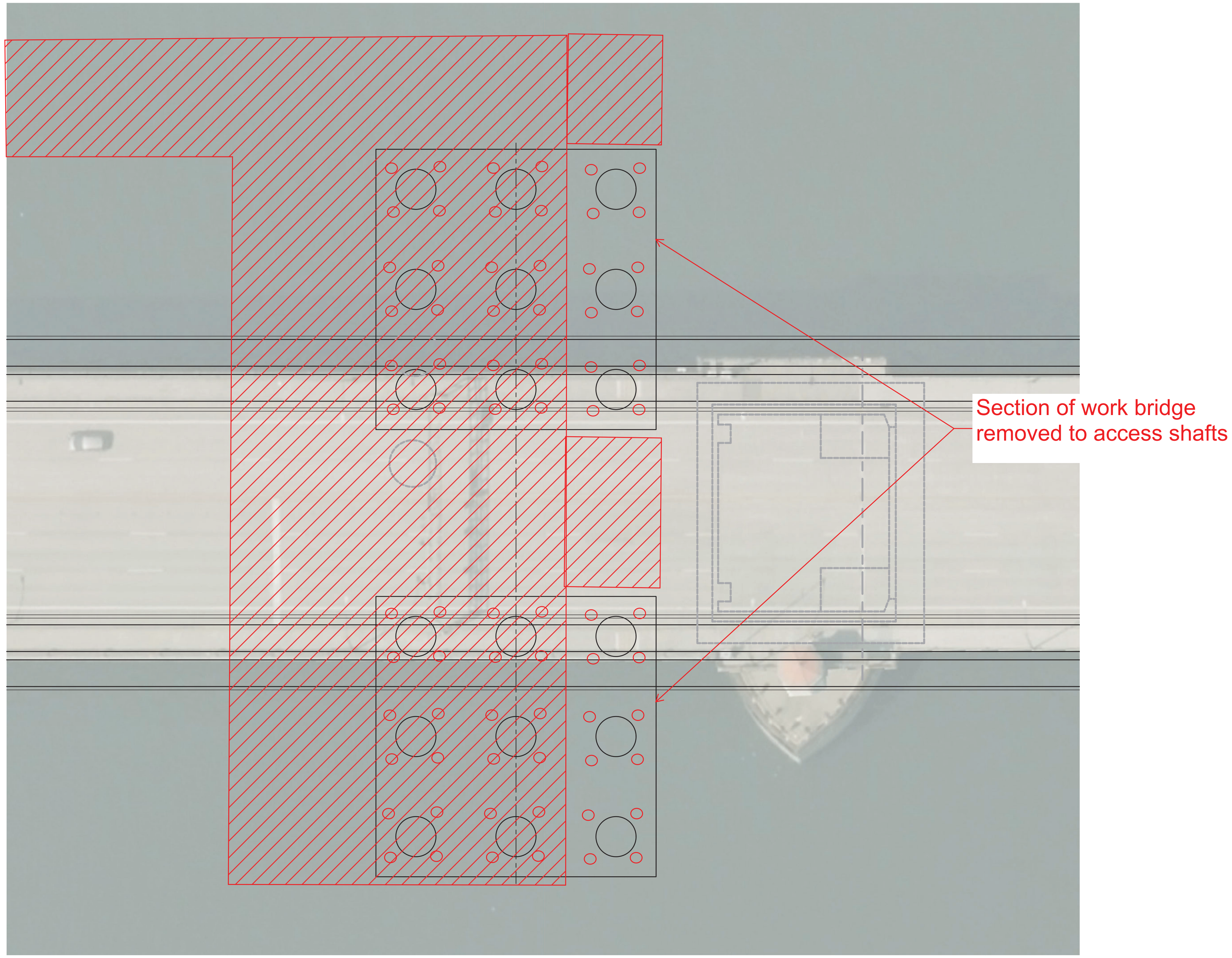
Open Water Shaft Construction Sequence

2) As each shaft is drilled, the work bridge will be "peeled back" to expose the shaft location. Start closest to the navigation channel and work back to the "main" work bridge

3) Install casings and shafts one shaft at a time



Section of work bridge removed to access shafts

BENT 5 PLAN - MOVEABLE LIFT - BASCULE DELTA

SCALE: 1" = 10'-0"

CONCEPTUAL PLANS
SEPTEMBER 2020

Earthquake Ready Burnside Bridge

Sheet_Title

MULTNOMAH COUNTY

DATE: *January 2021* PROJECT NO.: --

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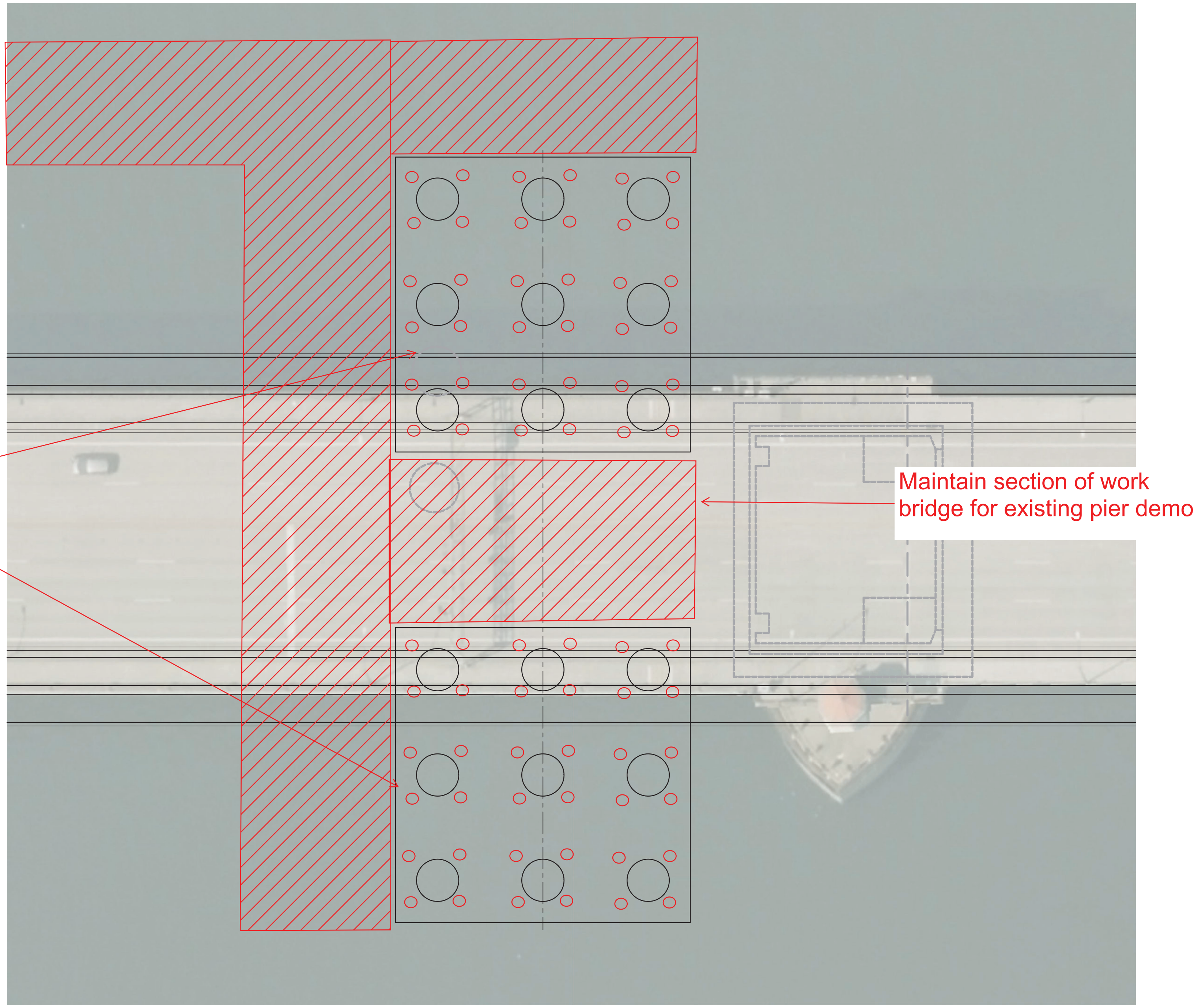
Sheet No. 7

Open Water Shaft Construction Sequence

4) Repeat steps 2 & 3 until shafts are complete

Section of work bridge removed to access shafts



Maintain section of work bridge for existing pier demo

BENT 5 PLAN - MOVEABLE LIFT - BASCULE DELTA

SCALE: 1" = 10'–0"

CONCEPTUAL PLANS
SEPTEMBER 2020

Earthquake Ready Burnside Bridge

Sheet_Title

MULTNOMAH COUNTY

DATE: *January 2021* PROJECT NO.: --

MULTNOMAH COUNTY
DEPARTMENT OF COMMUNITY SERVICES
TRANSPORTATION DIVISION
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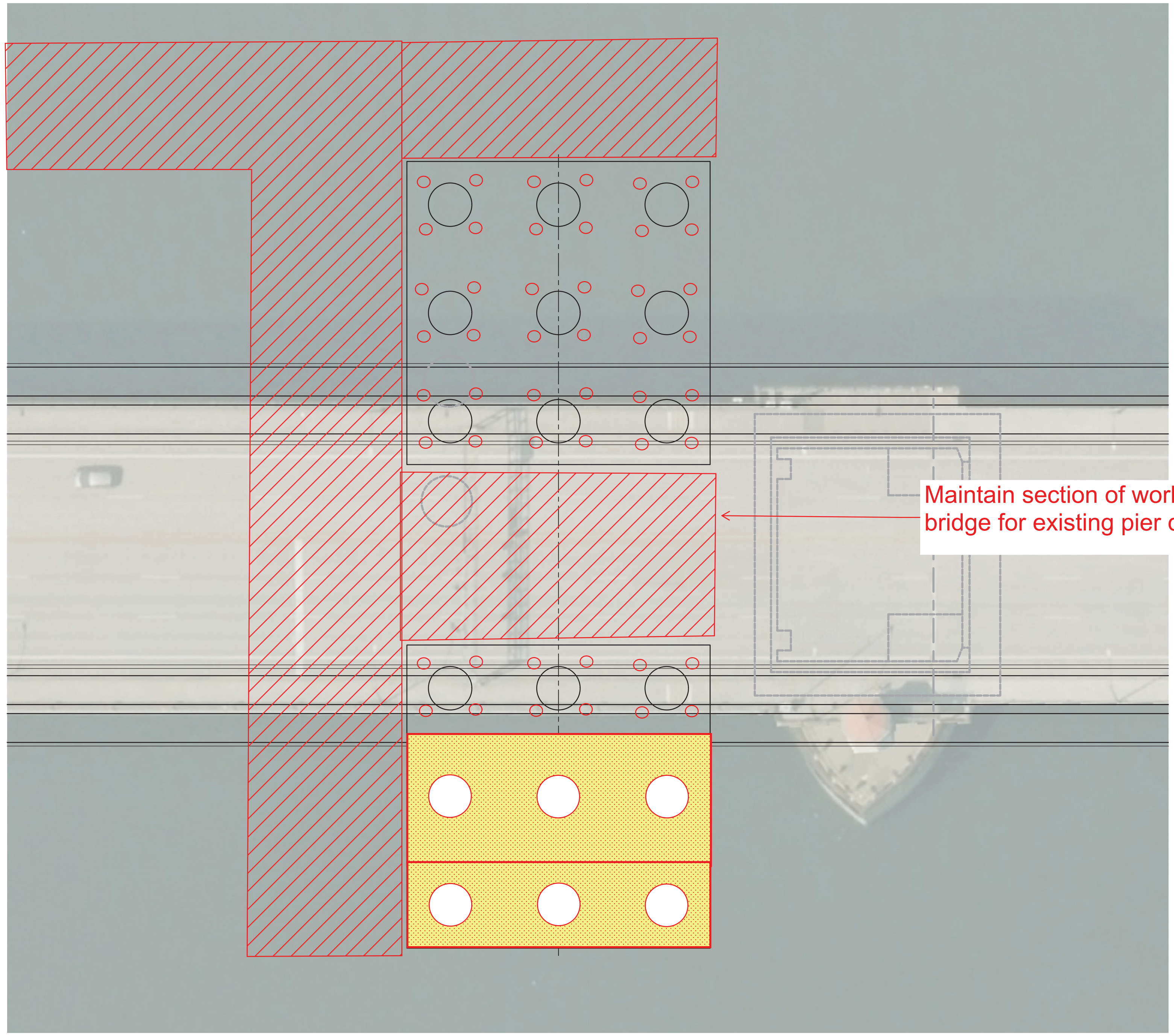
Open Water Shaft Construction Sequence

5) Cut down oscillator pile supports and use as falsework support for perched footing (or weld/bolt on falsework tabs to use as perched footing supports)

6) Install sections of precast slabs with wall sections over shafts

7) Repeat step 6 until all precast slabs are in place



Maintain section of work bridge for existing pier demo

BENT 5 PLAN - MOVEABLE LIFT - BASCULE DELTA

SCALE: 1" = 10'-0"

CONCEPTUAL PLANS
SEPTEMBER 2020

Earthquake Ready Burnside Bridge

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MULTNOMAH COUNTY

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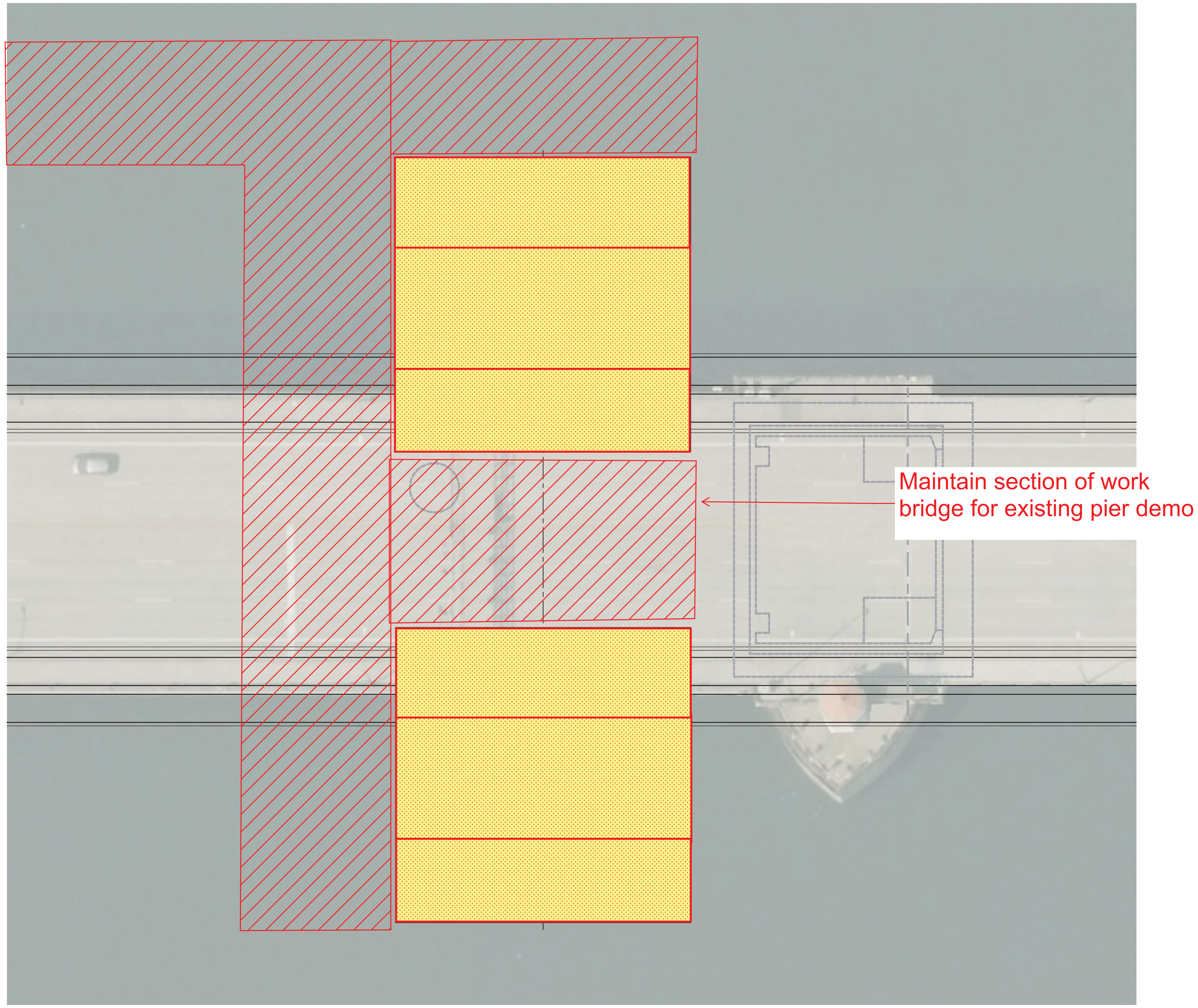
Open Water Shaft Construction Sequence

8) After all precast sections are in place, connect slabs together using interlocks, tension rods, and/or post tensioning

9) Grout annulus between shaft casings and precast slabs

10) Dewater inside footing areas and begin pier footing construction



Maintain section of work bridge for existing pier demo

BENT 5 PLAN - MOVEABLE LIFT - BASCULE DELTA

SCALE: 1" = 10'–0"

CONCEPTUAL PLANS
SEPTEMBER 2020

Earthquake Ready Burnside Bridge

Sheet_Title

MULTNOMAH COUNTY

DATE: *January 2021* PROJECT NO.: __

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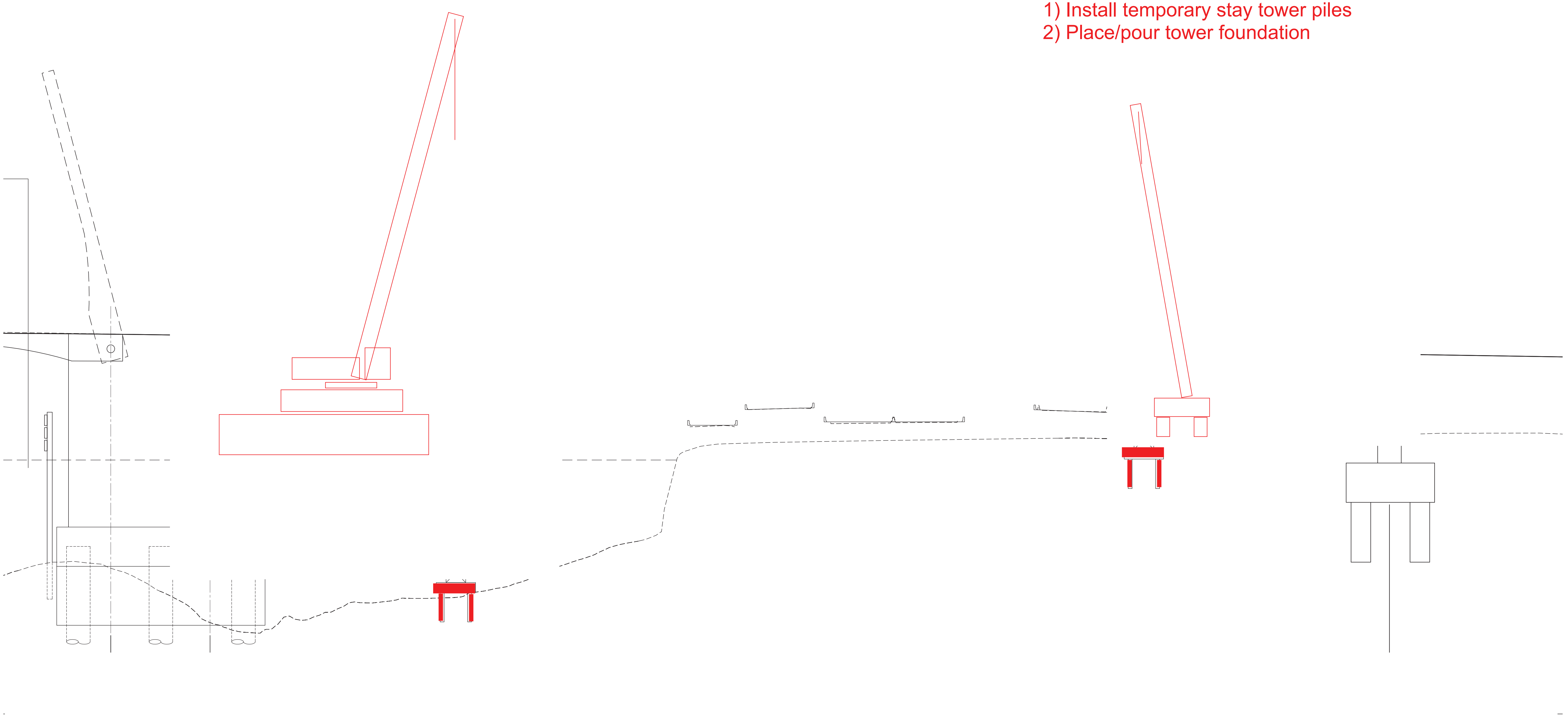
Appendix F. Long-span Approach Erection

Long Span Approach Sequence

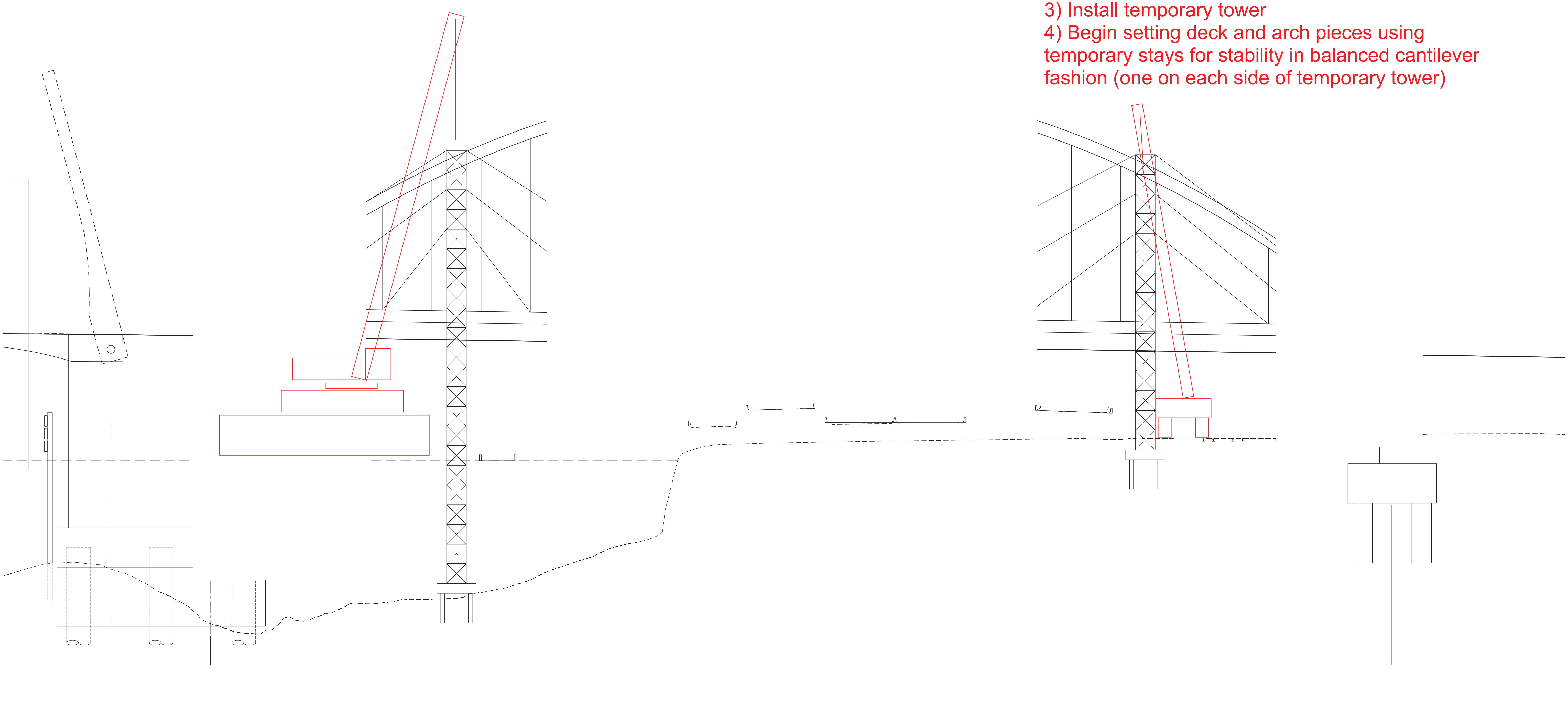
(Note: East side shown. West side similar)

1) Install temporary stay tower piles
2) Place/pour tower foundation



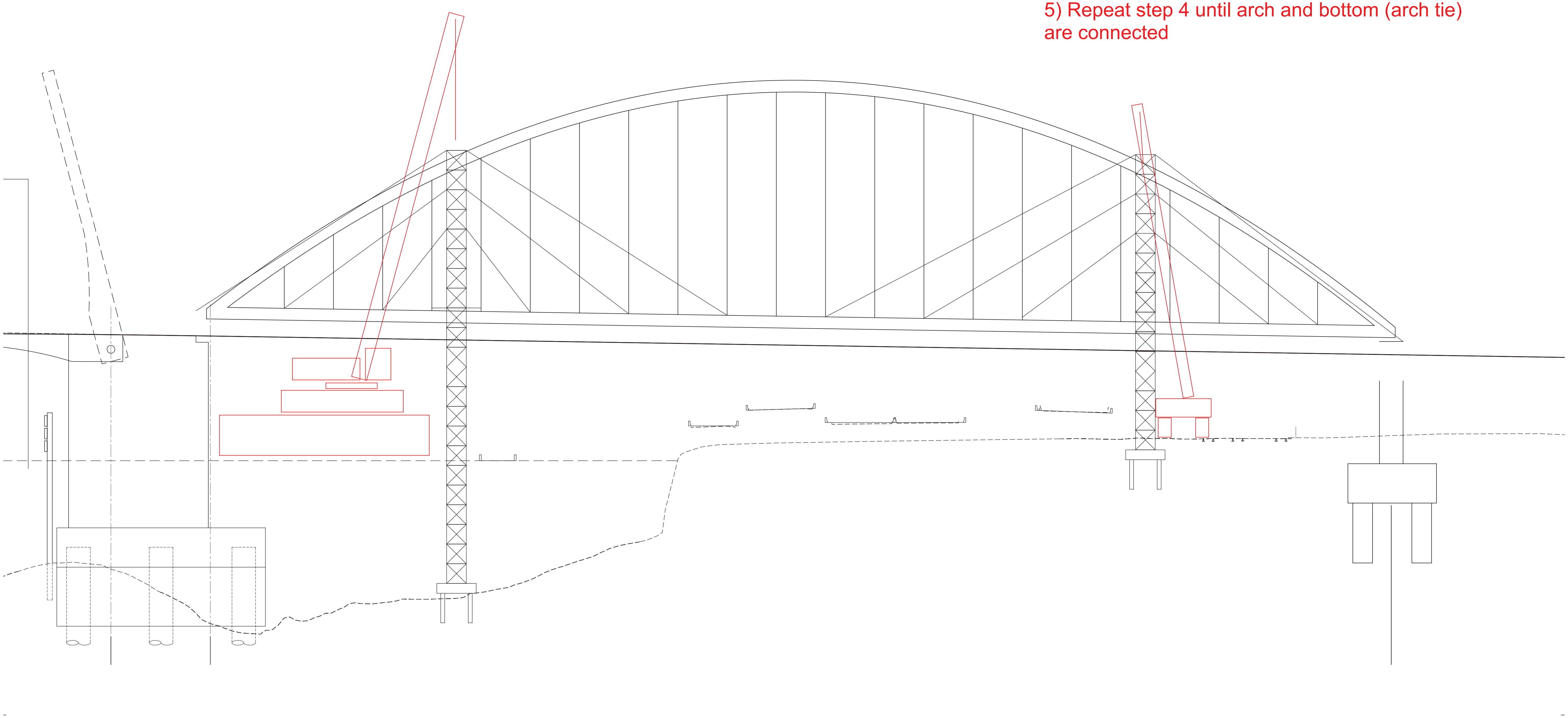
Long Span Approach Sequence
(Note: East side shown. West side similar)

3) Install temporary tower
4) Begin setting deck and arch pieces using temporary stays for stability in balanced cantilever fashion (one on each side of temporary tower)



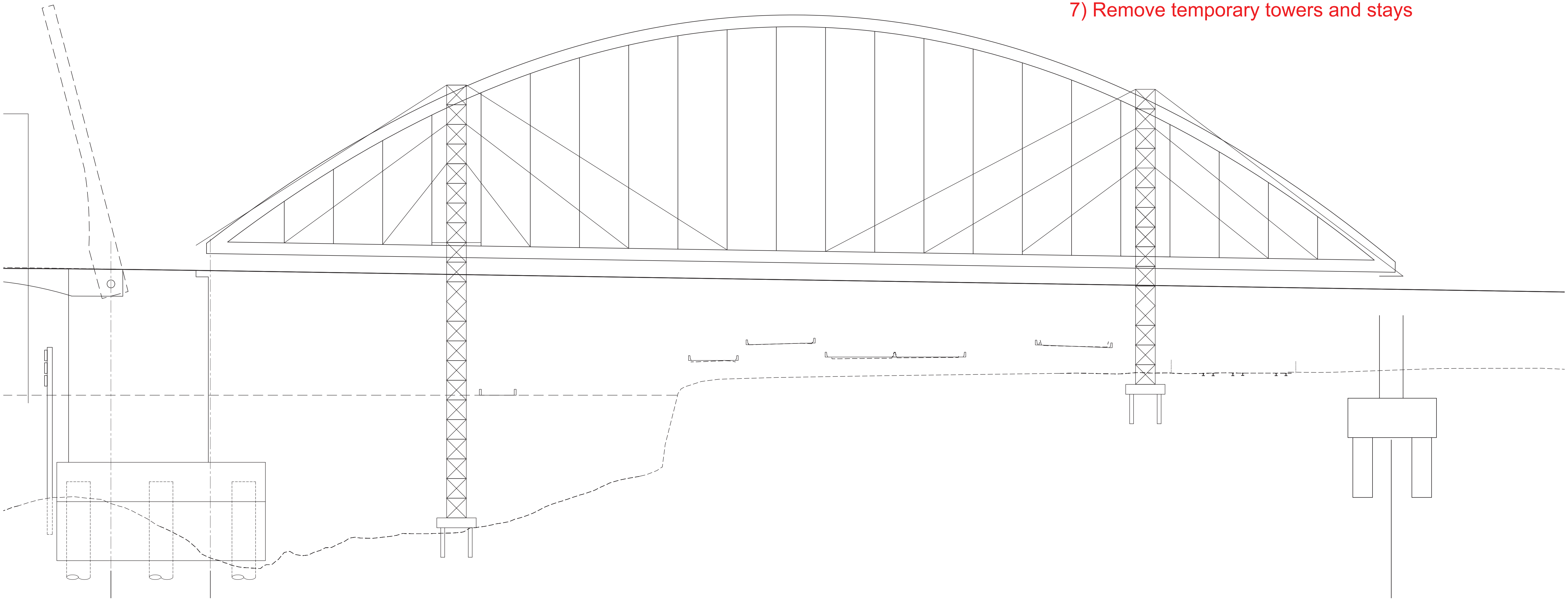
Long Span Approach Sequence
(Note: East side shown. West side similar)

5) Repeat step 4 until arch and bottom (arch tie)
are connected



Long Span Approach Sequence
(Note: East side shown. West side similar)

5) Once piers are complete (assumed river piers), install jacks at arch ends on piers
6) Release temporary towers and jack arch down onto piers
7) Remove temporary towers and stays

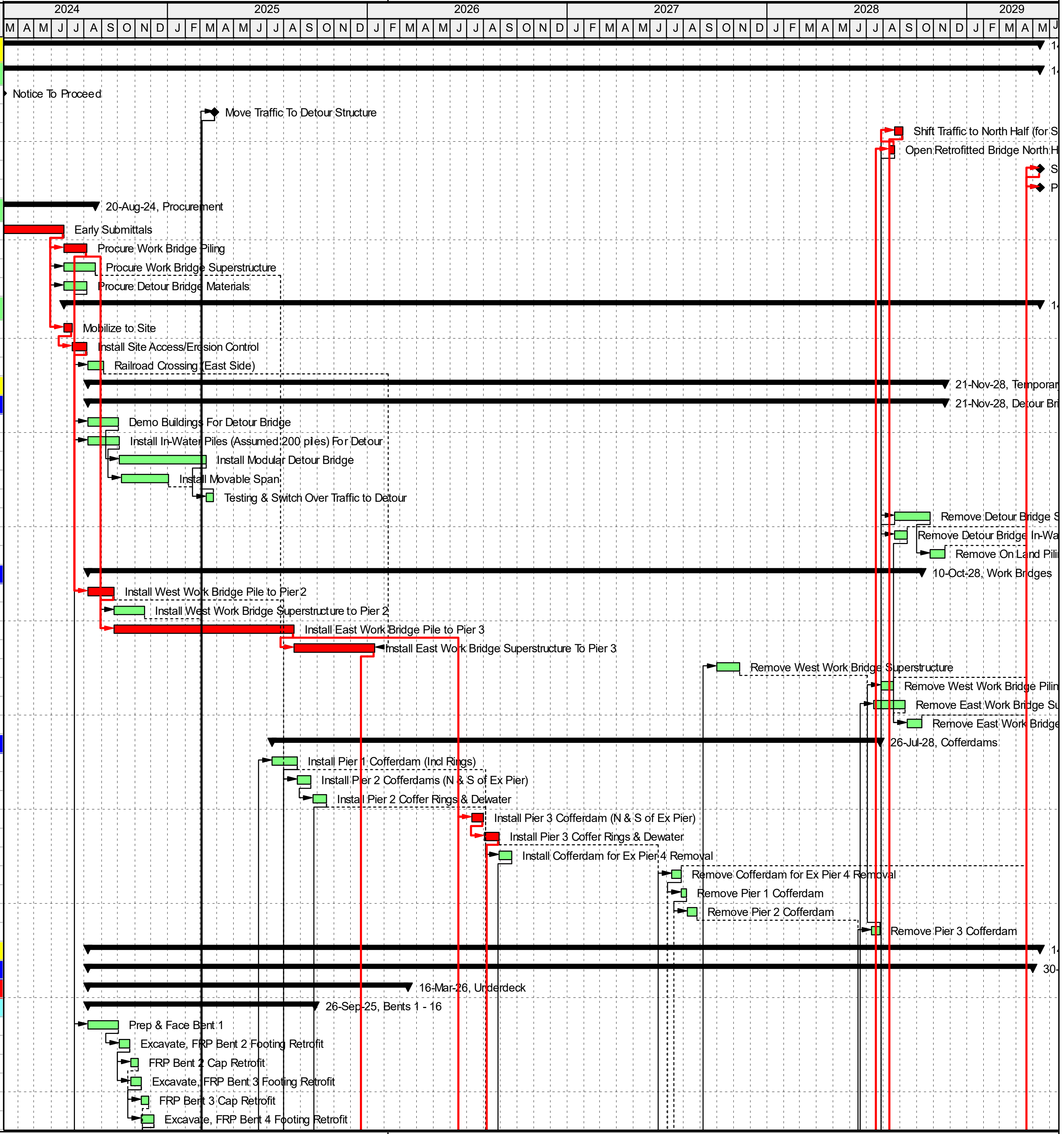


Appendix G. Project Schedules

APPENDIX G-1

Enhanced Retrofit Schedule with Temporary Bridge

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Retrofit (With Detour Bridge)		1321	0%	0	04-Mar-24	14-May-29		
General/Milestones		1321	0%	0	04-Mar-24	14-May-29		
A1000	Notice To Proceed	0	0%	4	04-Mar-24			A1050
A1010	Move Traffic To Detour Structure	0	0%	49	26-Mar-25		A1150	A1590, A2000
A1020	Shift Traffic to North Half (for South Approaches Work)	10	0%	0	22-Aug-28	05-Sep-28	A1390, A2200,	A2210, A2860
A1030	Open Retrofitted Bridge North Half to Traffic	7	0%	0	11-Aug-28	21-Aug-28	A1990	A2390, A1020
A1035	South Approaches Complete	0	0%	0		14-May-29	A2900, A2510	A1040
A1040	Project Completion	0	0%	0		14-May-29*	A2430, A2450,	
Procurement		120	0%	159	04-Mar-24	20-Aug-24		
A1050	Early Submittals	80	0%	4	04-Mar-24	24-Jun-24	A1000	A1060, A1070,
A1060	Procure Work Bridge Piling	30	0%	13	25-Jun-24	06-Aug-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	159	25-Jun-24	20-Aug-24	A1050	A1170, A1190
A1080	Procure Detour Bridge Materials	30	0%	4	25-Jun-24	06-Aug-24	A1050	A1120
Construction		1241	0%	0	25-Jun-24	14-May-29		
A1090	Mobilize to Site	10	0%	4	25-Jun-24	09-Jul-24	A1050	A1100
A1100	Install Site Access/Erosion Control	20	0%	4	10-Jul-24	06-Aug-24	A1090	A1110, A1120, A
A1110	Railroad Crossing (East Side)	20	0%	428	07-Aug-24	04-Sep-24	A1100	A1190
Temporary Works		1091	0%	120	07-Aug-24	21-Nov-28		
Detour Bridge		1091	0%	120	07-Aug-24	21-Nov-28		
A1115	Demo Buildings For Detour Bridge	40	0%	49	07-Aug-24	02-Oct-24	A1100	A1130
A1120	Install In-Water Piles (Assumed 200 piles) For Detour	50	0%	5	07-Aug-24	04-Oct-24	A1100, A1080	A1140
A1130	Install Modular Detour Bridge	110	0%	49	03-Oct-24	11-Mar-25	A1115	A1150
A1140	Install Movable Span	60	0%	97	07-Oct-24	02-Jan-25	A1120	A1150
A1150	Testing & Switch Over Traffic to Detour	10	0%	49	12-Mar-25	25-Mar-25	A1140, A1130	A1010
A2390	Remove Detour Bridge Superstructure	45	0%	1	22-Aug-28	24-Oct-28	A1030	A2400, A2410
A2400	Remove Detour Bridge In-Water Piling	20	0%	1	22-Aug-28	14-Sep-28	A2390	A1040, A2450
A2410	Remove On Land Piling	20	0%	120	25-Oct-28	21-Nov-28	A2390	A1040
Work Bridges		1060	0%	1	07-Aug-24	10-Oct-28		
A1160	Install West Work Bridge Pile to Pier 2	40	0%	15	07-Aug-24	23-Sep-24	A1100, A1060	A1170, A1200, A
A1170	Install West Work Bridge Superstructure to Pier 2	40	0%	136	24-Sep-24	18-Nov-24	A1160, A1070	A1590
A1180	Install East Work Bridge Pile to Pier 3	50	0%	43	24-Sep-24	19-Aug-25	A1060, A1160	A1190, A1210
A1190	Install East Work Bridge Superstructure To Pier 3	100	0%	85	20-Aug-25	13-Jan-26	A1180, A1070,	A1595
A2420	Remove West Work Bridge Superstructure	30	0%	214	01-Oct-27	11-Nov-27	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	45	27-Jul-28	18-Aug-28	A2420, A2470	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	4	14-Jul-28	08-Sep-28	A1980	A2450
A2450	Remove East Work Bridge Piling	22	0%	1	14-Sep-28	10-Oct-28	A2440, A2400	A1040
Cofferdams		774	0%	36	10-Jul-25	26-Jul-28		
A1195	Install Pier 1 Cofferdam (Incl Rings)	40	0%	18	10-Jul-25	25-Aug-25	A1620	A1225, A1680,
A1200	Install Pier 2 Cofferdams (N & S of Ex Pier)	20	0%	18	26-Aug-25	19-Sep-25	A1620, A1160,	A1205
A1205	Install Pier 2 Coffer Rings & Dewater	20	0%	39	22-Sep-25	17-Oct-25	A1200	A1700, A1225
A1210	Install Pier 3 Cofferdam (N & S of Ex Pier)	20	0%	0	10-Jul-26	01-Aug-26	A1630, A1180	A1215
A1215	Install Pier 3 Coffer Rings & Dewater	20	0%	0	03-Aug-26	28-Aug-26	A1210	A1235, A1760,
A1225	Install Cofferdam for Ex Pier 4 Removal	20	0%	17	29-Aug-26	21-Sep-26	A2000, A1195,	A1670
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	84	10-Jul-27	27-Jul-27	A1670, A1215	A1040, A2455
A2455	Remove Pier 1 Cofferdam	10	0%	84	28-Jul-27	07-Aug-27	A1235, A1685	A2460
A2460	Remove Pier 2 Cofferdam	15	0%	84	09-Aug-27	25-Aug-27	A1720, A2455	A2470
A2470	Remove Pier 3 Cofferdam	15	0%	45	10-Jul-28	26-Jul-28	A1780, A2460	A2430
Retrofit Bridge		1211	0%	0	07-Aug-24	14-May-29		
West Approach		1201	0%	10	07-Aug-24	30-Apr-29		
Underdeck		407	0%	397	07-Aug-24	16-Mar-26		
Bents 1 - 16		290	0%	484	07-Aug-24	26-Sep-25		
A1230	Prep & Face Bent 1	40	0%	484	07-Aug-24	02-Oct-24	A1100	A1240
A1240	Excavate, FRP Bent 2 Footing Retrofit	15	0%	484	03-Oct-24	23-Oct-24	A1230	A1250, A1260
A1250	FRP Bent 2 Cap Retrofit	10	0%	569	24-Oct-24	06-Nov-24	A1240	A1280
A1260	Excavate, FRP Bent 3 Footing Retrofit	15	0%	484	24-Oct-24	13-Nov-24	A1240	A1280, A1300
A1280	FRP Bent 3 Cap Retrofit	10	0%	564	14-Nov-24	27-Nov-24	A1260, A1250	A1320
A1300	Excavate, FRP Bent 4 Footing Retrofit	15	0%	484	14-Nov-24	06-Dec-24	A1260	A1320, A1340

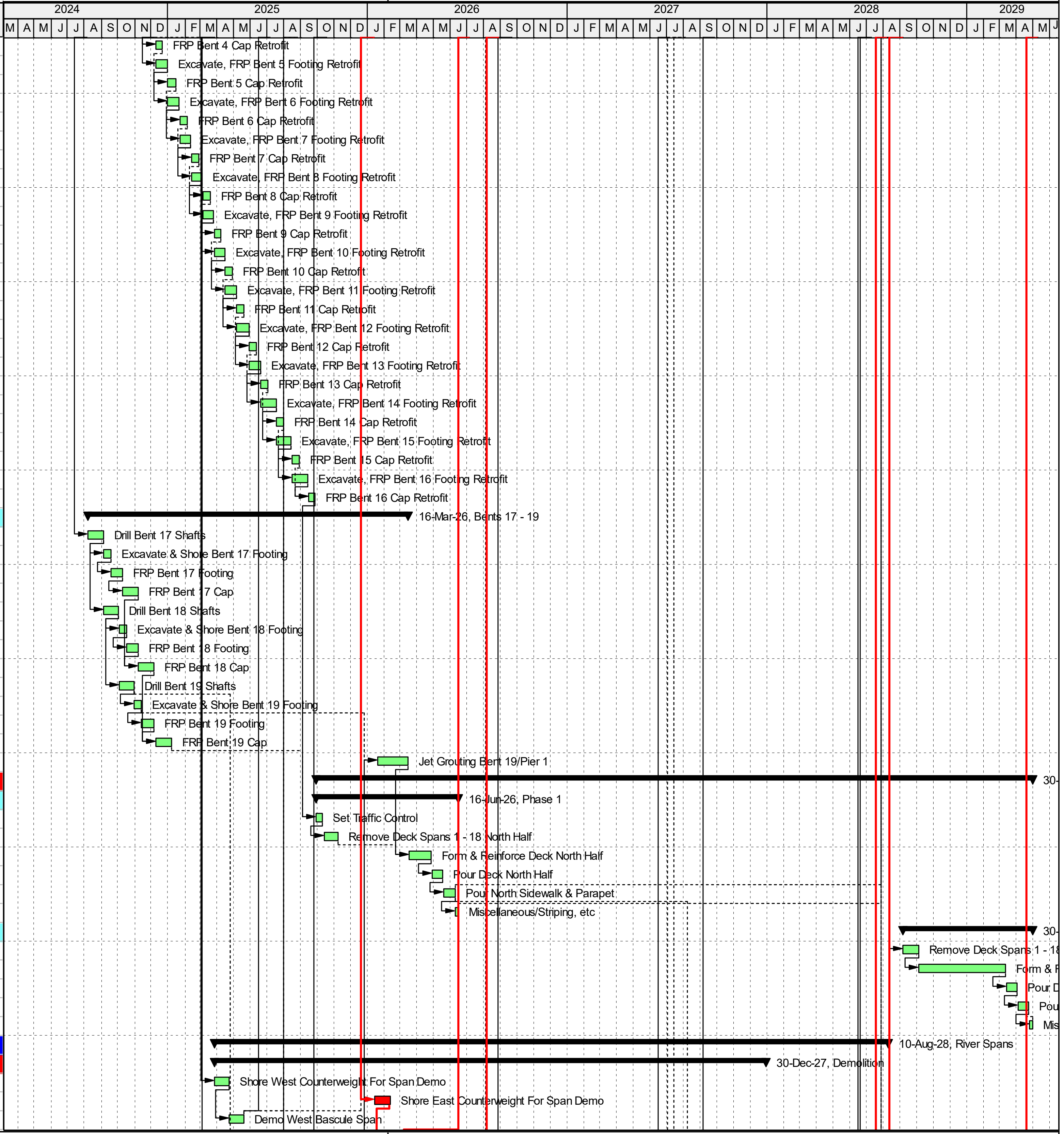


🟦 Actual Work
🟥 Critical Remaining Work
▼ Summary
🟩 Remaining Work
◆ Milestone

TASK filter: All Activities

EQRB NEPA Retrofit (With Detour Bridge) | Classic Schedule Layout | 14-Dec-19 13:14

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1320	FRP Bent 4 Cap Retrofit	10	0%	559	09-Dec-24	20-Dec-24	A1300, A1280	A1400
A1340	Excavate, FRP Bent 5 Footing Retrofit	15	0%	484	09-Dec-24	30-Dec-24	A1300	A1400, A2520
A1400	FRP Bent 5 Cap Retrofit	10	0%	554	31-Dec-24	14-Jan-25	A1320, A1340	A2530
A2520	Excavate, FRP Bent 6 Footing Retrofit	15	0%	484	31-Dec-24	21-Jan-25	A1340	A2530, A2540
A2530	FRP Bent 6 Cap Retrofit	10	0%	549	22-Jan-25	04-Feb-25	A2520, A1400	A2550
A2540	Excavate, FRP Bent 7 Footing Retrofit	15	0%	484	22-Jan-25	11-Feb-25	A2520	A2550, A2560
A2550	FRP Bent 7 Cap Retrofit	10	0%	544	12-Feb-25	25-Feb-25	A2540, A2530	A2570
A2560	Excavate, FRP Bent 8 Footing Retrofit	15	0%	484	12-Feb-25	04-Mar-25	A2540	A2570, A2580
A2570	FRP Bent 8 Cap Retrofit	10	0%	539	05-Mar-25	18-Mar-25	A2560, A2550	A2590
A2580	Excavate, FRP Bent 9 Footing Retrofit	15	0%	484	05-Mar-25	25-Mar-25	A2560	A2590, A2600
A2590	FRP Bent 9 Cap Retrofit	10	0%	534	26-Mar-25	08-Apr-25	A2570, A2580	A2610
A2600	Excavate, FRP Bent 10 Footing Retrofit	15	0%	484	26-Mar-25	15-Apr-25	A2580	A2610, A2620
A2610	FRP Bent 10 Cap Retrofit	10	0%	529	16-Apr-25	29-Apr-25	A2600, A2590	A2630
A2620	Excavate, FRP Bent 11 Footing Retrofit	15	0%	484	16-Apr-25	06-May-25	A2600	A2630, A2640
A2630	FRP Bent 11 Cap Retrofit	10	0%	524	07-May-25	20-May-25	A2620, A2610	A2650
A2640	Excavate, FRP Bent 12 Footing Retrofit	15	0%	484	07-May-25	28-May-25	A2620	A2650, A2660
A2650	FRP Bent 12 Cap Retrofit	10	0%	519	29-May-25	11-Jun-25	A2640, A2630	A2670
A2660	Excavate, FRP Bent 13 Footing Retrofit	15	0%	484	29-May-25	18-Jun-25	A2640	A2670, A2680
A2670	FRP Bent 13 Cap Retrofit	10	0%	514	19-Jun-25	02-Jul-25	A2650, A2660	A2690
A2680	Excavate, FRP Bent 14 Footing Retrofit	20	0%	484	19-Jun-25	17-Jul-25	A2660	A2690, A2700
A2690	FRP Bent 14 Cap Retrofit	10	0%	504	18-Jul-25	31-Jul-25	A2680, A2670	A2710
A2700	Excavate, FRP Bent 15 Footing Retrofit	20	0%	484	18-Jul-25	14-Aug-25	A2680	A2710, A2720
A2710	FRP Bent 15 Cap Retrofit	10	0%	494	15-Aug-25	28-Aug-25	A2700, A2690	A2730
A2720	Excavate, FRP Bent 16 Footing Retrofit	20	0%	484	15-Aug-25	12-Sep-25	A2700	A2730
A2730	FRP Bent 16 Cap Retrofit	10	0%	484	15-Sep-25	26-Sep-25	A2720, A2710	A1350
Bents 17 - 19		407	0%	397	07-Aug-24	16-Mar-26		
A2740	Drill Bent 17 Shafts	20	0%	669	07-Aug-24	04-Sep-24	A1100	A2750, A2780
A2750	Excavate & Shore Bent 17 Footing	10	0%	669	05-Sep-24	18-Sep-24	A2740	A2760
A2760	FRP Bent 17 Footing	15	0%	669	19-Sep-24	09-Oct-24	A2750	A2770
A2770	FRP Bent 17 Cap	20	0%	669	10-Oct-24	06-Nov-24	A2760	A2810
A2780	Drill Bent 18 Shafts	20	0%	669	05-Sep-24	02-Oct-24	A2740	A2790, A2820
A2790	Excavate & Shore Bent 18 Footing	10	0%	669	03-Oct-24	16-Oct-24	A2780	A2800
A2800	FRP Bent 18 Footing	15	0%	669	17-Oct-24	06-Nov-24	A2790	A2810
A2810	FRP Bent 18 Cap	20	0%	669	07-Nov-24	06-Dec-24	A2800, A2770	A2850
A2820	Drill Bent 19 Shafts	20	0%	669	03-Oct-24	30-Oct-24	A2780	A2830, A2500
A2830	Excavate & Shore Bent 19 Footing	10	0%	669	31-Oct-24	13-Nov-24	A2820	A2840, A3140
A2840	FRP Bent 19 Footing	15	0%	669	14-Nov-24	06-Dec-24	A2830	A2850
A2850	FRP Bent 19 Cap	20	0%	669	09-Dec-24	07-Jan-25	A2840, A2810	A1350
A3140	Jet Grouting Bent 19/Pier 1	40	0%	397	20-Jan-26	16-Mar-26	A2830, A1680	A1370
Top Deck		911	0%	10	29-Sep-25	30-Apr-29		
Phase 1		182	0%	554	29-Sep-25	16-Jun-26		
A1350	Set Traffic Control	10	0%	484	29-Sep-25	10-Oct-25	A2850, A2730	A1360
A1360	Remove Deck Spans 1 - 18 North Half	20	0%	484	13-Oct-25	07-Nov-25	A1350	A1370
A1370	Form & Reinforce Deck North Half	30	0%	397	17-Mar-26	27-Apr-26	A1360, A3140	A1380
A1380	Pour Deck North Half	15	0%	397	28-Apr-26	18-May-26	A1370	A1390
A1390	Pour North Sidewalk & Parapet	15	0%	397	19-May-26	09-Jun-26	A1380	A1910, A1020, A
A2480	Miscellaneous/Striping, etc	5	0%	554	10-Jun-26	16-Jun-26	A1390	A1020
Phase 2		165	0%	10	06-Sep-28	30-Apr-29		
A2860	Remove Deck Spans 1 - 18 South Half	20	0%	10	06-Sep-28	03-Oct-28	A1020	A2870
A2870	Form & Reinforce Deck South Half	110	0%	10	04-Oct-28	12-Mar-29	A2860	A2880
A2880	Pour Deck South Half	15	0%	10	13-Mar-29	02-Apr-29	A2870	A2890
A2890	Pour South Sidewalk & Parapet	15	0%	10	03-Apr-29	23-Apr-29	A2880	A2900
A2900	Miscellaneous/Striping, etc	5	0%	10	24-Apr-29	30-Apr-29	A2890	A1035
River Spans		859	0%	42	26-Mar-25	10-Aug-28		
Demolition		702	0%	10	26-Mar-25	30-Dec-27		
A1590	Shore West Counterweight For Span Demo	20	0%	49	26-Mar-25	22-Apr-25	A1010, A1170	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	85	14-Jan-26	10-Feb-26	A1620, A1190	A1630
A1620	Demo West Bascule Span	20	0%	49	23-Apr-25	20-May-25	A1590	A1595, A1200, A



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Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1630	Demo East Bascule Span	20	0%	85	11-Feb-26	10-Mar-26	A1595	A1210
A1670	Demo Ex Pier 4	40	0%	173	22-Sep-26	16-Nov-26	A2030, A1225	A1820, A1235
A1675	Demo Portion of Truss & Deck Between New Pier 4 & (	25	0%	10	23-Nov-27	30-Dec-27	A1830	A1920
Substructure		617	0%	177	26-Aug-25	01-Feb-28		
A1680	Pier 1 Shafts	100	0%	142	26-Aug-25	19-Jan-26	A1195	A1685, A3140
A1685	FRP Pier 1 Shaft Cap	60	0%	142	20-Jan-26	13-Apr-26	A1680	A1710, A2455, A
A1700	Pier 2 Shafts	180	0%	39	20-Oct-25	06-Jul-26	A1205	A1710, A1760
A1710	FRP Pier 2 Shaft Cap	60	0%	84	07-Jul-26	29-Sep-26	A1700, A1685	A1720, A1770
A1720	Reinforce Pier 2 Walls	60	0%	84	30-Sep-26	24-Dec-26	A1710	A1730, A1780, A
A1730	Install Pier 2 Mechanical	60	0%	84	28-Dec-26	22-Mar-27	A1720	A1790, A1860
A1760	Pier 3 Shafts	180	0%	0	31-Aug-26	14-May-27	A1700, A1215	A1770, A1820
A1770	FRP Pier 3 Shaft Cap	60	0%	0	17-May-27	10-Aug-27	A1760, A1710	A1780
A1780	Reinforce Pier 3 Walls	60	0%	0	11-Aug-27	03-Nov-27	A1770, A1720	A1790, A2470
A1790	Install Pier 3 Mechanical	60	0%	0	04-Nov-27	01-Feb-28	A1780, A1730	A1940
A1820	New Pier 4 Shafts	30	0%	13	10-Jul-27	13-Aug-27	A1670, A1760	A1825, A1835
A1825	FRP New Pier 4 Columns	30	0%	10	16-Aug-27	27-Sep-27	A1820	A1830
A1830	FRP New Pier 4 Cap	40	0%	10	28-Sep-27	22-Nov-27	A1825	A1920, A1675
A1835	Jet Grouting Pier 4	40	0%	89	14-Aug-27	29-Sep-27	A1820	
Superstructure		414	0%	0	28-Dec-26	10-Aug-28		
A1850	Form & Reinforce Spans 17 through 20	40	0%	139	28-Dec-26	22-Feb-27	A1685, A1720	A1880
A1860	FRP West Bascule Span Offsite	30	0%	84	23-Mar-27	03-May-27	A1730	A1870
A1870	Float In and Place West Bascule Span	5	0%	84	04-May-27	10-May-27	A1860	A1880
A1880	Pour Spans 17 through 20 (Incl Cure)	30	0%	84	11-May-27	22-Jun-27	A1870, A1850	A1890
A1890	FRP Sidewalk Spans 17 through West Bascule	20	0%	84	23-Jun-27	21-Jul-27	A1880	A1900
A1900	FRP Barrier Spans 17 through West Bascule	30	0%	84	22-Jul-27	01-Sep-27	A1890	A1910
A1910	West Bascule Testing	20	0%	84	02-Sep-27	30-Sep-27	A1900, A1390	A1940, A2420
A1920	Erect Girders Spans 21 to 24, Incl over I-5, I-84, & RR	4	0%	4	01-Jan-28	09-Jan-28	A1830, A1675, ,	A1930
A1930	Form & Reinforce Spans 21 to 24	40	0%	12	10-Jan-28	03-Mar-28	A1920	A1960
A1940	FRP East Bascule Span Offsite	30	0%	0	02-Feb-28	14-Mar-28	A1910, A1790	A1950
A1950	Float In and Place East Bascule Span	5	0%	0	15-Mar-28	21-Mar-28	A1940	A1960
A1960	Pour Spans 21 through 24 (Incl Cure)	30	0%	0	22-Mar-28*	02-May-28	A1950, A1930	A1970
A1970	FRP Sidewalk Spans 24 through East Bascule	20	0%	0	03-May-28	31-May-28	A1960	A1980
A1980	FRP Barrier Spans 24 through East Bascule	30	0%	0	01-Jun-28	13-Jul-28	A1970	A1990, A2440
A1990	East Bascule Testing	20	0%	0	14-Jul-28	10-Aug-28	A1980, A2200	A1030
East Approach		1048	0%	0	29-Mar-25	14-May-29		
Phase 1		283	0%	580	29-Mar-25	08-May-26		
Demolition		50	0%	499	29-Mar-25	09-Jun-25		
A2000	Demo Superstructure over I-5 & I-84	8	0%	146	29-Mar-25	20-Apr-25	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	499	21-Apr-25	02-May-25	A2000	A2020
A2020	Demo Substructure Bents 21 through 24	10	0%	499	05-May-25	16-May-25	A2010	A2500, A2030
A2030	Demo Remainder of East Approach, North Half	15	0%	499	19-May-25	09-Jun-25	A2020	A1670, A2170, A
Substructure		135	0%	581	19-May-25	26-Nov-25		
A2495	Jet Grouting Bent 22	20	0%	636	16-Jul-25	12-Aug-25	A2930	A2955
A2500	Bent 23 Shafts	20	0%	539	19-May-25	16-Jun-25	A2820, A2020	A2910, A2930
A2910	FRP Bent 23 Columns	15	0%	539	17-Jun-25	08-Jul-25	A2500	A2920
A2920	FRP Bent 23 Cap	20	0%	539	09-Jul-25	05-Aug-25	A2910	A2950
A2930	Bent 24 Shafts	20	0%	539	17-Jun-25	15-Jul-25	A2500	A2940, A2960, A
A2940	FRP Bent 24 Columns	15	0%	539	16-Jul-25	05-Aug-25	A2930	A2950
A2950	FRP Bent 24 Cap	20	0%	539	06-Aug-25	03-Sep-25	A2940, A2920	A2980
A2955	Jet Grouting Bent 24/25	10	0%	636	13-Aug-25	26-Aug-25	A2495	A2995
A2960	Bent 25 Shafts	15	0%	549	16-Jul-25	05-Aug-25	A2930	A2970, A2990
A2970	FRP Bent 25 Columns	10	0%	549	06-Aug-25	19-Aug-25	A2960	A2980
A2980	FRP Bent 25 Cap	20	0%	539	04-Sep-25	01-Oct-25	A2970, A2950	A3010
A2990	Bent 26 Shafts	15	0%	554	06-Aug-25	26-Aug-25	A2960	A3000, A3020, A
A2995	Jet Grouting Bent 26	10	0%	636	27-Aug-25	10-Sep-25	A2955, A2990	A2170
A3000	FRP Bent 26 Columns	10	0%	554	27-Aug-25	10-Sep-25	A2990	A3010
A3010	FRP Bent 26 Cap	20	0%	539	02-Oct-25	29-Oct-25	A3000, A2980	A3040, A3050
A3020	Bent 27 Shafts	15	0%	559	27-Aug-25	17-Sep-25	A2990	A3030

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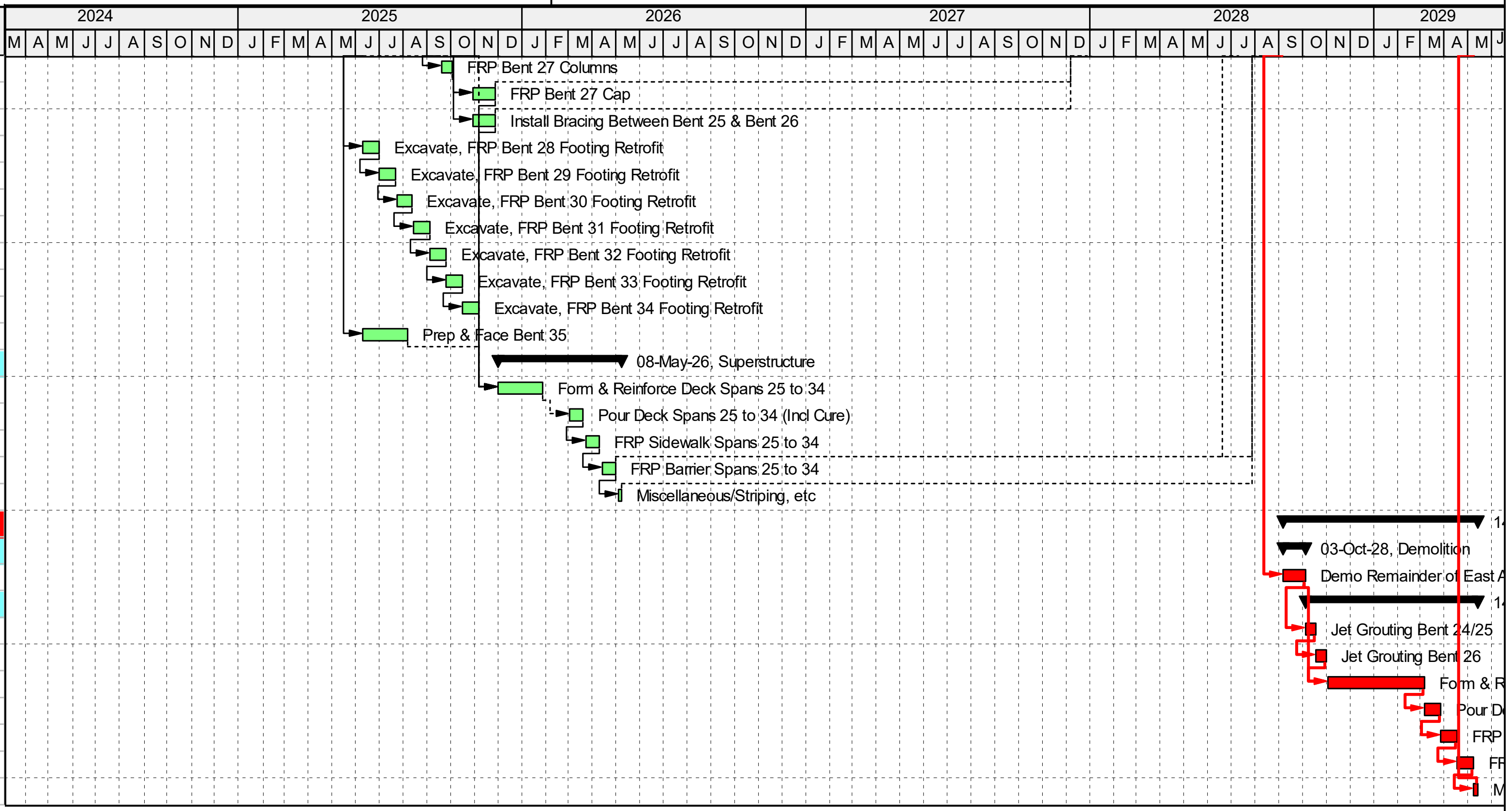
Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A3030	FRP Bent 27 Columns	10	0%	559	18-Sep-25	01-Oct-25	A3020	A3040
A3040	FRP Bent 27 Cap	20	0%	539	30-Oct-25	26-Nov-25	A3030, A3010	A1920, A2170
A3050	Install Bracing Between Bent 25 & Bent 26	20	0%	539	30-Oct-25	26-Nov-25	A3010	A1920, A2170
A3060	Excavate, FRP Bent 28 Footing Retrofit	15	0%	596	10-Jun-25	30-Jun-25	A2030	A3070
A3070	Excavate, FRP Bent 29 Footing Retrofit	15	0%	596	01-Jul-25	22-Jul-25	A3060	A3080
A3080	Excavate, FRP Bent 30 Footing Retrofit	15	0%	596	23-Jul-25	12-Aug-25	A3070	A3090
A3090	Excavate, FRP Bent 31 Footing Retrofit	15	0%	596	13-Aug-25	03-Sep-25	A3080	A3100
A3100	Excavate, FRP Bent 32 Footing Retrofit	15	0%	596	04-Sep-25	24-Sep-25	A3090	A3110
A3110	Excavate, FRP Bent 33 Footing Retrofit	15	0%	596	25-Sep-25	15-Oct-25	A3100	A3120
A3120	Excavate, FRP Bent 34 Footing Retrofit	15	0%	596	16-Oct-25	05-Nov-25	A3110	A2170
A3130	Prep & Face Bent 35	40	0%	661	10-Jun-25	05-Aug-25	A2030	A2170
Superstructure		113	0%	580	01-Dec-25	08-May-26		
A2170	Form & Reinforce Deck Spans 25 to 34	40	0%	581	01-Dec-25	27-Jan-26	A3040, A3050,	A2180
A2180	Pour Deck Spans 25 to 34 (Incl Cure)	15	0%	558	02-Mar-26*	20-Mar-26	A2170	A2190
A2190	FRP Sidewalk Spans 25 to 34	15	0%	558	23-Mar-26	10-Apr-26	A2180	A2200
A2200	FRP Barrier Spans 25 to 34	15	0%	558	13-Apr-26	01-May-26	A2190	A1990, A1020,
A2490	Miscellaneous/Striping, etc	5	0%	580	04-May-26	08-May-26	A2200	A1020
Phase 2		175	0%	0	06-Sep-28	14-May-29		
Demolition		20	0%	0	06-Sep-28	03-Oct-28		
A2210	Demo Remainder of East Approach, South Half	20	0%	0	06-Sep-28	03-Oct-28	A1020	A2350, A2345
Superstructure		155	0%	0	04-Oct-28	14-May-29		
A2345	Jet Grouting Bent 24/25	10	0%	0	04-Oct-28	17-Oct-28	A2210	A2346
A2346	Jet Grouting Bent 26	10	0%	0	18-Oct-28	31-Oct-28	A2345	A2350
A2350	Form & Reinforce Deck Spans 12 to 15	85	0%	0	01-Nov-28	05-Mar-29	A2210, A2346	A2360
A2360	Pour Deck Spans 12 to 15 (Incl Cure)	15	0%	0	06-Mar-29	26-Mar-29	A2350	A2370
A2370	FRP Sidewalk Spans 12 to 15	15	0%	0	27-Mar-29	16-Apr-29	A2360	A2380
A2380	FRP Barrier Spans 12 to 15	15	0%	0	17-Apr-29	07-May-29	A2370	A2510
A2510	Miscellaneous/Striping, etc	5	0%	0	08-May-29	14-May-29	A2380	A1035



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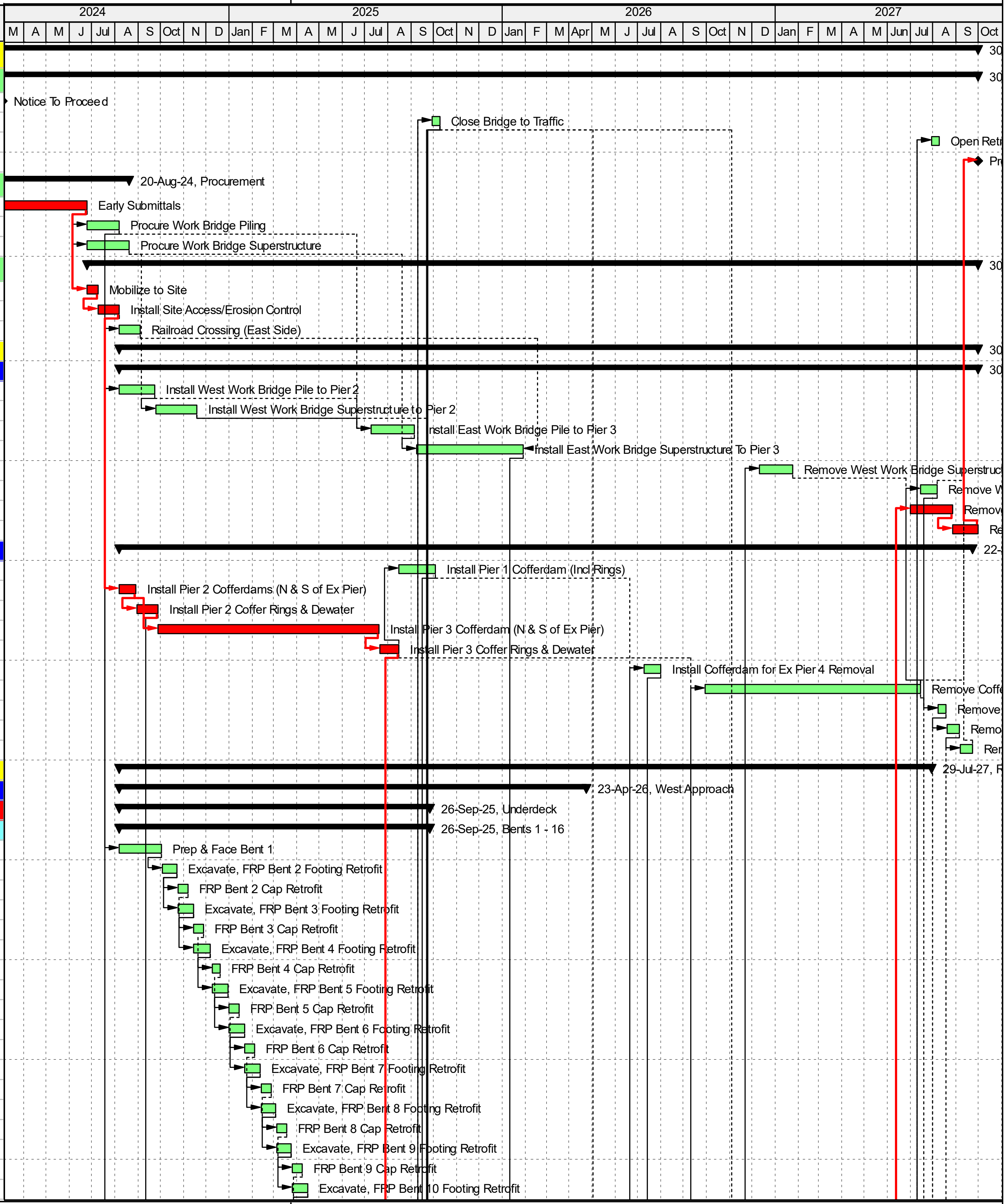
APPENDIX G-2

Enhanced Retrofit Schedule

NO Temporary Bridge

EQRB NEPA Retrofit (No Detour Bridge) | Classic Schedule Layout | 18-Nov-19 11:15

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Retrofit (No Detour Bridge)		910	0%	0	04-Mar-24	30-Sep-27		
General/Milestones		910	0%	0	04-Mar-24	30-Sep-27		
A1000	Notice To Proceed	0	0%	0	04-Mar-24			A1050
A1020	Close Bridge to Traffic	10	0%	86	29-Sep-25	10-Oct-25	A2730, A2850	A1360, A2000, A
A1030	Open Retrofitted Bridge to Traffic	7	0%	0	30-Jul-27	09-Aug-27*	A1990, A2480, ,	
A1040	Project Completion	0	0%	0		30-Sep-27*	A2470, A2430, ,	
Procurement		120	0%	207	04-Mar-24	20-Aug-24		
A1050	Early Submittals	80	0%	0	04-Mar-24	24-Jun-24	A1000	A1060, A1070, A
A1060	Procure Work Bridge Piling	30	0%	13	25-Jun-24	06-Aug-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	207	25-Jun-24	20-Aug-24	A1050	A1170, A1190
Construction		830	0%	0	25-Jun-24	30-Sep-27		
A1090	Mobilize to Site	10	0%	0	25-Jun-24	09-Jul-24	A1050	A1100
A1100	Install Site Access/Erosion Control	20	0%	0	10-Jul-24	06-Aug-24	A1090	A1110, A1160, A
A1110	Railroad Crossing (East Side)	20	0%	501	07-Aug-24	04-Sep-24	A1100	A1190
Temporary Works		800	0%	0	07-Aug-24	30-Sep-27		
Work Bridges		800	0%	0	07-Aug-24	30-Sep-27		
A1160	Install West Work Bridge Pile to Pier 2	40	0%	15	07-Aug-24	23-Sep-24	A1100, A1060	A1170, A1180
A1170	Install West Work Bridge Superstructure to Pier 2	40	0%	184	24-Sep-24	18-Nov-24	A1160, A1070	A1590, A1180
A1180	Install East Work Bridge Pile to Pier 3	50	0%	28	10-Jul-25	05-Sep-25	A1060, A1160, ,	A1190
A1190	Install East Work Bridge Superstructure To Pier 3	100	0%	146	08-Sep-25	29-Jan-26	A1180, A1070, ,	A1595
A2420	Remove West Work Bridge Superstructure	30	0%	126	11-Dec-26	25-Jan-27	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	7	15-Jul-27	06-Aug-27	A2420, A1235	A1040, A2455
A2440	Remove East Work Bridge Superstructure	40	0%	0	01-Jul-27	26-Aug-27	A1980	A2450
A2450	Remove East Work Bridge Piling	30	0%	0	27-Aug-27	30-Sep-27	A2440	A1040
Cofferdams		794	0%	6	07-Aug-24	22-Sep-27		
A1195	Install Pier 1 Cofferdam (Incl Rings)	40	0%	6	16-Aug-25	03-Oct-25	A1215	A1225, A1680
A1200	Install Pier 2 Cofferdams (N & S of Ex Pier)	20	0%	0	07-Aug-24	29-Aug-24	A1100	A1205, A1210
A1205	Install Pier 2 Coffer Rings & Dewater	20	0%	0	30-Aug-24	27-Sep-24	A1200	A1700, A1210
A1210	Install Pier 3 Cofferdam (N & S of Ex Pier)	20	0%	0	28-Sep-24	19-Jul-25	A1200, A1205	A1215
A1215	Install Pier 3 Coffer Rings & Dewater	20	0%	0	21-Jul-25	15-Aug-25	A1210	A1235, A1760, A
A1225	Install Cofferdam for Ex Pier 4 Removal	20	0%	7	10-Jul-26	01-Aug-26	A2000, A1195	A1670
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	7	29-Sep-26	14-Jul-27	A1670, A1215	A1040, A2455, A
A2455	Remove Pier 1 Cofferdam	10	0%	7	07-Aug-27	18-Aug-27	A1235, A1685, ,	A2460
A2460	Remove Pier 2 Cofferdam	15	0%	7	19-Aug-27	04-Sep-27	A1720, A2455	A2470
A2470	Remove Pier 3 Cofferdam	15	0%	7	06-Sep-27	22-Sep-27	A1780, A2460	A1040
Retrofit Bridge		756	0%	0	07-Aug-24	29-Jul-27		
West Approach		435	0%	321	07-Aug-24	23-Apr-26		
Underdeck		290	0%	211	07-Aug-24	26-Sep-25		
Bents 1 - 16		290	0%	86	07-Aug-24	26-Sep-25		
A1230	Prep & Face Bent 1	40	0%	86	07-Aug-24	02-Oct-24	A1100	A1240
A1240	Excavate, FRP Bent 2 Footing Retrofit	15	0%	86	03-Oct-24	23-Oct-24	A1230	A1250, A1260
A1250	FRP Bent 2 Cap Retrofit	10	0%	171	24-Oct-24	06-Nov-24	A1240	A1280
A1260	Excavate, FRP Bent 3 Footing Retrofit	15	0%	86	24-Oct-24	13-Nov-24	A1240	A1280, A1300
A1280	FRP Bent 3 Cap Retrofit	10	0%	166	14-Nov-24	27-Nov-24	A1260, A1250	A1320
A1300	Excavate, FRP Bent 4 Footing Retrofit	15	0%	86	14-Nov-24	06-Dec-24	A1260	A1320, A1340
A1320	FRP Bent 4 Cap Retrofit	10	0%	161	09-Dec-24	20-Dec-24	A1300, A1280	A1400
A1340	Excavate, FRP Bent 5 Footing Retrofit	15	0%	86	09-Dec-24	30-Dec-24	A1300	A1400, A2520
A1400	FRP Bent 5 Cap Retrofit	10	0%	156	31-Dec-24	14-Jan-25	A1320, A1340	A2530
A2520	Excavate, FRP Bent 6 Footing Retrofit	15	0%	86	31-Dec-24	21-Jan-25	A1340	A2530, A2540
A2530	FRP Bent 6 Cap Retrofit	10	0%	151	22-Jan-25	04-Feb-25	A2520, A1400	A2550
A2540	Excavate, FRP Bent 7 Footing Retrofit	15	0%	86	22-Jan-25	11-Feb-25	A2520	A2550, A2560
A2550	FRP Bent 7 Cap Retrofit	10	0%	146	12-Feb-25	25-Feb-25	A2540, A2530	A2570
A2560	Excavate, FRP Bent 8 Footing Retrofit	15	0%	86	12-Feb-25	04-Mar-25	A2540	A2570, A2580
A2570	FRP Bent 8 Cap Retrofit	10	0%	141	05-Mar-25	18-Mar-25	A2560, A2550	A2590
A2580	Excavate, FRP Bent 9 Footing Retrofit	15	0%	86	05-Mar-25	25-Mar-25	A2560	A2590, A2600
A2590	FRP Bent 9 Cap Retrofit	10	0%	136	26-Mar-25	08-Apr-25	A2570, A2580	A2610
A2600	Excavate, FRP Bent 10 Footing Retrofit	15	0%	86	26-Mar-25	15-Apr-25	A2580	A2610, A2620



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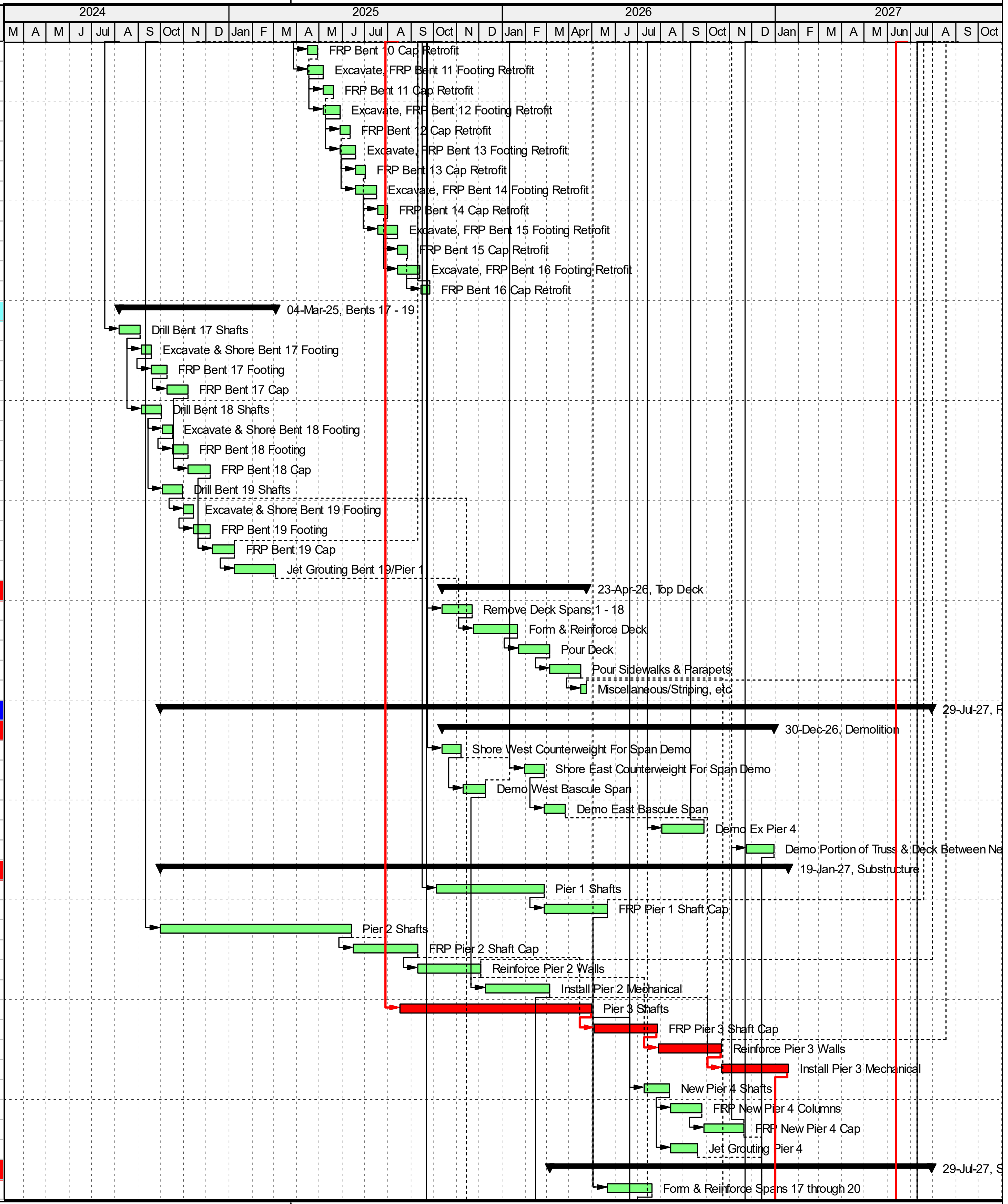
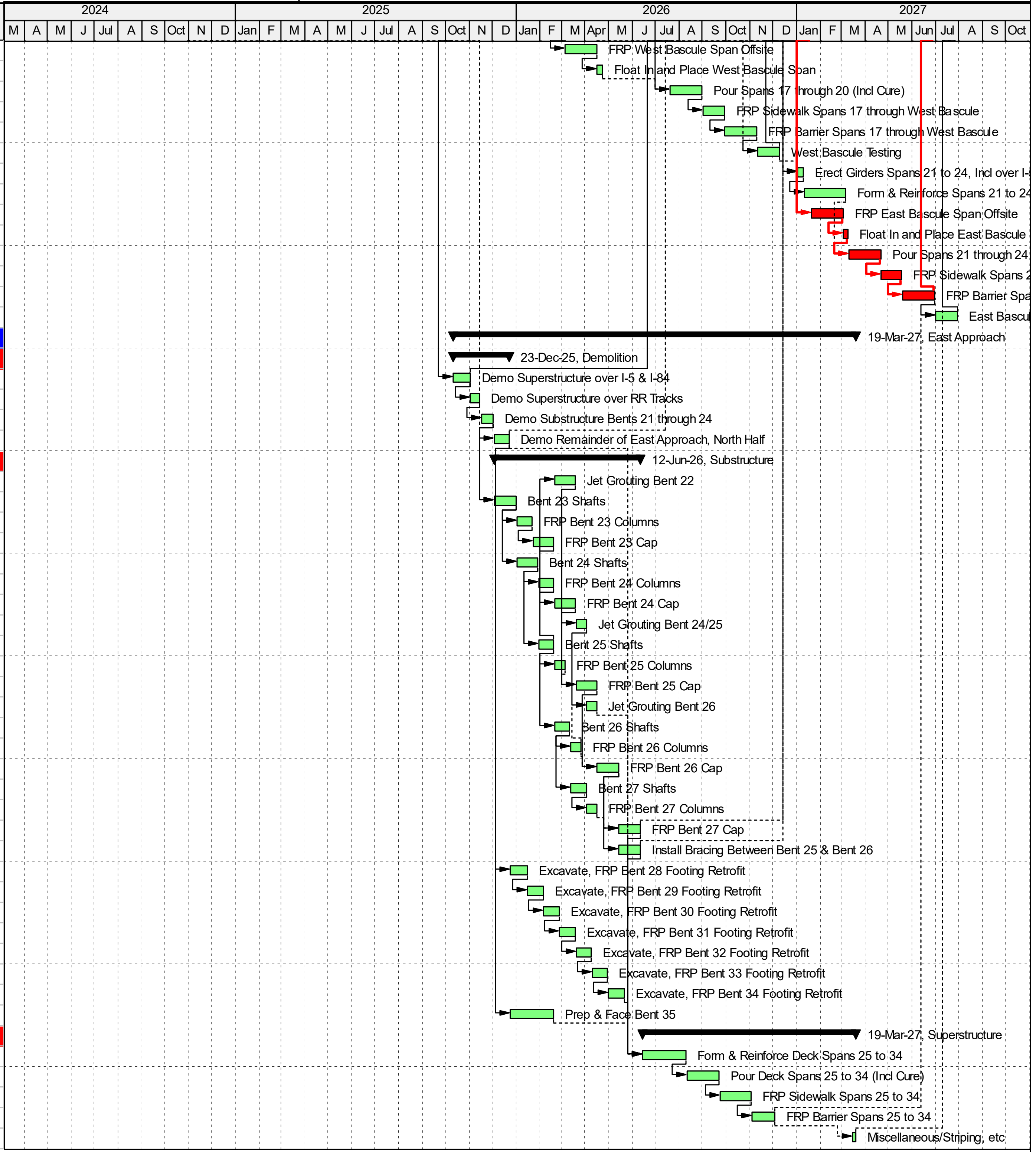
Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A2610	FRP Bent 10 Cap Retrofit	10	0%	131	16-Apr-25	29-Apr-25	A2600, A2590	A2630
A2620	Excavate, FRP Bent 11 Footing Retrofit	15	0%	86	16-Apr-25	06-May-25	A2600	A2630, A2640
A2630	FRP Bent 11 Cap Retrofit	10	0%	126	07-May-25	20-May-25	A2620, A2610	A2650
A2640	Excavate, FRP Bent 12 Footing Retrofit	15	0%	86	07-May-25	28-May-25	A2620	A2650, A2660
A2650	FRP Bent 12 Cap Retrofit	10	0%	121	29-May-25	11-Jun-25	A2640, A2630	A2670
A2660	Excavate, FRP Bent 13 Footing Retrofit	15	0%	86	29-May-25	18-Jun-25	A2640	A2670, A2680
A2670	FRP Bent 13 Cap Retrofit	10	0%	116	19-Jun-25	02-Jul-25	A2650, A2660	A2690
A2680	Excavate, FRP Bent 14 Footing Retrofit	20	0%	86	19-Jun-25	17-Jul-25	A2660	A2690, A2700
A2690	FRP Bent 14 Cap Retrofit	10	0%	106	18-Jul-25	31-Jul-25	A2680, A2670	A2710
A2700	Excavate, FRP Bent 15 Footing Retrofit	20	0%	86	18-Jul-25	14-Aug-25	A2680	A2710, A2720
A2710	FRP Bent 15 Cap Retrofit	10	0%	96	15-Aug-25	28-Aug-25	A2700, A2690	A2730
A2720	Excavate, FRP Bent 16 Footing Retrofit	20	0%	86	15-Aug-25	12-Sep-25	A2700	A2730
A2730	FRP Bent 16 Cap Retrofit	10	0%	86	15-Sep-25	26-Sep-25	A2720, A2710	A1020
Bents 17 - 19		145	0%	356	07-Aug-24	04-Mar-25		
A2740	Drill Bent 17 Shafts	20	0%	271	07-Aug-24	04-Sep-24	A1100	A2750, A2780
A2750	Excavate & Shore Bent 17 Footing	10	0%	271	05-Sep-24	18-Sep-24	A2740	A2760
A2760	FRP Bent 17 Footing	15	0%	271	19-Sep-24	09-Oct-24	A2750	A2770
A2770	FRP Bent 17 Cap	20	0%	271	10-Oct-24	06-Nov-24	A2760	A2810
A2780	Drill Bent 18 Shafts	20	0%	271	05-Sep-24	02-Oct-24	A2740	A2790, A2820
A2790	Excavate & Shore Bent 18 Footing	10	0%	271	03-Oct-24	16-Oct-24	A2780	A2800
A2800	FRP Bent 18 Footing	15	0%	271	17-Oct-24	06-Nov-24	A2790	A2810
A2810	FRP Bent 18 Cap	20	0%	271	07-Nov-24	06-Dec-24	A2800, A2770	A2850
A2820	Drill Bent 19 Shafts	20	0%	271	03-Oct-24	30-Oct-24	A2780	A2830, A2500
A2830	Excavate & Shore Bent 19 Footing	10	0%	271	31-Oct-24	13-Nov-24	A2820	A2840
A2840	FRP Bent 19 Footing	15	0%	271	14-Nov-24	06-Dec-24	A2830	A2850
A2850	FRP Bent 19 Cap	20	0%	271	09-Dec-24	07-Jan-25	A2840, A2810	A1020, A2855
A2855	Jet Grouting Bent 19/Pier 1	40	0%	356	08-Jan-25	04-Mar-25	A2850	A1370
Top Deck		135	0%	321	13-Oct-25	23-Apr-26		
A1360	Remove Deck Spans 1 - 18	30	0%	171	13-Oct-25	21-Nov-25	A1020	A1370
A1370	Form & Reinforce Deck	40	0%	171	24-Nov-25	22-Jan-26	A1360, A2855	A1380
A1380	Pour Deck	30	0%	171	23-Jan-26	05-Mar-26	A1370	A1390
A1390	Pour Sidewalks & Parapets	30	0%	171	06-Mar-26	16-Apr-26	A1380	A1910, A2480
A2480	Miscellaneous/Striping, etc	5	0%	321	17-Apr-26	23-Apr-26	A1390	A1030
River Spans		719	0%	0	30-Sep-24	29-Jul-27		
Demolition		308	0%	1	13-Oct-25	30-Dec-26		
A1590	Shore West Counterweight For Span Demo	20	0%	86	13-Oct-25	07-Nov-25	A1170, A1020	A1620, A1595
A1595	Shore East Counterweight For Span Demo	20	0%	146	30-Jan-26	26-Feb-26	A1190, A1590,	A1630
A1620	Demo West Bascule Span	20	0%	86	10-Nov-25	09-Dec-25	A1590	A1730, A1595
A1630	Demo East Bascule Span	20	0%	146	27-Feb-26	26-Mar-26	A1595	A1790
A1670	Demo Ex Pier 4	40	0%	6	03-Aug-26	28-Sep-26	A2030, A1225	A1235
A1675	Demo Portion of Truss & Deck Between New Pier 4 & Old Pier 4	25	0%	1	23-Nov-26	30-Dec-26	A1830, A1020	A1920
Substructure		584	0%	0	30-Sep-24	19-Jan-27		
A1680	Pier 1 Shafts	100	0%	26	06-Oct-25	26-Feb-26	A1195	A1685
A1685	FRP Pier 1 Shaft Cap	60	0%	26	27-Feb-26	21-May-26	A1680	A2455, A1850
A1700	Pier 2 Shafts	180	0%	44	30-Sep-24	13-Jun-25	A1205	A1710, A1760
A1710	FRP Pier 2 Shaft Cap	60	0%	89	16-Jun-25	09-Sep-25	A1700	A1720, A1770
A1720	Reinforce Pier 2 Walls	60	0%	89	10-Sep-25	04-Dec-25	A1710	A1730, A1780,
A1730	Install Pier 2 Mechanical	60	0%	86	10-Dec-25	05-Mar-26	A1720, A1620	A1790, A1860
A1760	Pier 3 Shafts	180	0%	0	18-Aug-25	01-May-26	A1700, A1215	A1770, A1820
A1770	FRP Pier 3 Shaft Cap	60	0%	0	04-May-26	28-Jul-26	A1760, A1710	A1780
A1780	Reinforce Pier 3 Walls	60	0%	0	29-Jul-26	21-Oct-26	A1770, A1720	A1790, A2470
A1790	Install Pier 3 Mechanical	60	0%	0	22-Oct-26	19-Jan-27	A1780, A1730,	A1940
A1820	New Pier 4 Shafts	30	0%	2	10-Jul-26	13-Aug-26	A1760	A1825, A1840
A1825	FRP New Pier 4 Columns	30	0%	1	14-Aug-26	25-Sep-26	A1820	A1830
A1830	FRP New Pier 4 Cap	40	0%	1	28-Sep-26	20-Nov-26	A1825	A1920, A1675
A1840	Jet Grouting Pier 4	32	0%	18	14-Aug-26	19-Sep-26	A1820	A1920
Superstructure		356	0%	0	06-Mar-26	29-Jul-27		
A1850	Form & Reinforce Spans 17 through 20	40	0%	26	22-May-26	20-Jul-26	A1685, A1720,	A1880



🟦 Actual Work
🟩 Remaining Work
🟥 Critical Remaining Work
▬ Summary
◆ ◆ Milestone

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1860	FRP West Bascule Span Offsite	30	0%	86	06-Mar-26	16-Apr-26	A1730	A1870
A1870	Float In and Place West Bascule Span	5	0%	86	17-Apr-26	23-Apr-26	A1860	A1880
A1880	Pour Spans 17 through 20 (Incl Cure)	30	0%	26	21-Jul-26	31-Aug-26	A1870, A1850	A1890
A1890	FRP Sidewalk Spans 17 through West Bascule	20	0%	26	01-Sep-26	29-Sep-26	A1880	A1900
A1900	FRP Barrier Spans 17 through West Bascule	30	0%	26	30-Sep-26	10-Nov-26	A1890	A1910
A1910	West Bascule Testing	20	0%	26	11-Nov-26	10-Dec-26	A1900, A1390	A1940, A2420
A1920	Erect Girders Spans 21 to 24, Incl over I-5, I-84, & RR	4	0%	0	02-Jan-27	10-Jan-27	A1830, A1675,	A1930
A1930	Form & Reinforce Spans 21 to 24	40	0%	2	11-Jan-27	05-Mar-27	A1920	A1960
A1940	FRP East Bascule Span Offsite	30	0%	0	20-Jan-27	02-Mar-27	A1910, A1790	A1950
A1950	Float In and Place East Bascule Span	5	0%	0	03-Mar-27	09-Mar-27	A1940	A1960
A1960	Pour Spans 21 through 24 (Incl Cure)	30	0%	0	10-Mar-27	20-Apr-27	A1950, A1930	A1970
A1970	FRP Sidewalk Spans 24 through East Bascule	20	0%	0	21-Apr-27	18-May-27	A1960	A1980
A1980	FRP Barrier Spans 24 through East Bascule	30	0%	0	19-May-27	30-Jun-27	A1970	A1990, A2440
A1990	East Bascule Testing	20	0%	0	01-Jul-27	29-Jul-27	A1980, A2200	A1030
East Approach		364	0%	92	11-Oct-25	19-Mar-27		
Demolition		50	0%	160	11-Oct-25	23-Dec-25		
A2000	Demo Superstructure over I-5 & I-84	8	0%	56	11-Oct-25	02-Nov-25	A1020	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	139	03-Nov-25	14-Nov-25	A2000	A2020
A2020	Demo Substructure Bents 21 through 24	10	0%	139	17-Nov-25	02-Dec-25	A2010	A2500, A2030
A2030	Demo Remainder of East Approach, North Half	15	0%	160	03-Dec-25	23-Dec-25	A2020	A1670, A2170, A
Substructure		135	0%	146	03-Dec-25	12-Jun-26		
A2495	Jet Grouting Bent 22	20	0%	186	20-Feb-26	19-Mar-26	A2960	A2955
A2500	Bent 23 Shafts	20	0%	139	03-Dec-25	31-Dec-25	A2820, A2020	A2910, A2930
A2910	FRP Bent 23 Columns	15	0%	139	02-Jan-26	22-Jan-26	A2500	A2920
A2920	FRP Bent 23 Cap	20	0%	139	23-Jan-26	19-Feb-26	A2910	A2950
A2930	Bent 24 Shafts	20	0%	139	02-Jan-26	29-Jan-26	A2500	A2940, A2960
A2940	FRP Bent 24 Columns	15	0%	139	30-Jan-26	19-Feb-26	A2930	A2950
A2950	FRP Bent 24 Cap	20	0%	139	20-Feb-26	19-Mar-26	A2940, A2920	A2980
A2955	Jet Grouting Bent 24/25	10	0%	186	20-Mar-26	02-Apr-26	A2495	A2985
A2960	Bent 25 Shafts	15	0%	149	30-Jan-26	19-Feb-26	A2930	A2970, A2990, A
A2970	FRP Bent 25 Columns	10	0%	149	20-Feb-26	05-Mar-26	A2960	A2980
A2980	FRP Bent 25 Cap	20	0%	139	20-Mar-26	16-Apr-26	A2970, A2950	A3010
A2985	Jet Grouting Bent 26	10	0%	186	03-Apr-26	16-Apr-26	A2955, A3000	A2170
A2990	Bent 26 Shafts	15	0%	154	20-Feb-26	12-Mar-26	A2960	A3000, A3020
A3000	FRP Bent 26 Columns	10	0%	154	13-Mar-26	26-Mar-26	A2990	A3010, A2985
A3010	FRP Bent 26 Cap	20	0%	139	17-Apr-26	14-May-26	A3000, A2980	A3040, A3050
A3020	Bent 27 Shafts	15	0%	159	13-Mar-26	02-Apr-26	A2990	A3030
A3030	FRP Bent 27 Columns	10	0%	159	03-Apr-26	16-Apr-26	A3020	A3040
A3040	FRP Bent 27 Cap	20	0%	139	15-May-26	12-Jun-26	A3030, A3010	A1920, A2170
A3050	Install Bracing Between Bent 25 & Bent 26	20	0%	139	15-May-26	12-Jun-26	A3010	A1920, A2170
A3060	Excavate, FRP Bent 28 Footing Retrofit	15	0%	161	24-Dec-25	15-Jan-26	A2030	A3070
A3070	Excavate, FRP Bent 29 Footing Retrofit	15	0%	161	16-Jan-26	05-Feb-26	A3060	A3080
A3080	Excavate, FRP Bent 30 Footing Retrofit	15	0%	161	06-Feb-26	26-Feb-26	A3070	A3090
A3090	Excavate, FRP Bent 31 Footing Retrofit	15	0%	161	27-Feb-26	19-Mar-26	A3080	A3100
A3100	Excavate, FRP Bent 32 Footing Retrofit	15	0%	161	20-Mar-26	09-Apr-26	A3090	A3110
A3110	Excavate, FRP Bent 33 Footing Retrofit	15	0%	161	10-Apr-26	30-Apr-26	A3100	A3120
A3120	Excavate, FRP Bent 34 Footing Retrofit	15	0%	161	01-May-26	21-May-26	A3110	A2170
A3130	Prep & Face Bent 35	40	0%	226	24-Dec-25	19-Feb-26	A2030	A2170
Superstructure		194	0%	92	15-Jun-26	19-Mar-27		
A2170	Form & Reinforce Deck Spans 25 to 34	40	0%	146	15-Jun-26	10-Aug-26	A3040, A3050,	A2180
A2180	Pour Deck Spans 25 to 34 (Incl Cure)	30	0%	146	11-Aug-26	22-Sep-26	A2170	A2190
A2190	FRP Sidewalk Spans 25 to 34	30	0%	146	23-Sep-26	03-Nov-26	A2180	A2200
A2200	FRP Barrier Spans 25 to 34	20	0%	146	04-Nov-26	03-Dec-26	A2190	A1990, A2490
A2490	Miscellaneous/Striping, etc	5	0%	92	15-Mar-27*	19-Mar-27	A2200	A1030



🟦 Actual Work 🟥 Critical Remaining Work ▬ Summary

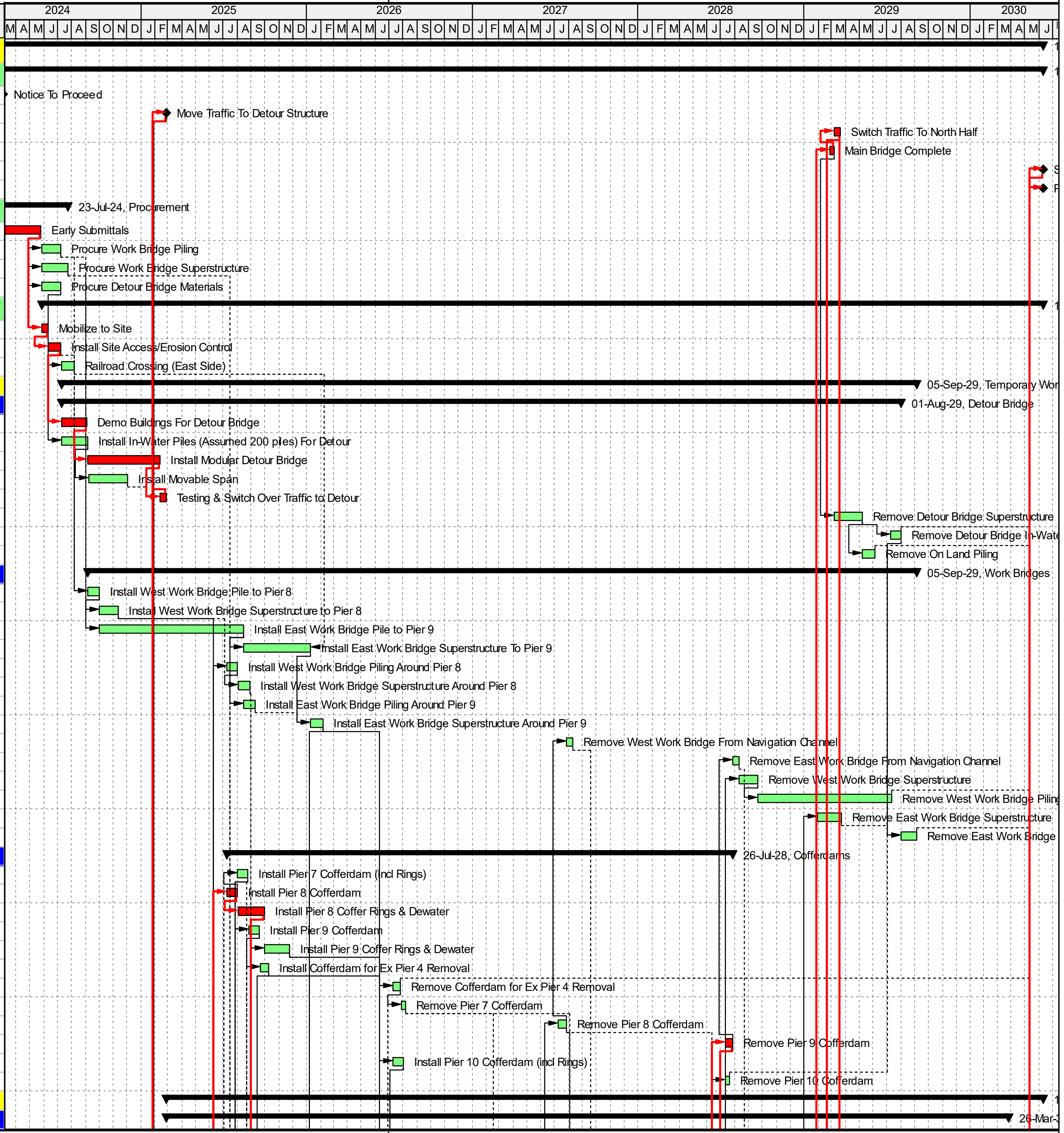
🟩 Remaining Work ◆ ◆ Milestone

TASK filter: All Activities

APPENDIX G-3

Replacement In-Kind Schedule with Conventional Approaches with Temporary Bridge

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Replacement In-Kind (With Detour Bridge)		1602	0%	105	04-Mar-24	11-Jun-30		
General/Milestones		1602	0%	0	04-Mar-24	11-Jun-30		
A1000	Notice To Proceed	0	0%	8	04-Mar-24			A1050
A1010	Move Traffic To Detour Structure	0	0%	63	26-Feb-25		A1150	A1220, A1590,
A1020	Switch Traffic To North Half	10	0%	0	07-Mar-29	20-Mar-29	A1030	A1410, A2210
A1030	Main Bridge Complete	7	0%	0	26-Feb-29	06-Mar-29*	A1990	A2390, A1020
A1035	South Approaches Complete	0	0%	0		11-Jun-30	A2510, A2500	A1040
A1040	Project Completion	0	0%	0		11-Jun-30*	A2430, A2450,	
Procurement		100	0%	245	04-Mar-24	23-Jul-24		
A1050	Early Submittals	60	0%	8	04-Mar-24	24-May-24	A1000	A1060, A1070,
A1060	Procure Work Bridge Piling	30	0%	50	28-May-24	09-Jul-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	245	28-May-24	23-Jul-24	A1050	A1170, A1190
A1080	Procure Detour Bridge Materials	30	0%	8	28-May-24	09-Jul-24	A1050	A1120
Construction		1542	0%	105	28-May-24	11-Jun-30		
A1090	Mobilize to Site	10	0%	8	28-May-24	10-Jun-24	A1050	A1100
A1100	Install Site Access/Erosion Control	20	0%	8	11-Jun-24	09-Jul-24	A1090	A1110, A1120, A
A1110	Railroad Crossing (East Side)	20	0%	462	10-Jul-24	06-Aug-24	A1100	A1190
Temporary Works		1313	0%	199	10-Jul-24	05-Sep-29		
Detour Bridge		1288	0%	224	10-Jul-24	01-Aug-29		
A1115	Demo Buildings For Detour Bridge	40	0%	63	10-Jul-24	04-Sep-24	A1100	A1130
A1120	Install In-Water Piles (Assumed 200 piles) For Detour	50	0%	10	10-Jul-24	06-Sep-24	A1100, A1080	A1140, A1160
A1130	Install Modular Detour Bridge	110	0%	63	05-Sep-24	11-Feb-25	A1115	A1150
A1140	Install Movable Span	60	0%	111	09-Sep-24	03-Dec-24	A1120	A1150
A1150	Testing & Switch Over Traffic to Detour	10	0%	63	12-Feb-25	25-Feb-25	A1140, A1130	A1010
A2390	Remove Detour Bridge Superstructure	45	0%	69	07-Mar-29	08-May-29	A1030	A2400, A2410
A2400	Remove Detour Bridge In-Water Piling	20	0%	30	10-Jul-29	01-Aug-29	A2390	A1040, A2450
A2410	Remove On Land Piling	20	0%	265	09-May-29	05-Jun-29	A2390	A1040
Work Bridges		1271	0%	25	07-Sep-24	05-Sep-29		
A1160	Install West Work Bridge Pile to Pier 8	20	0%	10	07-Sep-24	30-Sep-24	A1100, A1060,	A1170, A1180
A1170	Install West Work Bridge Superstructure to Pier 8	30	0%	197	01-Oct-24	11-Nov-24	A1160, A1070	A1665, A1660
A1180	Install East Work Bridge Pile to Pier 9	40	0%	27	01-Oct-24	14-Aug-25	A1060, A1160	A1190, A2415
A1190	Install East Work Bridge Superstructure To Pier 9	100	0%	102	15-Aug-25	08-Jan-26	A1180, A1070,	A2416
A1660	Install West Work Bridge Piling Around Pier 8	20	0%	37	10-Jul-25	01-Aug-25	A1620, A1600,	A1665, A2415
A1665	Install West Work Bridge Superstructure Around Pier 8	20	0%	31	04-Aug-25	29-Aug-25	A1660, A1170	A1640
A2415	Install East Work Bridge Piling Around Pier 9	20	0%	27	15-Aug-25	09-Sep-25	A1610, A1630,	A2416
A2416	Install East Work Bridge Superstructure Around Pier 9	20	0%	102	09-Jan-26	05-Feb-26	A2415, A1190	A1650, A1235
A2417	Remove West Work Bridge From Navigation Channel	10	0%	151	28-Jul-27	10-Aug-27	A2460	A1870
A2418	Remove East Work Bridge From Navigation Channel	10	0%	32	27-Jul-28	09-Aug-28	A2470	A1950
A2420	Remove West Work Bridge Superstructure	30	0%	254	09-Aug-28	20-Sep-28	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	77	21-Sep-28	12-Jul-29	A2420	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	118	29-Jan-29	23-Mar-29	A1980	A2450
A2450	Remove East Work Bridge Piling	30	0%	30	02-Aug-29	05-Sep-29	A2440, A2400,	A1040
Cofferdams		774	0%	285	10-Jul-25	26-Jul-28		
A1195	Install Pier 7 Cofferdam (Incl Rings)	20	0%	18	02-Aug-25	25-Aug-25	A1220, A1620,	A1635, A1225,
A1200	Install Pier 8 Cofferdam	20	0%	14	10-Jul-25	01-Aug-25	A1600, A1620	A1205, A1195
A1205	Install Pier 8 Coffer Rings & Dewater	40	0%	11	04-Aug-25	29-Sep-25	A1200	A1640, A1215
A1210	Install Pier 9 Cofferdam	20	0%	18	26-Aug-25	19-Sep-25	A1610, A1630,	A1215, A1225
A1215	Install Pier 9 Coffer Rings & Dewater	40	0%	151	30-Sep-25	24-Nov-25	A1210, A1205	A1650, A1235
A1225	Install Cofferdam for Ex Pier 4 Removal	18	0%	80	20-Sep-25	10-Oct-25	A1610, A2000,	A1670, A2520
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	134	10-Jul-26	27-Jul-26	A1670, A1215,	A1040, A2455
A2455	Remove Pier 7 Cofferdam	10	0%	134	28-Jul-26	07-Aug-26	A1690, A1235	A1840, A1860
A2460	Remove Pier 8 Cofferdam	15	0%	64	10-Jul-27	27-Jul-27	A1720	A1860, A2470,
A2470	Remove Pier 9 Cofferdam	15	0%	2	10-Jul-28	26-Jul-28	A1780, A2460	A1920, A1940,
A2520	Install Pier 10 Cofferdam (incl Rings)	20	0%	99	10-Jul-26	01-Aug-26	A1225	A1835
A2530	Remove Pier 10 Cofferdam	10	0%	120	10-Jul-28	20-Jul-28	A1830	A2450
New Bridge		1352	0%	105	26-Feb-25	11-Jun-30		
West Approach		1297	0%	160	26-Feb-25	26-Mar-30		



🟦 Actual Work   🟥 Critical Remaining Work   ▬ Summary

🟩 Remaining Work ◆   ◆ Milestone

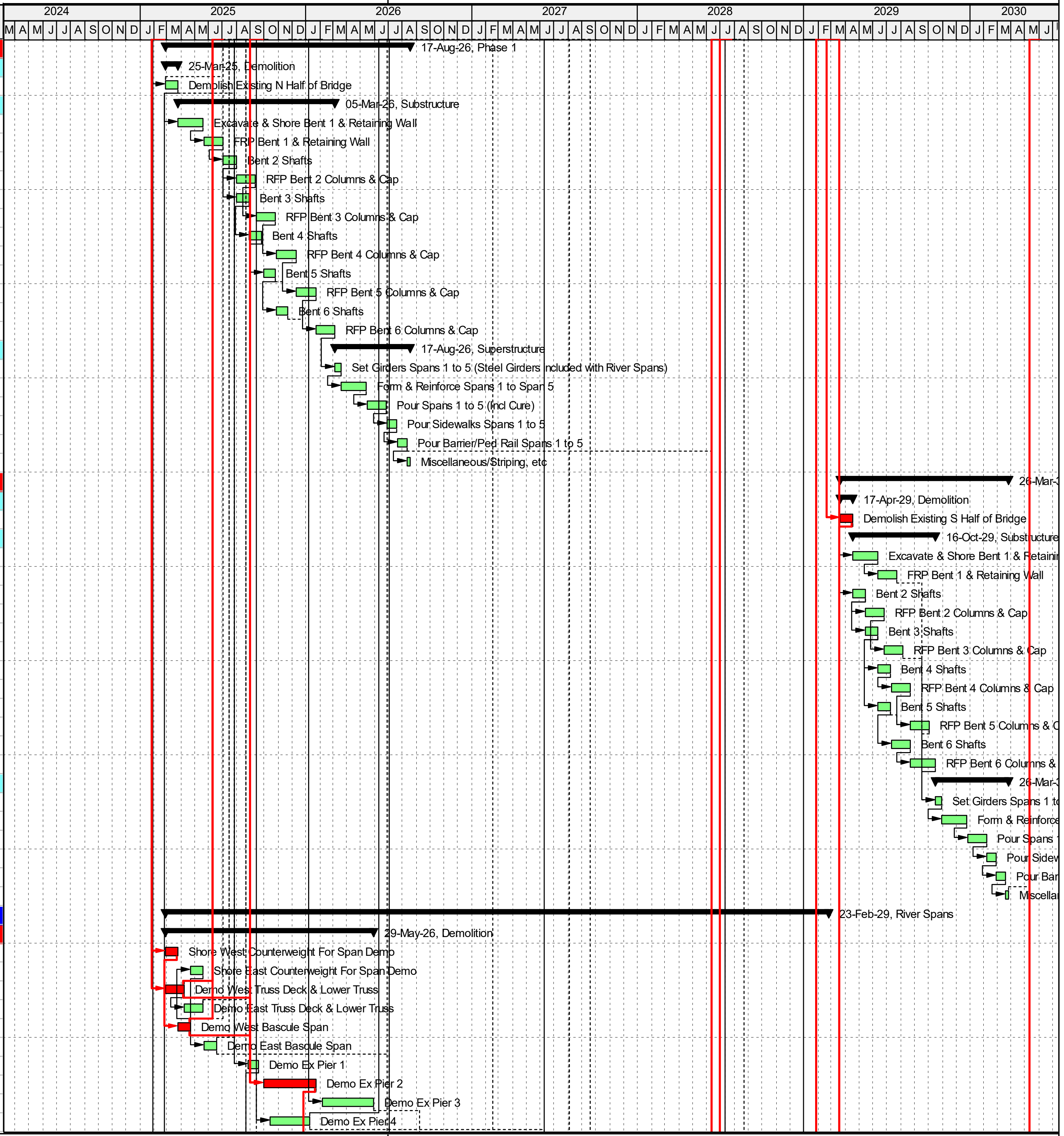
TASK filter: All Activities

EQRB NEPA Replacement In-Kind (With Detour Bridge)

Classic Schedule Layout

18-Dec-19 21:43

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
Phase 1		375	0%	1082	26-Feb-25	17-Aug-26		
Demolition		20	0%	116	26-Feb-25	25-Mar-25		
A1220	Demolish Existing N Half of Bridge	20	0%	116	26-Feb-25	25-Mar-25	A1010	A1635, A2030, A
Substructure		240	0%	490	26-Mar-25	05-Mar-26		
A1230	Excavate & Shore Bent 1 & Retaining Wall	40	0%	490	26-Mar-25	20-May-25	A1220	A1240
A1240	FRP Bent 1 & Retaining Wall	30	0%	490	21-May-25	02-Jul-25	A1230	A1250
A1250	Bent 2 Shafts	20	0%	490	03-Jul-25	31-Jul-25	A1240	A1260, A1270
A1260	RFP Bent 2 Columns & Cap	30	0%	490	01-Aug-25	12-Sep-25	A1250	A1280
A1270	Bent 3 Shafts	20	0%	500	01-Aug-25	28-Aug-25	A1250	A1290, A1280
A1280	RFP Bent 3 Columns & Cap	30	0%	490	15-Sep-25	24-Oct-25	A1260, A1270	A1300
A1290	Bent 4 Shafts	20	0%	510	29-Aug-25	26-Sep-25	A1270	A1310, A1300
A1300	RFP Bent 4 Columns & Cap	30	0%	490	27-Oct-25	09-Dec-25	A1280, A1290	A1320
A1310	Bent 5 Shafts	20	0%	520	29-Sep-25	24-Oct-25	A1290	A1330, A1320
A1320	RFP Bent 5 Columns & Cap	30	0%	490	10-Dec-25	22-Jan-26	A1300, A1310	A1340
A1330	Bent 6 Shafts	20	0%	530	27-Oct-25	21-Nov-25	A1310	A1340
A1340	RFP Bent 6 Columns & Cap	30	0%	490	23-Jan-26	05-Mar-26	A1320, A1330	A1350
Superstructure		115	0%	1082	06-Mar-26	17-Aug-26		
A1350	Set Girders Spans 1 to 5 (Steel Girders included with F	10	0%	490	06-Mar-26	19-Mar-26	A1340	A1360
A1360	Form & Reinforce Spans 1 to Span 5	40	0%	490	20-Mar-26	14-May-26	A1350	A1370
A1370	Pour Spans 1 to 5 (Incl Cure)	30	0%	490	15-May-26	26-Jun-26	A1360	A1380
A1380	Pour Sidewalks Spans 1 to 5	15	0%	490	29-Jun-26	20-Jul-26	A1370	A1390
A1390	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	490	21-Jul-26	10-Aug-26	A1380	A1910, A2480
A2480	Miscellaneous/Striping, etc	5	0%	1082	11-Aug-26	17-Aug-26	A1390	
Phase 2		265	0%	55	21-Mar-29	26-Mar-30		
Demolition		20	0%	0	21-Mar-29	17-Apr-29		
A1410	Demolish Existing S Half of Bridge	20	0%	0	21-Mar-29	17-Apr-29	A1020	A2210, A1420, A
Substructure		130	0%	55	18-Apr-29	16-Oct-29		
A1420	Excavate & Shore Bent 1 & Retaining Wall	40	0%	115	18-Apr-29	12-Jun-29	A1410	A1430
A1430	FRP Bent 1 & Retaining Wall	30	0%	115	13-Jun-29	24-Jul-29	A1420	A1540
A1440	Bent 2 Shafts	20	0%	55	18-Apr-29	15-May-29	A1410	A1450, A1460
A1450	RFP Bent 2 Columns & Cap	30	0%	105	16-May-29	26-Jun-29	A1440	A1470
A1460	Bent 3 Shafts	20	0%	55	16-May-29	12-Jun-29	A1440	A1480, A1470, A
A1470	RFP Bent 3 Columns & Cap	30	0%	105	27-Jun-29	07-Aug-29	A1450, A1460	A1540
A1480	Bent 4 Shafts	20	0%	65	13-Jun-29	10-Jul-29	A1460	A1490
A1490	RFP Bent 4 Columns & Cap	30	0%	65	11-Jul-29	21-Aug-29	A1480	A1510
A1500	Bent 5 Shafts	20	0%	55	13-Jun-29	10-Jul-29	A1460	A1520, A1510
A1510	RFP Bent 5 Columns & Cap	30	0%	65	22-Aug-29	02-Oct-29	A1490, A1500	A1540
A1520	Bent 6 Shafts	30	0%	55	11-Jul-29	21-Aug-29	A1500	A1530
A1530	RFP Bent 6 Columns & Cap	40	0%	55	22-Aug-29	16-Oct-29	A1520	A1540
Superstructure		115	0%	55	17-Oct-29	26-Mar-30		
A1540	Set Girders Spans 1 to 5 (Steel Girders included with F	10	0%	55	17-Oct-29	30-Oct-29	A1530, A1430,	A1550
A1550	Form & Reinforce Spans 1 to Span 5	40	0%	55	31-Oct-29	25-Dec-29	A1540	A1560
A1560	Pour Spans 1 to 5 (Incl Cure)	30	0%	55	26-Dec-29	05-Feb-30	A1550	A1570
A1570	Pour Sidewalks Spans 1 to 5	15	0%	55	06-Feb-30	26-Feb-30	A1560	A1580
A1580	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	55	27-Feb-30	19-Mar-30	A1570	A2500
A2500	Miscellaneous/Striping, etc	5	0%	55	20-Mar-30	26-Mar-30	A1580	A1035
River Spans		1015	0%	0	26-Feb-25	23-Feb-29		
Demolition		320	0%	282	26-Feb-25	29-May-26		
A1590	Shore West Counterweight For Span Demo	20	0%	63	26-Feb-25	25-Mar-25	A1010	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	63	23-Apr-25	20-May-25	A1620	A1630
A1600	Demo West Truss Deck & Lower Truss	30	0%	76	26-Feb-25	08-Apr-25	A1010	A1610, A1640, A
A1610	Demo East Truss Deck & Lower Truss	30	0%	83	09-Apr-25	20-May-25	A1600	A1210, A2415, A
A1620	Demo West Bascule Span	20	0%	63	26-Mar-25	22-Apr-25	A1590	A1595, A1640, A
A1630	Demo East Bascule Span	20	0%	63	21-May-25	18-Jun-25	A1595	A1650, A1210, A
A1635	Demo Ex Pier 1	20	0%	98	26-Aug-25	19-Sep-25	A1220, A1195	A1670, A1680
A1640	Demo Ex Pier 2	80	0%	11	30-Sep-25	23-Jan-26	A1600, A1620,	A1650, A1700
A1650	Demo Ex Pier 3	80	0%	102	06-Feb-26	29-May-26	A1640, A1630,	A1760
A1670	Demo Ex Pier 4	60	0%	382	13-Oct-25	08-Jan-26	A1635, A2030,	A1820, A1235

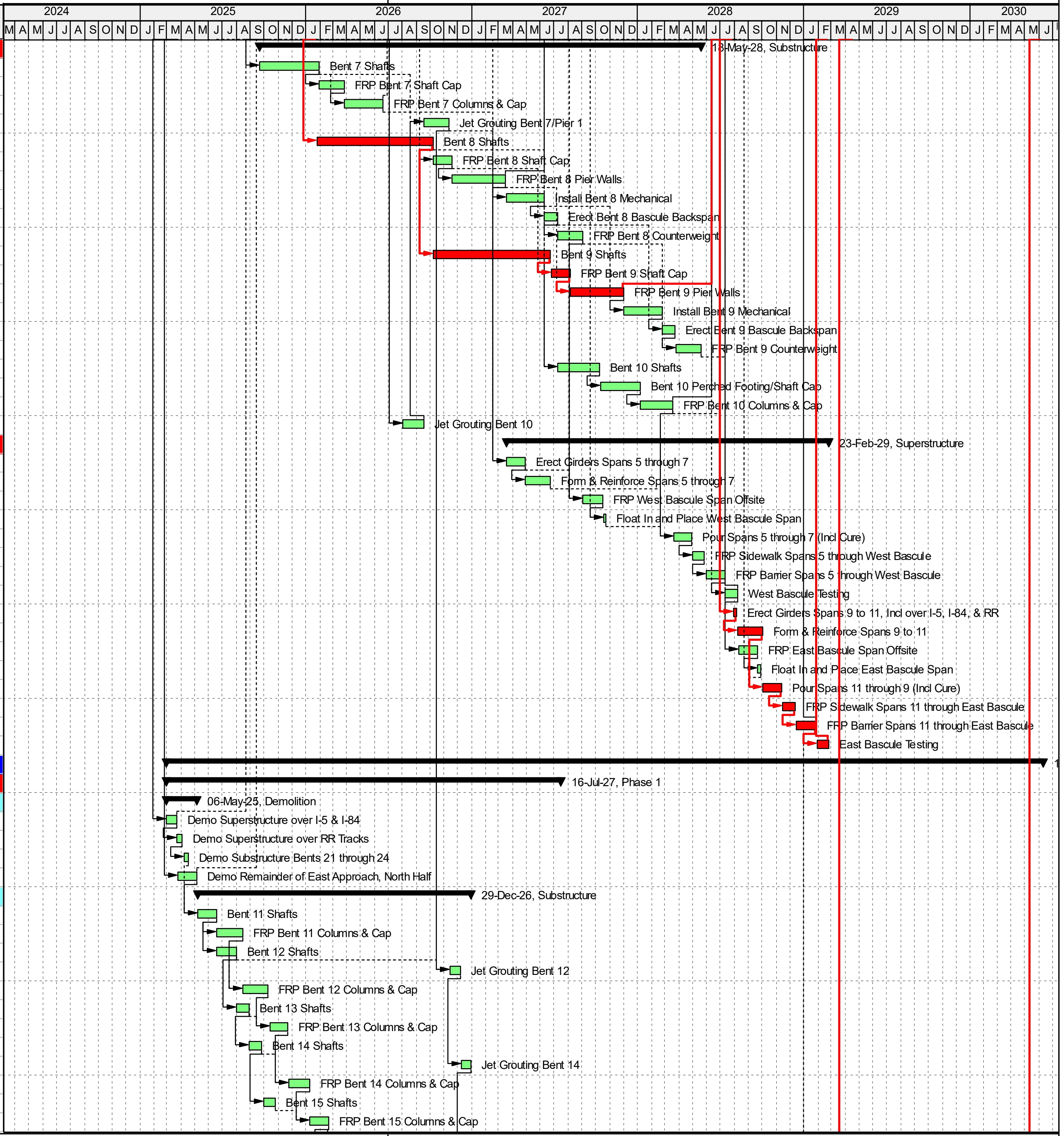


🟦 Actual Work 🟥 Critical Remaining Work Summary

🟩 Remaining Work ◆ ◆ Milestone

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
Substructure		676	0%	59	22-Sep-25	18-May-28		
A1680	Bent 7 Shafts	90	0%	323	22-Sep-25	29-Jan-26	A1635	A1690, A1685, A
A1685	FRP Bent 7 Shaft Cap	40	0%	323	30-Jan-26	26-Mar-26	A1680	A1690
A1690	FRP Bent 7 Columns & Cap	60	0%	323	27-Mar-26	19-Jun-26	A1680, A1685	A1840, A2455
A1692	Jet Grouting Bent 7/Pier 1	40	0%	273	18-Sep-26	12-Nov-26	A1835, A1680	A1840, A2065
A1700	Bent 8 Shafts	180	0%	11	26-Jan-26	07-Oct-26	A1640	A1710, A1760, A
A1710	FRP Bent 8 Shaft Cap	30	0%	104	08-Oct-26	18-Nov-26	A1700	A1720, A1770
A1720	FRP Bent 8 Pier Walls	80	0%	104	19-Nov-26	16-Mar-27	A1710	A1730, A1780, A
A1730	Install Bent 8 Mechanical	60	0%	104	17-Mar-27	09-Jun-27	A1720	A1740, A1790
A1740	Erect Bent 8 Bascule Backspan	20	0%	104	10-Jun-27	08-Jul-27	A1730	A1750, A1800
A1750	FRP Bent 8 Counterweight	40	0%	104	09-Jul-27	02-Sep-27	A1740	A1810, A1860
A1760	Bent 9 Shafts	180	0%	11	08-Oct-26	23-Jun-27	A1650, A1700	A1770, A1820
A1770	FRP Bent 9 Shaft Cap	30	0%	59	24-Jun-27	05-Aug-27	A1760, A1710	A1780
A1780	FRP Bent 9 Pier Walls	80	0%	59	06-Aug-27	30-Nov-27	A1770, A1720	A1790, A2470
A1790	Install Bent 9 Mechanical	60	0%	59	01-Dec-27	24-Feb-28	A1780, A1730	A1800
A1800	Erect Bent 9 Bascule Backspan	20	0%	59	25-Feb-28	23-Mar-28	A1790, A1740	A1810
A1810	FRP Bent 9 Counterweight	40	0%	59	24-Mar-28	18-May-28	A1800, A1750	A1940
A1820	Bent 10 Shafts	79	0%	0	10-Jul-27	09-Oct-27	A1670, A1700,	A1825
A1825	Bent 10 Perched Footing/Shaft Cap	60	0%	3	11-Oct-27	06-Jan-28	A1820	A1830
A1830	FRP Bent 10 Columns & Cap	51	0%	3	07-Jan-28	17-Mar-28	A1825	A1920, A2530, A
A1835	Jet Grouting Bent 10	40	0%	99	03-Aug-26	17-Sep-26	A1630, A2520	A1692
Superstructure		494	0%	0	17-Mar-27	23-Feb-29		
A1840	Erect Girders Spans 5 through 7	30	0%	189	17-Mar-27	27-Apr-27	A1690, A2455,	A1850, A1860
A1850	Form & Reinforce Spans 5 through 7	40	0%	189	28-Apr-27	23-Jun-27	A1840	A1880
A1860	FRP West Bascule Span Offsite	30	0%	104	03-Sep-27	15-Oct-27	A1750, A2455,	A1870
A1870	Float In and Place West Bascule Span	5	0%	104	18-Oct-27	22-Oct-27	A1860, A2417	A1880
A1880	Pour Spans 5 through 7 (Incl Cure)	30	0%	3	20-Mar-28*	28-Apr-28	A1870, A1850,	A1890
A1890	FRP Sidewalk Spans 5 through West Bascule	20	0%	3	01-May-28	26-May-28	A1880	A1900
A1900	FRP Barrier Spans 5 through West Bascule	30	0%	3	30-May-28	11-Jul-28	A1890	A1910
A1910	West Bascule Testing	20	0%	3	12-Jul-28	08-Aug-28	A1900, A1390	A1940, A2420
A1920	Erect Girders Spans 9 to 11, Incl over I-5, I-84, & RR	4	0%	0	29-Jul-28	06-Aug-28	A1830, A2470	A1930
A1930	Form & Reinforce Spans 9 to 11	40	0%	0	07-Aug-28	02-Oct-28	A1920	A1960
A1940	FRP East Bascule Span Offsite	30	0%	3	09-Aug-28	20-Sep-28	A1910, A1810,	A1950
A1950	Float In and Place East Bascule Span	5	0%	3	21-Sep-28	27-Sep-28	A1940, A2418	A1960
A1960	Pour Spans 11 through 9 (Incl Cure)	30	0%	0	03-Oct-28	13-Nov-28	A1950, A1930	A1970
A1970	FRP Sidewalk Spans 11 through East Bascule	20	0%	0	14-Nov-28	13-Dec-28	A1960	A1980
A1980	FRP Barrier Spans 11 through East Bascule	30	0%	0	14-Dec-28	26-Jan-29	A1970	A1990, A2440
A1990	East Bascule Testing	20	0%	0	29-Jan-29	23-Feb-29	A1980, A2200	A1030
East Approach		1349	0%	105	01-Mar-25	11-Jun-30		
Phase 1		604	0%	850	01-Mar-25	16-Jul-27		
Demolition		47	0%	570	01-Mar-25	06-May-25		
A2000	Demo Superstructure over I-5 & I-84	8	0%	156	01-Mar-25	23-Mar-25	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	582	24-Mar-25	04-Apr-25	A2000	A2020
A2020	Demo Substructure Bents 21 through 24	10	0%	582	07-Apr-25	18-Apr-25	A2010	A2040
A2030	Demo Remainder of East Approach, North Half	30	0%	492	26-Mar-25	06-May-25	A1220	A1670, A2040
Substructure		417	0%	393	07-May-25	29-Dec-26		
A2040	Bent 11 Shafts	30	0%	570	07-May-25	18-Jun-25	A2020, A2030	A2050, A2060
A2050	FRP Bent 11 Columns & Cap	40	0%	570	19-Jun-25	14-Aug-25	A2040	A2070
A2060	Bent 12 Shafts	30	0%	580	19-Jun-25	31-Jul-25	A2040	A2070, A2080, A
A2065	Jet Grouting Bent 12	15	0%	393	13-Nov-26	07-Dec-26	A2060, A1692	A2105
A2070	FRP Bent 12 Columns & Cap	40	0%	570	15-Aug-25	10-Oct-25	A2050, A2060	A2090
A2080	Bent 13 Shafts	20	0%	600	01-Aug-25	28-Aug-25	A2060	A2090, A2100
A2090	FRP Bent 13 Columns & Cap	30	0%	570	13-Oct-25	21-Nov-25	A2080, A2070	A2110
A2100	Bent 14 Shafts	20	0%	610	29-Aug-25	26-Sep-25	A2080	A2120, A2110
A2105	Jet Grouting Bent 14	15	0%	393	08-Dec-26	29-Dec-26	A2065	A2160
A2110	FRP Bent 14 Columns & Cap	30	0%	570	24-Nov-25	08-Jan-26	A2090, A2100	A2130
A2120	Bent 15 Shafts	20	0%	620	29-Sep-25	24-Oct-25	A2100	A2130
A2130	FRP Bent 15 Columns & Cap	30	0%	570	09-Jan-26	19-Feb-26	A2110, A2120	A2150, A2140



🟦 Actual Work	🟥 Critical Remaining Work
🟩 Remaining Work ◆	◆ Milestone
Summary	

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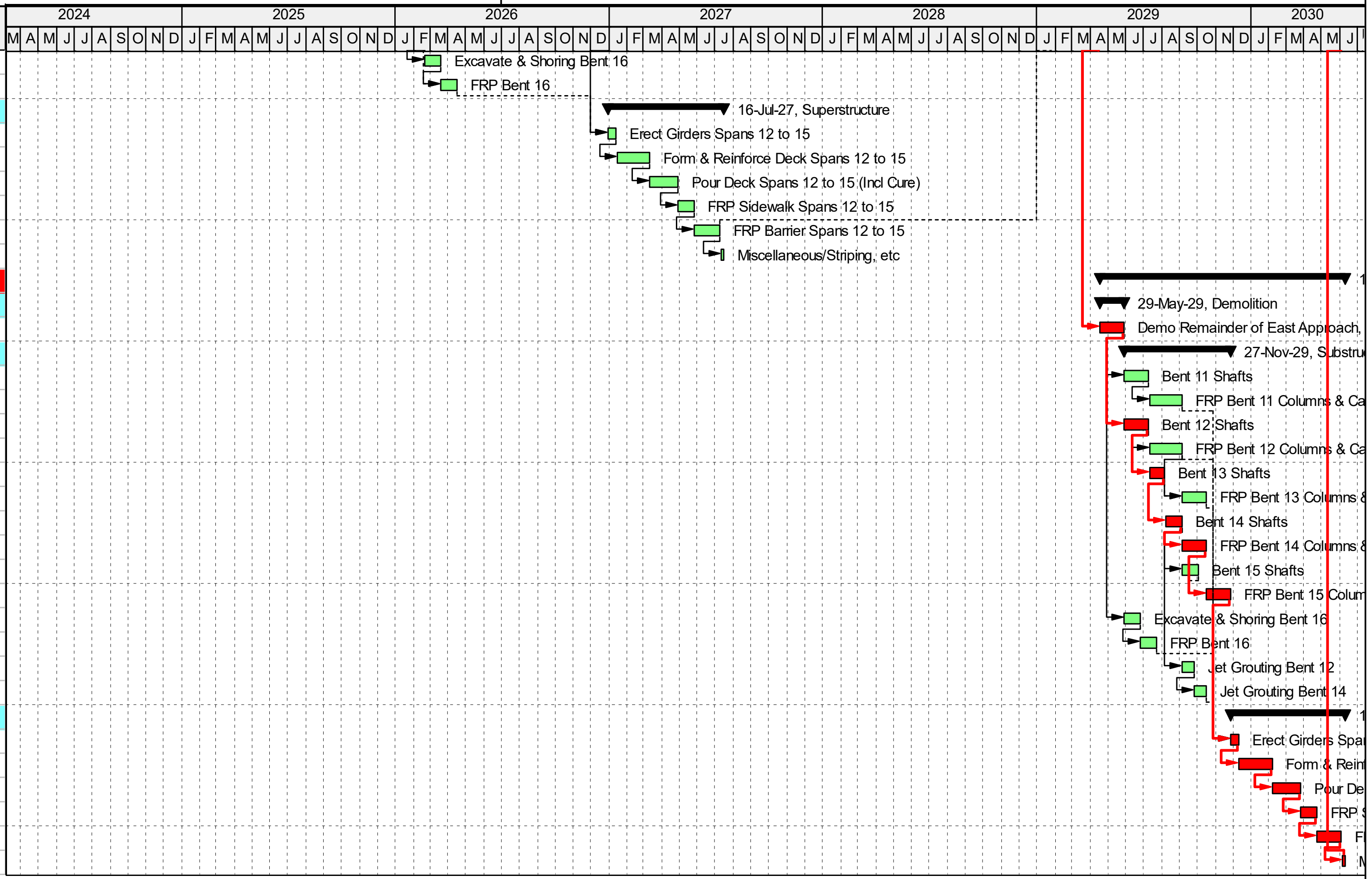
TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A2140	Excavate & Shoring Bent 16	20	0%	570	20-Feb-26	19-Mar-26	A2130	A2150
A2150	FRP Bent 16	20	0%	570	20-Mar-26	16-Apr-26	A2130, A2140	A2160
Superstructure		140	0%	850	30-Dec-26	16-Jul-27		
A2160	Erect Girders Spans 12 to 15	10	0%	393	30-Dec-26	13-Jan-27	A2150, A2105	A2170
A2170	Form & Reinforce Deck Spans 12 to 15	40	0%	393	14-Jan-27	10-Mar-27	A2160	A2180
A2180	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	393	11-Mar-27	28-Apr-27	A2170	A2190
A2190	FRP Sidewalk Spans 12 to 15	20	0%	393	29-Apr-27	26-May-27	A2180	A2200
A2200	FRP Barrier Spans 12 to 15	30	0%	393	27-May-27	09-Jul-27	A2190	A1990, A2490
A2490	Miscellaneous/Striping, etc	5	0%	850	12-Jul-27	16-Jul-27	A2200	
Phase 2		300	0%	0	18-Apr-29	11-Jun-30		
Demolition		30	0%	0	18-Apr-29	29-May-29		
A2210	Demo Remainder of East Approach, South Half	30	0%	0	18-Apr-29	29-May-29	A1020, A1410	A2220, A2240,
Substructure		130	0%	0	30-May-29	27-Nov-29		
A2220	Bent 11 Shafts	30	0%	60	30-May-29	10-Jul-29	A2210	A2230
A2230	FRP Bent 11 Columns & Cap	40	0%	60	11-Jul-29	04-Sep-29	A2220	A2340
A2240	Bent 12 Shafts	30	0%	0	30-May-29	10-Jul-29	A2210	A2250, A2260
A2250	FRP Bent 12 Columns & Cap	40	0%	30	11-Jul-29	04-Sep-29	A2240	A2270, A2340
A2260	Bent 13 Shafts	20	0%	0	11-Jul-29	07-Aug-29	A2240	A2270, A2280
A2270	FRP Bent 13 Columns & Cap	30	0%	30	05-Sep-29	16-Oct-29	A2260, A2250	A2340
A2280	Bent 14 Shafts	20	0%	0	08-Aug-29	04-Sep-29	A2260	A2300, A2290,
A2290	FRP Bent 14 Columns & Cap	30	0%	0	05-Sep-29	16-Oct-29	A2280	A2310
A2300	Bent 15 Shafts	20	0%	10	05-Sep-29	02-Oct-29	A2280	A2310
A2310	FRP Bent 15 Columns & Cap	30	0%	0	17-Oct-29	27-Nov-29	A2290, A2300	A2340
A2320	Excavate & Shoring Bent 16	20	0%	90	30-May-29	26-Jun-29	A2210	A2330
A2330	FRP Bent 16	20	0%	90	27-Jun-29	24-Jul-29	A2320	A2340
A2540	Jet Grouting Bent 12	15	0%	30	05-Sep-29	25-Sep-29	A2280	A2550
A2550	Jet Grouting Bent 14	15	0%	30	26-Sep-29	16-Oct-29	A2540	A2340
Superstructure		140	0%	0	28-Nov-29	11-Jun-30		
A2340	Erect Girders Spans 12 to 15	10	0%	0	28-Nov-29	11-Dec-29	A2330, A2550,	A2350
A2350	Form & Reinforce Deck Spans 12 to 15	40	0%	0	12-Dec-29	05-Feb-30	A2340	A2360
A2360	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	0	06-Feb-30	26-Mar-30	A2350	A2370
A2370	FRP Sidewalk Spans 12 to 15	20	0%	0	27-Mar-30	23-Apr-30	A2360	A2380
A2380	FRP Barrier Spans 12 to 15	30	0%	0	24-Apr-30	04-Jun-30	A2370	A2510
A2510	Miscellaneous/Striping, etc	5	0%	0	05-Jun-30	11-Jun-30	A2380	A1035



🟦 Actual Work 🟥 Critical Remaining Work ▼ Summary
🟩 Remaining Work ◆ ◆ Milestone

TASK filter: All Activities

APPENDIX G-4

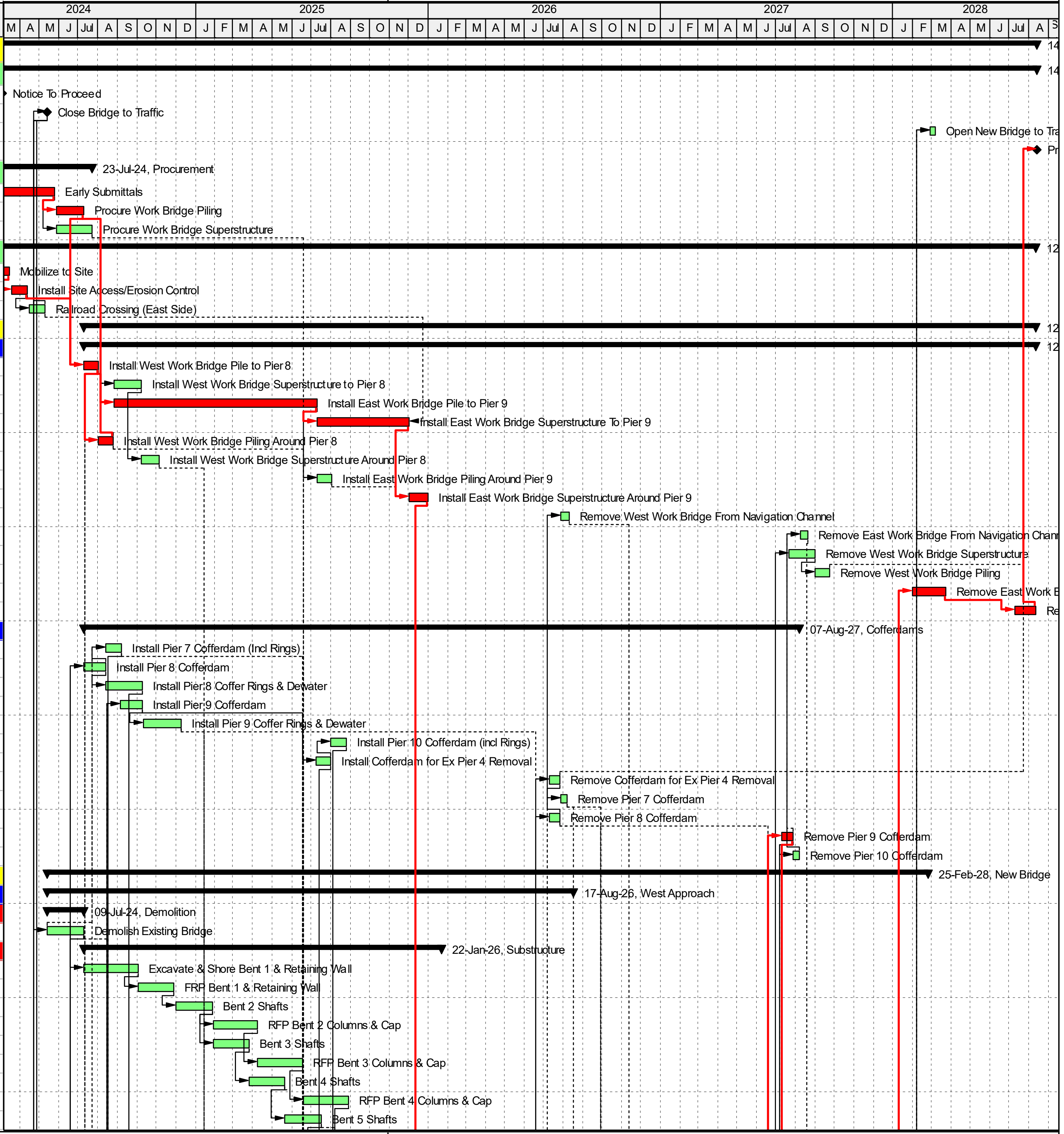
Replacement In-Kind Schedule with Conventional Approaches NO Temporary Bridge

EQRB NEPA Replacement In-Kind (No Detour Bridge)

Classic Schedule Layout

17-Dec-19 12:40

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Replacement In-Kind (No Detour Bridge)		1130	0%	1	04-Mar-24	14-Aug-28		
General/Milestones		1130	0%	1	04-Mar-24	14-Aug-28		
A1000	Notice To Proceed	0	0%	33	04-Mar-24			A1050, A1090
A1010	Close Bridge to Traffic	0	0%	41	13-May-24		A1110	A1220, A1590, A
A1030	Open New Bridge to Traffic	7	0%	0	28-Feb-28	07-Mar-28*	A1990, A2480, ,	
A1040	Project Completion	0	0%	1		14-Aug-28*	A2430, A2450, ,	
Procurement		100	0%	197	04-Mar-24	23-Jul-24		
A1050	Early Submittals	60	0%	33	04-Mar-24	24-May-24	A1000	A1060, A1070
A1060	Procure Work Bridge Piling	30	0%	33	28-May-24	09-Jul-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	197	28-May-24	23-Jul-24	A1050	A1170, A1190
Construction		1130	0%	1	04-Mar-24	12-Aug-28		
A1090	Mobilize to Site	10	0%	41	04-Mar-24	15-Mar-24	A1000	A1100
A1100	Install Site Access/Erosion Control	20	0%	41	18-Mar-24	12-Apr-24	A1090	A1110, A1160
A1110	Railroad Crossing (East Side)	20	0%	41	15-Apr-24	10-May-24	A1100	A1190, A1010
Temporary Works		1040	0%	1	10-Jul-24	12-Aug-28		
Work Bridges		1040	0%	1	10-Jul-24	12-Aug-28		
A1160	Install West Work Bridge Pile to Pier 8	20	0%	39	10-Jul-24	01-Aug-24	A1100, A1060	A1170, A1180, A
A1170	Install West Work Bridge Superstructure to Pier 8	30	0%	174	26-Aug-24	07-Oct-24	A1160, A1070, ,	A1665
A1180	Install East Work Bridge Pile to Pier 9	40	0%	39	26-Aug-24	10-Jul-25	A1060, A1160, ,	A1190, A2415
A1190	Install East Work Bridge Superstructure To Pier 9	100	0%	32	11-Jul-25	02-Dec-25	A1180, A1070, ,	A2416
A1660	Install West Work Bridge Piling Around Pier 8	20	0%	39	02-Aug-24	24-Aug-24	A1620, A1600, ,	A1665, A2415, A
A1665	Install West Work Bridge Superstructure Around Pier 8	20	0%	174	08-Oct-24	04-Nov-24	A1660, A1170	A1700
A2415	Install East Work Bridge Piling Around Pier 9	20	0%	57	11-Jul-25	02-Aug-25	A1610, A1630, ,	A2416
A2416	Install East Work Bridge Superstructure Around Pier 9	20	0%	32	03-Dec-25	31-Dec-25	A2415, A1190	A1760
A2417	Remove West Work Bridge From Navigation Channel	10	0%	152	28-Jul-26	10-Aug-26	A2460	A1870
A2418	Remove East Work Bridge From Navigation Channel	10	0%	25	09-Aug-27	20-Aug-27	A2470, A2510	A1950
A2420	Remove West Work Bridge Superstructure	30	0%	226	21-Jul-27	31-Aug-27	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	45	01-Sep-27	23-Sep-27	A2420	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	74	31-Jan-28	24-Mar-28	A1980	A2450
A2450	Remove East Work Bridge Piling	30	0%	1	10-Jul-28	12-Aug-28	A2440	A1040
Cofferdams		782	0%	25	10-Jul-24	07-Aug-27		
A1195	Install Pier 7 Cofferdam (Incl Rings)	20	0%	87	14-Aug-24	06-Sep-24	A1220, A1620, ,	A1635, A1225
A1200	Install Pier 8 Cofferdam	30	0%	49	10-Jul-24	13-Aug-24	A1600, A1620	A1205, A1195
A1205	Install Pier 8 Coffer Rings & Dewater	40	0%	112	14-Aug-24	09-Oct-24	A1200	A1640
A1210	Install Pier 9 Cofferdam	31	0%	40	05-Sep-24	10-Oct-24	A1610, A1630	A1215, A1225
A1215	Install Pier 9 Coffer Rings & Dewater	40	0%	221	11-Oct-24	09-Dec-24	A1210	A1650, A1235
A1216	Install Pier 10 Cofferdam (incl Rings)	20	0%	78	02-Aug-25	25-Aug-25	A1225	A1835
A1225	Install Cofferdam for Ex Pier 4 Removal	20	0%	58	10-Jul-25	01-Aug-25	A1610, A2000, ,	A1670, A1216
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	55	10-Jul-26	27-Jul-26	A1670, A1215	A1040, A2455
A2455	Remove Pier 7 Cofferdam	10	0%	55	28-Jul-26	07-Aug-26	A1690, A1235	A1840, A1860
A2460	Remove Pier 8 Cofferdam	15	0%	65	10-Jul-26	27-Jul-26	A1720	A1860, A2470, A
A2470	Remove Pier 9 Cofferdam	15	0%	3	10-Jul-27	27-Jul-27	A1780, A2460	A1920, A1940, A
A2510	Remove Pier 10 Cofferdam	10	0%	31	28-Jul-27	07-Aug-27	A1830, A2470	A2418
New Bridge		962	0%	0	13-May-24	25-Feb-28		
West Approach		575	0%	387	13-May-24	17-Aug-26		
Demolition		40	0%	237	13-May-24	09-Jul-24		
A1220	Demolish Existing Bridge	40	0%	237	13-May-24	09-Jul-24	A1010	A1635, A2030, A
Substructure		390	0%	237	10-Jul-24	22-Jan-26		
A1230	Excavate & Shore Bent 1 & Retaining Wall	60	0%	237	10-Jul-24	02-Oct-24	A1220	A1240
A1240	FRP Bent 1 & Retaining Wall	40	0%	237	03-Oct-24	27-Nov-24	A1230	A1250
A1250	Bent 2 Shafts	40	0%	237	02-Dec-24	28-Jan-25	A1240	A1260, A1270
A1260	RFP Bent 2 Columns & Cap	50	0%	237	29-Jan-25	08-Apr-25	A1250	A1280
A1270	Bent 3 Shafts	40	0%	247	29-Jan-25	25-Mar-25	A1250	A1290, A1280
A1280	RFP Bent 3 Columns & Cap	50	0%	237	09-Apr-25	18-Jun-25	A1260, A1270	A1300
A1290	Bent 4 Shafts	40	0%	257	26-Mar-25	20-May-25	A1270	A1310, A1300
A1300	RFP Bent 4 Columns & Cap	50	0%	237	19-Jun-25	28-Aug-25	A1280, A1290	A1320
A1310	Bent 5 Shafts	40	0%	267	21-May-25	17-Jul-25	A1290	A1330, A1320



🟦 Actual Work	🟥 Critical Remaining Work
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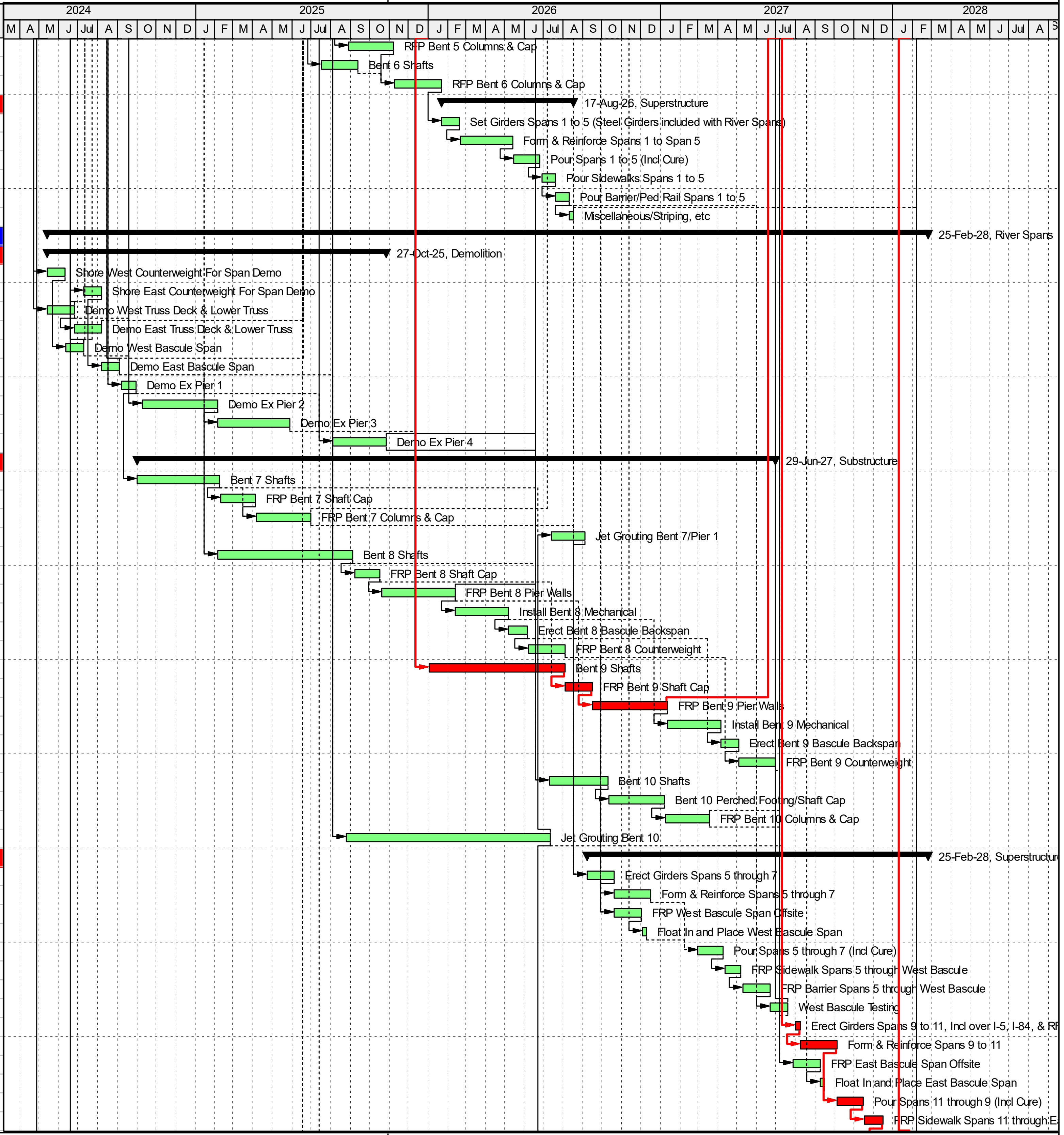
▼ Summary

TASK filter: All Activities

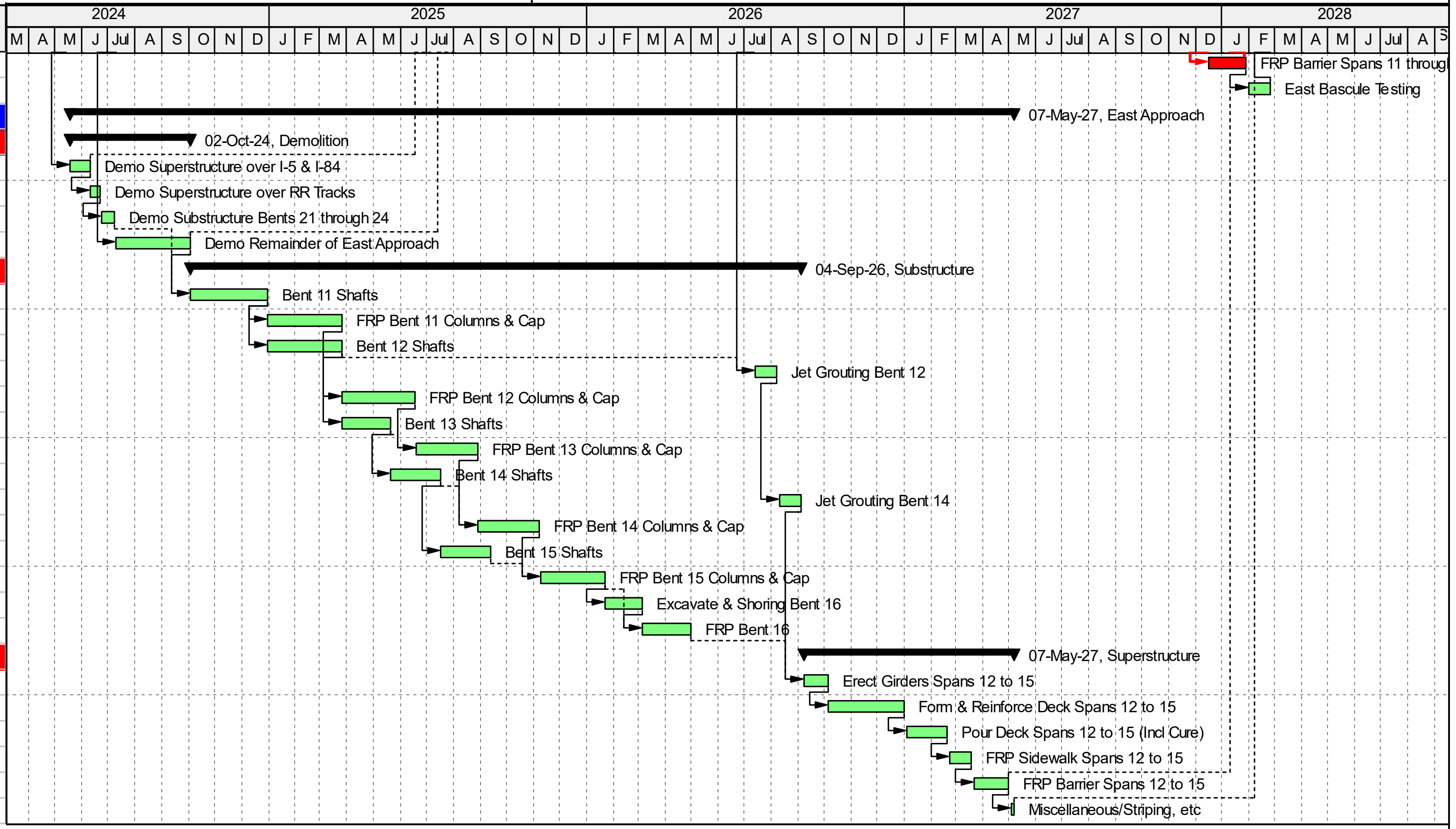
Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1320	RFP Bent 5 Columns & Cap	50	0%	237	29-Aug-25	07-Nov-25	A1300, A1310	A1340
A1330	Bent 6 Shafts	40	0%	277	18-Jul-25	12-Sep-25	A1310	A1340
A1340	RFP Bent 6 Columns & Cap	50	0%	237	10-Nov-25	22-Jan-26	A1320, A1330	A1350
Superstructure		145	0%	387	23-Jan-26	17-Aug-26		
A1350	Set Girders Spans 1 to 5 (Steel Girders included with F	20	0%	237	23-Jan-26	19-Feb-26	A1340	A1360
A1360	Form & Reinforce Spans 1 to Span 5	60	0%	237	20-Feb-26	14-May-26	A1350	A1370
A1370	Pour Spans 1 to 5 (Incl Cure)	30	0%	237	15-May-26	26-Jun-26	A1360	A1380
A1380	Pour Sidewalks Spans 1 to 5	15	0%	237	29-Jun-26	20-Jul-26	A1370	A1390
A1390	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	237	21-Jul-26	10-Aug-26	A1380	A1910, A2480
A2480	Miscellaneous/Striping, etc	5	0%	387	11-Aug-26	17-Aug-26	A1390	A1030
River Spans		962	0%	0	13-May-24	25-Feb-28		
Demolition		371	0%	177	13-May-24	27-Oct-25		
A1590	Shore West Counterweight For Span Demo	20	0%	41	13-May-24	10-Jun-24	A1010	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	221	10-Jul-24	06-Aug-24	A1620	A1630
A1600	Demo West Truss Deck & Lower Truss	30	0%	51	13-May-24	24-Jun-24	A1010	A1610, A1640,
A1610	Demo East Truss Deck & Lower Truss	30	0%	241	25-Jun-24	06-Aug-24	A1600	A1210, A2415,
A1620	Demo West Bascule Span	20	0%	41	11-Jun-24	09-Jul-24	A1590	A1595, A1640,
A1630	Demo East Bascule Span	20	0%	221	07-Aug-24	04-Sep-24	A1595	A1650, A1210,
A1635	Demo Ex Pier 1	20	0%	87	07-Sep-24	30-Sep-24	A1220, A1195	A1670, A1680
A1640	Demo Ex Pier 2	80	0%	112	10-Oct-24	04-Feb-25	A1600, A1620,	A1650, A1700
A1650	Demo Ex Pier 3	80	0%	182	05-Feb-25	28-May-25	A1640, A1630,	A1760
A1670	Demo Ex Pier 4	60	0%	177	04-Aug-25	27-Oct-25	A1635, A2030,	A1820, A1235
Substructure		697	0%	32	01-Oct-24	29-Jun-27		
A1680	Bent 7 Shafts	90	0%	317	01-Oct-24	07-Feb-25	A1635	A1690, A1685,
A1685	FRP Bent 7 Shaft Cap	40	0%	317	10-Feb-25	04-Apr-25	A1680	A1690
A1690	FRP Bent 7 Columns & Cap	60	0%	317	07-Apr-25	30-Jun-25	A1680, A1685	A1840, A2455
A1692	Jet Grouting Bent 7/Pier 1	40	0%	68	13-Jul-26	04-Sep-26	A1680, A1835	A1840
A1700	Bent 8 Shafts	150	0%	112	05-Feb-25	05-Sep-25	A1640, A1665	A1710, A1760,
A1710	FRP Bent 8 Shaft Cap	30	0%	127	08-Sep-25	17-Oct-25	A1700	A1720, A1770
A1720	FRP Bent 8 Pier Walls	80	0%	127	20-Oct-25	12-Feb-26	A1710	A1730, A1780,
A1730	Install Bent 8 Mechanical	60	0%	127	13-Feb-26	07-May-26	A1720	A1740, A1790
A1740	Erect Bent 8 Bascule Backspan	20	0%	127	08-May-26	05-Jun-26	A1730	A1750, A1800
A1750	FRP Bent 8 Counterweight	40	0%	127	08-Jun-26	03-Aug-26	A1740	A1810, A1860
A1760	Bent 9 Shafts	150	0%	32	02-Jan-26	03-Aug-26	A1650, A1700,	A1770
A1770	FRP Bent 9 Shaft Cap	30	0%	32	04-Aug-26	15-Sep-26	A1760, A1710	A1780
A1780	FRP Bent 9 Pier Walls	80	0%	32	16-Sep-26	11-Jan-27	A1770, A1720	A1790, A2470
A1790	Install Bent 9 Mechanical	60	0%	32	12-Jan-27	05-Apr-27	A1780, A1730	A1800
A1800	Erect Bent 9 Bascule Backspan	20	0%	32	06-Apr-27	03-May-27	A1790, A1740	A1810
A1810	FRP Bent 9 Counterweight	40	0%	32	04-May-27	29-Jun-27	A1800, A1750	A1940
A1820	Bent 10 Shafts	80	0%	0	10-Jul-26	10-Oct-26	A1670, A1700	A1825
A1825	Bent 10 Perched Footing/Shaft Cap	60	0%	93	12-Oct-26	07-Jan-27	A1820	A1830
A1830	FRP Bent 10 Columns & Cap	51	0%	93	08-Jan-27	19-Mar-27	A1825	A1920, A2510
A1835	Jet Grouting Bent 10	40	0%	78	26-Aug-25	11-Jul-26	A1630, A1216	A1920, A1692,
Superstructure		373	0%	0	08-Sep-26	25-Feb-28		
A1840	Erect Girders Spans 5 through 7	30	0%	68	08-Sep-26	19-Oct-26	A1690, A2455,	A1850, A1860
A1850	Form & Reinforce Spans 5 through 7	40	0%	68	20-Oct-26	16-Dec-26	A1840	A1880
A1860	FRP West Bascule Span Offsite	30	0%	73	20-Oct-26	02-Dec-26	A1750, A2455,	A1870
A1870	Float In and Place West Bascule Span	5	0%	73	03-Dec-26	09-Dec-26	A1860, A2417	A1880
A1880	Pour Spans 5 through 7 (Incl Cure)	30	0%	18	01-Mar-27*	09-Apr-27	A1870, A1850	A1890
A1890	FRP Sidewalk Spans 5 through West Bascule	20	0%	18	12-Apr-27	07-May-27	A1880	A1900
A1900	FRP Barrier Spans 5 through West Bascule	30	0%	18	10-May-27	21-Jun-27	A1890	A1910
A1910	West Bascule Testing	20	0%	18	22-Jun-27	20-Jul-27	A1900, A1390	A1940, A2420
A1920	Erect Girders Spans 9 to 11, Incl over I-5, I-84, & RR	4	0%	0	31-Jul-27	08-Aug-27	A1830, A2470,	A1930
A1930	Form & Reinforce Spans 9 to 11	40	0%	0	09-Aug-27	04-Oct-27	A1920	A1960
A1940	FRP East Bascule Span Offsite	30	0%	13	28-Jul-27	08-Sep-27	A1910, A1810,	A1950
A1950	Float In and Place East Bascule Span	5	0%	13	09-Sep-27	15-Sep-27	A1940, A2418	A1960
A1960	Pour Spans 11 through 9 (Incl Cure)	30	0%	0	05-Oct-27	15-Nov-27	A1950, A1930	A1970
A1970	FRP Sidewalk Spans 11 through East Bascule	20	0%	0	16-Nov-27	15-Dec-27	A1960	A1980



🟦	Actual Work	🟥	Critical Remaining Work
🟩	Remaining Work	◆	Milestone
		▼	Summary

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1980	FRP Barrier Spans 11 through East Bascule	30	0%	0	16-Dec-27	28-Jan-28	A1970	A1990, A2440
A1990	East Bascule Testing	20	0%	0	31-Jan-28	25-Feb-28	A1980, A2200	A1030
East Approach		754	0%	203	18-May-24	07-May-27		
Demolition		95	0%	277	18-May-24	02-Oct-24		
A2000	Demo Superstructure over I-5 & I-84	8	0%	132	18-May-24	09-Jun-24	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	338	10-Jun-24	21-Jun-24	A2000	A2020
A2020	Demo Substructure Bents 21 through 24	10	0%	338	24-Jun-24	08-Jul-24	A2010	A2040
A2030	Demo Remainder of East Approach	60	0%	277	10-Jul-24	02-Oct-24	A1220	A1670, A2040
Substructure		489	0%	188	03-Oct-24	04-Sep-26		
A2040	Bent 11 Shafts	60	0%	277	03-Oct-24	30-Dec-24	A2020, A2030	A2050, A2060
A2050	FRP Bent 11 Columns & Cap	60	0%	277	31-Dec-24	25-Mar-25	A2040	A2070
A2060	Bent 12 Shafts	60	0%	277	31-Dec-24	25-Mar-25	A2040	A2070, A2080, A
A2065	Jet Grouting Bent 12	20	0%	188	13-Jul-26	07-Aug-26	A2060, A1835	A2105
A2070	FRP Bent 12 Columns & Cap	60	0%	277	26-Mar-25	18-Jun-25	A2050, A2060	A2090
A2080	Bent 13 Shafts	40	0%	297	26-Mar-25	20-May-25	A2060	A2090, A2100
A2090	FRP Bent 13 Columns & Cap	50	0%	277	19-Jun-25	28-Aug-25	A2080, A2070	A2110
A2100	Bent 14 Shafts	40	0%	307	21-May-25	17-Jul-25	A2080	A2120, A2110
A2105	Jet Grouting Bent 14	20	0%	188	10-Aug-26	04-Sep-26	A2065	A2160
A2110	FRP Bent 14 Columns & Cap	50	0%	277	29-Aug-25	07-Nov-25	A2090, A2100	A2130
A2120	Bent 15 Shafts	40	0%	317	18-Jul-25	12-Sep-25	A2100	A2130
A2130	FRP Bent 15 Columns & Cap	50	0%	277	10-Nov-25	22-Jan-26	A2110, A2120	A2150, A2140
A2140	Excavate & Shoring Bent 16	30	0%	277	23-Jan-26	05-Mar-26	A2130	A2150
A2150	FRP Bent 16	40	0%	277	06-Mar-26	30-Apr-26	A2130, A2140	A2160
Superstructure		170	0%	203	08-Sep-26	07-May-27		
A2160	Erect Girders Spans 12 to 15	20	0%	188	08-Sep-26	05-Oct-26	A2150, A2105	A2170
A2170	Form & Reinforce Deck Spans 12 to 15	60	0%	188	06-Oct-26	31-Dec-26	A2160	A2180
A2180	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	188	04-Jan-27	19-Feb-27	A2170	A2190
A2190	FRP Sidewalk Spans 12 to 15	20	0%	188	22-Feb-27	19-Mar-27	A2180	A2200
A2200	FRP Barrier Spans 12 to 15	30	0%	188	22-Mar-27	30-Apr-27	A2190	A1990, A2490
A2490	Miscellaneous/Striping, etc	5	0%	203	03-May-27	07-May-27	A2200	A1030



🟦 Actual Work
🟥 Critical Remaining Work
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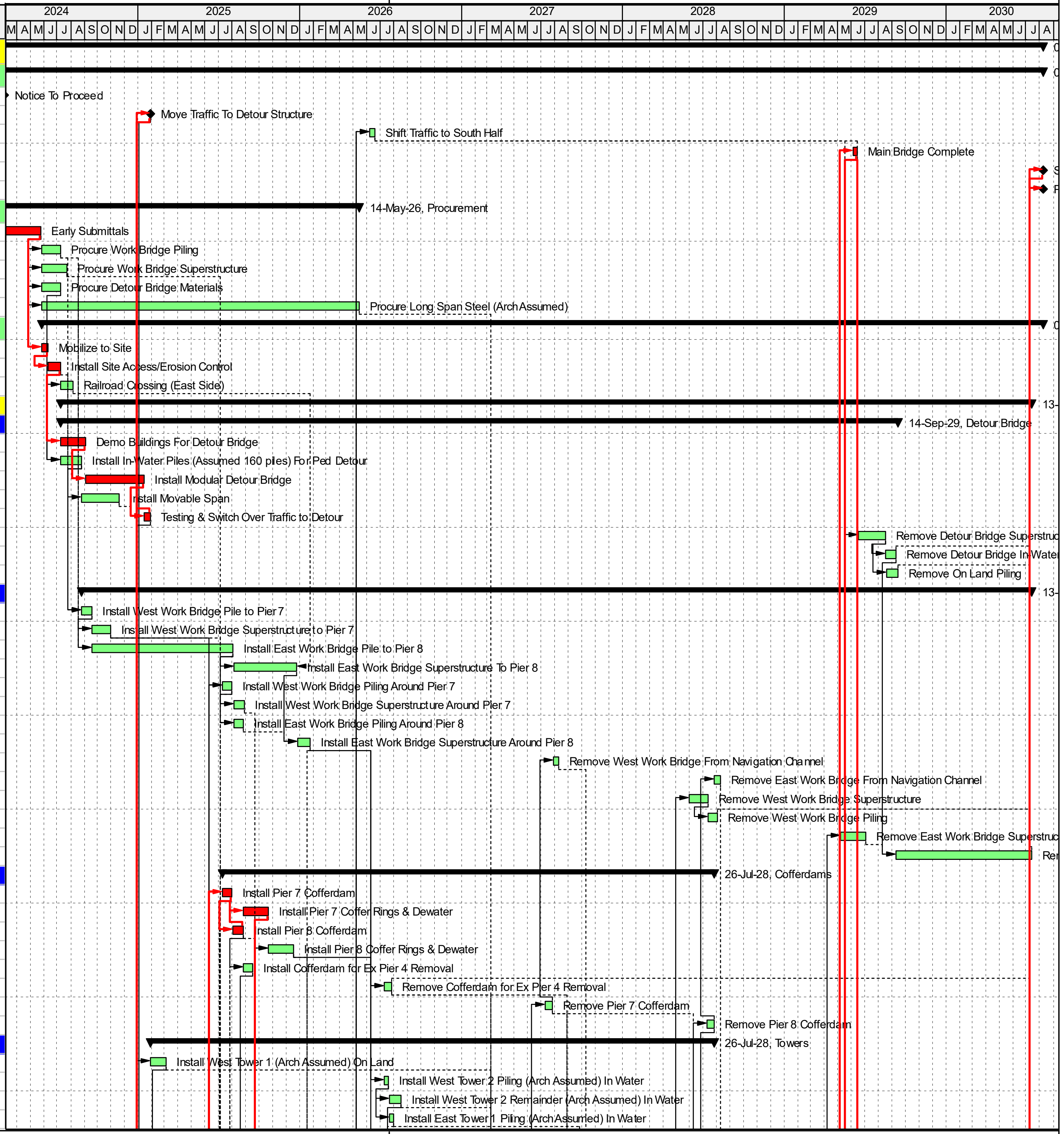
🟩 Remaining Work
◆ ◆ Milestone

TASK filter: All Activities

APPENDIX G-5

Replacement In-Kind Schedule with Long Span Approaches with Temporary Bridge

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Replacement In-Kind Long Span Approach		1645	0%	23	04-Mar-24	09-Aug-30		
General/Milestones		1645	0%	0	04-Mar-24	09-Aug-30		
A1000	Notice To Proceed	0	0%	18	04-Mar-24			A1050
A1010	Move Traffic To Detour Structure	0	0%	51	29-Jan-25		A1150	A1220, A1590, A
A1020	Shift Traffic to South Half	10	0%	760	08-Jun-26	19-Jun-26	A1390, A2200,	A1410, A2210
A1030	Main Bridge Complete	8	0%	0	06-Jun-29	15-Jun-29*	A1990	A2390, A1410, A
A1035	South Approaches Complete	0	0%	0		09-Aug-30	A2500, A2510	A1040
A1040	Project Completion	0	0%	0		09-Aug-30*	A2430, A2450,	
Procurement		560	0%	251	04-Mar-24	14-May-26		
A1050	Early Submittals	60	0%	18	04-Mar-24	24-May-24	A1000	A1060, A1070, A
A1060	Procure Work Bridge Piling	30	0%	52	28-May-24	09-Jul-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	246	28-May-24	23-Jul-24	A1050	A1170, A1190
A1080	Procure Detour Bridge Materials	30	0%	18	28-May-24	09-Jul-24	A1050	A1120
A1400	Procure Long Span Steel (Arch Assumed)	500	0%	251	28-May-24	14-May-26	A1050	A1840
Construction		1585	0%	23	28-May-24	09-Aug-30		
A1090	Mobilize to Site	10	0%	18	28-May-24	10-Jun-24	A1050	A1100
A1100	Install Site Access/Erosion Control	20	0%	18	11-Jun-24	09-Jul-24	A1090	A1110, A1120, A
A1110	Railroad Crossing (East Side)	20	0%	467	10-Jul-24	06-Aug-24	A1100	A1190
Temporary Works		1535	0%	20	10-Jul-24	13-Jul-30		
Detour Bridge		1320	0%	235	10-Jul-24	14-Sep-29		
A1115	Demo Buildings For Detour Bridge	40	0%	51	10-Jul-24	04-Sep-24	A1100	A1130
A1120	Install In-Water Piles (Assumed 160 piles) For Ped Det	40	0%	22	10-Jul-24	24-Aug-24	A1100, A1080	A1140, A1160
A1130	Install Modular Detour Bridge	90	0%	51	05-Sep-24	14-Jan-25	A1115	A1150
A1140	Install Movable Span	60	0%	88	26-Aug-24	18-Nov-24	A1120	A1150
A1150	Testing & Switch Over Traffic to Detour	10	0%	51	15-Jan-25	28-Jan-25	A1140, A1130	A1010, A2560
A2390	Remove Detour Bridge Superstructure	45	0%	19	18-Jun-29	17-Aug-29	A1030	A2400, A2410
A2400	Remove Detour Bridge In-Water Piling	20	0%	23	18-Aug-29	10-Sep-29	A2390	A1040, A2450
A2410	Remove On Land Piling	20	0%	235	20-Aug-29	14-Sep-29	A2390	A1040
Work Bridges		1502	0%	20	26-Aug-24	13-Jul-30		
A1160	Install West Work Bridge Pile to Pier 7	20	0%	22	26-Aug-24	18-Sep-24	A1100, A1060,	A1170, A1180
A1170	Install West Work Bridge Superstructure to Pier 7	30	0%	206	19-Sep-24	30-Oct-24	A1160, A1070	A1665, A1660
A1180	Install East Work Bridge Pile to Pier 8	40	0%	37	19-Sep-24	02-Aug-25	A1060, A1160	A1190, A2415
A1190	Install East Work Bridge Superstructure To Pier 8	100	0%	116	04-Aug-25	24-Dec-25	A1180, A1070,	A2416
A1660	Install West Work Bridge Piling Around Pier 7	20	0%	38	10-Jul-25	01-Aug-25	A1620, A1600,	A1665, A2415
A1665	Install West Work Bridge Superstructure Around Pier 7	20	0%	36	04-Aug-25	29-Aug-25	A1660, A1170	A1640
A2415	Install East Work Bridge Piling Around Pier 8	20	0%	37	04-Aug-25	26-Aug-25	A1610, A1630,	A2416
A2416	Install East Work Bridge Superstructure Around Pier 8	20	0%	116	26-Dec-25	23-Jan-26	A2415, A1190	A1650, A1235, A
A2417	Remove West Work Bridge From Navigation Channel	10	0%	293	28-Jul-27	10-Aug-27	A2460	A1870
A2418	Remove East Work Bridge From Navigation Channel	10	0%	139	27-Jul-28	09-Aug-28	A2470	A1950
A2420	Remove West Work Bridge Superstructure	30	0%	521	30-May-28	11-Jul-28	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	165	12-Jul-28	03-Aug-28	A2420	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	68	09-May-29	03-Jul-29	A1980	A2450
A2450	Remove East Work Bridge Piling	30	0%	23	11-Sep-29	13-Jul-30	A2440, A2400	A1040
Cofferdams		774	0%	53	10-Jul-25	26-Jul-28		
A1200	Install Pier 7 Cofferdam	20	0%	0	10-Jul-25	01-Aug-25	A1600, A1620	A1205, A1210
A1205	Install Pier 7 Coffer Rings & Dewater	40	0%	0	26-Aug-25	21-Oct-25	A1200, A1210	A1640, A1215
A1210	Install Pier 8 Cofferdam	20	0%	0	02-Aug-25	25-Aug-25	A1610, A1630,	A1215, A1225, A
A1215	Install Pier 8 Coffer Rings & Dewater	40	0%	140	22-Oct-25	18-Dec-25	A1210, A1205	A1650, A1235
A1225	Install Cofferdam for Ex Pier 4 Removal	18	0%	20	26-Aug-25	17-Sep-25	A1610, A2000,	A1670
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	65	10-Jul-26	27-Jul-26	A1670, A1215,	A1040, A1840, A
A2460	Remove Pier 7 Cofferdam	15	0%	102	10-Jul-27	27-Jul-27	A1720	A1860, A2470, A
A2470	Remove Pier 8 Cofferdam	15	0%	65	10-Jul-28	26-Jul-28	A1780, A2460	A1940, A2418
Towers		888	0%	29	29-Jan-25	26-Jul-28		
A2560	Install West Tower 1 (Arch Assumed) On Land	25	0%	556	29-Jan-25	04-Mar-25	A1150	A2610, A1840
A2570	Install West Tower 2 Piling (Arch Assumed) In Water	10	0%	70	10-Jul-26	21-Jul-26	A2416	A2580, A2590
A2580	Install West Tower 2 Remainder (Arch Assumed) In Wa	20	0%	185	22-Jul-26	18-Aug-26	A2570	A1840, A2600
A2590	Install East Tower 1 Piling (Arch Assumed) In Water	10	0%	128	22-Jul-26	01-Aug-26	A2570	A2600, A1920



🟦	Actual Work
🟥	Critical Remaining Work
▼	Summary
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◆ ◆	Milestone

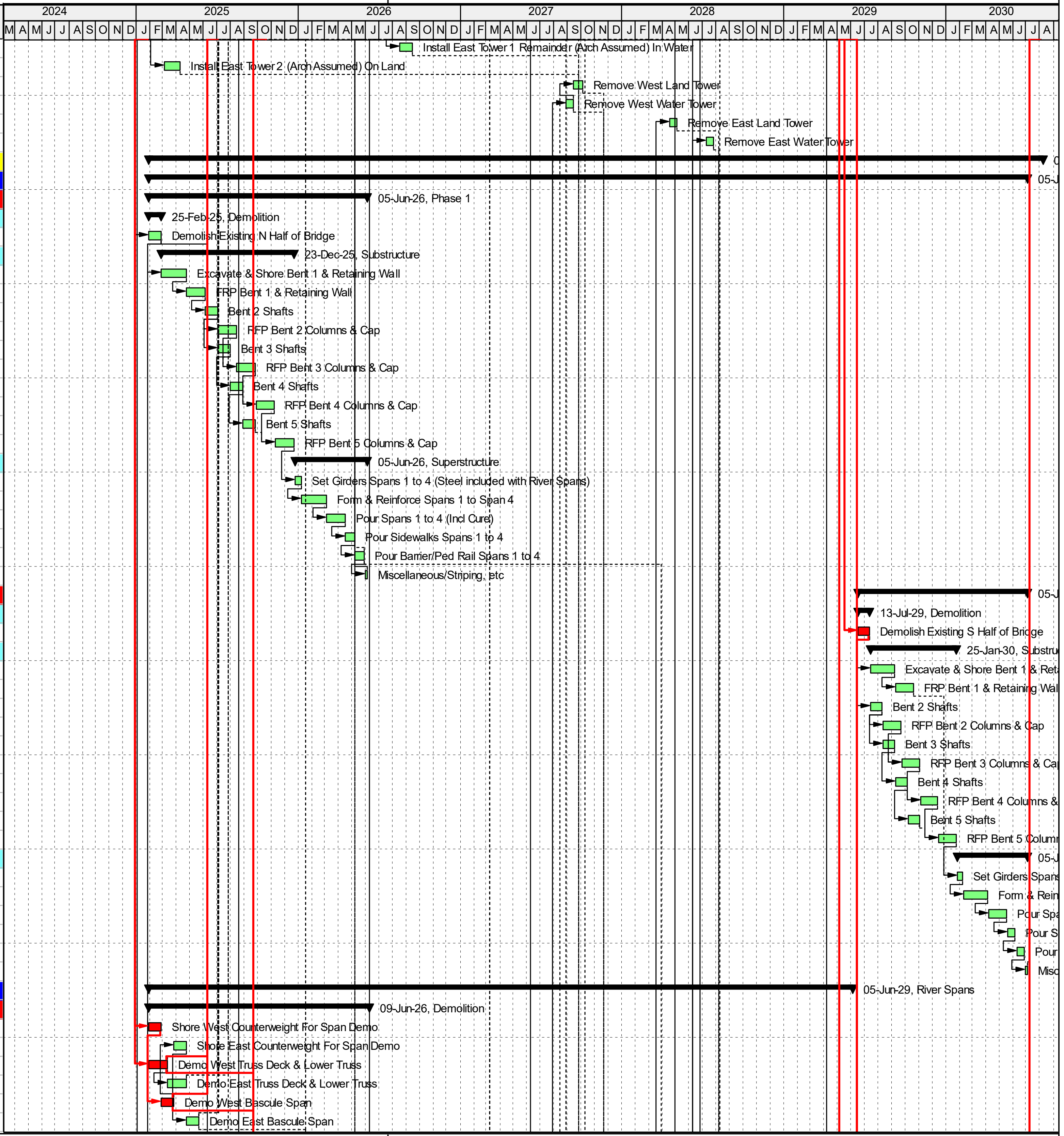
TASK filter: All Activities

EQRB NEPA Replacement In-Kind Long Span Approaches (With Detour Bridge)

Classic Schedule Layout

18-Dec-19 21:41

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A2600	Install East Tower 1 Remainder (Arch Assumed) In Wat	20	0%	281	19-Aug-26	16-Sep-26	A2590, A2580	A1920
A2610	Install East Tower 2 (Arch Assumed) On Land	25	0%	647	05-Mar-25	08-Apr-25	A2560	A1920
A2620	Remove West Land Tower	15	0%	214	15-Sep-27	05-Oct-27	A1840, A2630	A1851
A2630	Remove West Water Tower	15	0%	30	28-Aug-27	14-Sep-27	A1840	A1851, A2620
A2670	Remove East Land Tower	15	0%	85	17-Apr-28	05-May-28	A1920	A1931
A2680	Remove East Water Tower	15	0%	36	10-Jul-28	26-Jul-28	A1920	A1931
New Bridge		1415	0%	23	29-Jan-25	09-Aug-30		
West Approach		1390	0%	25	29-Jan-25	05-Jul-30		
Phase 1		345	0%	760	29-Jan-25	05-Jun-26		
Demolition		20	0%	143	29-Jan-25	25-Feb-25		
A1220	Demolish Existing N Half of Bridge	20	0%	143	29-Jan-25	25-Feb-25	A1010	A1635, A2030, A
Substructure		210	0%	647	26-Feb-25	23-Dec-25		
A1230	Excavate & Shore Bent 1 & Retaining Wall	40	0%	647	26-Feb-25	22-Apr-25	A1220	A1240
A1240	FRP Bent 1 & Retaining Wall	30	0%	647	23-Apr-25	04-Jun-25	A1230	A1250
A1250	Bent 2 Shafts	20	0%	647	05-Jun-25	02-Jul-25	A1240	A1260, A1270
A1260	RFP Bent 2 Columns & Cap	30	0%	647	03-Jul-25	14-Aug-25	A1250	A1280
A1270	Bent 3 Shafts	20	0%	657	03-Jul-25	31-Jul-25	A1250	A1290, A1280
A1280	RFP Bent 3 Columns & Cap	30	0%	647	15-Aug-25	26-Sep-25	A1260, A1270	A1300
A1290	Bent 4 Shafts	20	0%	667	01-Aug-25	28-Aug-25	A1270	A1310, A1300
A1300	RFP Bent 4 Columns & Cap	30	0%	647	29-Sep-25	07-Nov-25	A1280, A1290	A1320
A1310	Bent 5 Shafts	20	0%	677	29-Aug-25	26-Sep-25	A1290	A1320
A1320	RFP Bent 5 Columns & Cap	30	0%	647	10-Nov-25	23-Dec-25	A1300, A1310	A1350
Superstructure		115	0%	760	24-Dec-25	05-Jun-26		
A1350	Set Girders Spans 1 to 4 (Steel included with River Spa	10	0%	647	24-Dec-25	08-Jan-26	A1320	A1360
A1360	Form & Reinforce Spans 1 to Span 4	40	0%	647	09-Jan-26	05-Mar-26	A1350	A1370
A1370	Pour Spans 1 to 4 (Incl Cure)	30	0%	647	06-Mar-26	16-Apr-26	A1360	A1380
A1380	Pour Sidewalks Spans 1 to 4	15	0%	647	17-Apr-26	07-May-26	A1370	A1390
A1390	Pour Barrier/Ped Rail Spans 1 to 4	15	0%	647	08-May-26	29-May-26	A1380	A1910, A1020, A
A2480	Miscellaneous/Striping, etc	5	0%	760	01-Jun-26	05-Jun-26	A1390	A1020
Phase 2		275	0%	25	18-Jun-29	05-Jul-30		
Demolition		20	0%	0	18-Jun-29	13-Jul-29		
A1410	Demolish Existing S Half of Bridge	20	0%	0	18-Jun-29	13-Jul-29	A1020, A1030	A2210, A1420, A
Substructure		140	0%	25	16-Jul-29	25-Jan-30		
A1420	Excavate & Shore Bent 1 & Retaining Wall	40	0%	95	16-Jul-29	07-Sep-29	A1410	A1430
A1430	FRP Bent 1 & Retaining Wall	30	0%	95	10-Sep-29	19-Oct-29	A1420	A1540
A1440	Bent 2 Shafts	20	0%	25	16-Jul-29	10-Aug-29	A1410	A1450, A1460
A1450	RFP Bent 2 Columns & Cap	30	0%	25	13-Aug-29	21-Sep-29	A1440	A1470
A1460	Bent 3 Shafts	20	0%	35	13-Aug-29	07-Sep-29	A1440	A1480, A1470
A1470	RFP Bent 3 Columns & Cap	30	0%	25	24-Sep-29	02-Nov-29	A1450, A1460	A1490
A1480	Bent 4 Shafts	20	0%	45	10-Sep-29	05-Oct-29	A1460	A1500, A1490
A1490	RFP Bent 4 Columns & Cap	30	0%	25	05-Nov-29	14-Dec-29	A1470, A1480	A1510
A1500	Bent 5 Shafts	20	0%	55	08-Oct-29	02-Nov-29	A1480	A1510
A1510	RFP Bent 5 Columns & Cap	30	0%	25	17-Dec-29	25-Jan-30	A1490, A1500	A1540
Superstructure		115	0%	25	28-Jan-30	05-Jul-30		
A1540	Set Girders Spans 1 to 4 (Steel included with River Spa	10	0%	25	28-Jan-30	08-Feb-30	A1510, A1430	A1550
A1550	Form & Reinforce Spans 1 to Span 4	40	0%	25	11-Feb-30	05-Apr-30	A1540	A1560
A1560	Pour Spans 1 to 4 (Incl Cure)	30	0%	25	08-Apr-30	17-May-30	A1550	A1570
A1570	Pour Sidewalks Spans 1 to 4	15	0%	25	20-May-30	07-Jun-30	A1560	A1580
A1580	Pour Barrier/Ped Rail Spans 1 to 4	15	0%	25	10-Jun-30	28-Jun-30	A1570	A2500
A2500	Miscellaneous/Striping, etc	5	0%	25	01-Jul-30	05-Jul-30	A1580	A1035
River Spans		1107	0%	0	29-Jan-25	05-Jun-29		
Demolition		347	0%	100	29-Jan-25	09-Jun-26		
A1590	Shore West Counterweight For Span Demo	20	0%	51	29-Jan-25	25-Feb-25	A1010	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	51	26-Mar-25	22-Apr-25	A1620	A1630
A1600	Demo West Truss Deck & Lower Truss	30	0%	71	29-Jan-25	11-Mar-25	A1010	A1610, A1640, A
A1610	Demo East Truss Deck & Lower Truss	30	0%	71	12-Mar-25	22-Apr-25	A1600	A1210, A2415, A
A1620	Demo West Bascule Span	20	0%	51	26-Feb-25	25-Mar-25	A1590	A1595, A1640, A
A1630	Demo East Bascule Span	20	0%	51	23-Apr-25	20-May-25	A1595	A1650, A1210, A



🟦 Actual Work
🟥 Critical Remaining Work
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🟩 Remaining Work
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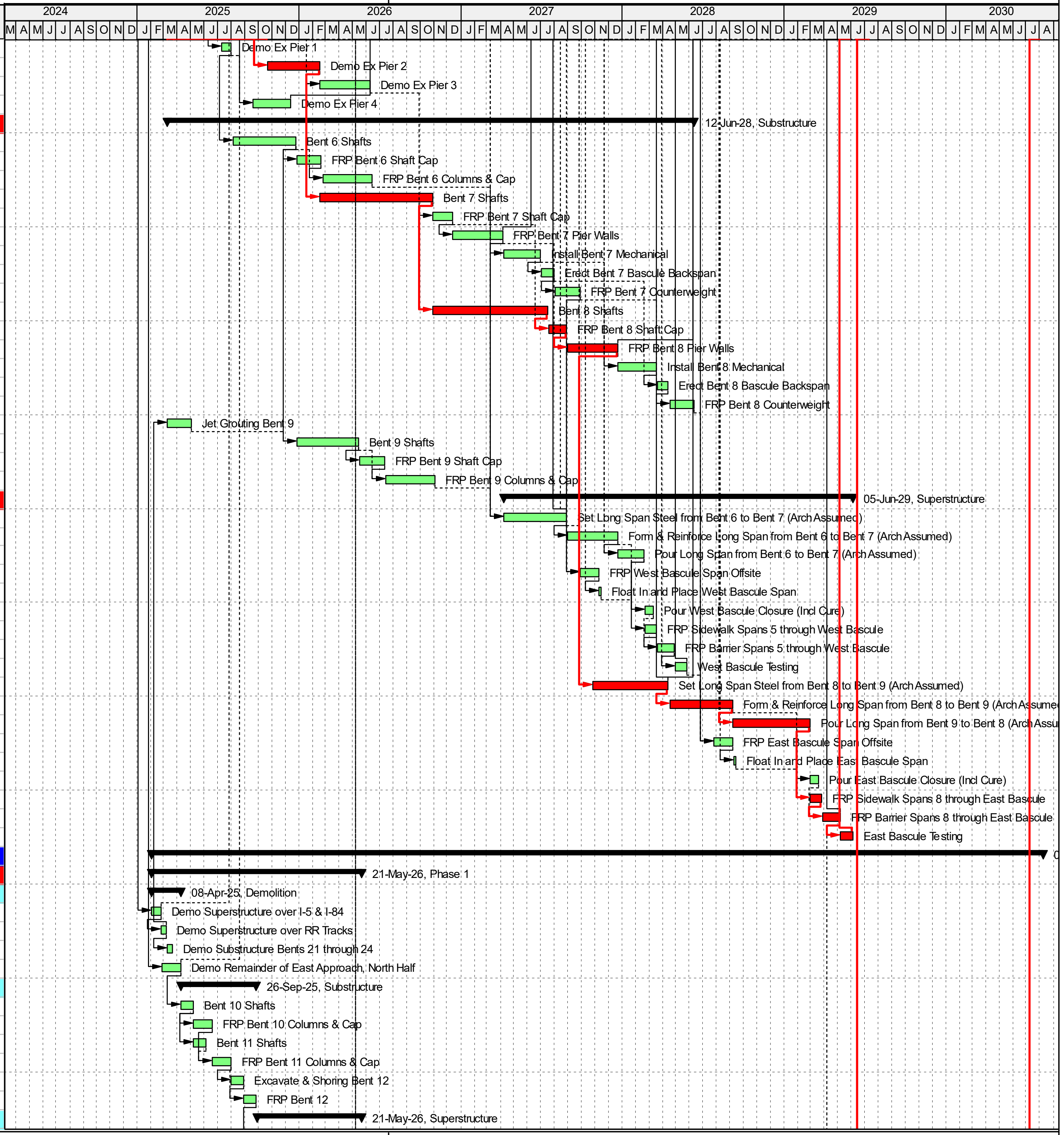
TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1635	Demo Ex Pier 1	20	0%	58	10-Jul-25	01-Aug-25	A1220	A1670, A1680
A1640	Demo Ex Pier 2	80	0%	0	22-Oct-25	16-Feb-26	A1600, A1620,	A1650, A1700
A1650	Demo Ex Pier 3	80	0%	100	17-Feb-26	09-Jun-26	A1640, A1630,	A1760
A1670	Demo Ex Pier 4	60	0%	198	18-Sep-25	12-Dec-25	A1635, A2030,	A1235
Substructure		829	0%	150	10-Mar-25	12-Jun-28		
A1680	Bent 6 Shafts	100	0%	130	04-Aug-25	24-Dec-25	A1635	A1690, A1685, A
A1685	FRP Bent 6 Shaft Cap	40	0%	230	26-Dec-25	20-Feb-26	A1680	A1690
A1690	FRP Bent 6 Columns & Cap	80	0%	230	23-Feb-26	15-Jun-26	A1680, A1685	A1840
A1700	Bent 7 Shafts	180	0%	0	17-Feb-26	29-Oct-26	A1640	A1710, A1760
A1710	FRP Bent 7 Shaft Cap	30	0%	24	30-Oct-26	14-Dec-26	A1700	A1720, A1770
A1720	FRP Bent 7 Pier Walls	80	0%	24	15-Dec-26	07-Apr-27	A1710	A1730, A1780, A
A1730	Install Bent 7 Mechanical	60	0%	230	08-Apr-27	01-Jul-27	A1720	A1740, A1790
A1740	Erect Bent 7 Bascule Backspan	20	0%	230	02-Jul-27	30-Jul-27	A1730	A1750, A1800
A1750	FRP Bent 7 Counterweight	40	0%	230	02-Aug-27	27-Sep-27	A1740	A1810, A1860
A1760	Bent 8 Shafts	180	0%	0	30-Oct-26	16-Jul-27	A1650, A1700	A1770
A1770	FRP Bent 8 Shaft Cap	30	0%	0	19-Jul-27	27-Aug-27	A1760, A1710	A1780
A1780	FRP Bent 8 Pier Walls	80	0%	0	30-Aug-27	22-Dec-27	A1770, A1720	A1790, A2470, A
A1790	Install Bent 8 Mechanical	60	0%	150	23-Dec-27	17-Mar-28	A1780, A1730	A1800
A1800	Erect Bent 8 Bascule Backspan	20	0%	150	20-Mar-28	14-Apr-28	A1790, A1740	A1810
A1810	FRP Bent 8 Counterweight	40	0%	150	17-Apr-28	12-Jun-28	A1800, A1750	A1940
A2540	Jet Grouting Bent 9	40	0%	293	10-Mar-25	02-May-25	A2010	A2640
A2640	Bent 9 Shafts	100	0%	130	26-Dec-25	15-May-26	A2540, A1680	A2660, A2650
A2650	FRP Bent 9 Shaft Cap	40	0%	130	18-May-26	14-Jul-26	A2640	A2660
A2660	FRP Bent 9 Columns & Cap	80	0%	130	15-Jul-26	04-Nov-26	A2640, A2650	A1840
Superstructure		550	0%	0	08-Apr-27	05-Jun-29		
A1840	Set Long Span Steel from Bent 6 to Bent 7 (Arch Assu	100	0%	24	08-Apr-27	27-Aug-27	A1690, A1720,	A1850, A1860, A
A1850	Form & Reinforce Long Span from Bent 6 to Bent 7 (A	80	0%	160	30-Aug-27	22-Dec-27	A1840	A1880, A1851
A1851	Pour Long Span from Bent 6 to Bent 7 (Arch Assumed	40	0%	160	23-Dec-27	18-Feb-28	A1850, A2620,	A1890, A1880
A1860	FRP West Bascule Span Offsite	30	0%	230	28-Sep-27	08-Nov-27	A1750, A2460,	A1870
A1870	Float In and Place West Bascule Span	5	0%	230	09-Nov-27	15-Nov-27	A1860, A2417	A1880
A1880	Pour West Bascule Closure (Incl Cure)	15	0%	165	21-Feb-28	10-Mar-28	A1870, A1850,	A1900
A1890	FRP Sidewalk Spans 5 through West Bascule	20	0%	160	21-Feb-28	17-Mar-28	A1851	A1900
A1900	FRP Barrier Spans 5 through West Bascule	30	0%	160	20-Mar-28	28-Apr-28	A1890, A1880	A1910
A1910	West Bascule Testing	20	0%	160	01-May-28	26-May-28	A1900, A1390	A1940, A2420
A1920	Set Long Span Steel from Bent 8 to Bent 9 (Arch Assu	120	0%	0	26-Oct-27	14-Apr-28	A1840, A2590,	A1930, A2670, A
A1930	Form & Reinforce Long Span from Bent 8 to Bent 9 (A	100	0%	0	17-Apr-28	06-Sep-28	A1920	A1960, A1931
A1931	Pour Long Span from Bent 9 to Bent 8 (Arch Assumed	120	0%	0	07-Sep-28	27-Feb-29	A1930, A2680,	A1960, A1970
A1940	FRP East Bascule Span Offsite	30	0%	119	27-Jul-28	07-Sep-28	A1910, A1810,	A1950
A1950	Float In and Place East Bascule Span	5	0%	119	08-Sep-28	14-Sep-28	A1940, A2418	A1960
A1960	Pour East Bascule Closure (Incl Cure)	15	0%	5	28-Feb-29	20-Mar-29	A1950, A1930,	A1980
A1970	FRP Sidewalk Spans 8 through East Bascule	20	0%	0	28-Feb-29	27-Mar-29	A1931	A1980
A1980	FRP Barrier Spans 8 through East Bascule	30	0%	0	28-Mar-29	08-May-29	A1970, A1960	A1990, A2440
A1990	East Bascule Testing	20	0%	0	09-May-29	05-Jun-29	A1980, A2200	A1030
East Approach		1412	0%	23	01-Feb-25	09-Aug-30		
Phase 1		332	0%	1103	01-Feb-25	21-May-26		
Demolition		47	0%	1388	01-Feb-25	08-Apr-25		
A2000	Demo Superstructure over I-5 & I-84	8	0%	58	01-Feb-25	23-Feb-25	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	293	24-Feb-25	07-Mar-25	A2000	A2020, A2540
A2020	Demo Substructure Bents 21 through 24	10	0%	1400	10-Mar-25	21-Mar-25	A2010	
A2030	Demo Remainder of East Approach, North Half	30	0%	311	26-Feb-25	08-Apr-25	A1220	A1670, A2080
Substructure		120	0%	757	09-Apr-25	26-Sep-25		
A2080	Bent 10 Shafts	20	0%	757	09-Apr-25	06-May-25	A2030	A2090, A2120
A2090	FRP Bent 10 Columns & Cap	30	0%	757	07-May-25	18-Jun-25	A2080	A2130
A2120	Bent 11 Shafts	20	0%	767	07-May-25	04-Jun-25	A2080	A2130
A2130	FRP Bent 11 Columns & Cap	30	0%	757	19-Jun-25	31-Jul-25	A2120, A2090	A2150, A2140
A2140	Excavate & Shoring Bent 12	20	0%	757	01-Aug-25	28-Aug-25	A2130	A2150
A2150	FRP Bent 12	20	0%	757	29-Aug-25	26-Sep-25	A2130, A2140	A2160
Superstructure		165	0%	770	29-Sep-25	21-May-26		



🟦	Actual Work	🟥	Critical Remaining Work
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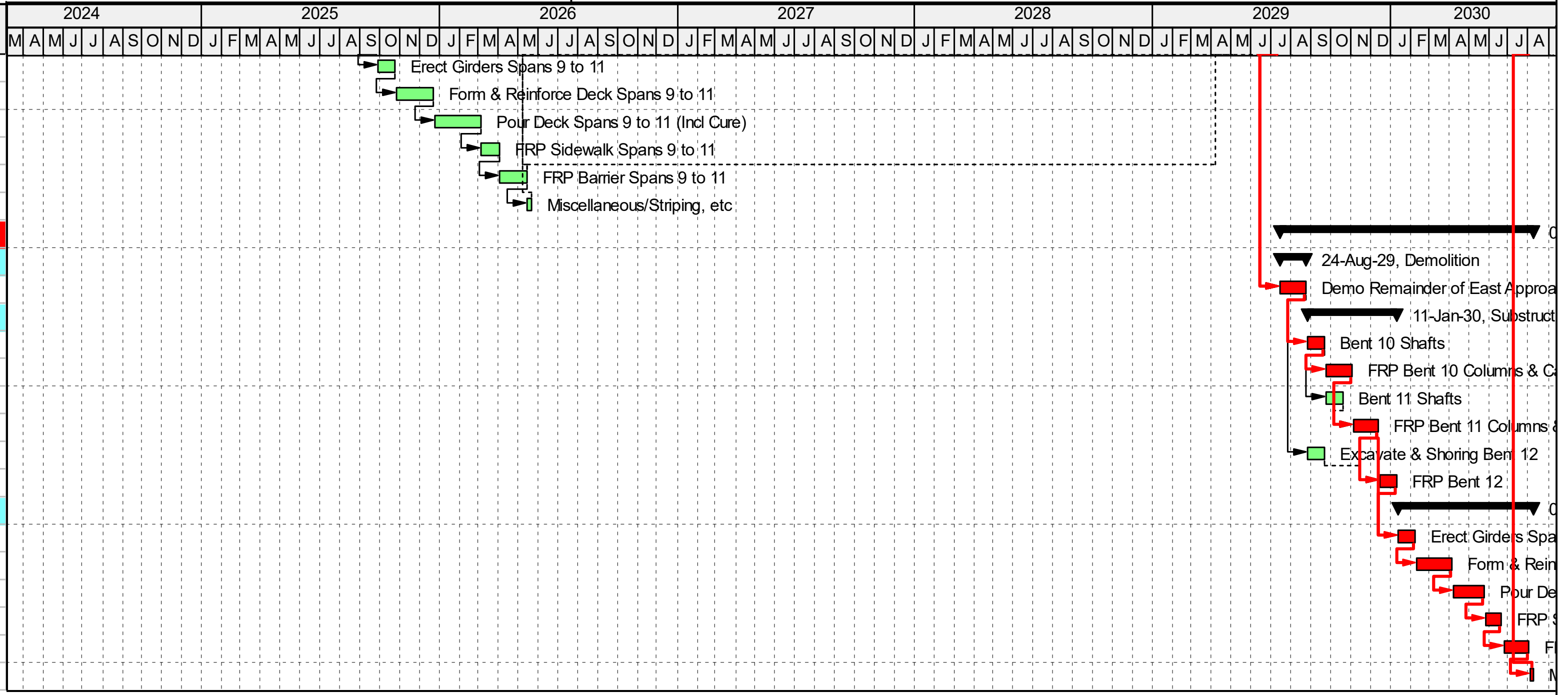
	Summary		

TASK filter: All Activities

EQRB NEPA Replacement In-Kind Long Span Approaches (With Detour Bridge) | Classic Schedule Layout | 18-Dec-19 21:41

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A2160	Erect Girders Spans 9 to 11	20	0%	757	29-Sep-25	24-Oct-25	A2150	A2170
A2170	Form & Reinforce Deck Spans 9 to 11	40	0%	757	27-Oct-25	23-Dec-25	A2160	A2180
A2180	Pour Deck Spans 9 to 11 (Incl Cure)	50	0%	757	24-Dec-25	05-Mar-26	A2170	A2190
A2190	FRP Sidewalk Spans 9 to 11	20	0%	757	06-Mar-26	02-Apr-26	A2180	A2200
A2200	FRP Barrier Spans 9 to 11	30	0%	757	03-Apr-26	14-May-26	A2190	A1990, A1020, A
A2490	Miscellaneous/Striping, etc	5	0%	770	15-May-26	21-May-26	A2200	A1020
Phase 2		280	0%	0	16-Jul-29	09-Aug-30		
Demolition		30	0%	0	16-Jul-29	24-Aug-29		
A2210	Demo Remainder of East Approach, South Half	30	0%	0	16-Jul-29	24-Aug-29	A1020, A1410,	A2260, A2320
Substructure		100	0%	0	27-Aug-29	11-Jan-30		
A2260	Bent 10 Shafts	20	0%	0	27-Aug-29	21-Sep-29	A2210	A2270, A2300
A2270	FRP Bent 10 Columns & Cap	30	0%	0	24-Sep-29	02-Nov-29	A2260	A2310
A2300	Bent 11 Shafts	20	0%	10	24-Sep-29	19-Oct-29	A2260	A2310
A2310	FRP Bent 11 Columns & Cap	30	0%	0	05-Nov-29	14-Dec-29	A2300, A2270	A2330, A2340
A2320	Excavate & Shoring Bent 12	20	0%	60	27-Aug-29	21-Sep-29	A2210	A2330
A2330	FRP Bent 12	20	0%	0	17-Dec-29	11-Jan-30	A2310, A2320	A2340
Superstructure		150	0%	0	14-Jan-30	09-Aug-30		
A2340	Erect Girders Spans 9 to 11	20	0%	0	14-Jan-30	08-Feb-30	A2330, A2310	A2350
A2350	Form & Reinforce Deck Spans 9 to 11	40	0%	0	11-Feb-30	05-Apr-30	A2340	A2360
A2360	Pour Deck Spans 9 to 11 (Incl Cure)	35	0%	0	08-Apr-30	24-May-30	A2350	A2370
A2370	FRP Sidewalk Spans 9 to 11	20	0%	0	27-May-30	21-Jun-30	A2360	A2380
A2380	FRP Barrier Spans 9 to 11	30	0%	0	24-Jun-30	02-Aug-30	A2370	A2510
A2510	Miscellaneous/Striping, etc	5	0%	0	05-Aug-30	09-Aug-30	A2380	A1035



🟦 Actual Work 🟥 Critical Remaining Work ▬ Summary
🟩 Remaining Work ◆ ◆ Milestone

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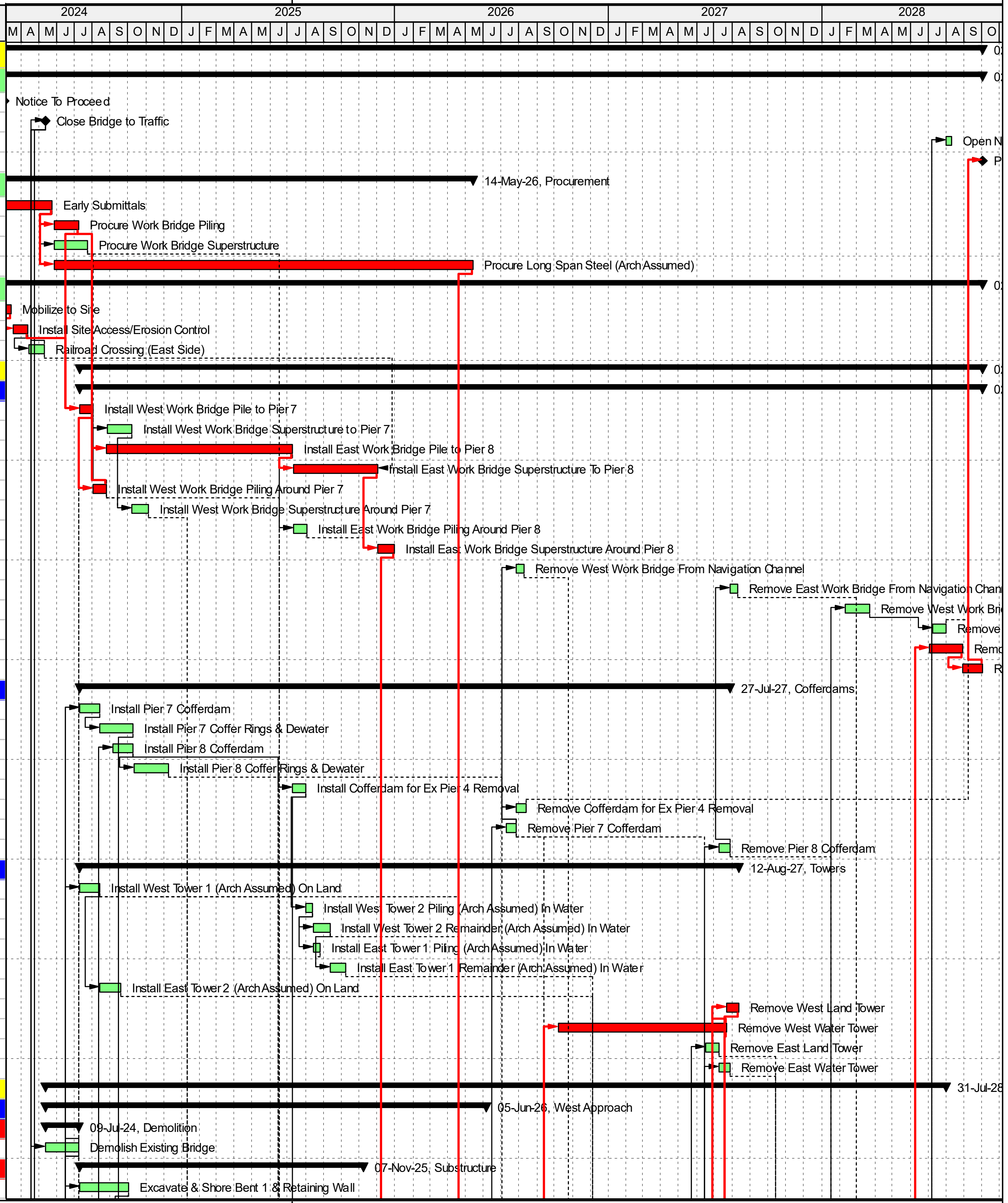
TASK filter: All Activities

APPENDIX G-6

Replacement In-Kind Schedule with Long Span Approaches NO Temporary Bridge

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Replacement In-Kind Long Span Approaches (No Detour E		1165	0%	0	04-Mar-24	02-Oct-28		
General/Milestones		1165	0%	0	04-Mar-24	02-Oct-28		
A1000	Notice To Proceed	0	0%	0	04-Mar-24			A1050, A1090
A1010	Close Bridge to Traffic	0	0%	1	13-May-24		A1110	A1220, A1590, A
A1030	Open New Bridge to Traffic	7	0%	0	01-Aug-28	09-Aug-28*	A1990, A2480, ,	
A1040	Project Completion	0	0%	0		02-Oct-28*	A2430, A2450, ,	
Procurement		560	0%	0	04-Mar-24	14-May-26		
A1050	Early Submittals	60	0%	0	04-Mar-24	24-May-24	A1000	A1060, A1070, A
A1060	Procure Work Bridge Piling	30	0%	0	28-May-24	09-Jul-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	120	28-May-24	23-Jul-24	A1050	A1170, A1190
A1080	Procure Long Span Steel (Arch Assumed)	500	0%	0	28-May-24	14-May-26	A1050	A1840
Construction		1165	0%	0	04-Mar-24	02-Oct-28		
A1090	Mobilize to Site	10	0%	1	04-Mar-24	15-Mar-24	A1000	A1100
A1100	Install Site Access/Erosion Control	20	0%	1	18-Mar-24	12-Apr-24	A1090	A1110, A1160
A1110	Railroad Crossing (East Side)	20	0%	1	15-Apr-24	10-May-24	A1100	A1190, A1010
Temporary Works		1075	0%	0	10-Jul-24	02-Oct-28		
Work Bridges		1075	0%	0	10-Jul-24	02-Oct-28		
A1160	Install West Work Bridge Pile to Pier 7	20	0%	0	10-Jul-24	01-Aug-24	A1100, A1060	A1170, A1180, A
A1170	Install West Work Bridge Superstructure to Pier 7	30	0%	97	26-Aug-24	07-Oct-24	A1160, A1070, ,	A1665
A1180	Install East Work Bridge Pile to Pier 8	40	0%	0	26-Aug-24	10-Jul-25	A1060, A1160, ,	A1190, A2415
A1190	Install East Work Bridge Superstructure To Pier 8	100	0%	0	11-Jul-25	02-Dec-25	A1180, A1070, ,	A2416
A1660	Install West Work Bridge Piling Around Pier 7	20	0%	0	02-Aug-24	24-Aug-24	A1620, A1600, ,	A1665, A2415, A
A1665	Install West Work Bridge Superstructure Around Pier 7	20	0%	97	08-Oct-24	04-Nov-24	A1660, A1170	A1700
A2415	Install East Work Bridge Piling Around Pier 8	20	0%	57	11-Jul-25	02-Aug-25	A1610, A1630, ,	A2416
A2416	Install East Work Bridge Superstructure Around Pier 8	20	0%	0	03-Dec-25	31-Dec-25	A2415, A1190	A1760
A2417	Remove West Work Bridge From Navigation Channel	10	0%	291	28-Jul-26	10-Aug-26	A2460	A1870
A2418	Remove East Work Bridge From Navigation Channel	10	0%	157	28-Jul-27	10-Aug-27	A2470	A1950
A2420	Remove West Work Bridge Superstructure	30	0%	118	11-Feb-28	23-Mar-28	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	53	10-Jul-28	01-Aug-28	A2420	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	0	03-Jul-28	28-Aug-28	A1980	A2450
A2450	Remove East Work Bridge Piling	30	0%	0	29-Aug-28	02-Oct-28	A2440	A1040
Cofferdams		774	0%	301	10-Jul-24	27-Jul-27		
A1200	Install Pier 7 Cofferdam	30	0%	42	10-Jul-24	13-Aug-24	A1600, A1620	A1205
A1205	Install Pier 7 Coffer Rings & Dewater	40	0%	35	14-Aug-24	09-Oct-24	A1200	A1640
A1210	Install Pier 8 Cofferdam	31	0%	1	05-Sep-24	10-Oct-24	A1610, A1630	A1215, A1225
A1215	Install Pier 8 Coffer Rings & Dewater	40	0%	189	11-Oct-24	09-Dec-24	A1210	A1650, A1235
A1225	Install Cofferdam for Ex Pier 4 Removal	20	0%	48	10-Jul-25	01-Aug-25	A1610, A2000, ,	A1670, A2510
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	202	28-Jul-26	13-Aug-26	A1670, A1215, ,	A1040
A2460	Remove Pier 7 Cofferdam	15	0%	100	10-Jul-26	27-Jul-26	A1720	A1860, A2470, A
A2470	Remove Pier 8 Cofferdam	15	0%	64	10-Jul-27	27-Jul-27	A1780, A2460	A1940, A2418
Towers		786	0%	60	10-Jul-24	12-Aug-27		
A2500	Install West Tower 1 (Arch Assumed) On Land	25	0%	286	10-Jul-24	13-Aug-24	A1220	A2510, A2550, A
A2510	Install West Tower 2 Piling (Arch Assumed) In Water	10	0%	48	02-Aug-25	13-Aug-25	A2500, A1225	A2520, A2530
A2520	Install West Tower 2 Remainder (Arch Assumed) In Water	20	0%	171	14-Aug-25	11-Sep-25	A2510	A2540, A1840
A2530	Install East Tower 1 Piling (Arch Assumed) In Water	10	0%	118	14-Aug-25	25-Aug-25	A2510	A2540
A2540	Install East Tower 1 Remainder (Arch Assumed) In Water	20	0%	307	12-Sep-25	09-Oct-25	A2530, A2520	A1920
A2550	Install East Tower 2 (Arch Assumed) On Land	25	0%	576	14-Aug-24	18-Sep-24	A2500	A1920
A2560	Remove West Land Tower	15	0%	0	23-Jul-27	12-Aug-27	A1840, A2570	A1851
A2570	Remove West Water Tower	15	0%	0	07-Oct-26	22-Jul-27	A1840	A1851, A2560
A2580	Remove East Land Tower	15	0%	85	17-Jun-27	08-Jul-27	A1920	A1931
A2590	Remove East Water Tower	15	0%	64	10-Jul-27	27-Jul-27	A1920	A1931
New Bridge		1071	0%	44	13-May-24	31-Jul-28		
West Approach		525	0%	546	13-May-24	05-Jun-26		
Demolition		40	0%	49	13-May-24	09-Jul-24		
A1220	Demolish Existing Bridge	40	0%	49	13-May-24	09-Jul-24	A1010	A1635, A2030, A
Substructure		340	0%	411	10-Jul-24	07-Nov-25		
A1230	Excavate & Shore Bent 1 & Retaining Wall	60	0%	411	10-Jul-24	02-Oct-24	A1220	A1240



🟦 Actual Work 🟥 Critical Remaining Work ▬ Summary
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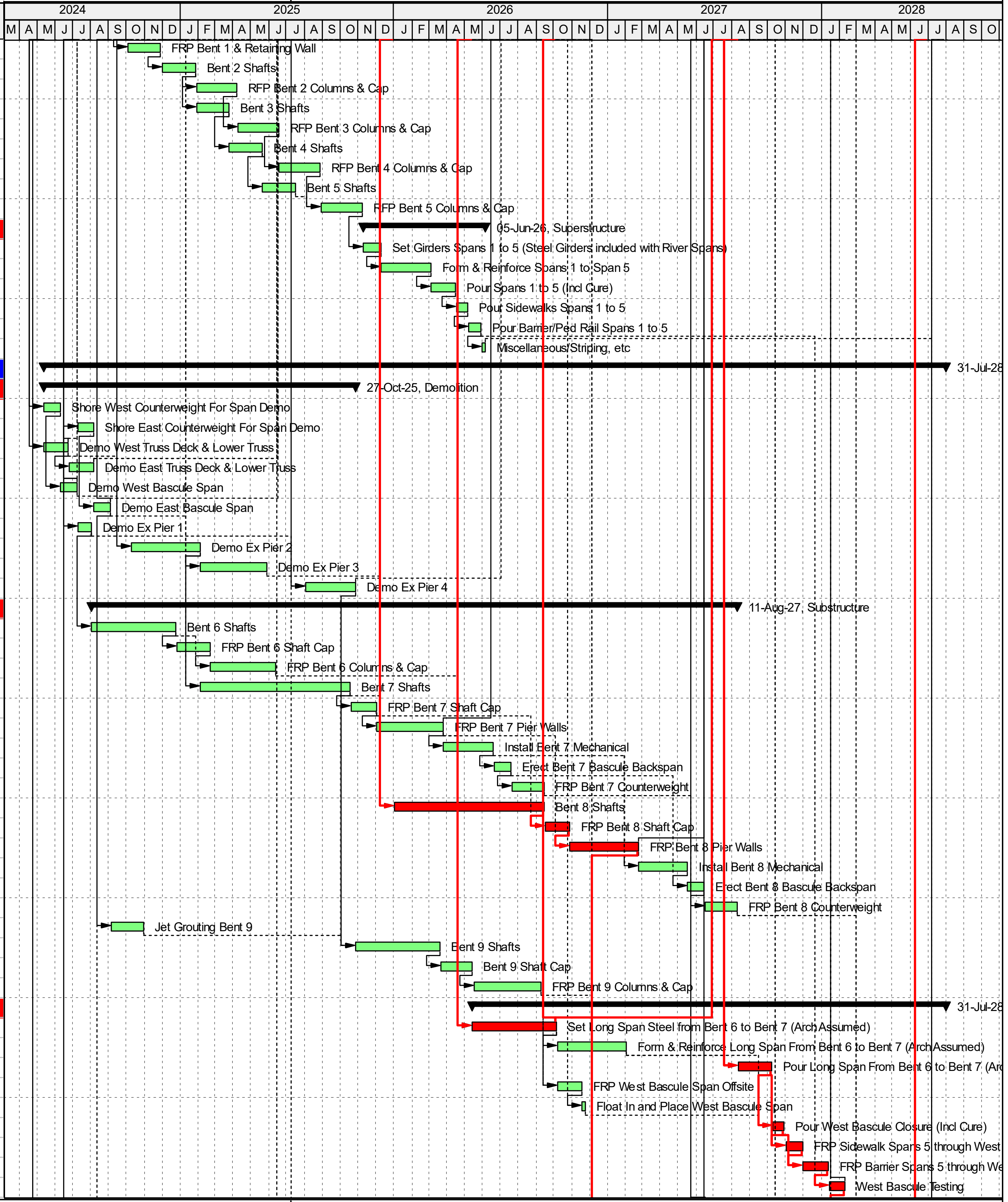
TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1240	FRP Bent 1 & Retaining Wall	40	0%	411	03-Oct-24	27-Nov-24	A1230	A1250
A1250	Bent 2 Shafts	40	0%	411	02-Dec-24	28-Jan-25	A1240	A1260, A1270
A1260	RFP Bent 2 Columns & Cap	50	0%	411	29-Jan-25	08-Apr-25	A1250	A1280
A1270	Bent 3 Shafts	40	0%	421	29-Jan-25	25-Mar-25	A1250	A1290, A1280
A1280	RFP Bent 3 Columns & Cap	50	0%	411	09-Apr-25	18-Jun-25	A1260, A1270	A1300
A1290	Bent 4 Shafts	40	0%	431	26-Mar-25	20-May-25	A1270	A1310, A1300
A1300	RFP Bent 4 Columns & Cap	50	0%	411	19-Jun-25	28-Aug-25	A1280, A1290	A1320
A1310	Bent 5 Shafts	40	0%	441	21-May-25	17-Jul-25	A1290	A1320
A1320	RFP Bent 5 Columns & Cap	50	0%	411	29-Aug-25	07-Nov-25	A1300, A1310	A1350
Superstructure		145	0%	546	10-Nov-25	05-Jun-26		
A1350	Set Girders Spans 1 to 5 (Steel Girders included with River Spans)	20	0%	411	10-Nov-25	09-Dec-25	A1320	A1360
A1360	Form & Reinforce Spans 1 to Span 5	60	0%	411	10-Dec-25	05-Mar-26	A1350	A1370
A1370	Pour Spans 1 to 5 (Incl Cure)	30	0%	411	06-Mar-26	16-Apr-26	A1360	A1380
A1380	Pour Sidewalks Spans 1 to 5	15	0%	411	17-Apr-26	07-May-26	A1370	A1390
A1390	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	411	08-May-26	29-May-26	A1380	A1910, A2480
A2480	Miscellaneous/Striping, etc	5	0%	546	01-Jun-26	05-Jun-26	A1390	A1030
River Spans		1071	0%	0	13-May-24	31-Jul-28		
Demolition		371	0%	75	13-May-24	27-Oct-25		
A1590	Shore West Counterweight For Span Demo	20	0%	1	13-May-24	10-Jun-24	A1010	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	1	10-Jul-24	06-Aug-24	A1620	A1630
A1600	Demo West Truss Deck & Lower Truss	30	0%	21	13-May-24	24-Jun-24	A1010	A1610, A1640, A
A1610	Demo East Truss Deck & Lower Truss	30	0%	21	25-Jun-24	06-Aug-24	A1600	A1210, A2415, A
A1620	Demo West Bascule Span	20	0%	1	11-Jun-24	09-Jul-24	A1590	A1595, A1640, A
A1630	Demo East Bascule Span	20	0%	1	07-Aug-24	04-Sep-24	A1595	A1650, A1210, A
A1635	Demo Ex Pier 1	20	0%	59	10-Jul-24	01-Aug-24	A1220	A1670, A1680
A1640	Demo Ex Pier 2	80	0%	35	10-Oct-24	04-Feb-25	A1600, A1620,	A1650, A1700
A1650	Demo Ex Pier 3	80	0%	150	05-Feb-25	28-May-25	A1640, A1630,	A1760
A1670	Demo Ex Pier 4	60	0%	75	04-Aug-25	27-Oct-25	A1635, A2030,	A1820, A1235
Substructure		768	0%	126	02-Aug-24	11-Aug-27		
A1680	Bent 6 Shafts	100	0%	233	02-Aug-24	24-Dec-24	A1635	A1690, A1685
A1685	FRP Bent 6 Shaft Cap	40	0%	233	26-Dec-24	20-Feb-25	A1680	A1690
A1690	FRP Bent 6 Columns & Cap	80	0%	233	21-Feb-25	13-Jun-25	A1680, A1685	A1840
A1700	Bent 7 Shafts	180	0%	35	05-Feb-25	17-Oct-25	A1640, A1665	A1710, A1760, A
A1710	FRP Bent 7 Shaft Cap	30	0%	35	20-Oct-25	02-Dec-25	A1700	A1720, A1770
A1720	FRP Bent 7 Pier Walls	80	0%	35	03-Dec-25	26-Mar-26	A1710	A1730, A1780, A
A1730	Install Bent 7 Mechanical	60	0%	236	27-Mar-26	19-Jun-26	A1720	A1740, A1790
A1740	Erect Bent 7 Bascule Backspan	20	0%	236	22-Jun-26	20-Jul-26	A1730	A1750, A1800
A1750	FRP Bent 7 Counterweight	40	0%	236	21-Jul-26	15-Sep-26	A1740	A1810, A1860
A1760	Bent 8 Shafts	180	0%	0	02-Jan-26	15-Sep-26	A1650, A1700,	A1770
A1770	FRP Bent 8 Shaft Cap	30	0%	0	16-Sep-26	27-Oct-26	A1760, A1710	A1780
A1780	FRP Bent 8 Pier Walls	80	0%	0	28-Oct-26	22-Feb-27	A1770, A1720	A1790, A2470, A
A1790	Install Bent 8 Mechanical	60	0%	126	23-Feb-27	17-May-27	A1780, A1730	A1800
A1800	Erect Bent 8 Bascule Backspan	20	0%	126	18-May-27	15-Jun-27	A1790, A1740	A1810
A1810	FRP Bent 8 Counterweight	40	0%	126	16-Jun-27	11-Aug-27	A1800, A1750	A1940, A1950
A1815	Jet Grouting Bent 9	40	0%	326	05-Sep-24	30-Oct-24	A1630, A2010	A1820
A1820	Bent 9 Shafts	100	0%	75	28-Oct-25	20-Mar-26	A1670, A1700,	A1825
A1825	Bent 9 Shaft Cap	40	0%	75	23-Mar-26	15-May-26	A1820	A1830
A1830	FRP Bent 9 Columns & Cap	80	0%	75	18-May-26	09-Sep-26	A1825	A1920
Superstructure		561	0%	0	15-May-26	31-Jul-28		
A1840	Set Long Span Steel from Bent 6 to Bent 7 (Arch Assumed)	100	0%	0	15-May-26	06-Oct-26	A1690, A1720,	A1850, A1860, A
A1850	Form & Reinforce Long Span From Bent 6 to Bent 7 (Arch Assumed)	80	0%	136	07-Oct-26	01-Feb-27	A1840	A1880, A1851
A1851	Pour Long Span From Bent 6 to Bent 7 (Arch Assumed)	40	0%	0	13-Aug-27	08-Oct-27	A1850, A2560,	A1880, A1890
A1860	FRP West Bascule Span Offsite	30	0%	221	07-Oct-26	17-Nov-26	A1750, A2460,	A1870
A1870	Float In and Place West Bascule Span	5	0%	221	18-Nov-26	24-Nov-26	A1860, A2417	A1880
A1880	Pour West Bascule Closure (Incl Cure)	15	0%	0	11-Oct-27	29-Oct-27	A1870, A1850,	A1890, A1900
A1890	FRP Sidewalk Spans 5 through West Bascule	20	0%	0	01-Nov-27	30-Nov-27	A1880, A1851	A1900
A1900	FRP Barrier Spans 5 through West Bascule	30	0%	0	01-Dec-27	13-Jan-28	A1890, A1880	A1910
A1910	West Bascule Testing	20	0%	0	14-Jan-28	10-Feb-28	A1900, A1390	A1940, A2420



🟦 Actual Work 🟥 Critical Remaining Work ▼ Summary
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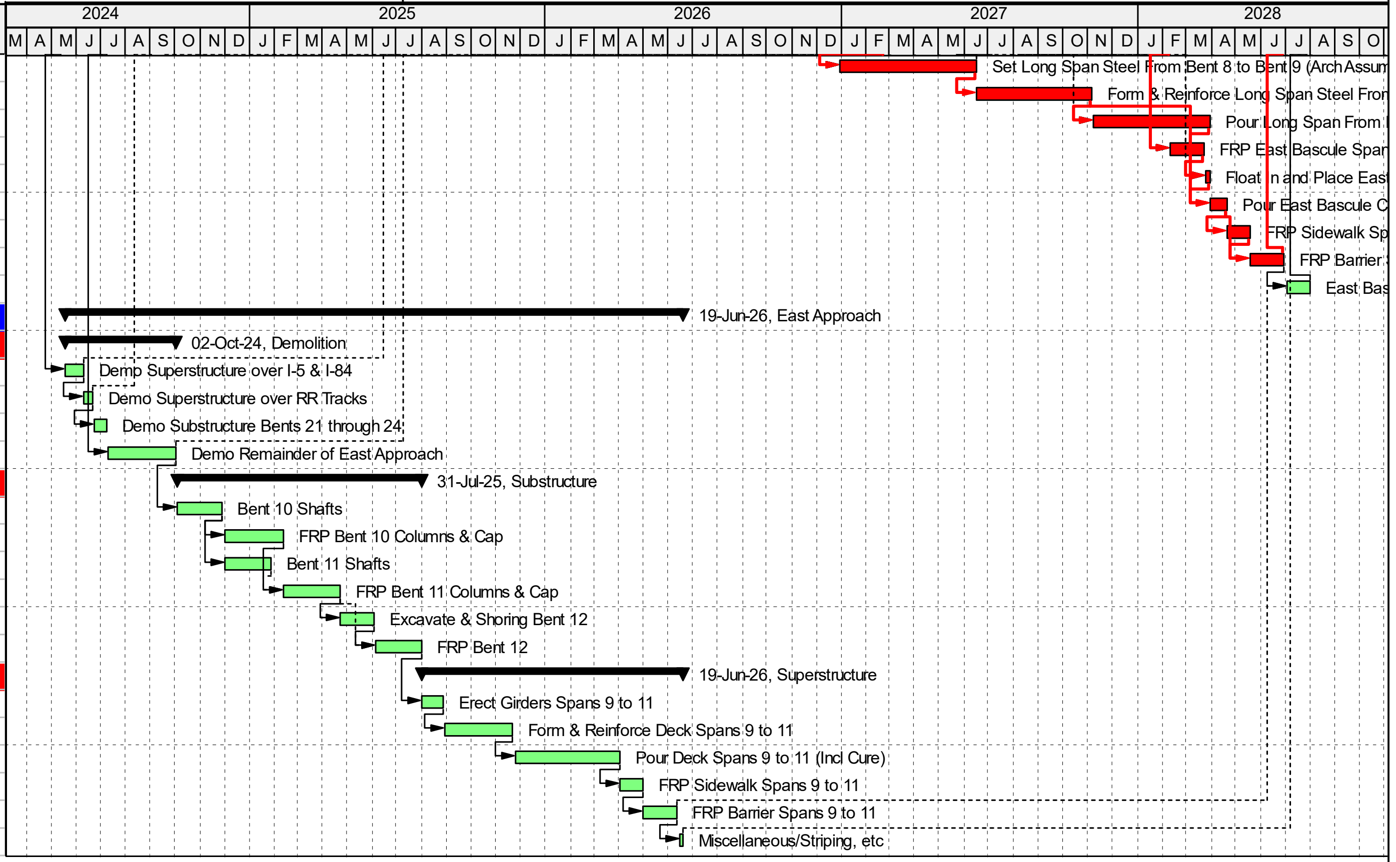
TASK filter: All Activities

EQRB NEPA Replacement In-Kind Long Span Approaches (No Detour Bridge)

Classic Schedule Layout

02-Dec-19 21:56

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1920	Set Long Span Steel From Bent 8 to Bent 9 (Arch Assumed)	120	0%	0	29-Dec-26	16-Jun-27	A1830, A1780, ,	A1930, A2580, A
A1930	Form & Reinforce Long Span Steel From Bent 8 to Bent 9 (Arch Assumed)	100	0%	0	17-Jun-27	05-Nov-27	A1920	A1960, A1931
A1931	Pour Long Span From Bent 9 to Bent 8 (Arch Assumed)	100	0%	0	08-Nov-27	30-Mar-28	A1930, A2580, ,	A1960
A1940	FRP East Bascule Span Offsite	30	0%	0	11-Feb-28	23-Mar-28	A1910, A1810, ,	A1950
A1950	Float In and Place East Bascule Span	5	0%	0	24-Mar-28	30-Mar-28	A1940, A2418, ,	A1960
A1960	Pour East Bascule Closure (Incl Cure)	15	0%	0	31-Mar-28	20-Apr-28	A1950, A1930, ,	A1970, A1980
A1970	FRP Sidewalk Spans 9 through East Bascule	20	0%	0	21-Apr-28	18-May-28	A1960	A1980
A1980	FRP Barrier Spans 9 through East Bascule	30	0%	0	19-May-28	30-Jun-28	A1970, A1960	A1990, A2440
A1990	East Bascule Testing	20	0%	0	03-Jul-28	31-Jul-28	A1980, A2200	A1030
East Approach		530	0%	580	18-May-24	19-Jun-26		
Demolition		95	0%	1015	18-May-24	02-Oct-24		
A2000	Demo Superstructure over I-5 & I-84	8	0%	128	18-May-24	09-Jun-24	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	377	10-Jun-24	21-Jun-24	A2000	A2020, A1815
A2020	Demo Substructure Bents 21 through 24	10	0%	1076	24-Jun-24	08-Jul-24	A2010	
A2030	Demo Remainder of East Approach	60	0%	286	10-Jul-24	02-Oct-24	A1220	A1670, A2080
Substructure		210	0%	521	03-Oct-24	31-Jul-25		
A2080	Bent 10 Shafts	40	0%	521	03-Oct-24	27-Nov-24	A2030	A2120, A2090
A2090	FRP Bent 10 Columns & Cap	50	0%	521	02-Dec-24	11-Feb-25	A2080	A2130
A2120	Bent 11 Shafts	40	0%	531	02-Dec-24	28-Jan-25	A2080	A2130
A2130	FRP Bent 11 Columns & Cap	50	0%	521	12-Feb-25	22-Apr-25	A2120, A2090	A2150, A2140
A2140	Excavate & Shoring Bent 12	30	0%	521	23-Apr-25	04-Jun-25	A2130	A2150
A2150	FRP Bent 12	40	0%	521	05-Jun-25	31-Jul-25	A2130, A2140	A2160
Superstructure		225	0%	536	01-Aug-25	19-Jun-26		
A2160	Erect Girders Spans 9 to 11	20	0%	521	01-Aug-25	28-Aug-25	A2150	A2170
A2170	Form & Reinforce Deck Spans 9 to 11	60	0%	521	29-Aug-25	21-Nov-25	A2160	A2180
A2180	Pour Deck Spans 9 to 11 (Incl Cure)	90	0%	521	24-Nov-25	02-Apr-26	A2170	A2190
A2190	FRP Sidewalk Spans 9 to 11	20	0%	521	03-Apr-26	30-Apr-26	A2180	A2200
A2200	FRP Barrier Spans 9 to 11	30	0%	521	01-May-26	12-Jun-26	A2190	A1990, A2490
A2490	Miscellaneous/Striping, etc	5	0%	536	15-Jun-26	19-Jun-26	A2200	A1030



🟦 Actual Work	🟥 Critical Remaining Work
🟩 Remaining Work	◆ Milestone
▼ Summary	

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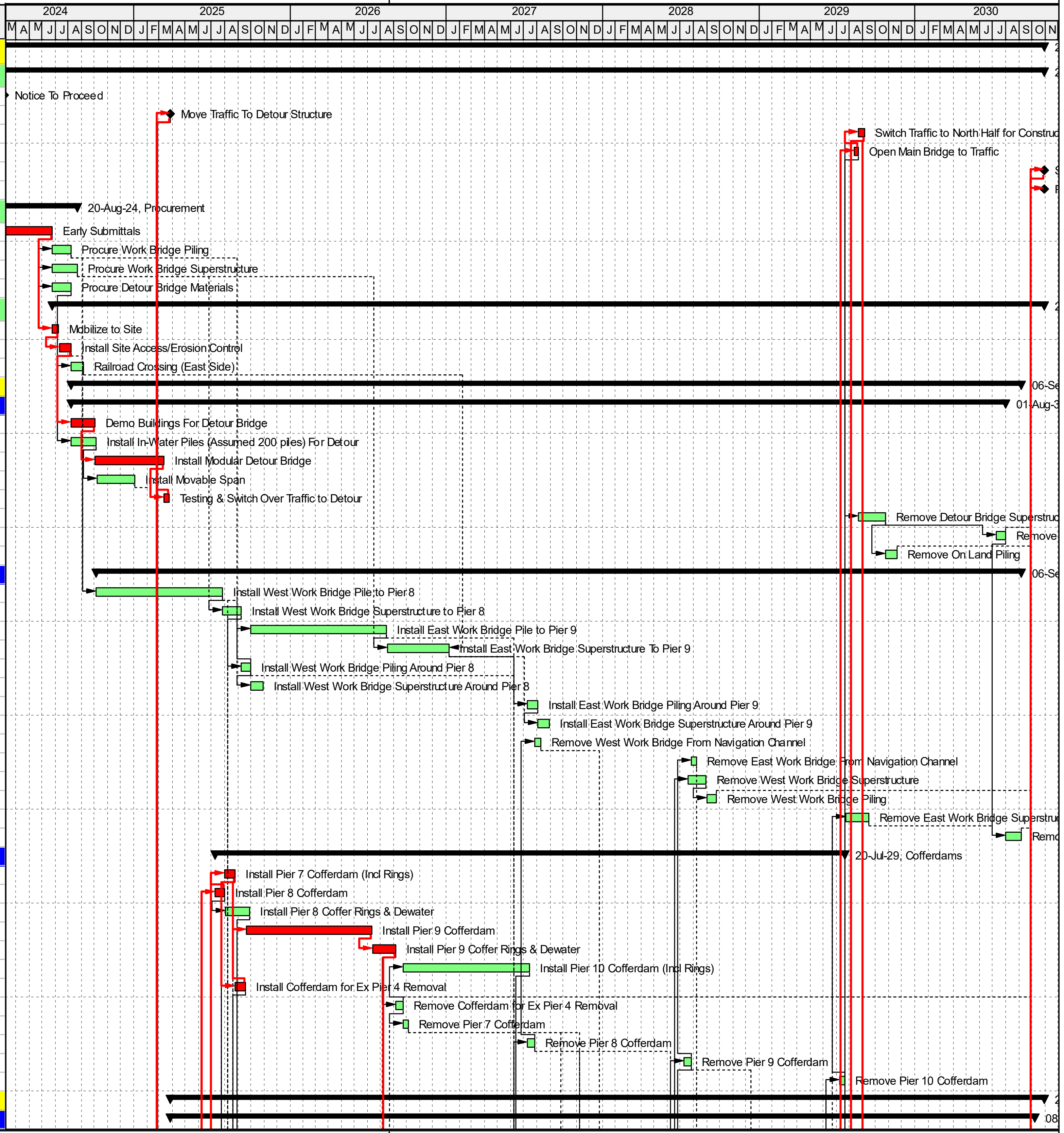
TASK filter: All Activities

APPENDIX G-7

Replacement with Couch Connection Schedule with Temporary Bridge

EQRB NEPA Replacement w/Couch Couplet (With Detour Bridge) | Classic Schedule Layout | 17-Dec-19 13:01

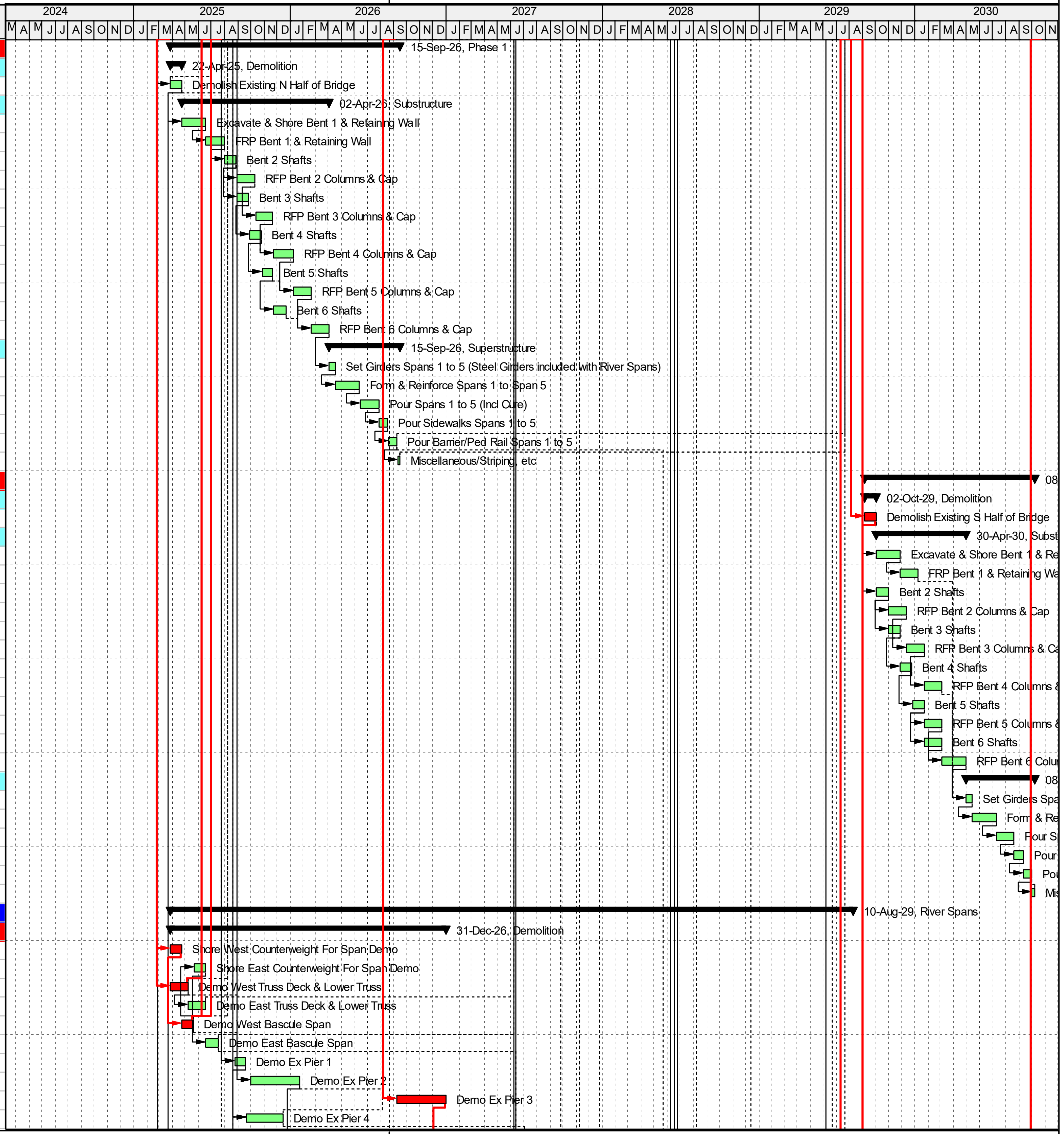
Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Replacement w/Couch Couplet (With Deto		1702	0%	0	04-Mar-24	29-Oct-30		
General/Milestones		1702	0%	0	04-Mar-24	29-Oct-30		
A1000	Notice To Proceed	0	0%	4	04-Mar-24			A1050
A1010	Move Traffic To Detour Structure	0	0%	35	26-Mar-25		A1150	A1220, A1590, A
A1020	Switch Traffic to North Half for Construction of South Ap	10	0%	0	22-Aug-29	04-Sep-29	A1390, A2200,	A1410, A2210
A1030	Open Main Bridge to Traffic	7	0%	0	13-Aug-29	21-Aug-29	A1990, A2690,	A2390, A1020
A1035	South Approaches Complete	0	0%	0		29-Oct-30	A2500, A2510	A1040
A1040	Project Completion	0	0%	0		29-Oct-30*	A2430, A2450,	
Procurement		120	0%	1228	04-Mar-24	20-Aug-24		
A1050	Early Submittals	80	0%	4	04-Mar-24	24-Jun-24	A1000	A1060, A1070, A
A1060	Procure Work Bridge Piling	30	0%	1044	25-Jun-24	06-Aug-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	1228	25-Jun-24	20-Aug-24	A1050	A1170, A1190
A1080	Procure Detour Bridge Materials	30	0%	4	25-Jun-24	06-Aug-24	A1050	A1120
Construction		1622	0%	0	25-Jun-24	29-Oct-30		
A1090	Mobilize to Site	10	0%	4	25-Jun-24	09-Jul-24	A1050	A1100
A1100	Install Site Access/Erosion Control	20	0%	4	10-Jul-24	06-Aug-24	A1090	A1110, A1120, A
A1110	Railroad Crossing (East Side)	20	0%	1535	07-Aug-24	04-Sep-24	A1100	A1190
Temporary Works		1555	0%	37	07-Aug-24	06-Sep-30		
Detour Bridge		1529	0%	63	07-Aug-24	01-Aug-30		
A1115	Demo Buildings For Detour Bridge	40	0%	35	07-Aug-24	02-Oct-24	A1100	A1130
A1120	Install In-Water Piles (Assumed 200 piles) For Detour	50	0%	5	07-Aug-24	04-Oct-24	A1100, A1080	A1140, A1160
A1130	Install Modular Detour Bridge	110	0%	35	03-Oct-24	11-Mar-25	A1115	A1150
A1140	Install Movable Span	60	0%	83	07-Oct-24	02-Jan-25	A1120	A1150
A1150	Testing & Switch Over Traffic to Detour	10	0%	35	12-Mar-25	25-Mar-25	A1140, A1130	A1010
A2390	Remove Detour Bridge Superstructure	45	0%	213	22-Aug-29	23-Oct-29	A1030	A2400, A2410
A2400	Remove Detour Bridge In-Water Piling	20	0%	33	10-Jul-30	01-Aug-30	A2390	A1040, A2450
A2410	Remove On Land Piling	20	0%	245	24-Oct-29	20-Nov-29	A2390	A1040
Work Bridges		1513	0%	37	05-Oct-24	06-Sep-30		
A1160	Install West Work Bridge Pile to Pier 8	20	0%	302	05-Oct-24	26-Jul-25	A1100, A1060,	A1170, A1180, A
A1170	Install West Work Bridge Superstructure to Pier 8	30	0%	992	28-Jul-25	08-Sep-25	A1160, A1070	A1665, A1660
A1180	Install East Work Bridge Pile to Pier 9	40	0%	287	02-Oct-25	15-Aug-26	A1060, A1160,	A1190, A2415
A1190	Install East Work Bridge Superstructure To Pier 9	100	0%	941	17-Aug-26	08-Jan-27	A1180, A1070,	A2416, A2415
A1660	Install West Work Bridge Piling Around Pier 8	20	0%	287	09-Sep-25	01-Oct-25	A1620, A1600,	A1665, A2415, A
A1665	Install West Work Bridge Superstructure Around Pier 8	20	0%	1279	02-Oct-25	29-Oct-25	A1660, A1170	
A2415	Install East Work Bridge Piling Around Pier 9	20	0%	290	10-Jul-27	02-Aug-27	A1610, A1630,	A2416
A2416	Install East Work Bridge Superstructure Around Pier 9	20	0%	814	03-Aug-27	30-Aug-27	A2415, A1190	
A2417	Remove West Work Bridge From Navigation Channel	10	0%	271	28-Jul-27	10-Aug-27	A2460	A1870
A2418	Remove East Work Bridge From Navigation Channel	10	0%	152	27-Jul-28	09-Aug-28	A2470	A1950
A2420	Remove West Work Bridge Superstructure	30	0%	531	21-Jul-28	31-Aug-28	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	177	01-Sep-28	23-Sep-28	A2420	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	257	23-Jul-29	14-Sep-29	A1980, A2710	A2450
A2450	Remove East Work Bridge Piling	30	0%	33	02-Aug-30	06-Sep-30	A2440, A2400	A1040
Cofferdams		1026	0%	257	10-Jul-25	20-Jul-29		
A1195	Install Pier 7 Cofferdam (Incl Rings)	20	0%	1	02-Aug-25	25-Aug-25	A1220, A1620,	A1635, A1225, A
A1200	Install Pier 8 Cofferdam	20	0%	1	10-Jul-25	01-Aug-25	A1600, A1620	A1205, A1195
A1205	Install Pier 8 Coffer Rings & Dewater	40	0%	89	04-Aug-25	29-Sep-25	A1200	A1640
A1210	Install Pier 9 Cofferdam	20	0%	1	20-Sep-25	11-Jul-26	A1610, A1630,	A1215
A1215	Install Pier 9 Coffer Rings & Dewater	40	0%	1	13-Jul-26	04-Sep-26	A1210	A1650, A1235
A1216	Install Pier 10 Cofferdam (Incl Rings)	20	0%	35	23-Sep-26	14-Jul-27	A1235	A1835
A1225	Install Cofferdam for Ex Pier 4 Removal	20	0%	1	26-Aug-25	19-Sep-25	A1610, A2000,	A1670, A1210
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	35	05-Sep-26	22-Sep-26	A1670, A1215	A1040, A2455, A
A2455	Remove Pier 7 Cofferdam	10	0%	85	23-Sep-26	03-Oct-26	A1690, A1235	A1840, A1860
A2460	Remove Pier 8 Cofferdam	15	0%	76	10-Jul-27	27-Jul-27	A1720	A1860, A2470, A
A2470	Remove Pier 9 Cofferdam	15	0%	65	10-Jul-28	26-Jul-28	A1780, A2460	A1920, A1940, A
A2710	Remove Pier 10 Cofferdam	10	0%	76	10-Jul-29	20-Jul-29	A1830	A2440
New Bridge		1432	0%	0	26-Mar-25	29-Oct-30		
West Approach		1417	0%	15	26-Mar-25	08-Oct-30		



🟦 Actual Work	🟥 Critical Remaining Work	Summary	
🟩 Remaining Work	◆	◆ Milestone	

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
Phase 1		375	0%	740	26-Mar-25	15-Sep-26		
Demolition		20	0%	81	26-Mar-25	22-Apr-25		
A1220	Demolish Existing N Half of Bridge	20	0%	81	26-Mar-25	22-Apr-25	A1010	A1635, A2030, A
Substructure		240	0%	590	23-Apr-25	02-Apr-26		
A1230	Excavate & Shore Bent 1 & Retaining Wall	40	0%	590	23-Apr-25	18-Jun-25	A1220	A1240
A1240	FRP Bent 1 & Retaining Wall	30	0%	590	19-Jun-25	31-Jul-25	A1230	A1250
A1250	Bent 2 Shafts	20	0%	590	01-Aug-25	28-Aug-25	A1240	A1260, A1270
A1260	RFP Bent 2 Columns & Cap	30	0%	590	29-Aug-25	10-Oct-25	A1250	A1280
A1270	Bent 3 Shafts	20	0%	600	29-Aug-25	26-Sep-25	A1250	A1290, A1280
A1280	RFP Bent 3 Columns & Cap	30	0%	590	13-Oct-25	21-Nov-25	A1260, A1270	A1300
A1290	Bent 4 Shafts	20	0%	610	29-Sep-25	24-Oct-25	A1270	A1310, A1300
A1300	RFP Bent 4 Columns & Cap	30	0%	590	24-Nov-25	08-Jan-26	A1280, A1290	A1320
A1310	Bent 5 Shafts	20	0%	620	27-Oct-25	21-Nov-25	A1290	A1330, A1320
A1320	RFP Bent 5 Columns & Cap	30	0%	590	09-Jan-26	19-Feb-26	A1300, A1310	A1340
A1330	Bent 6 Shafts	20	0%	630	24-Nov-25	23-Dec-25	A1310	A1340
A1340	RFP Bent 6 Columns & Cap	30	0%	590	20-Feb-26	02-Apr-26	A1320, A1330	A1350
Superstructure		115	0%	740	03-Apr-26	15-Sep-26		
A1350	Set Girders Spans 1 to 5 (Steel Girders included with F	10	0%	590	03-Apr-26	16-Apr-26	A1340	A1360
A1360	Form & Reinforce Spans 1 to Span 5	40	0%	590	17-Apr-26	12-Jun-26	A1350	A1370
A1370	Pour Spans 1 to 5 (Incl Cure)	30	0%	590	15-Jun-26	27-Jul-26	A1360	A1380
A1380	Pour Sidewalks Spans 1 to 5	15	0%	590	28-Jul-26	17-Aug-26	A1370	A1390
A1390	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	590	18-Aug-26	08-Sep-26	A1380	A1910, A1020, A
A2480	Miscellaneous/Striping, etc	5	0%	740	09-Sep-26	15-Sep-26	A1390	A1030, A1020
Phase 2		285	0%	15	05-Sep-29	08-Oct-30		
Demolition		20	0%	0	05-Sep-29	02-Oct-29		
A1410	Demolish Existing S Half of Bridge	20	0%	0	05-Sep-29	02-Oct-29	A1020	A2210, A1420, A
Substructure		150	0%	15	03-Oct-29	30-Apr-30		
A1420	Excavate & Shore Bent 1 & Retaining Wall	40	0%	95	03-Oct-29	27-Nov-29	A1410	A1430
A1430	FRP Bent 1 & Retaining Wall	30	0%	95	28-Nov-29	08-Jan-30	A1420	A1540
A1440	Bent 2 Shafts	20	0%	15	03-Oct-29	30-Oct-29	A1410	A1450, A1460
A1450	RFP Bent 2 Columns & Cap	30	0%	55	31-Oct-29	11-Dec-29	A1440	A1470
A1460	Bent 3 Shafts	20	0%	15	31-Oct-29	27-Nov-29	A1440	A1480, A1470
A1470	RFP Bent 3 Columns & Cap	30	0%	55	12-Dec-29	22-Jan-30	A1450, A1460	A1490
A1480	Bent 4 Shafts	20	0%	15	28-Nov-29	25-Dec-29	A1460	A1500, A1490
A1490	RFP Bent 4 Columns & Cap	30	0%	55	23-Jan-30	05-Mar-30	A1470, A1480	A1540
A1500	Bent 5 Shafts	20	0%	15	26-Dec-29	22-Jan-30	A1480	A1520, A1510
A1510	RFP Bent 5 Columns & Cap	30	0%	15	23-Jan-30	05-Mar-30	A1500	A1530
A1520	Bent 6 Shafts	30	0%	15	23-Jan-30	05-Mar-30	A1500	A1530
A1530	RFP Bent 6 Columns & Cap	40	0%	15	06-Mar-30	30-Apr-30	A1510, A1520	A1540
Superstructure		115	0%	15	01-May-30	08-Oct-30		
A1540	Set Girders Spans 1 to 5 (Steel Girders included with F	10	0%	15	01-May-30	14-May-30	A1530, A1430,	A1550
A1550	Form & Reinforce Spans 1 to Span 5	40	0%	15	15-May-30	09-Jul-30	A1540	A1560
A1560	Pour Spans 1 to 5 (Incl Cure)	30	0%	15	10-Jul-30	20-Aug-30	A1550	A1570
A1570	Pour Sidewalks Spans 1 to 5	15	0%	15	21-Aug-30	10-Sep-30	A1560	A1580
A1580	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	15	11-Sep-30	01-Oct-30	A1570	A2500
A2500	Miscellaneous/Striping, etc	5	0%	15	02-Oct-30	08-Oct-30	A1580	A1035
River Spans		1115	0%	0	26-Mar-25	10-Aug-29		
Demolition		449	0%	136	26-Mar-25	31-Dec-26		
A1590	Shore West Counterweight For Span Demo	20	0%	35	26-Mar-25	22-Apr-25	A1010	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	45	21-May-25	18-Jun-25	A1620	A1630
A1600	Demo West Truss Deck & Lower Truss	30	0%	45	26-Mar-25	06-May-25	A1010	A1610, A1640, A
A1610	Demo East Truss Deck & Lower Truss	30	0%	48	07-May-25	18-Jun-25	A1600	A1210, A2415, A
A1620	Demo West Bascule Span	20	0%	35	23-Apr-25	20-May-25	A1590	A1595, A1640, A
A1630	Demo East Bascule Span	20	0%	45	19-Jun-25	17-Jul-25	A1595	A1650, A1210, A
A1635	Demo Ex Pier 1	20	0%	98	26-Aug-25	19-Sep-25	A1220, A1195	A1670, A1680
A1640	Demo Ex Pier 2	80	0%	89	30-Sep-25	23-Jan-26	A1600, A1620,	A1650, A1700
A1650	Demo Ex Pier 3	80	0%	1	08-Sep-26	31-Dec-26	A1640, A1630,	A1760
A1670	Demo Ex Pier 4	60	0%	400	22-Sep-25	16-Dec-25	A1635, A2030,	A1820, A1235



🟦	Actual Work
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🟥	Critical Remaining Work
◆	Milestone
▼▼	Summary

TASK filter: All Activities

EQRB NEPA Replacement w/Couch Couplet (With Detour Bridge) | Classic Schedule Layout | 17-Dec-19 13:01

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
Substructure		839	0%	16	22-Sep-25	11-Jan-29		
A1680	Bent 7 Shafts	90	0%	323	22-Sep-25	29-Jan-26	A1635	A1690, A1685, A
A1685	FRP Bent 7 Shaft Cap	40	0%	323	30-Jan-26	26-Mar-26	A1680	A1690
A1690	FRP Bent 7 Columns & Cap	60	0%	323	27-Mar-26	19-Jun-26	A1680, A1685	A1840, A2455
A1692	Jet Grouting Bent 7/Pier 1	40	0%	152	31-Aug-27	26-Oct-27	A1835, A1680	A1840, A2065
A1700	Bent 8 Shafts	150	0%	89	26-Jan-26	25-Aug-26	A1640	A1710, A1760, A
A1710	FRP Bent 8 Shaft Cap	30	0%	173	26-Aug-26	07-Oct-26	A1700	A1720, A1770
A1720	FRP Bent 8 Pier Walls	80	0%	173	08-Oct-26	02-Feb-27	A1710	A1730, A1780, A
A1730	Install Bent 8 Mechanical	60	0%	239	03-Feb-27	27-Apr-27	A1720	A1740, A1790
A1740	Erect Bent 8 Bascule Backspan	25	0%	239	28-Apr-27	02-Jun-27	A1730	A1750, A1800
A1750	FRP Bent 8 Counterweight	50	0%	239	03-Jun-27	12-Aug-27	A1740	A1810, A1860
A1760	Bent 9 Shafts	150	0%	1	04-Jan-27	03-Aug-27	A1650, A1700	A1770, A1820
A1770	FRP Bent 9 Shaft Cap	30	0%	138	04-Aug-27	15-Sep-27	A1760, A1710	A1780
A1780	FRP Bent 9 Pier Walls	80	0%	138	16-Sep-27	11-Jan-28	A1770, A1720	A1790, A2470
A1790	Install Bent 9 Mechanical	60	0%	138	12-Jan-28	04-Apr-28	A1780, A1730	A1800
A1800	Erect Bent 9 Bascule Backspan	23	0%	138	05-Apr-28	05-May-28	A1790, A1740	A1810
A1810	FRP Bent 9 Counterweight	50	0%	138	08-May-28	18-Jul-28	A1800, A1750	A1940
A1820	Bent 10 Shafts	79	0%	1	04-Aug-27	02-Aug-28	A1670, A1700,	A1825, A2515
A1825	Bent 10 Perched Footing/Shaft Cap	60	0%	1	03-Aug-28	26-Oct-28	A1820	A1830
A1830	FRP Bent 10 Columns & Cap	51	0%	1	27-Oct-28	11-Jan-29	A1825	A1920, A2710
A1835	Jet Grouting Bent 10	40	0%	35	15-Jul-27	30-Aug-27	A1630, A1216	A1692
Superstructure		457	0%	0	27-Oct-27	10-Aug-29		
A1840	Erect Girders Spans 5 through 7	30	0%	152	27-Oct-27	09-Dec-27	A1690, A2455,	A1850, A1860
A1850	Form & Reinforce Spans 5 through 7	40	0%	152	10-Dec-27	07-Feb-28	A1840	A1880
A1860	FRP West Bascule Span Offsite	30	0%	157	10-Dec-27	24-Jan-28	A1750, A2455,	A1870
A1870	Float In and Place West Bascule Span	5	0%	157	25-Jan-28	31-Jan-28	A1860, A2417	A1880
A1880	Pour Spans 5 through 7 (Incl Cure)	30	0%	136	01-Mar-28*	11-Apr-28	A1870, A1850	A1890
A1890	FRP Sidewalk Spans 5 through West Bascule	20	0%	136	12-Apr-28	09-May-28	A1880	A1900
A1900	FRP Barrier Spans 5 through West Bascule	30	0%	136	10-May-28	21-Jun-28	A1890	A1910
A1910	West Bascule Testing	20	0%	136	22-Jun-28	20-Jul-28	A1900, A1390	A1940, A2420
A1920	Erect Girders Spans 9 to 11, Incl over I-5 & I-84	6	0%	0	13-Jan-29	28-Jan-29	A1830, A2470	A1930
A1930	Form & Reinforce Spans 9 to 11	40	0%	0	29-Jan-29	23-Mar-29	A1920	A1960
A1940	FRP East Bascule Span Offsite	30	0%	132	27-Jul-28	07-Sep-28	A1910, A1810,	A1950
A1950	Float In and Place East Bascule Span	5	0%	132	08-Sep-28	14-Sep-28	A1940, A2418	A1960
A1960	Pour Spans 11 through 9 (Incl Cure)	30	0%	0	26-Mar-29	04-May-29	A1950, A1930	A1970
A1970	FRP Sidewalk Spans 11 through East Bascule	20	0%	0	07-May-29	01-Jun-29	A1960	A1980
A1980	FRP Barrier Spans 11 through East Bascule	30	0%	0	04-Jun-29	13-Jul-29	A1970	A1990, A2440
A1990	East Bascule Testing	20	0%	0	16-Jul-29	10-Aug-29	A1980, A2200	A1030
East Approach		1429	0%	0	29-Mar-25	29-Oct-30		
Phase 1		1040	0%	389	29-Mar-25	02-May-29		
Demolition		47	0%	595	29-Mar-25	04-Jun-25		
A2000	Demo Superstructure over I-5 & I-84	8	0%	36	29-Mar-25	20-Apr-25	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	607	21-Apr-25	02-May-25	A2000	A2020
A2020	Demo Substructure Bents 21 through 24	10	0%	607	05-May-25	16-May-25	A2010	A2040
A2030	Demo Remainder of East Approach, North Half	30	0%	475	23-Apr-25	04-Jun-25	A1220	A1670, A2040
Substructure		853	0%	72	05-Jun-25	12-Oct-28		
Burnside Connection		638	0%	282	05-Jun-25	09-Dec-27		
A2040	Bent 11 Shafts	20	0%	595	05-Jun-25	02-Jul-25	A2020, A2030	A2050, A2060, A
A2050	FRP Bent 11 Columns & Cap	30	0%	595	03-Jul-25	14-Aug-25	A2040	A2070
A2060	Bent 12 Shafts	20	0%	605	03-Jul-25	31-Jul-25	A2040	A2070, A2080
A2065	Jet Grouting Bent 12	15	0%	282	27-Oct-27	16-Nov-27	A1692	A2105
A2070	FRP Bent 12 Columns & Cap	30	0%	595	15-Aug-25	26-Sep-25	A2050, A2060	A2090
A2080	Bent 13 Shafts	10	0%	625	01-Aug-25	14-Aug-25	A2060	A2090, A2100
A2090	FRP Bent 13 Columns & Cap	30	0%	595	29-Sep-25	07-Nov-25	A2080, A2070	A2110
A2100	Bent 14 Shafts	10	0%	645	15-Aug-25	28-Aug-25	A2080	A2120, A2110
A2105	Jet Grouting Bent 14	15	0%	282	17-Nov-27	09-Dec-27	A2065	A2160
A2110	FRP Bent 14 Columns & Cap	30	0%	595	10-Nov-25	23-Dec-25	A2090, A2100	A2130, A2530
A2120	Bent 15 Shafts	10	0%	645	29-Aug-25	12-Sep-25	A2100	A2130, A2520

🟦 Actual Work
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🟩 Remaining Work
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TASK filter: All Activities

EQRB NEPA Replacement w/Couch Couplet (With Detour Bridge) | Classic Schedule Layout | 17-Dec-19 13:01

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A2130	FRP Bent 15 Columns & Cap	30	0%	710	24-Dec-25	05-Feb-26	A2110, A2120	A2150, A2140
A2140	Excavate & Shoring Bent 16	20	0%	710	06-Feb-26	05-Mar-26	A2130	A2150
A2150	FRP Bent 16	20	0%	710	06-Mar-26	02-Apr-26	A2130, A2140	A2160
Couch Connection		783	0%	72	15-Sep-25	12-Oct-28		
A2515	Bent 10 Shafts	20	0%	72	03-Aug-28	30-Aug-28	A1820	A2516
A2516	FRP Bent 10 Columns & Cap	30	0%	72	31-Aug-28	12-Oct-28	A2515	A2640
A2520	Bent 11 Shafts	20	0%	645	15-Sep-25	10-Oct-25	A2040, A2120	A2530, A2540
A2530	FRP Bent 11 Columns & Cap	30	0%	595	24-Dec-25	05-Feb-26	A2520, A2110	A2550
A2540	Bent 12 Shafts	20	0%	655	13-Oct-25	07-Nov-25	A2520	A2550, A2560
A2550	FRP Bent 12 Columns & Cap	30	0%	595	06-Feb-26	19-Mar-26	A2530, A2540	A2570
A2560	Bent 13 Shafts	20	0%	665	10-Nov-25	09-Dec-25	A2540	A2570, A2580
A2570	FRP Bent 13 Columns & Cap	30	0%	595	20-Mar-26	30-Apr-26	A2560, A2550	A2590
A2580	Bent 14 Shafts	20	0%	675	10-Dec-25	08-Jan-26	A2560	A2600, A2590
A2590	FRP Bent 14 Columns & Cap	30	0%	595	01-May-26	12-Jun-26	A2570, A2580	A2610
A2600	Bent 15 Shafts	20	0%	685	09-Jan-26	05-Feb-26	A2580	A2610
A2610	FRP Bent 15 Columns & Cap	30	0%	595	15-Jun-26	27-Jul-26	A2590, A2600	A2630, A2620
A2620	Excavate & Shoring Bent 16	20	0%	595	28-Jul-26	24-Aug-26	A2610	A2630
A2630	FRP Bent 16	20	0%	595	25-Aug-26	22-Sep-26	A2610, A2620	A2640
Superstructure		355	0%	389	10-Dec-27	02-May-29		
Burnside Connection		130	0%	614	10-Dec-27	13-Jun-28		
A2160	Erect Girders Spans 12 to 15	10	0%	282	10-Dec-27	23-Dec-27	A2150, A2105	A2170
A2170	Form & Reinforce Deck Spans 12 to 15	30	0%	282	27-Dec-27	07-Feb-28	A2160	A2180
A2180	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	282	08-Feb-28	27-Mar-28	A2170	A2190
A2190	FRP Sidewalk Spans 12 to 15	20	0%	282	28-Mar-28	24-Apr-28	A2180	A2200
A2200	FRP Barrier Spans 12 to 15	30	0%	282	25-Apr-28	06-Jun-28	A2190	A1990, A1020, A
A2490	Miscellaneous/Striping, etc	5	0%	614	07-Jun-28	13-Jun-28	A2200	
Couch Connection		140	0%	72	13-Oct-28	02-May-29		
A2640	Erect Girders Spans 11 to 15	10	0%	72	13-Oct-28	26-Oct-28	A2516, A2630	A2650
A2650	Form & Reinforce Deck Spans 12 to 15	40	0%	72	27-Oct-28	26-Dec-28	A2640	A2660
A2660	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	72	27-Dec-28	14-Feb-29	A2650	A2670
A2670	FRP Sidewalk Spans 12 to 15	20	0%	72	15-Feb-29	14-Mar-29	A2660	A2680
A2680	FRP Barrier Spans 12 to 15	30	0%	72	15-Mar-29	25-Apr-29	A2670	A2690
A2690	Miscellaneous/Striping, etc	5	0%	72	26-Apr-29	02-May-29	A2680	A1030
Phase 2		280	0%	0	03-Oct-29	29-Oct-30		
Demolition		30	0%	0	03-Oct-29	13-Nov-29		
A2210	Demo Remainder of East Approach, South Half	30	0%	0	03-Oct-29	13-Nov-29	A1020, A1410	A2220, A2320, A
Substructure		110	0%	0	14-Nov-29	16-Apr-30		
A2220	Bent 11 Shafts	30	0%	0	14-Nov-29	25-Dec-29	A2210	A2230, A2240
A2230	FRP Bent 11 Columns & Cap	40	0%	0	26-Dec-29	19-Feb-30	A2220	A2250
A2240	Bent 12 Shafts	30	0%	0	26-Dec-29	05-Feb-30	A2220	A2250, A2300
A2250	FRP Bent 12 Columns & Cap	40	0%	0	20-Feb-30	16-Apr-30	A2230, A2240	A2340
A2255	Jet Grouting Bent 12	15	0%	40	09-Jan-30	29-Jan-30	A2280	A2285
A2260	Bent 13 Shafts	20	0%	0	14-Nov-29	11-Dec-29	A2210	A2270, A2280
A2270	FRP Bent 13 Columns & Cap	30	0%	0	12-Dec-29	22-Jan-30	A2260	A2340, A2290
A2280	Bent 14 Shafts	20	0%	10	12-Dec-29	08-Jan-30	A2260	A2300, A2290, A
A2285	Jet Grouting Bent 14	15	0%	40	30-Jan-30	19-Feb-30	A2255	A2340
A2290	FRP Bent 14 Columns & Cap	30	0%	0	23-Jan-30	05-Mar-30	A2280, A2270	A2340, A2310
A2300	Bent 15 Shafts	20	0%	0	06-Feb-30	05-Mar-30	A2280, A2240	A2310
A2310	FRP Bent 15 Columns & Cap	30	0%	0	06-Mar-30	16-Apr-30	A2300, A2290	A2340
A2320	Excavate & Shoring Bent 16	20	0%	70	14-Nov-29	11-Dec-29	A2210	A2330
A2330	FRP Bent 16	20	0%	70	12-Dec-29	08-Jan-30	A2320	A2340
Superstructure		140	0%	0	17-Apr-30	29-Oct-30		
A2340	Erect Girders Spans 12 to 15	10	0%	0	17-Apr-30	30-Apr-30	A2330, A2285,	A2350
A2350	Form & Reinforce Deck Spans 12 to 15	40	0%	0	01-May-30	25-Jun-30	A2340	A2360
A2360	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	0	26-Jun-30	13-Aug-30	A2350	A2370
A2370	FRP Sidewalk Spans 12 to 15	20	0%	0	14-Aug-30	10-Sep-30	A2360	A2380
A2380	FRP Barrier Spans 12 to 15	30	0%	0	11-Sep-30	22-Oct-30	A2370	A2510
A2510	Miscellaneous/Striping, etc	5	0%	0	23-Oct-30	29-Oct-30	A2380	A1035

- 🟦 Actual Work
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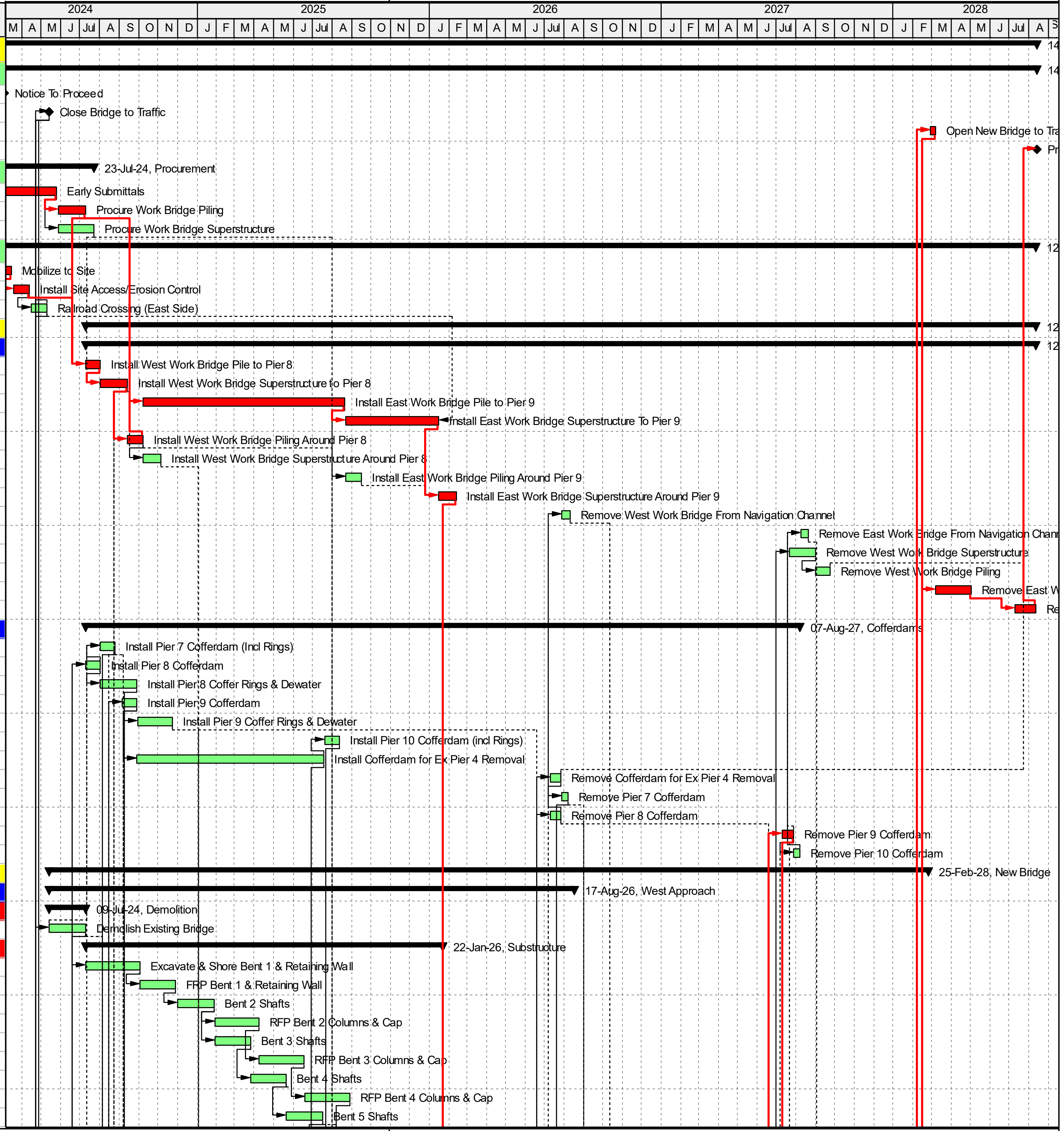
APPENDIX G-8

Replacement with Couch
Connection Schedule
NO Temporary Bridge

EQRB NEPA Replacement w/Couch Couplet (No Detour Bridge) | Classic Schedule Layout | 17-Dec-19 12:57

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
EQRB NEPA Replacement w/Couch Couplet (No Detour		1130	0%	1	04-Mar-24	14-Aug-28		
General/Milestones		1130	0%	1	04-Mar-24	14-Aug-28		
A1000	Notice To Proceed	0	0%	3	04-Mar-24			A1050, A1090
A1010	Close Bridge to Traffic	0	0%	49	13-May-24		A1110	A1220, A1590, A
A1030	Open New Bridge to Traffic	7	0%	0	28-Feb-28	07-Mar-28*	A1990, A2480,	A2440
A1040	Project Completion	0	0%	1		14-Aug-28*	A2430, A2450,	
Procurement		100	0%	9	04-Mar-24	23-Jul-24		
A1050	Early Submittals	60	0%	3	04-Mar-24	24-May-24	A1000	A1060, A1070
A1060	Procure Work Bridge Piling	30	0%	3	28-May-24	09-Jul-24	A1050	A1160, A1180
A1070	Procure Work Bridge Superstructure	40	0%	9	28-May-24	23-Jul-24	A1050	A1170, A1190
Construction		1130	0%	1	04-Mar-24	12-Aug-28		
A1090	Mobilize to Site	10	0%	49	04-Mar-24	15-Mar-24	A1000	A1100
A1100	Install Site Access/Erosion Control	20	0%	49	18-Mar-24	12-Apr-24	A1090	A1110, A1160
A1110	Railroad Crossing (East Side)	20	0%	49	15-Apr-24	10-May-24	A1100	A1190, A1010, A
Temporary Works		1040	0%	1	10-Jul-24	12-Aug-28		
Work Bridges		1040	0%	1	10-Jul-24	12-Aug-28		
A1160	Install West Work Bridge Pile to Pier 8	20	0%	3	10-Jul-24	01-Aug-24	A1100, A1060	A1170
A1170	Install West Work Bridge Superstructure to Pier 8	30	0%	2	02-Aug-24	13-Sep-24	A1160, A1070	A1665, A1660
A1180	Install East Work Bridge Pile to Pier 9	40	0%	3	08-Oct-24	21-Aug-25	A1060, A1660	A1190, A2415
A1190	Install East Work Bridge Superstructure To Pier 9	100	0%	2	22-Aug-25	15-Jan-26	A1180, A1070,	A2416
A1660	Install West Work Bridge Piling Around Pier 8	20	0%	3	14-Sep-24	07-Oct-24	A1620, A1600,	A1665, A2415, A
A1665	Install West Work Bridge Superstructure Around Pier 8	20	0%	174	08-Oct-24	04-Nov-24	A1660, A1170	A1700
A2415	Install East Work Bridge Piling Around Pier 9	20	0%	21	22-Aug-25	16-Sep-25	A1610, A1630,	A2416
A2416	Install East Work Bridge Superstructure Around Pier 9	20	0%	2	16-Jan-26	12-Feb-26	A2415, A1190	A1760
A2417	Remove West Work Bridge From Navigation Channel	10	0%	152	28-Jul-26	10-Aug-26	A2460	A1870
A2418	Remove East Work Bridge From Navigation Channel	10	0%	25	09-Aug-27	20-Aug-27	A2470, A2690	A1950
A2420	Remove West Work Bridge Superstructure	30	0%	226	21-Jul-27	31-Aug-27	A1910	A2430
A2430	Remove West Work Bridge Piling	20	0%	45	01-Sep-27	23-Sep-27	A2420	A1040
A2440	Remove East Work Bridge Superstructure	40	0%	47	08-Mar-28	02-May-28	A1980, A1030	A2450
A2450	Remove East Work Bridge Piling	30	0%	1	10-Jul-28	12-Aug-28	A2440	A1040
Cofferdams		782	0%	25	10-Jul-24	07-Aug-27		
A1195	Install Pier 7 Cofferdam (Incl Rings)	20	0%	59	02-Aug-24	24-Aug-24	A1220, A1620,	A1635, A1225, A
A1200	Install Pier 8 Cofferdam	20	0%	59	10-Jul-24	01-Aug-24	A1600, A1620	A1205, A1195
A1205	Install Pier 8 Coffer Rings & Dewater	40	0%	120	02-Aug-24	27-Sep-24	A1200	A1640
A1210	Install Pier 9 Cofferdam	20	0%	51	05-Sep-24	27-Sep-24	A1610, A1630,	A1215, A1225
A1215	Install Pier 9 Coffer Rings & Dewater	40	0%	230	30-Sep-24	22-Nov-24	A1210	A1650, A1235
A1216	Install Pier 10 Cofferdam (incl Rings)	20	0%	89	21-Jul-25	12-Aug-25	A1225	A2220
A1225	Install Cofferdam for Ex Pier 4 Removal	20	0%	69	28-Sep-24	19-Jul-25	A1610, A2000,	A1670, A1216
A1235	Remove Cofferdam for Ex Pier 4 Removal	15	0%	55	10-Jul-26	27-Jul-26	A1670, A1215	A1040, A2455
A2455	Remove Pier 7 Cofferdam	10	0%	55	28-Jul-26	07-Aug-26	A1690, A1235	A1840, A1860
A2460	Remove Pier 8 Cofferdam	15	0%	65	10-Jul-26	27-Jul-26	A1720	A1860, A2470, A
A2470	Remove Pier 9 Cofferdam	15	0%	3	10-Jul-27	27-Jul-27	A1780, A2460	A1920, A1940, A
A2690	Remove Pier 10 Cofferdam	10	0%	31	28-Jul-27	07-Aug-27	A1830, A2470	A2418
New Bridge		962	0%	0	13-May-24	25-Feb-28		
West Approach		575	0%	387	13-May-24	17-Aug-26		
Demolition		40	0%	237	13-May-24	09-Jul-24		
A1220	Demolish Existing Bridge	40	0%	237	13-May-24	09-Jul-24	A1010	A1635, A2030, A
Substructure		390	0%	237	10-Jul-24	22-Jan-26		
A1230	Excavate & Shore Bent 1 & Retaining Wall	60	0%	237	10-Jul-24	02-Oct-24	A1220	A1240
A1240	FRP Bent 1 & Retaining Wall	40	0%	237	03-Oct-24	27-Nov-24	A1230	A1250
A1250	Bent 2 Shafts	40	0%	237	02-Dec-24	28-Jan-25	A1240	A1260, A1270
A1260	RFP Bent 2 Columns & Cap	50	0%	237	29-Jan-25	08-Apr-25	A1250	A1280
A1270	Bent 3 Shafts	40	0%	247	29-Jan-25	25-Mar-25	A1250	A1290, A1280
A1280	RFP Bent 3 Columns & Cap	50	0%	237	09-Apr-25	18-Jun-25	A1260, A1270	A1300
A1290	Bent 4 Shafts	40	0%	257	26-Mar-25	20-May-25	A1270	A1310, A1300
A1300	RFP Bent 4 Columns & Cap	50	0%	237	19-Jun-25	28-Aug-25	A1280, A1290	A1320
A1310	Bent 5 Shafts	40	0%	267	21-May-25	17-Jul-25	A1290	A1330, A1320



🟦	Actual Work	🟥	Critical Remaining Work	Summary
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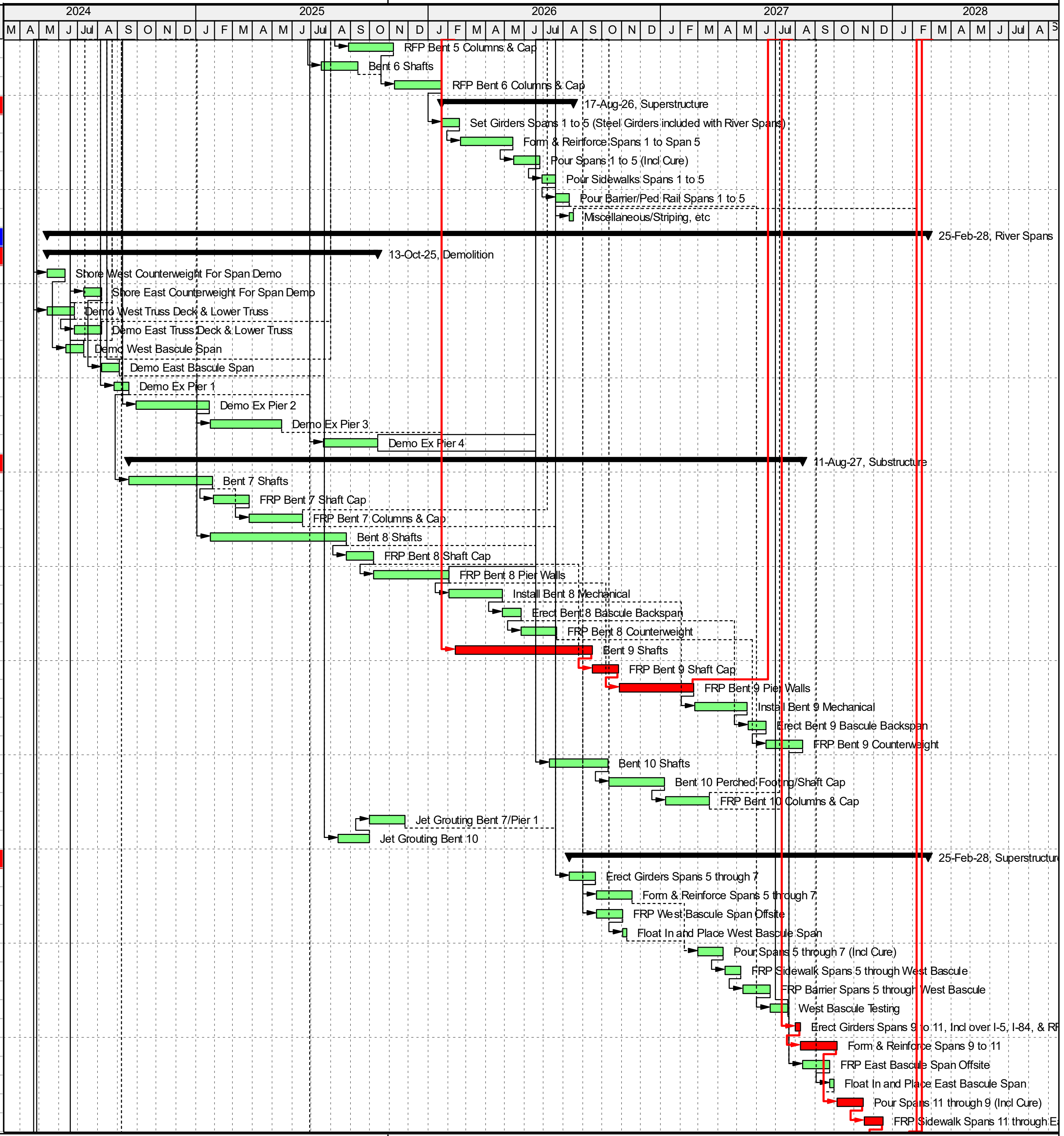
TASK filter: All Activities

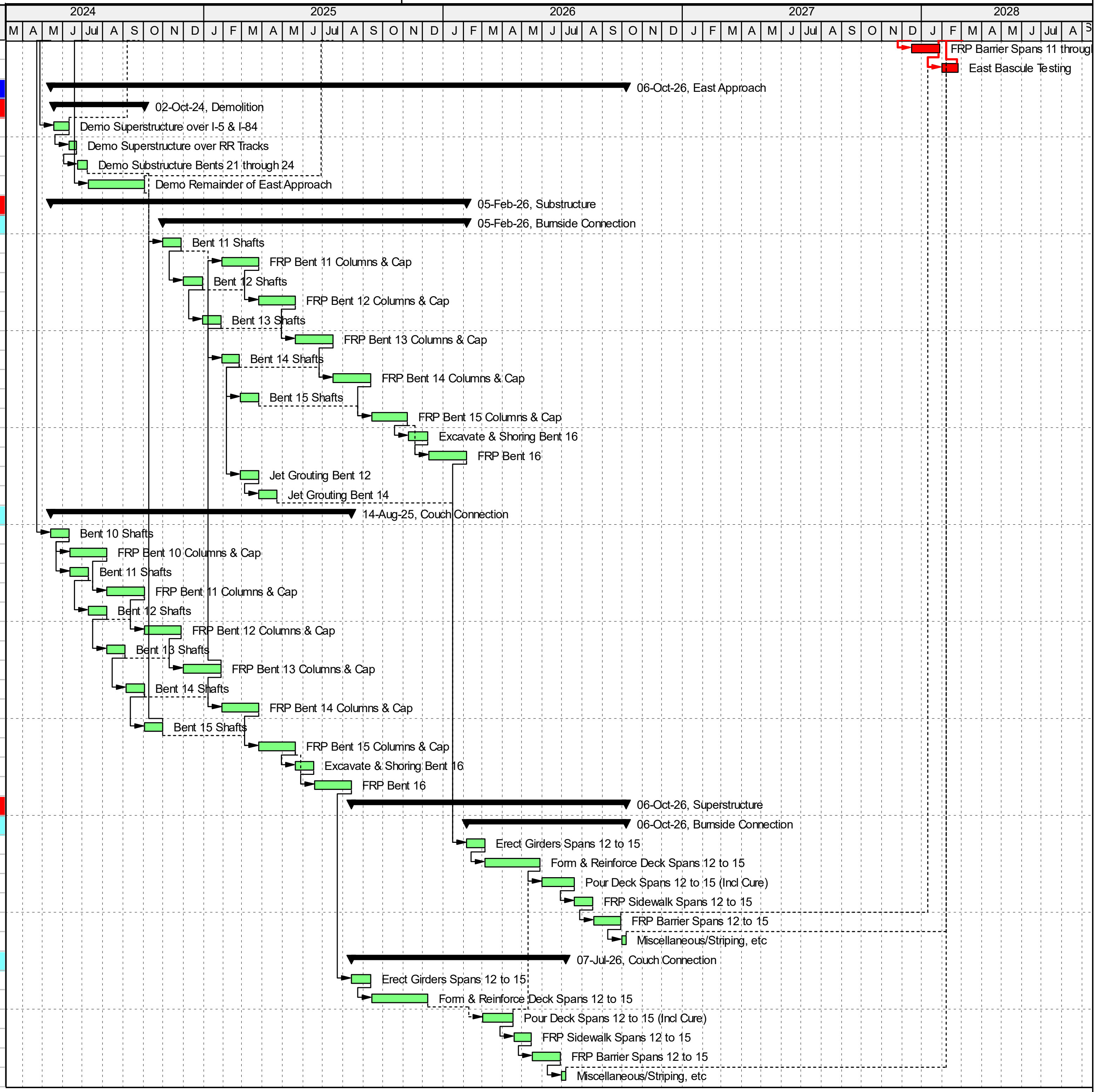
Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1320	RFP Bent 5 Columns & Cap	50	0%	237	29-Aug-25	07-Nov-25	A1300, A1310	A1340
A1330	Bent 6 Shafts	40	0%	277	18-Jul-25	12-Sep-25	A1310	A1340
A1340	RFP Bent 6 Columns & Cap	50	0%	237	10-Nov-25	22-Jan-26	A1320, A1330	A1350
Superstructure		145	0%	387	23-Jan-26	17-Aug-26		
A1350	Set Girders Spans 1 to 5 (Steel Girders included with F	20	0%	237	23-Jan-26	19-Feb-26	A1340	A1360
A1360	Form & Reinforce Spans 1 to Span 5	60	0%	237	20-Feb-26	14-May-26	A1350	A1370
A1370	Pour Spans 1 to 5 (Incl Cure)	30	0%	237	15-May-26	26-Jun-26	A1360	A1380
A1380	Pour Sidewalks Spans 1 to 5	15	0%	237	29-Jun-26	20-Jul-26	A1370	A1390
A1390	Pour Barrier/Ped Rail Spans 1 to 5	15	0%	237	21-Jul-26	10-Aug-26	A1380	A1910, A2480
A2480	Miscellaneous/Striping, etc	5	0%	387	11-Aug-26	17-Aug-26	A1390	A1030
River Spans		962	0%	0	13-May-24	25-Feb-28		
Demolition		361	0%	187	13-May-24	13-Oct-25		
A1590	Shore West Counterweight For Span Demo	20	0%	49	13-May-24	10-Jun-24	A1010	A1620
A1595	Shore East Counterweight For Span Demo	20	0%	231	10-Jul-24	06-Aug-24	A1620	A1630
A1600	Demo West Truss Deck & Lower Truss	30	0%	59	13-May-24	24-Jun-24	A1010	A1610, A1640, A
A1610	Demo East Truss Deck & Lower Truss	30	0%	251	25-Jun-24	06-Aug-24	A1600	A1210, A2415, A
A1620	Demo West Bascule Span	20	0%	49	11-Jun-24	09-Jul-24	A1590	A1595, A1640, A
A1630	Demo East Bascule Span	20	0%	231	07-Aug-24	04-Sep-24	A1595	A1650, A1210, A
A1635	Demo Ex Pier 1	20	0%	97	26-Aug-24	18-Sep-24	A1220, A1195	A1670, A1680
A1640	Demo Ex Pier 2	80	0%	120	30-Sep-24	23-Jan-25	A1600, A1620,	A1650, A1700
A1650	Demo Ex Pier 3	80	0%	190	24-Jan-25	15-May-25	A1640, A1630,	A1760
A1670	Demo Ex Pier 4	60	0%	187	21-Jul-25	13-Oct-25	A1635, A2030,	A1820, A1235
Substructure		735	0%	2	19-Sep-24	11-Aug-27		
A1680	Bent 7 Shafts	90	0%	325	19-Sep-24	28-Jan-25	A1635	A1690, A1685
A1685	FRP Bent 7 Shaft Cap	40	0%	325	29-Jan-25	25-Mar-25	A1680	A1690
A1690	FRP Bent 7 Columns & Cap	60	0%	325	26-Mar-25	18-Jun-25	A1680, A1685	A1840, A2455
A1700	Bent 8 Shafts	150	0%	120	24-Jan-25	25-Aug-25	A1640, A1665	A1710, A1760, A
A1710	FRP Bent 8 Shaft Cap	30	0%	135	26-Aug-25	07-Oct-25	A1700	A1720, A1770
A1720	FRP Bent 8 Pier Walls	80	0%	135	08-Oct-25	02-Feb-26	A1710	A1730, A1780, A
A1730	Install Bent 8 Mechanical	60	0%	135	03-Feb-26	27-Apr-26	A1720	A1740, A1790
A1740	Erect Bent 8 Bascule Backspan	20	0%	135	28-Apr-26	26-May-26	A1730	A1750, A1800
A1750	FRP Bent 8 Counterweight	40	0%	135	27-May-26	22-Jul-26	A1740	A1810, A1860
A1760	Bent 9 Shafts	150	0%	2	13-Feb-26	15-Sep-26	A1650, A1700,	A1770
A1770	FRP Bent 9 Shaft Cap	30	0%	2	16-Sep-26	27-Oct-26	A1760, A1710	A1780
A1780	FRP Bent 9 Pier Walls	80	0%	2	28-Oct-26	22-Feb-27	A1770, A1720	A1790, A2470
A1790	Install Bent 9 Mechanical	60	0%	2	23-Feb-27	17-May-27	A1780, A1730	A1800
A1800	Erect Bent 9 Bascule Backspan	20	0%	2	18-May-27	15-Jun-27	A1790, A1740	A1810
A1810	FRP Bent 9 Counterweight	40	0%	2	16-Jun-27	11-Aug-27	A1800, A1750	A1940
A1820	Bent 10 Shafts	80	0%	0	10-Jul-26	10-Oct-26	A1670, A1700	A1825
A1825	Bent 10 Perched Footing/Shaft Cap	60	0%	93	12-Oct-26	07-Jan-27	A1820	A1830
A1830	FRP Bent 10 Columns & Cap	51	0%	93	08-Jan-27	19-Mar-27	A1825	A1920, A2690
A2210	Jet Grouting Bent 7/Pier 1	40	0%	265	01-Oct-25	25-Nov-25	A2220	A1840
A2220	Jet Grouting Bent 10	40	0%	89	13-Aug-25	30-Sep-25	A1630, A1216	A2210
Superstructure		393	0%	0	10-Aug-26	25-Feb-28		
A1840	Erect Girders Spans 5 through 7	30	0%	88	10-Aug-26	21-Sep-26	A1690, A2455,	A1850, A1860
A1850	Form & Reinforce Spans 5 through 7	40	0%	88	22-Sep-26	16-Nov-26	A1840	A1880
A1860	FRP West Bascule Span Offsite	30	0%	93	22-Sep-26	02-Nov-26	A1750, A2455,	A1870
A1870	Float In and Place West Bascule Span	5	0%	93	03-Nov-26	09-Nov-26	A1860, A2417	A1880
A1880	Pour Spans 5 through 7 (Incl Cure)	30	0%	18	01-Mar-27*	09-Apr-27	A1870, A1850	A1890
A1890	FRP Sidewalk Spans 5 through West Bascule	20	0%	18	12-Apr-27	07-May-27	A1880	A1900
A1900	FRP Barrier Spans 5 through West Bascule	30	0%	18	10-May-27	21-Jun-27	A1890	A1910
A1910	West Bascule Testing	20	0%	18	22-Jun-27	20-Jul-27	A1900, A1390	A1940, A2420
A1920	Erect Girders Spans 9 to 11, Incl over I-5, I-84, & RR	4	0%	0	31-Jul-27	08-Aug-27	A1830, A2470	A1930
A1930	Form & Reinforce Spans 9 to 11	40	0%	0	09-Aug-27	04-Oct-27	A1920	A1960
A1940	FRP East Bascule Span Offsite	30	0%	2	12-Aug-27	23-Sep-27	A1910, A1810,	A1950
A1950	Float In and Place East Bascule Span	5	0%	2	24-Sep-27	30-Sep-27	A1940, A2418	A1960
A1960	Pour Spans 11 through 9 (Incl Cure)	30	0%	0	05-Oct-27	15-Nov-27	A1950, A1930	A1970
A1970	FRP Sidewalk Spans 11 through East Bascule	20	0%	0	16-Nov-27	15-Dec-27	A1960	A1980



🟦	Actual Work	🟥	Critical Remaining Work
🟩	Remaining Work	◆	Milestone
▬	Summary		

TASK filter: All Activities

Activity ID	Activity Name	Original Duration	% Complete	Total Float	Start	Finish	Predecessors	Successors
A1980	FRP Barrier Spans 11 through East Bascule	30	0%	0	16-Dec-27	28-Jan-28	A1970	A1990, A2440
A1990	East Bascule Testing	20	0%	0	31-Jan-28	25-Feb-28	A1980, A2200	A1030
East Approach		610	0%	352	13-May-24	06-Oct-26		
Demolition		95	0%	397	18-May-24	02-Oct-24		
A2000	Demo Superstructure over I-5 & I-84	8	0%	132	18-May-24	09-Jun-24	A1010	A2010, A1225
A2010	Demo Superstructure over RR Tracks	10	0%	458	10-Jun-24	21-Jun-24	A2000	A2020
A2020	Demo Substructure Bents 21 through 24	10	0%	458	24-Jun-24	08-Jul-24	A2010	A2040
A2030	Demo Remainder of East Approach	60	0%	388	10-Jul-24	02-Oct-24	A1220	A1670, A2040
Substructure		440	0%	337	13-May-24	05-Feb-26		
Burnside Connection		320	0%	337	31-Oct-24	05-Feb-26		
A2040	Bent 11 Shafts	20	0%	377	31-Oct-24	27-Nov-24	A2020, A2030, ,	A2050, A2060
A2050	FRP Bent 11 Columns & Cap	40	0%	337	29-Jan-25	25-Mar-25	A2040, A2550	A2070
A2060	Bent 12 Shafts	20	0%	397	02-Dec-24	30-Dec-24	A2040	A2070, A2080
A2070	FRP Bent 12 Columns & Cap	40	0%	337	26-Mar-25	20-May-25	A2050, A2060	A2090
A2080	Bent 13 Shafts	20	0%	417	31-Dec-24	28-Jan-25	A2060	A2090, A2100
A2090	FRP Bent 13 Columns & Cap	40	0%	337	21-May-25	17-Jul-25	A2080, A2070	A2110
A2100	Bent 14 Shafts	20	0%	437	29-Jan-25	25-Feb-25	A2080	A2120, A2110, A
A2110	FRP Bent 14 Columns & Cap	40	0%	337	18-Jul-25	12-Sep-25	A2090, A2100	A2130
A2120	Bent 15 Shafts	20	0%	457	26-Feb-25	25-Mar-25	A2100	A2130
A2130	FRP Bent 15 Columns & Cap	40	0%	337	15-Sep-25	07-Nov-25	A2110, A2120	A2150, A2140
A2140	Excavate & Shoring Bent 16	20	0%	337	10-Nov-25	09-Dec-25	A2130	A2150
A2150	FRP Bent 16	40	0%	337	10-Dec-25	05-Feb-26	A2130, A2140	A2160
A2230	Jet Grouting Bent 12	20	0%	537	26-Feb-25	25-Mar-25	A2100	A2240
A2240	Jet Grouting Bent 14	20	0%	537	26-Mar-25	22-Apr-25	A2230	A2160
Couch Connection		320	0%	422	13-May-24	14-Aug-25		
A2495	Bent 10 Shafts	20	0%	337	13-May-24	10-Jun-24	A1110	A2496, A2500
A2496	FRP Bent 10 Columns & Cap	40	0%	337	11-Jun-24	06-Aug-24	A2495	A2510
A2500	Bent 11 Shafts	20	0%	357	11-Jun-24	09-Jul-24	A2495	A2510, A2520
A2510	FRP Bent 11 Columns & Cap	40	0%	337	07-Aug-24	02-Oct-24	A2500, A2496	A2530
A2520	Bent 12 Shafts	20	0%	377	10-Jul-24	06-Aug-24	A2500	A2530, A2540
A2530	FRP Bent 12 Columns & Cap	40	0%	337	03-Oct-24	27-Nov-24	A2510, A2520	A2550
A2540	Bent 13 Shafts	20	0%	377	07-Aug-24	04-Sep-24	A2520	A2550, A2560
A2550	FRP Bent 13 Columns & Cap	40	0%	337	02-Dec-24	28-Jan-25	A2540, A2530	A2570, A2050
A2560	Bent 14 Shafts	20	0%	377	05-Sep-24	02-Oct-24	A2540	A2580, A2570
A2570	FRP Bent 14 Columns & Cap	40	0%	422	29-Jan-25	25-Mar-25	A2550, A2560	A2590
A2580	Bent 15 Shafts	20	0%	377	03-Oct-24	30-Oct-24	A2560	A2590, A2040
A2590	FRP Bent 15 Columns & Cap	40	0%	422	26-Mar-25	20-May-25	A2570, A2580	A2610, A2600
A2600	Excavate & Shoring Bent 16	20	0%	422	21-May-25	18-Jun-25	A2590	A2610
A2610	FRP Bent 16	40	0%	422	19-Jun-25	14-Aug-25	A2590, A2600	A2620
Superstructure		290	0%	352	15-Aug-25	06-Oct-26		
Burnside Connection		170	0%	352	06-Feb-26	06-Oct-26		
A2160	Erect Girders Spans 12 to 15	20	0%	337	06-Feb-26	05-Mar-26	A2150, A2240	A2170
A2170	Form & Reinforce Deck Spans 12 to 15	60	0%	337	06-Mar-26	29-May-26	A2160	A2180
A2180	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	337	01-Jun-26	20-Jul-26	A2170, A2640	A2190
A2190	FRP Sidewalk Spans 12 to 15	20	0%	337	21-Jul-26	17-Aug-26	A2180	A2200
A2200	FRP Barrier Spans 12 to 15	30	0%	337	18-Aug-26	29-Sep-26	A2190	A1990, A2490
A2490	Miscellaneous/Striping, etc	5	0%	352	30-Sep-26	06-Oct-26	A2200	A1030
Couch Connection		226	0%	416	15-Aug-25	07-Jul-26		
A2620	Erect Girders Spans 12 to 15	20	0%	422	15-Aug-25	12-Sep-25	A2610	A2630
A2630	Form & Reinforce Deck Spans 12 to 15	60	0%	422	15-Sep-25	09-Dec-25	A2620	A2640
A2640	Pour Deck Spans 12 to 15 (Incl Cure)	35	0%	366	02-Mar-26*	17-Apr-26	A2630	A2650, A2180
A2650	FRP Sidewalk Spans 12 to 15	20	0%	416	20-Apr-26	15-May-26	A2640	A2660
A2660	FRP Barrier Spans 12 to 15	30	0%	416	18-May-26	29-Jun-26	A2650	A2670
A2670	Miscellaneous/Striping, etc	5	0%	416	30-Jun-26	07-Jul-26	A2660	A1030



🟦 Actual Work
🟥 Critical Remaining Work
▼ Summary
🟩 Remaining Work
◆ ◆ Milestone

TASK filter: All Activities

Appendix H. Summary of Bridge Alternative Comparisons

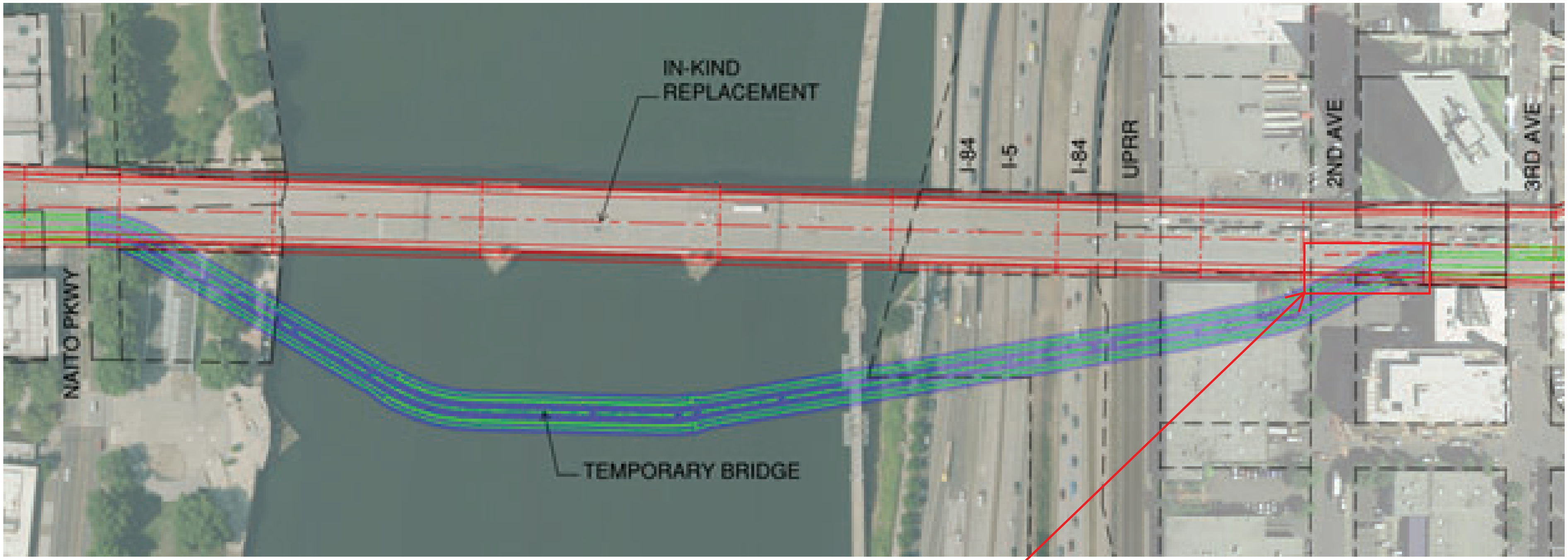
Anticipated Construction Impact Comparison Chart

Note: Not All Impacts Shown; Only Those That Vary By Alternative

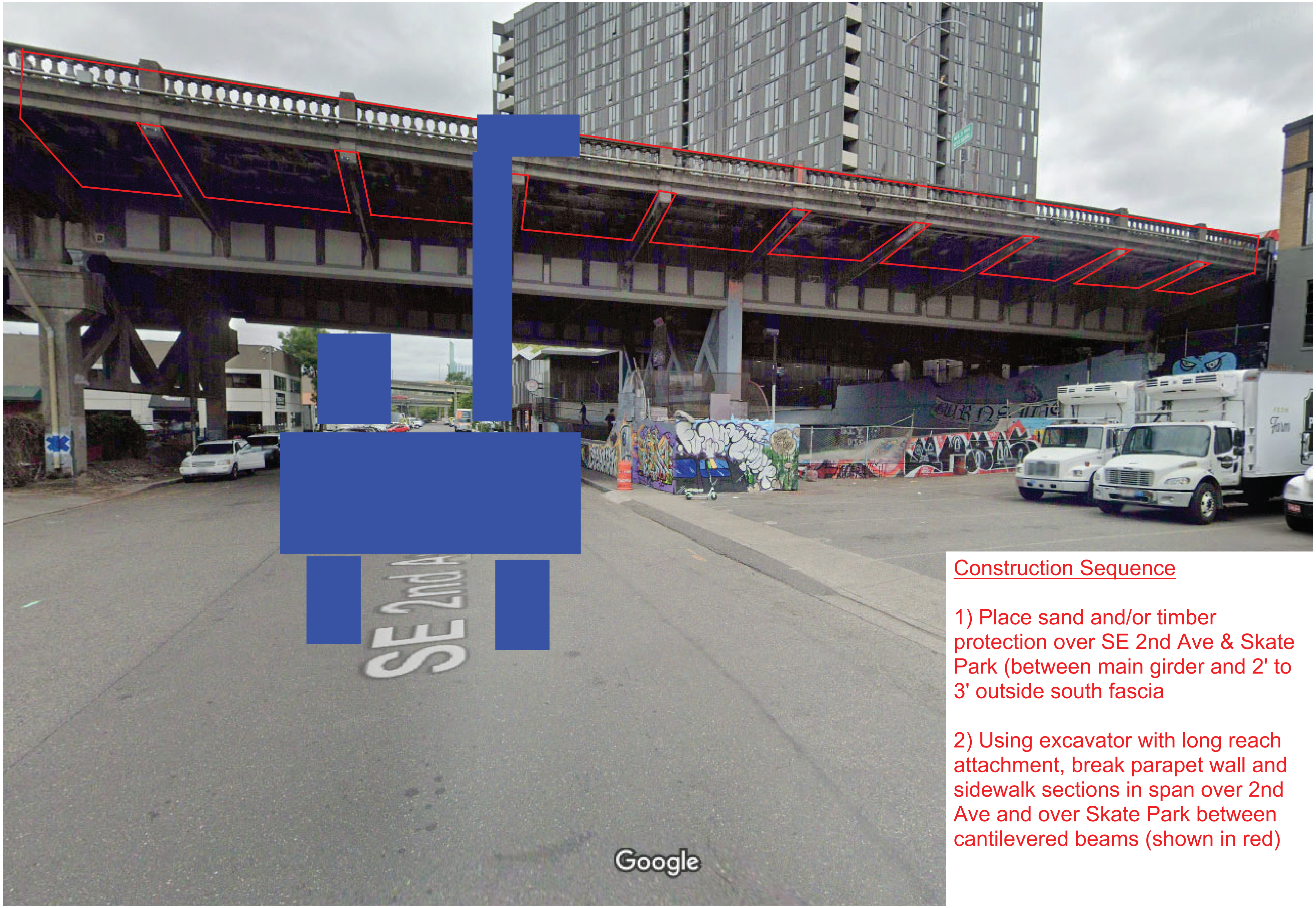
	Alternative			
Anticipated Impact	**Enhanced Retrofit**	**Replacement In-Kind With Conventional Span Approaches**	**Replacement In-Kind with Long Span Approaches**	**Replacement with Couch Connection**
Construction Duration (with Temporary Diversion Bridge)	5 yrs	6.5 yrs	6.5 yrs	6.5 yrs
Construction Duration (no Temporary Diversion Bridge)	3.5 yrs	4.5 yrs	4.5 yrs	4.5 yrs
Cofferdam Required at Ex Pier 1/Bent 7	Yes	Yes - for Ground Improvements	No	Yes - for Ground Improvements
Cofferdam Required at Bent 10	N/A	Yes	No	Yes
Relocation of City Sewer Pipes Required at Ex Pier 1	Yes	No	No	No
Removal and Replacement of Harbor Wall Required	Yes	Potentially - to accommodate ground improvements	No	Potentially - to accommodate ground improvements
New Pier Built In Waterfront Park	N/A	Yes	No	Yes
Piers Requiring Ground Improvements	Pier 1, Pier 4, Bent 22, Bent 24/25, Bent 26	Bents 7, 10, 11, 12, and 13	Bent 9	Bents 7, 10, 11, 12, and 13
I-5 and I-84 Ramp Closures	Weekends Required	Weekends Required	Weeknights Possible if Ex. Deck used as false deck	Weekends Required
Esplanade Closures	26 Months	30 Months	18 Months	30 Months
Burnside Skate Park Impacts/Closures	Closed for Duration of Project and Rebuilt	Intermittent Closures During Demolition and Girder Erection	Intermittent Closures During Demolition and Girder Erection	Intermittent Closures During Demolition and Girder Erection
Business and Resident Access Affected On Couch St	No	No	No	Yes
TriMet LRT Cumulative Closure Duration (no Temp Diversion Bridge)	8 Weeks	5 Weeks	5 Weeks	5 Weeks

Appendix I. East Approach Temporary Bridge Tie-In and Construction Sequence

Possible Construction Sequence for East Approach Temporary Bridge Tie-In



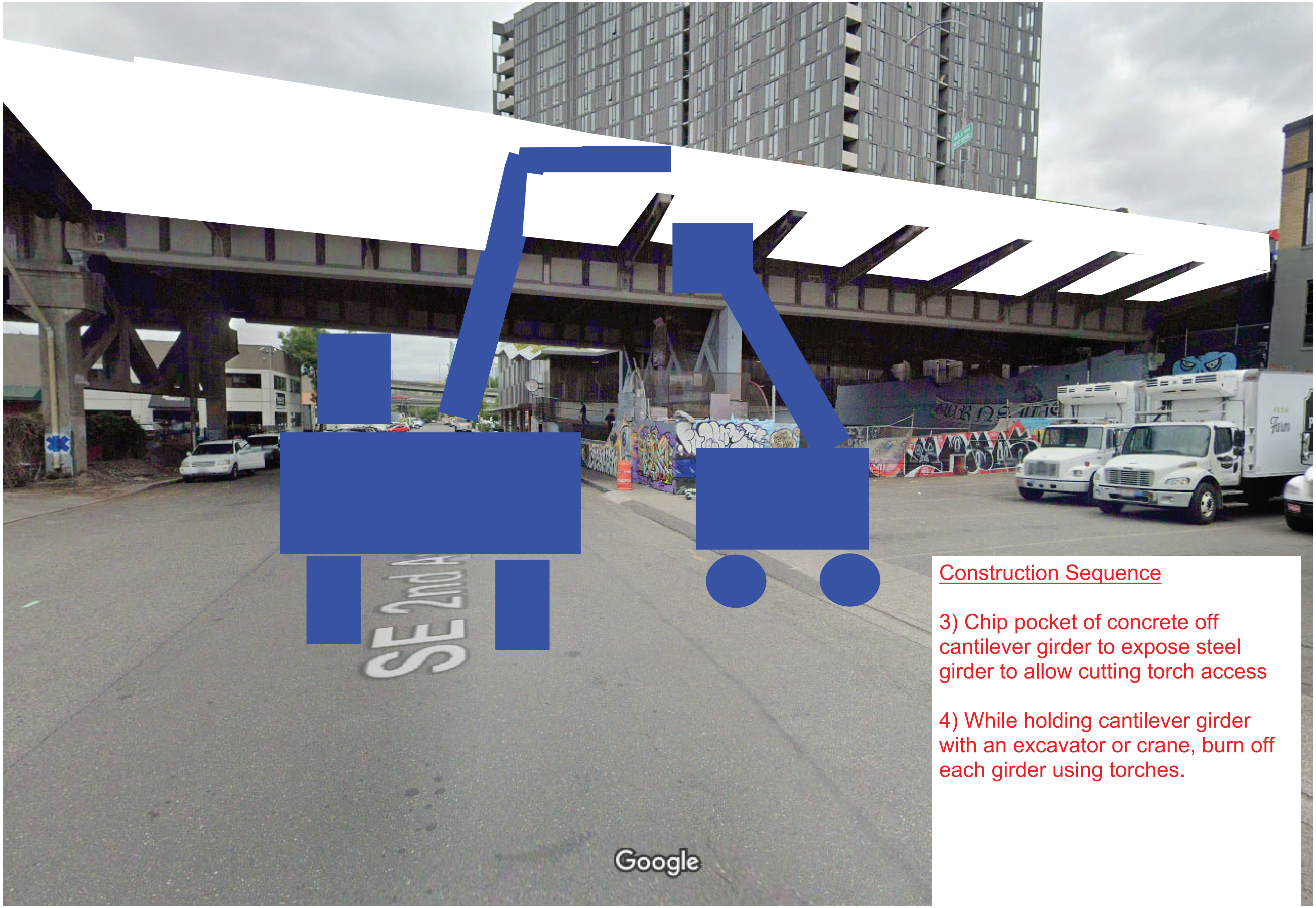
East approach temporary bridge tie-in



Construction Sequence

1) Place sand and/or timber protection over SE 2nd Ave & Skate Park (between main girder and 2' to 3' outside south fascia

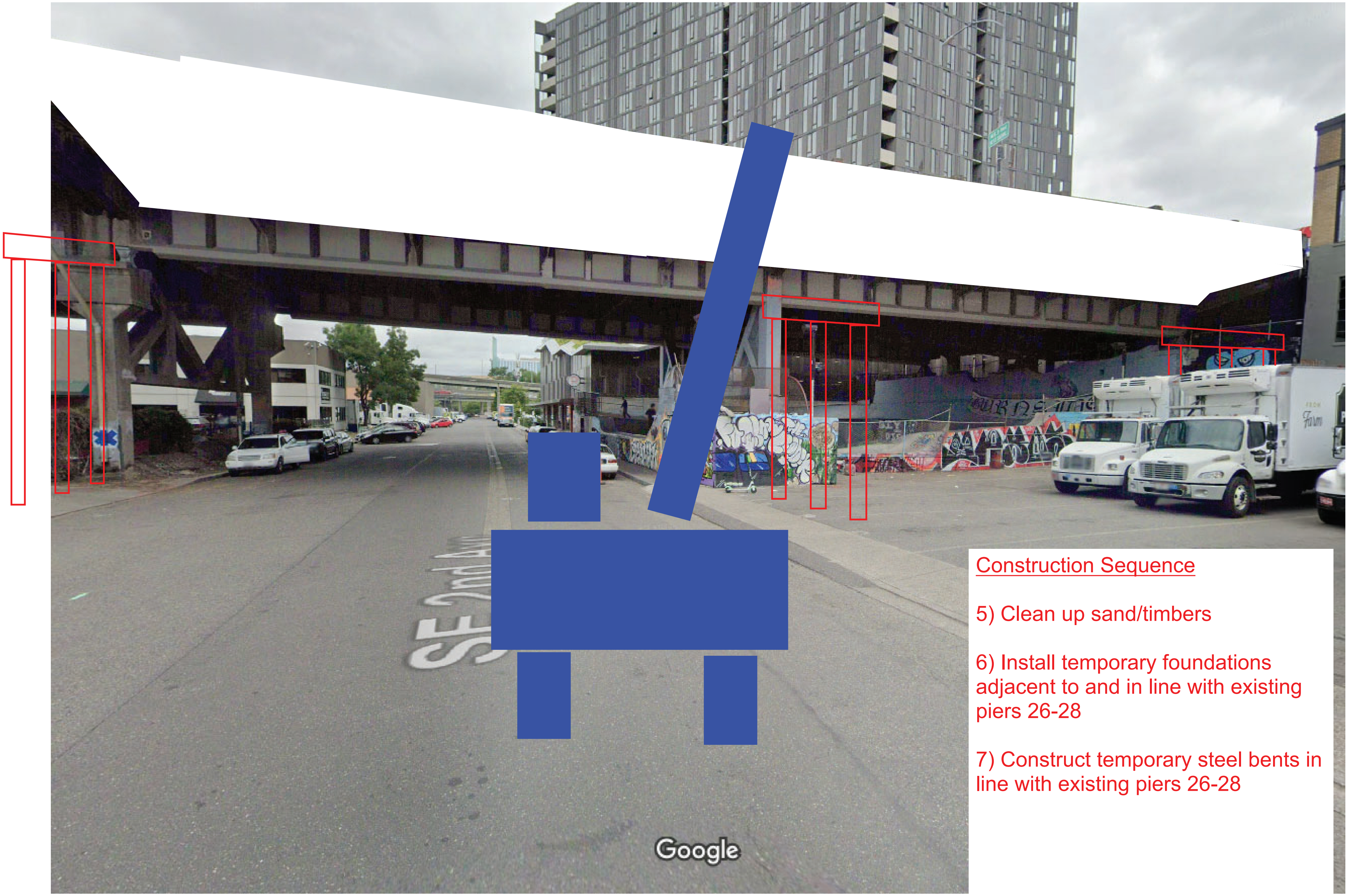
2) Using excavator with long reach attachment, break parapet wall and sidewalk sections in span over 2nd Ave and over Skate Park between cantilevered beams (shown in red)



Construction Sequence

3) Chip pocket of concrete off cantilever girder to expose steel girder to allow cutting torch access

4) While holding cantilever girder with an excavator or crane, burn off each girder using torches.

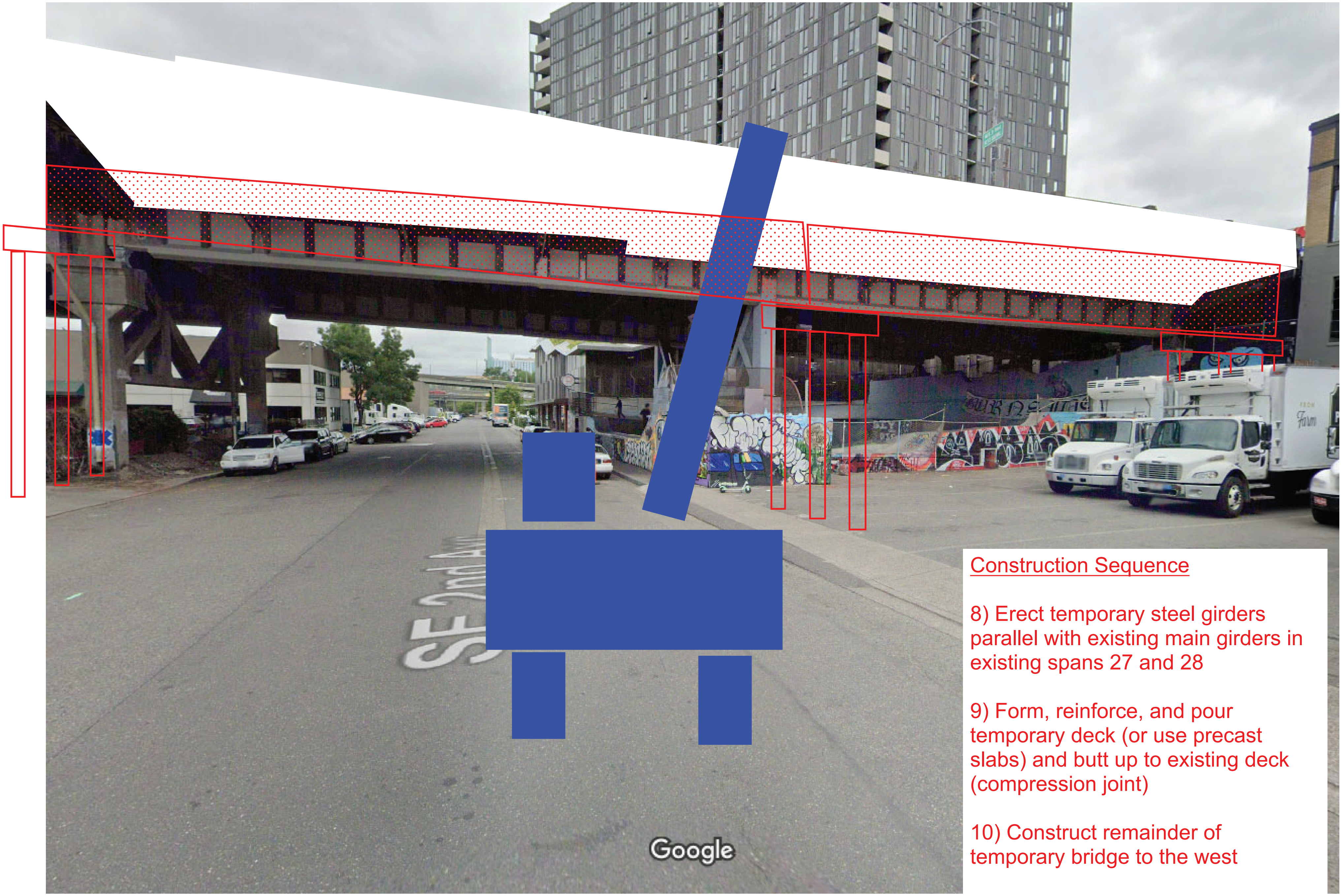


Construction Sequence

5) Clean up sand/timbers

6) Install temporary foundations adjacent to and in line with existing piers 26-28

7) Construct temporary steel bents in line with existing piers 26-28

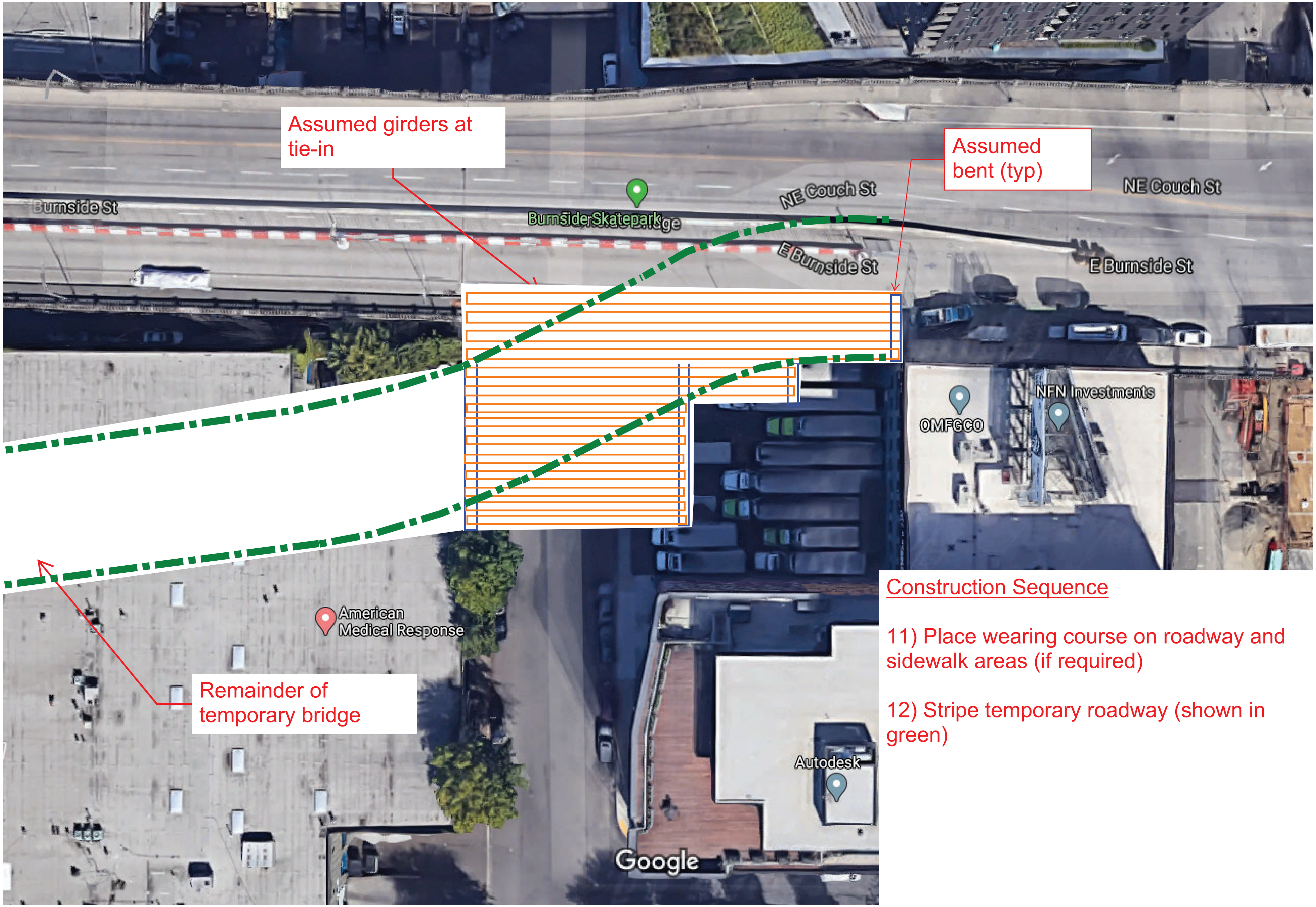


Construction Sequence

8) Erect temporary steel girders parallel with existing main girders in existing spans 27 and 28

9) Form, reinforce, and pour temporary deck (or use precast slabs) and butt up to existing deck (compression joint)

10) Construct remainder of temporary bridge to the west



Construction Sequence

11) Place wearing course on roadway and sidewalk areas (if required)

12) Stripe temporary roadway (shown in green)

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Shoring beam wedged tight to underside of cross beams

Construction Sequence

13) Chip off concrete on cross beams under deck over 2nd Ave to expose steel to be cut/torched

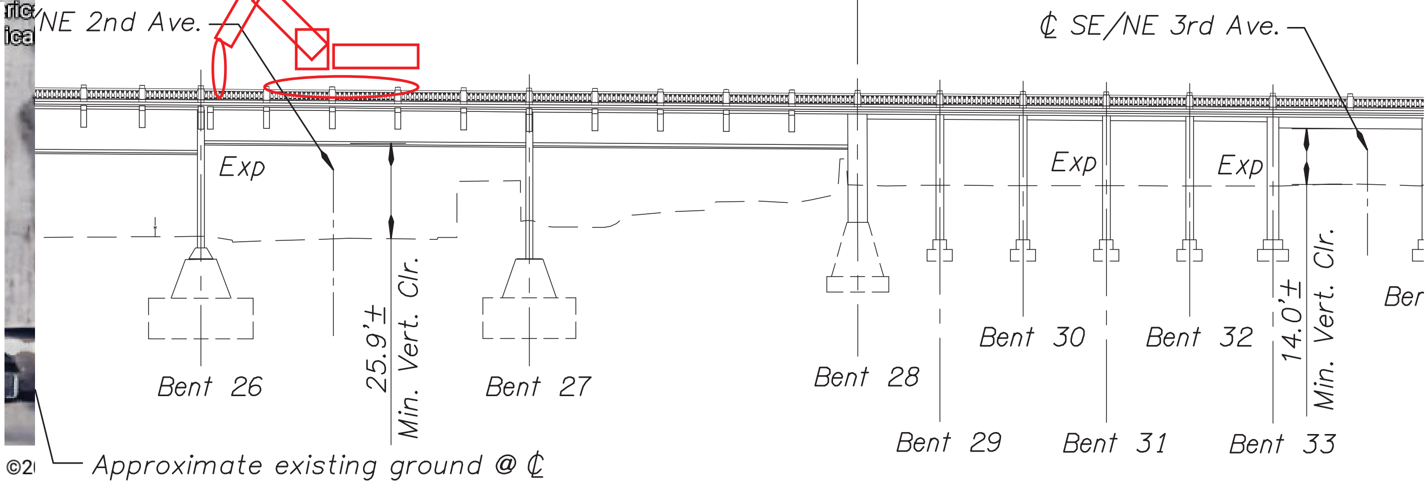
14) Install temporary bents on either side of 2nd Ave for temporary shoring

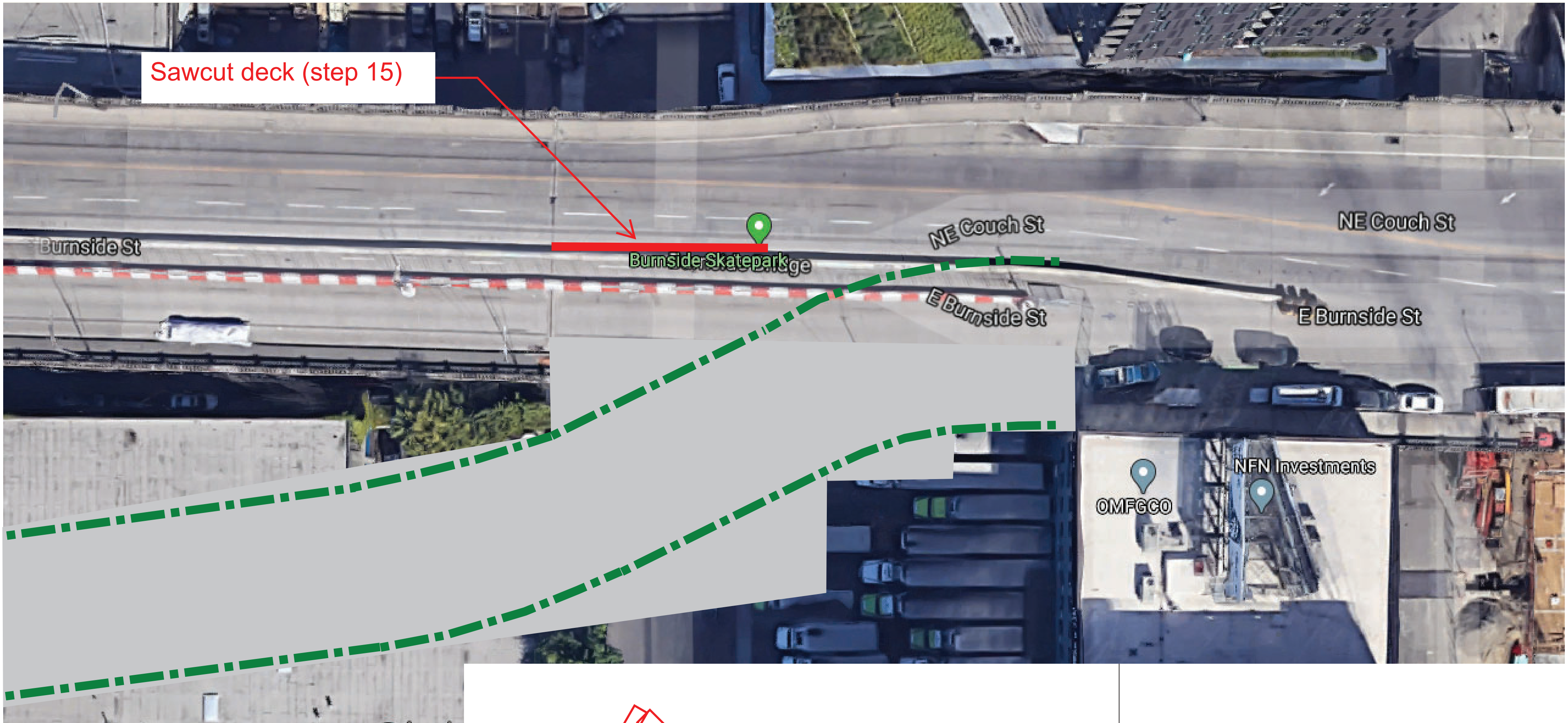
15) Using hydraulic jacks, install temporary shoring beam along centerline of bridge to allow demolition of north half

Construction Sequence

16) Place sand and/or timbers over 2nd Ave and timbers over the skate park for protection

17) Using excavator with bucket attachment, pull north parapet in span 26 back onto deck and load into trucks (entering & leaving from east approach).

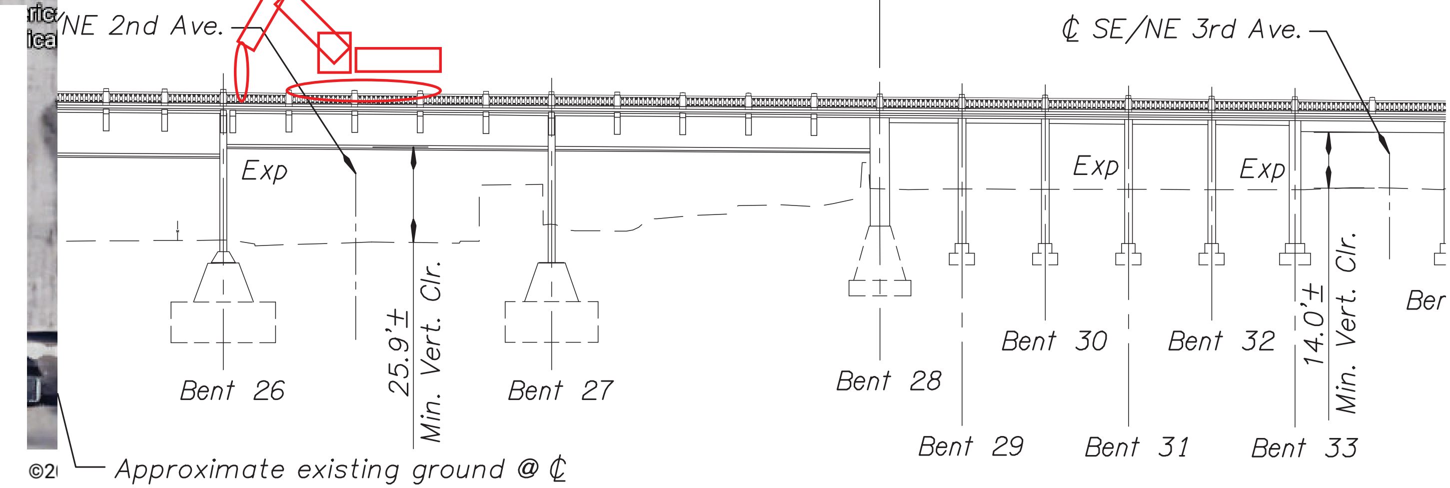


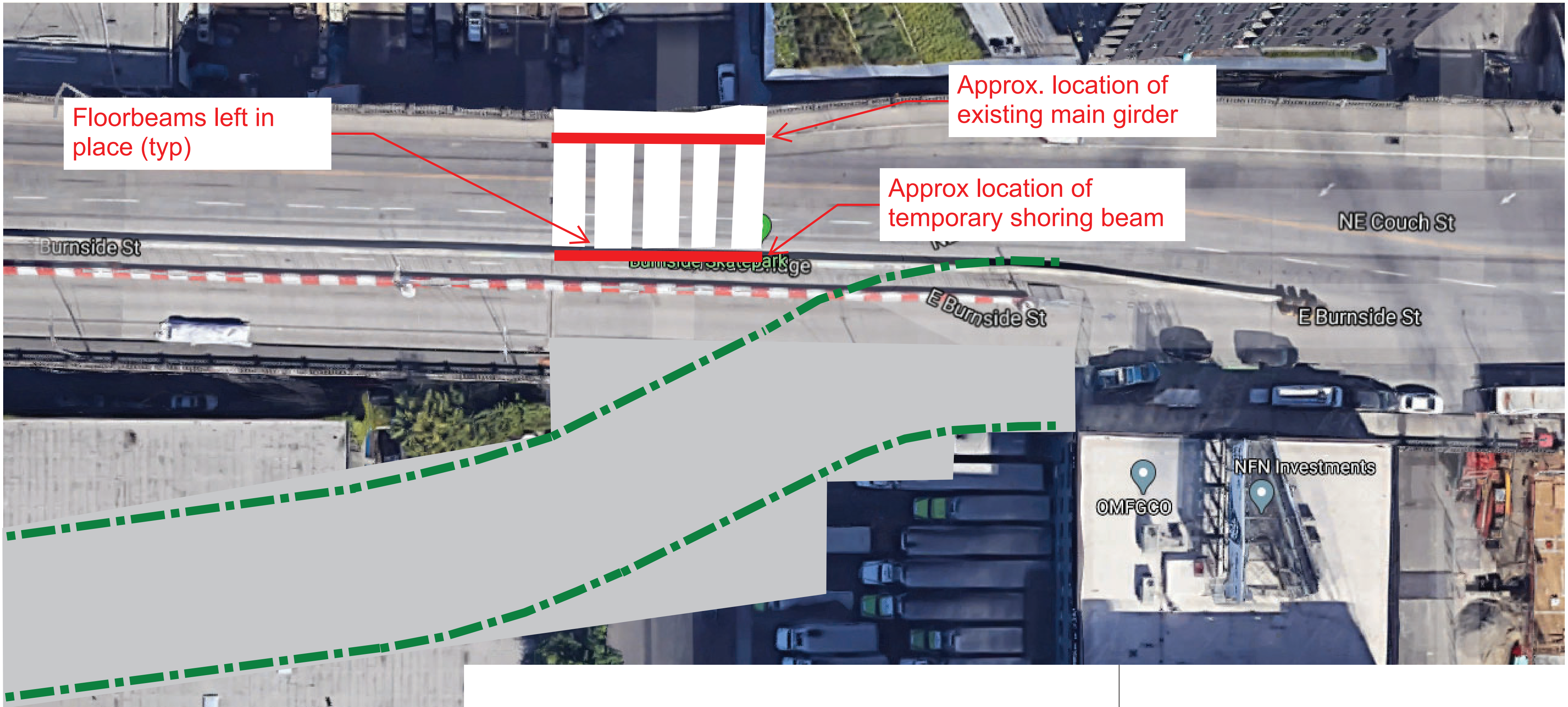


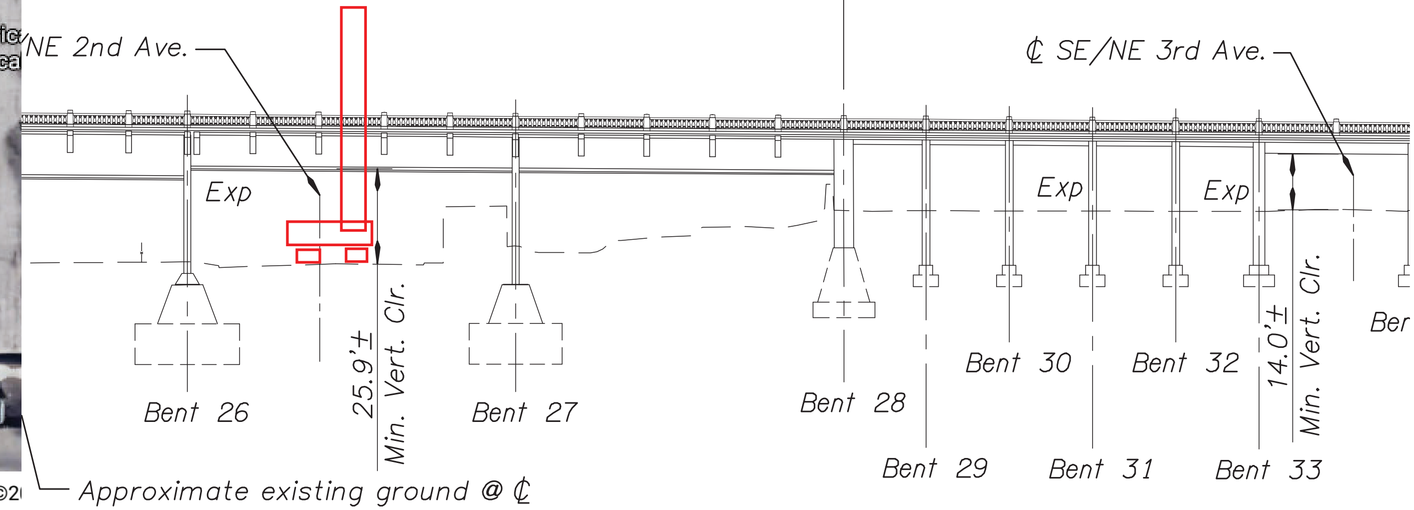
Construction Sequence

18) Sawcut longitudinal cut through deck just north of temporary support beam to allow clean separation.

19) Using processing attachment, break sidewalk and deck into small (less than 6") pieces and drop to sand bed on 2nd below. Break only span 26.



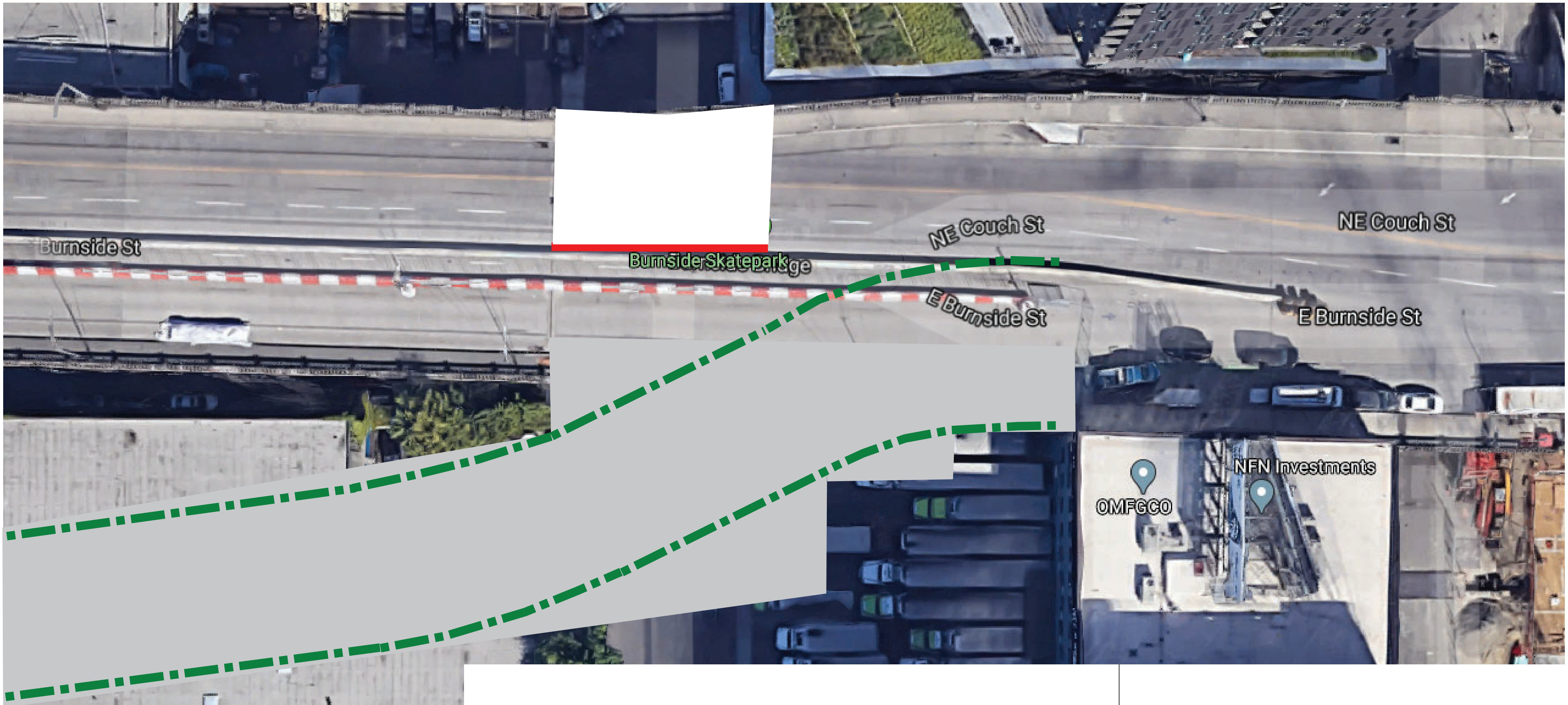


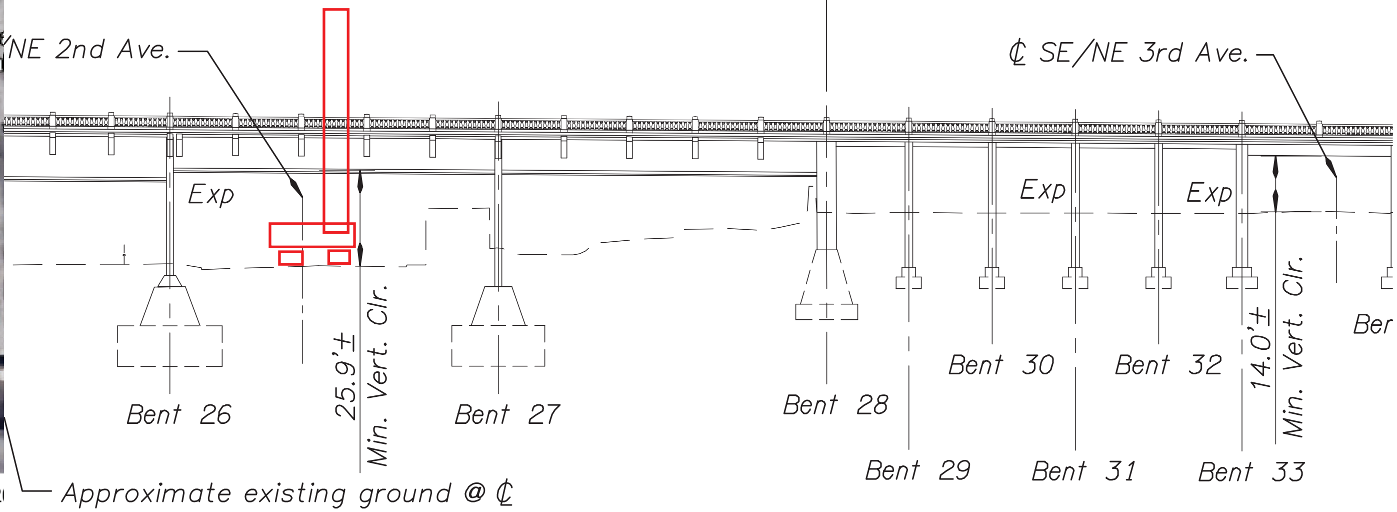


Construction Sequence

20) Using chipping gun, chip away concrete encasement on structural steel transverse floor beams at north end and just north of temporary support beam to expose steel.

21) Using crane from 2nd Ave and picking strap, attach to furthest sidewalk cantilever beam, cut cantilever beams near main girder from manlift on 2nd Ave, and lower cantilever beam onto truck for disposal.



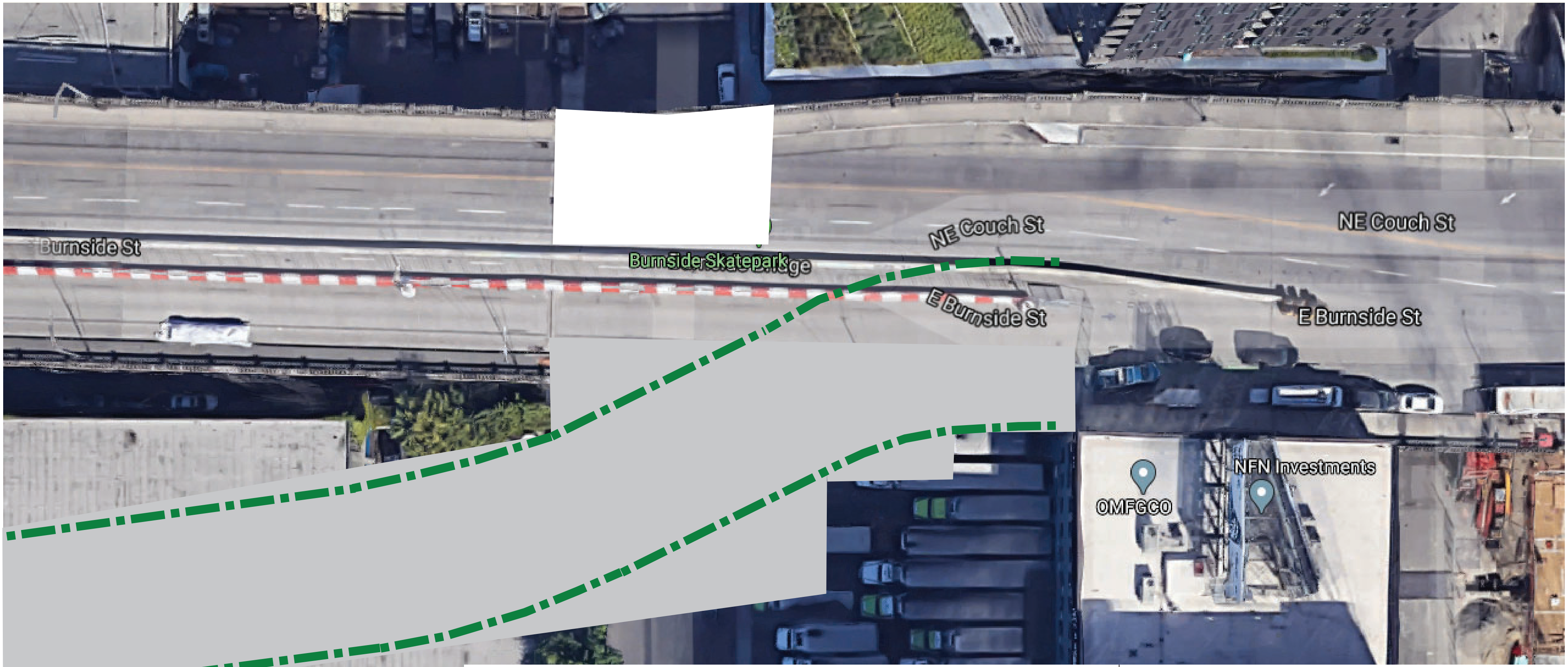


Construction Sequence

22) Add temporary bracing to top flange of north existing main girder such as prestressing strand or stiffening truss to ensure main girder is stable.

23) Using crane and picking strap, attach to furthest floorbeam, cut floorbeam near north end at main girder and just north of temporary support beam from manlift and lift floorbeam onto truck for disposal.

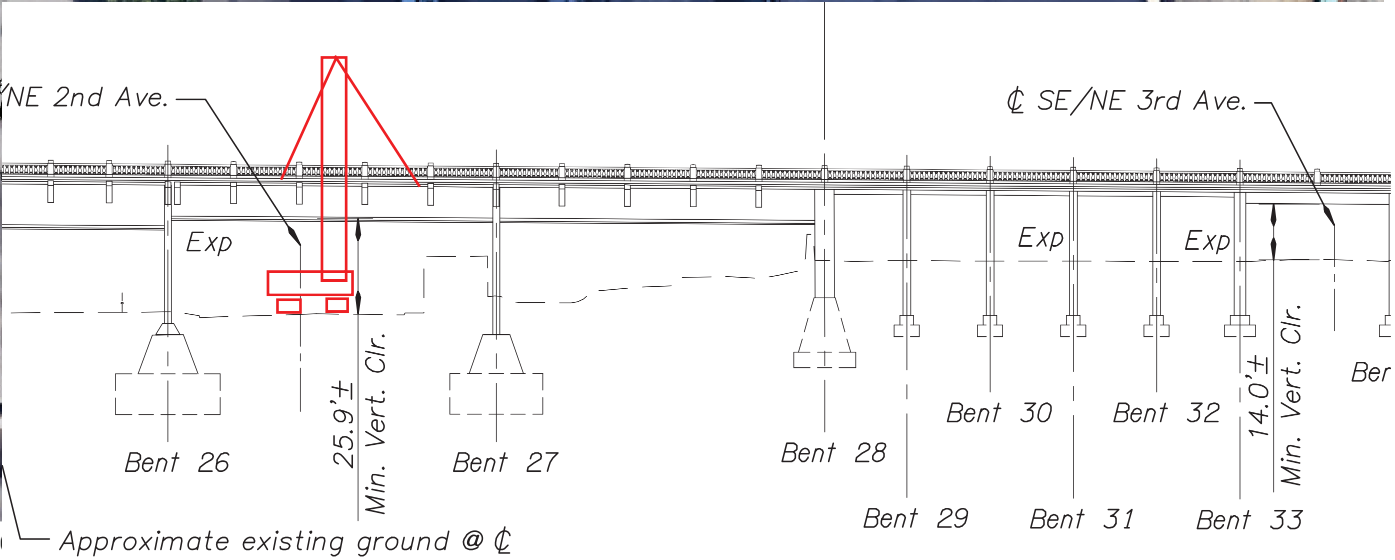
24) Repeat removing all floorbeams (only main beam left standing).

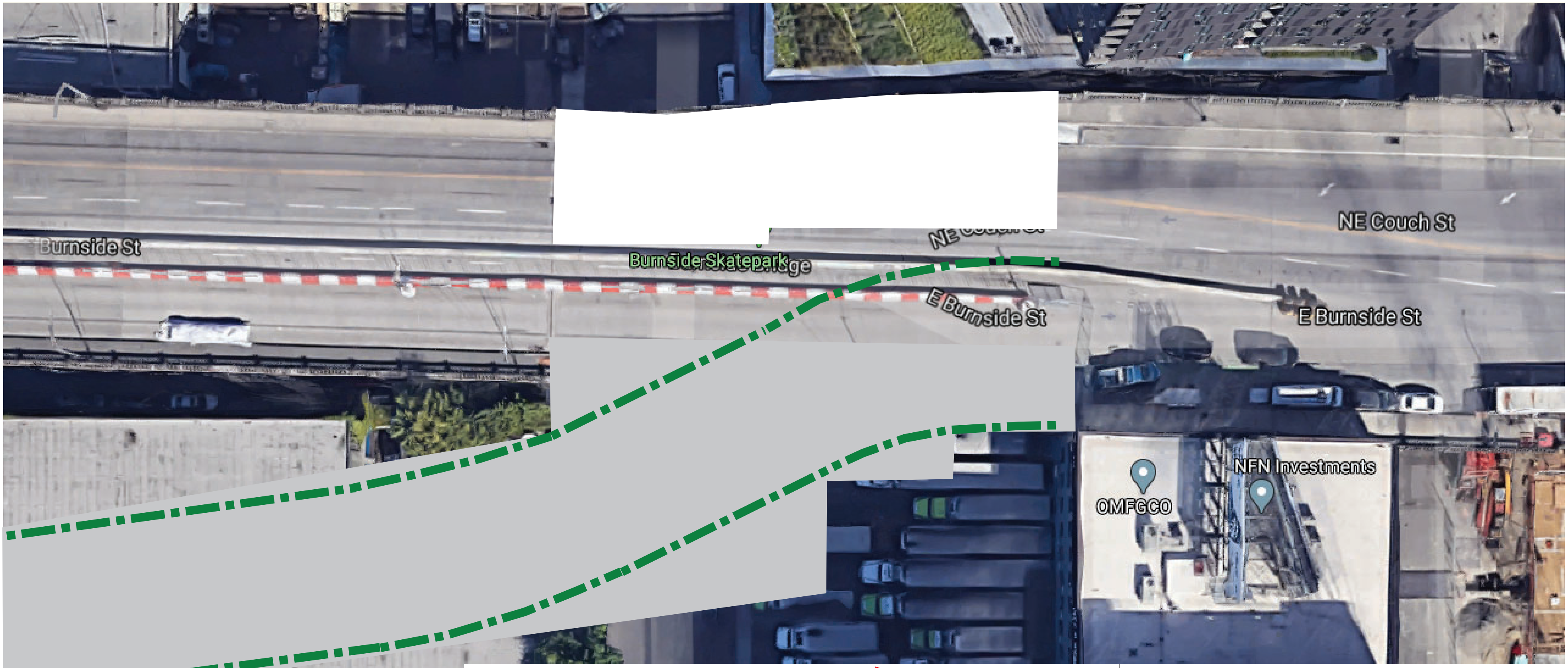


Construction Sequence

25) Using a crane on 2nd Ave, cut and lift out north main girder and load on truck.

26) Sawcut Span 27 (over skate park) deck, sidewalk, and north parapet into manageable sizes to be lifted off in pieces

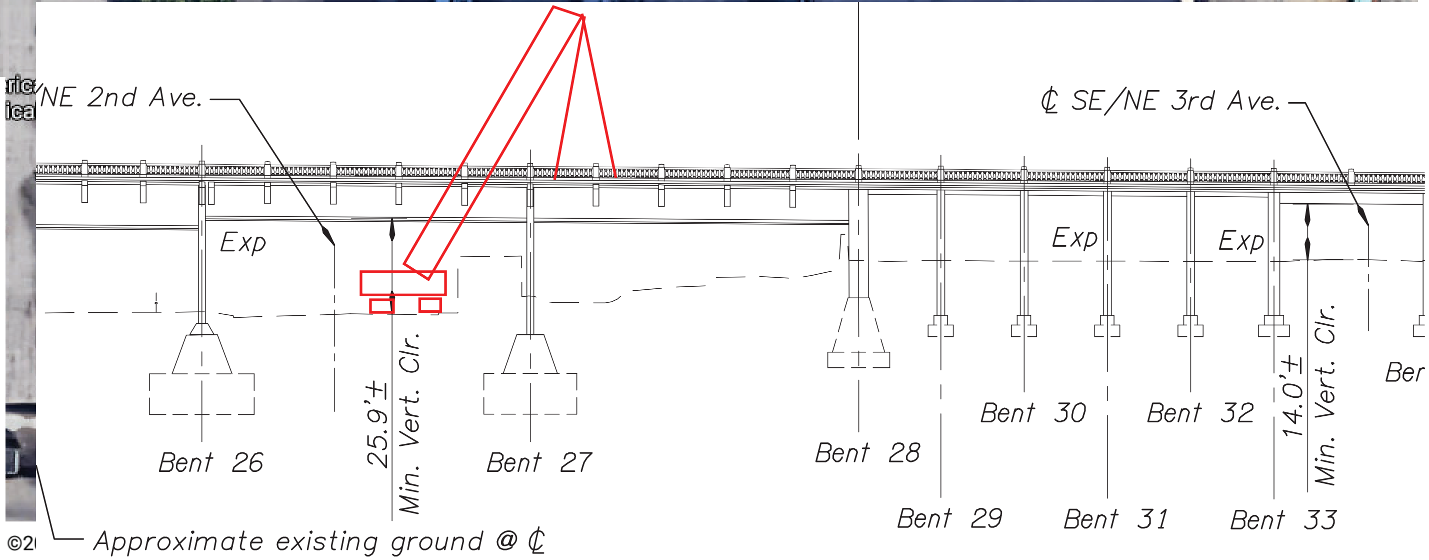


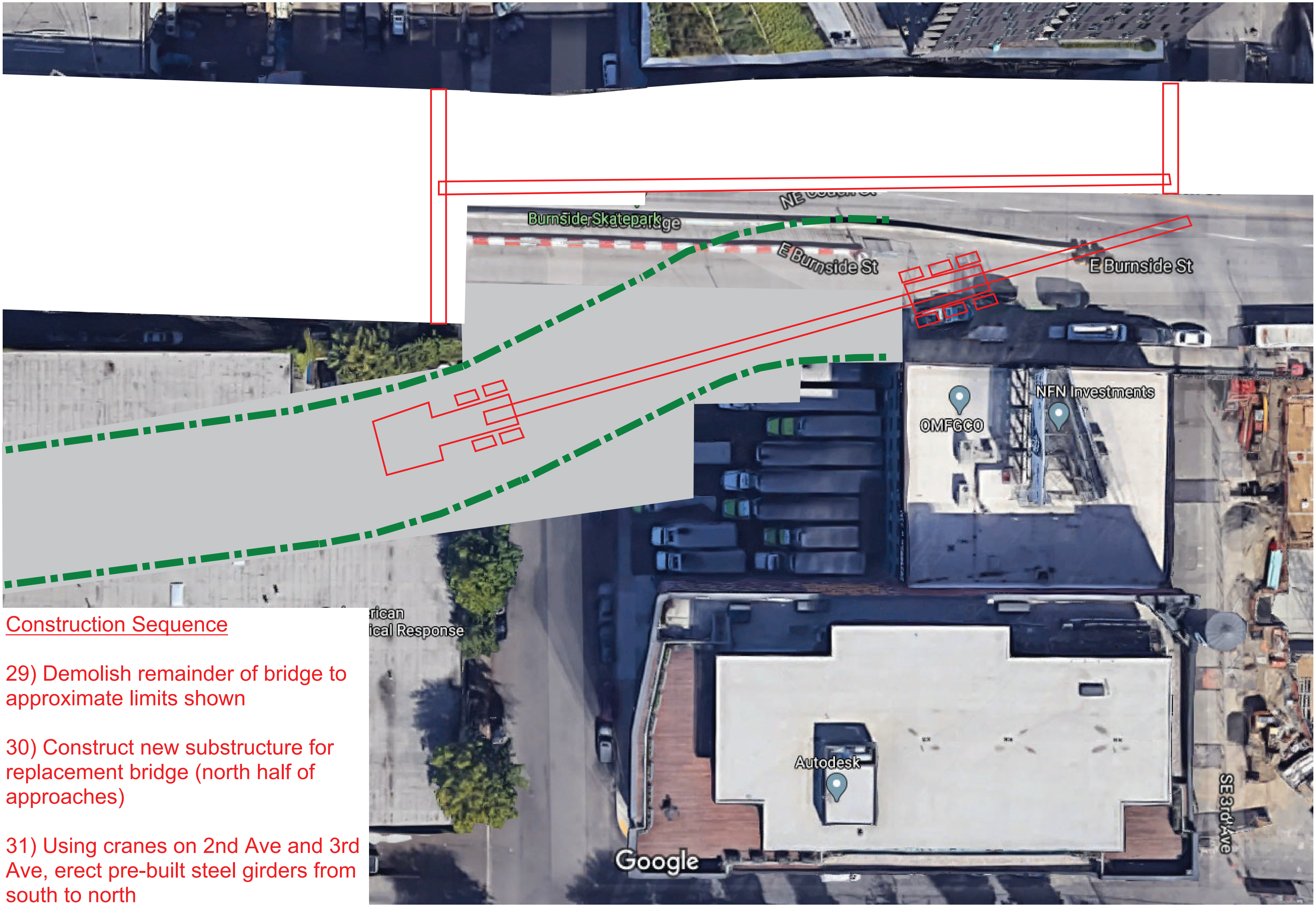


Construction Sequence

27) Using a crane on 2nd Ave, lift out deck, sidewalk, and parapet pieces one by one and load on truck.

28) Repeat steps 17 through 25 for span 27 except that in lieu of demolishing to temporary support beam, demolition would occur to just north of existing center main girder





Construction Sequence

29) Demolish remainder of bridge to approximate limits shown

30) Construct new substructure for replacement bridge (north half of approaches)

31) Using cranes on 2nd Ave and 3rd Ave, erect pre-built steel girders from south to north

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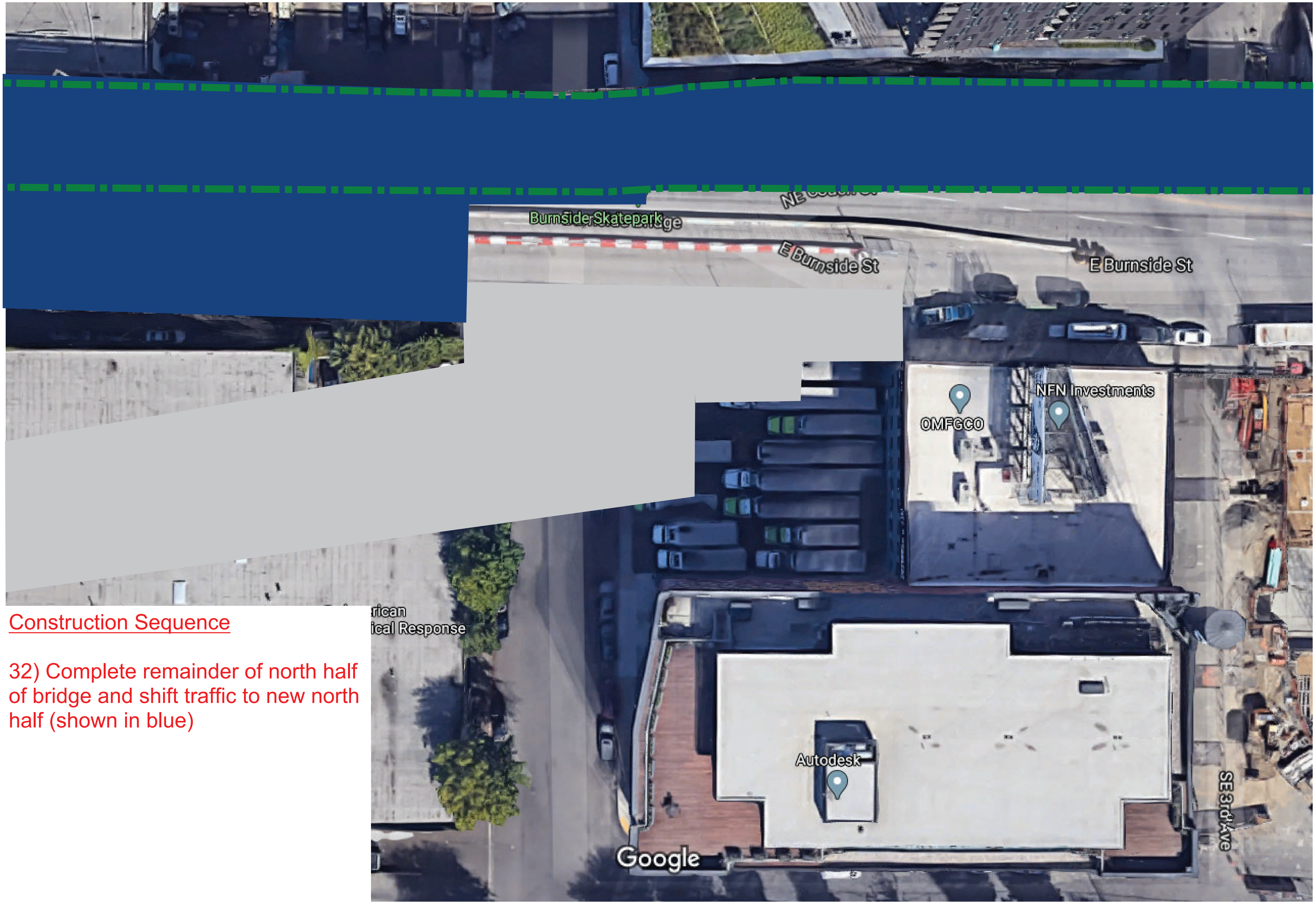

Construction Sequence

32) Complete remainder of north half of bridge and shift traffic to new north half (shown in blue)

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Construction Sequence

33) Start removing "remainder" of temporary bridge to the west using combination of excavator (processing) demolition for concrete and/or crane lifting pieces of deck and steel girders.

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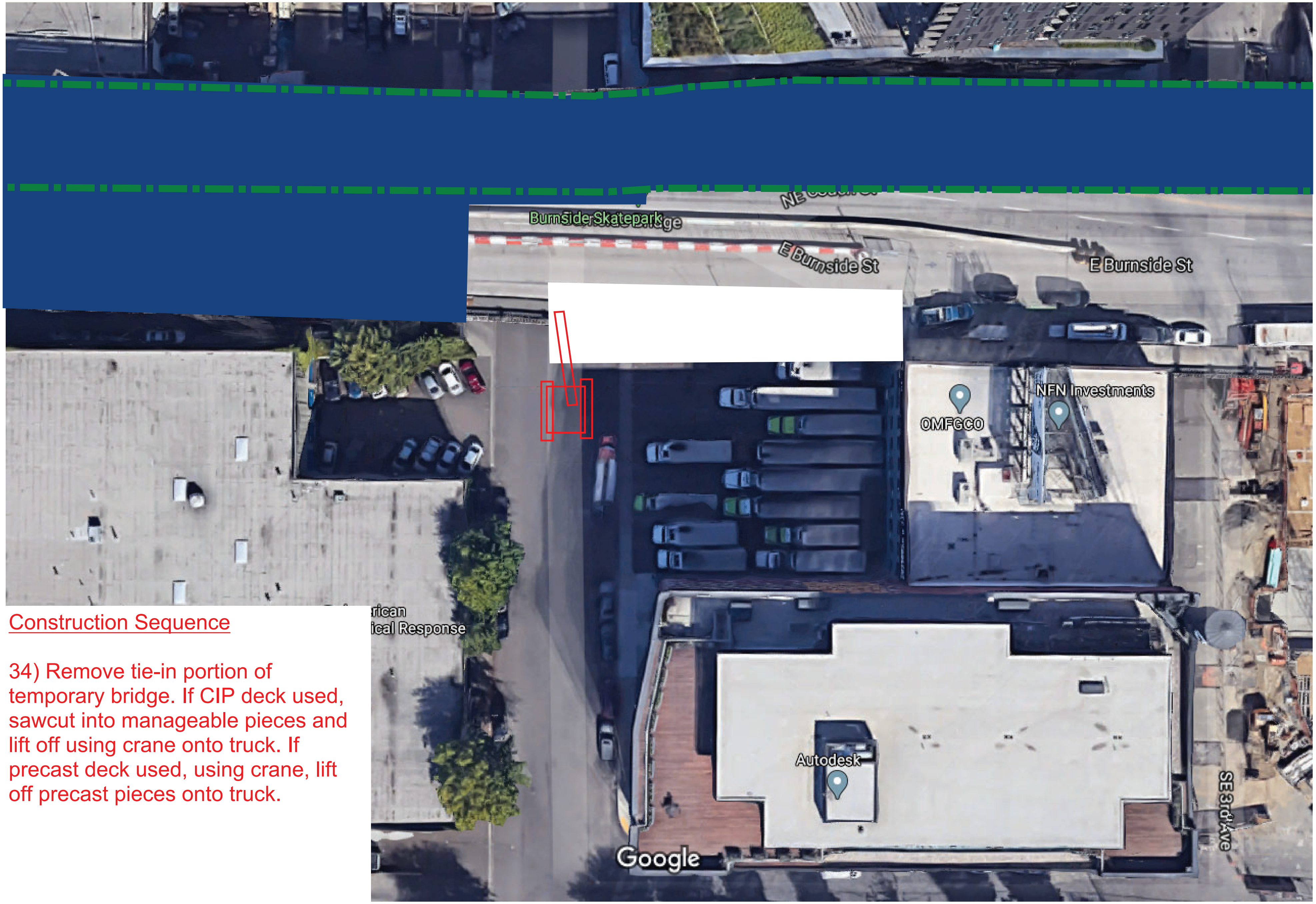

Construction Sequence

34) Remove tie-in portion of temporary bridge. If CIP deck used, sawcut into manageable pieces and lift off using crane onto truck. If precast deck used, using crane, lift off precast pieces onto truck.

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Construction Sequence

35) Place sand and/or timbers over 2nd Ave and timbers over the skate park for protection

36) Repeat steps 19 through 27 to remove remainder of existing deck over 2nd Ave and skate park

37) Demolish remainder of structure to east abutment

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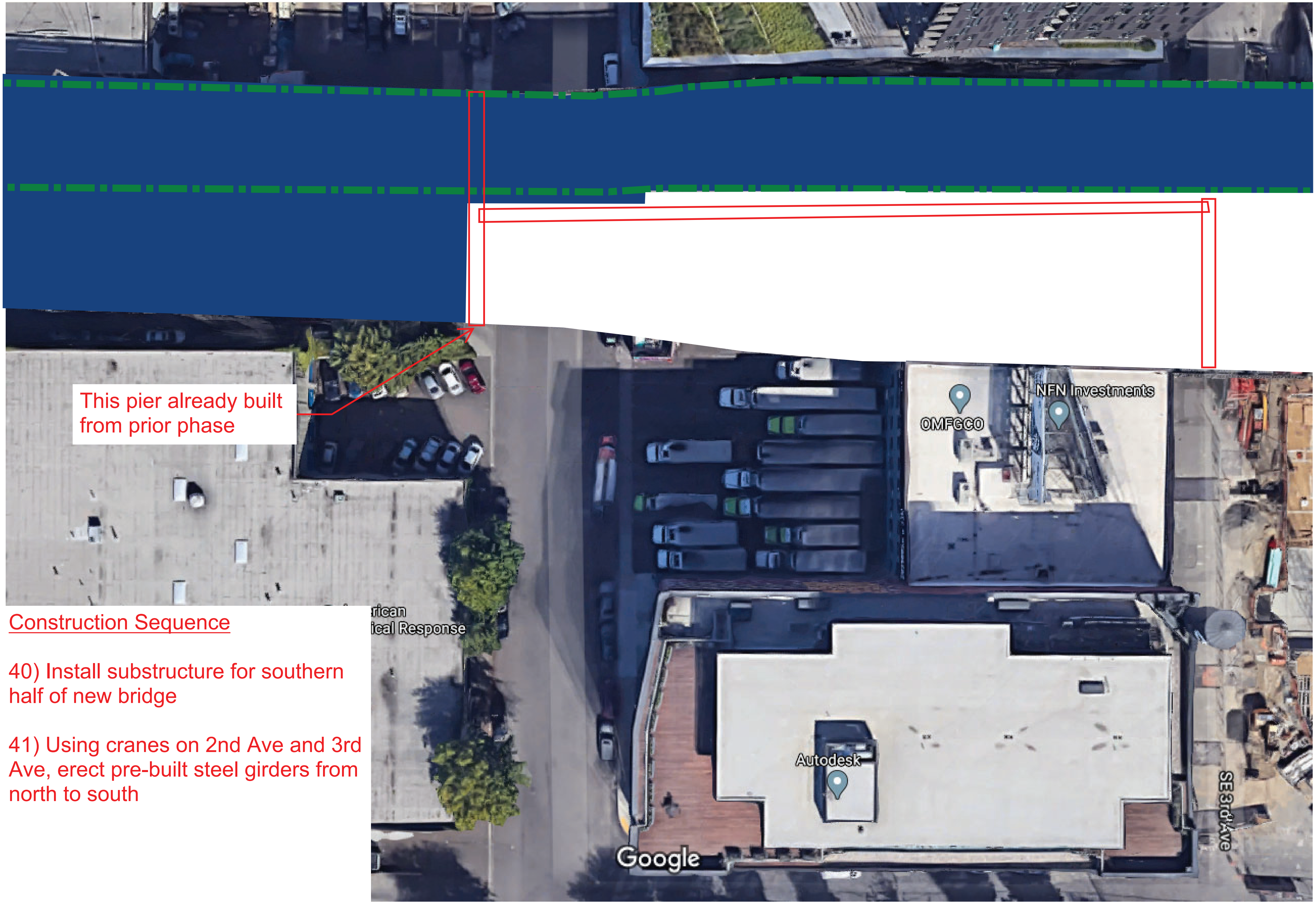

This pier already built from prior phase

Construction Sequence

40) Install substructure for southern half of new bridge

41) Using cranes on 2nd Ave and 3rd Ave, erect pre-built steel girders from north to south

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Construction Sequence

40) Complete remainder of south half of bridge and shift traffic to final alignment (shown in blue)

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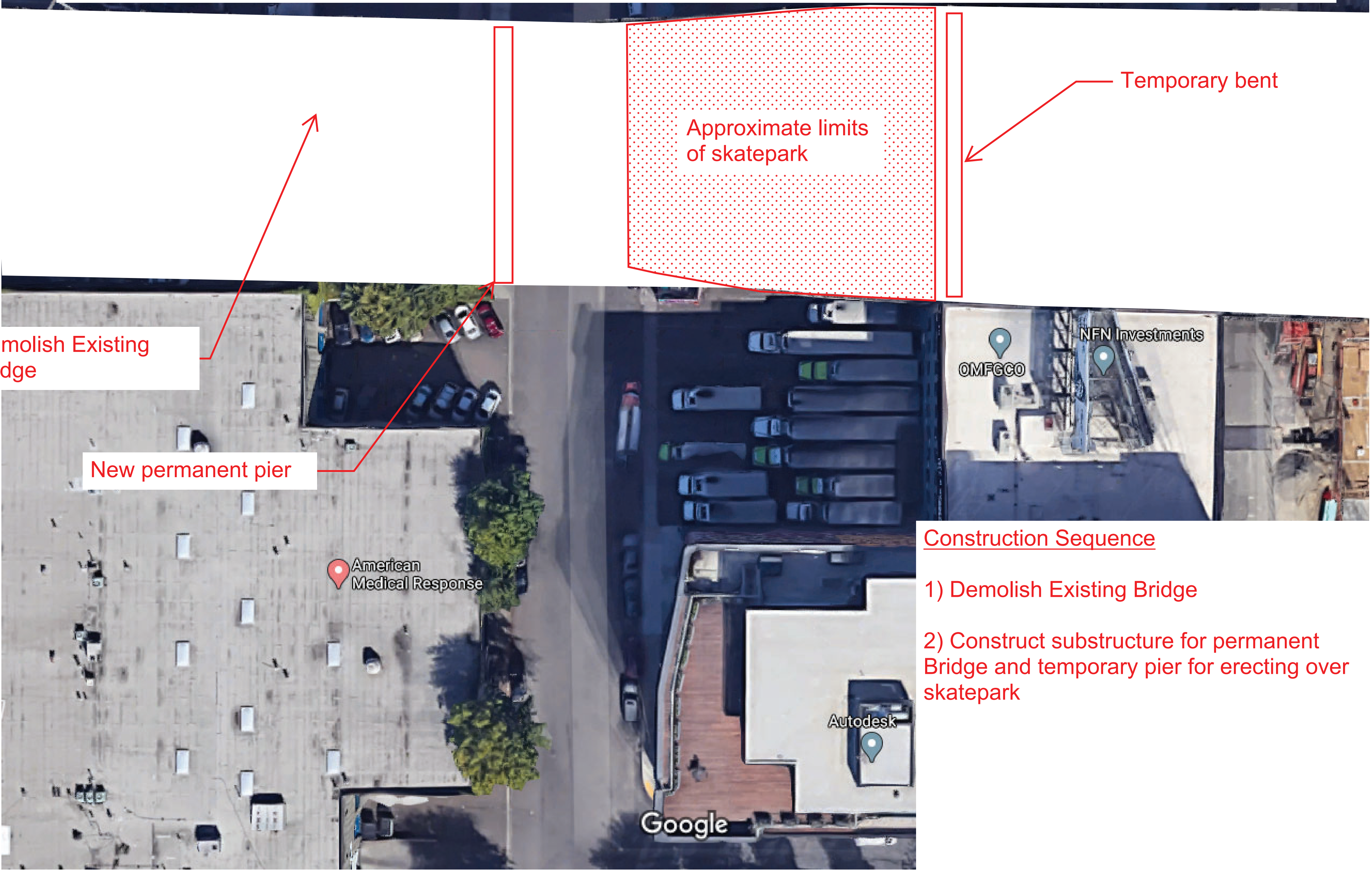
Appendix J. Girder Erection over Burnside Skatepark with No Detour Bridge

Possible Construction Sequence for East Approach with No Temporary Detour Bridge



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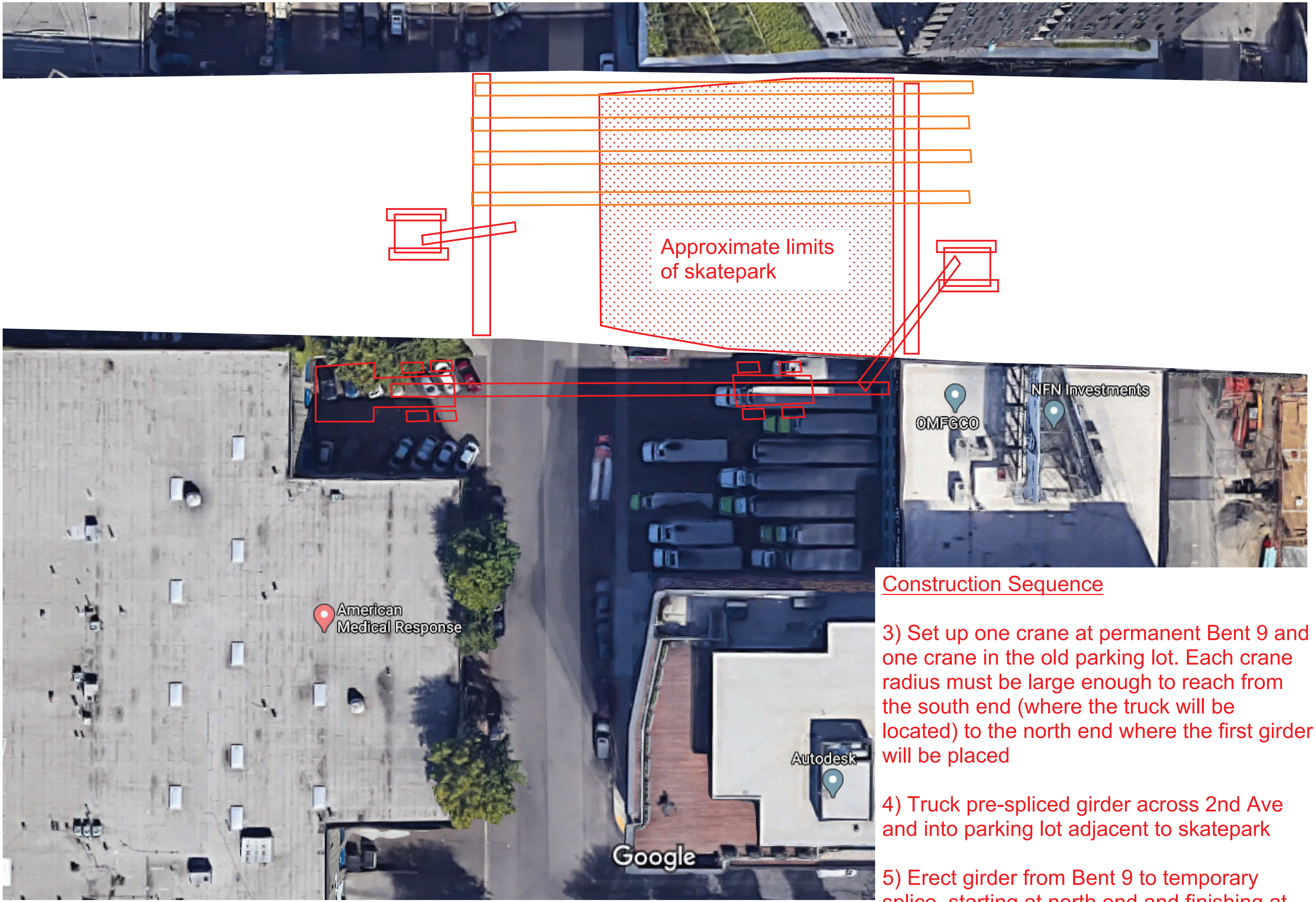
Construction Sequence

1) Demolish Existing Bridge

2) Construct substructure for permanent Bridge and temporary pier for erecting over skatepark



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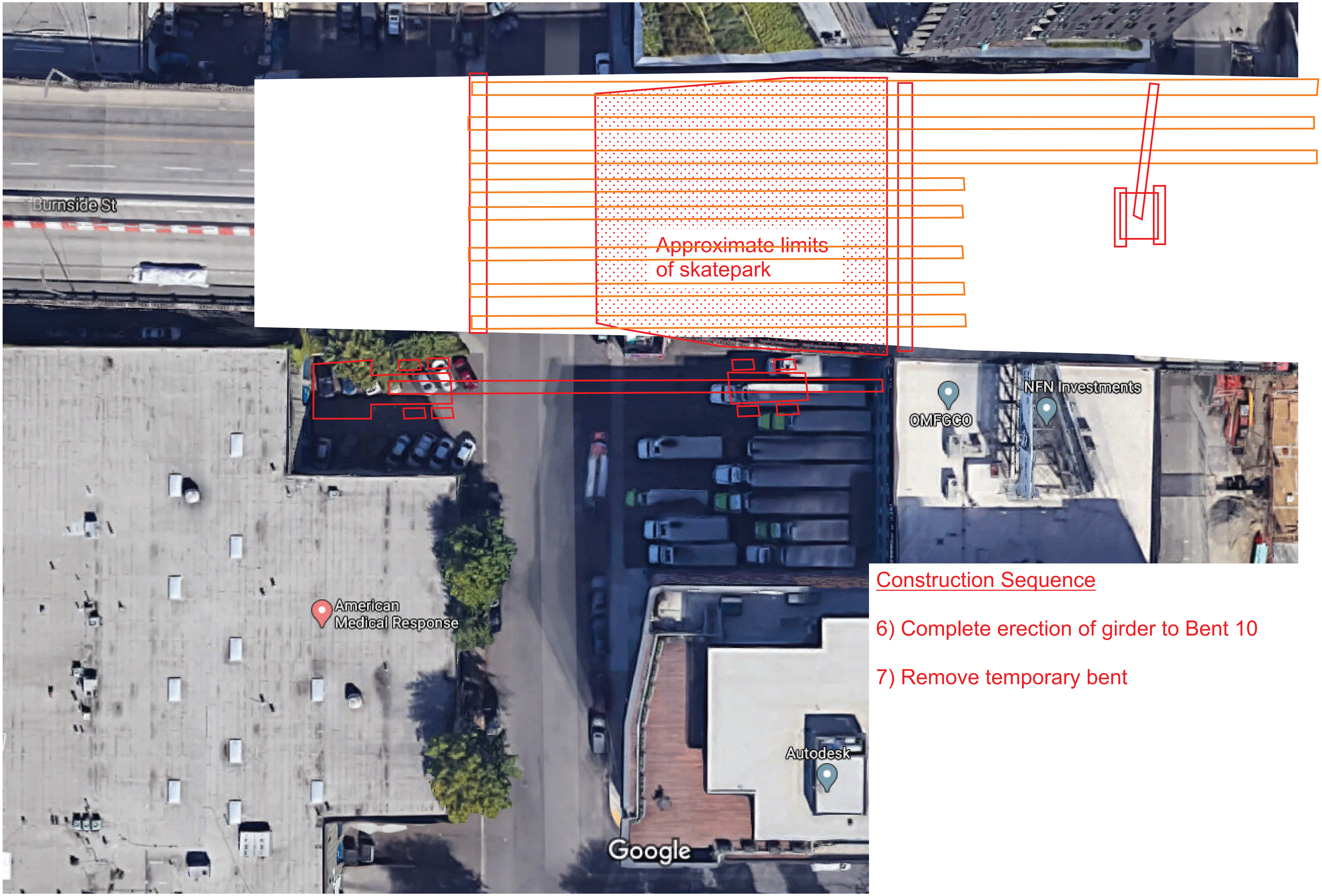
Construction Sequence

3) Set up one crane at permanent Bent 9 and one crane in the old parking lot. Each crane radius must be large enough to reach from the south end (where the truck will be located) to the north end where the first girder will be placed

4) Truck pre-spliced girder across 2nd Ave and into parking lot adjacent to skatepark

5) Erect girder from Bent 9 to temporary splice, starting at north end and finishing at the south end



Construction Sequence

6) Complete erection of girder to Bent 10

7) Remove temporary bent

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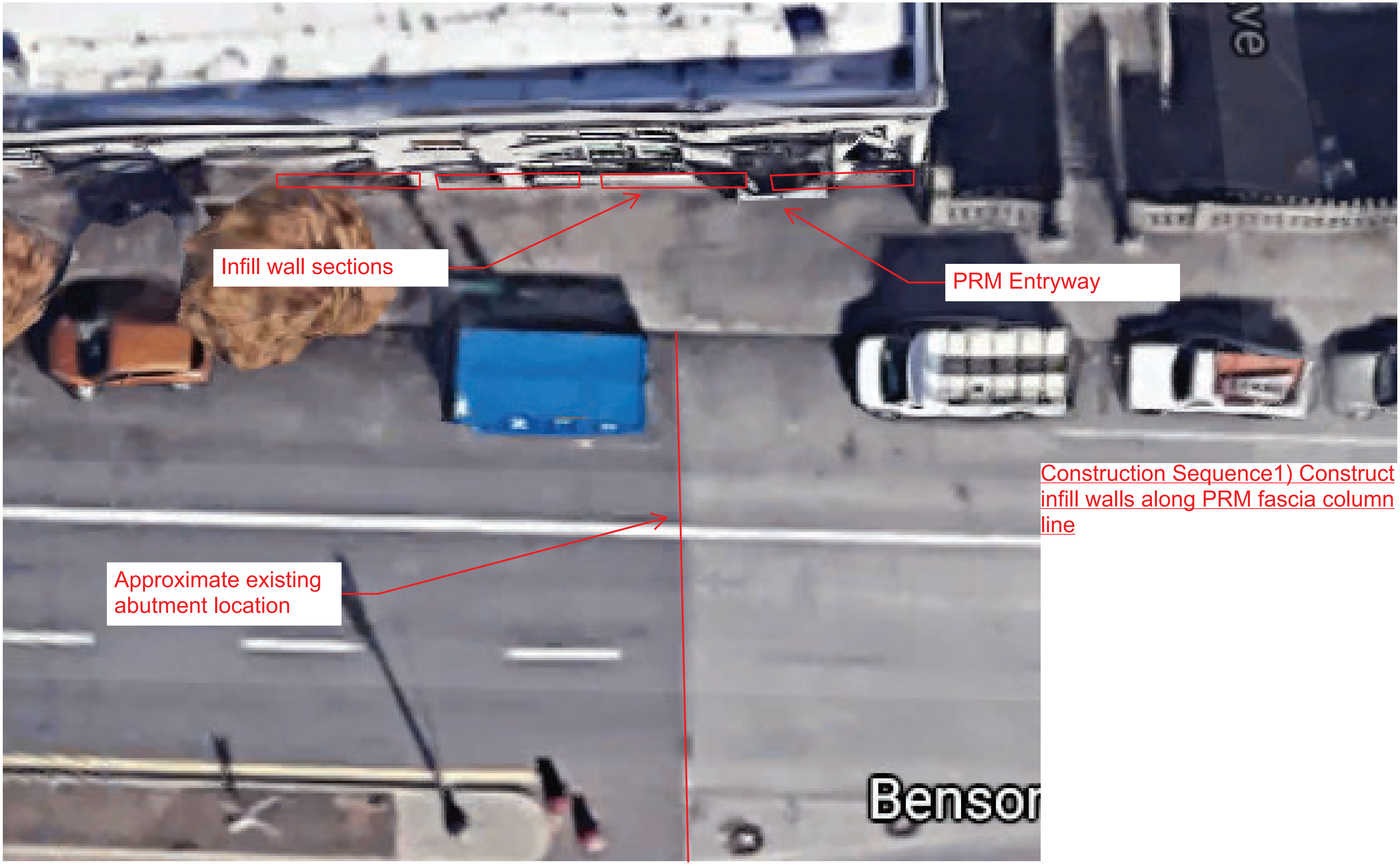
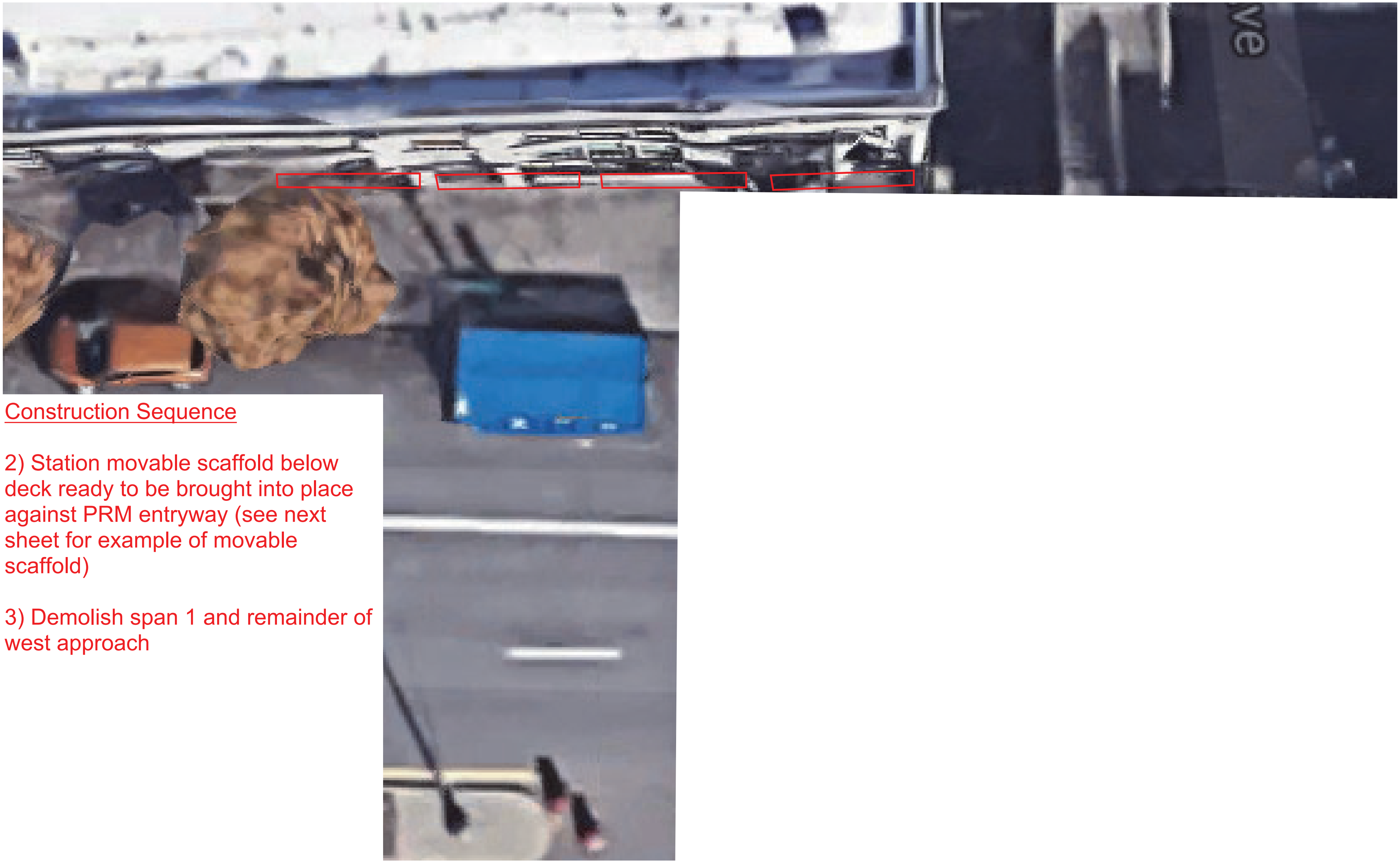
Appendix K. Span 1 Elimination and Portland Rescue Mission Access

Span 1 Elimination & MSE Wall Construction Sequence



Construction Sequence1) Construct infill walls along PRM fascia column line



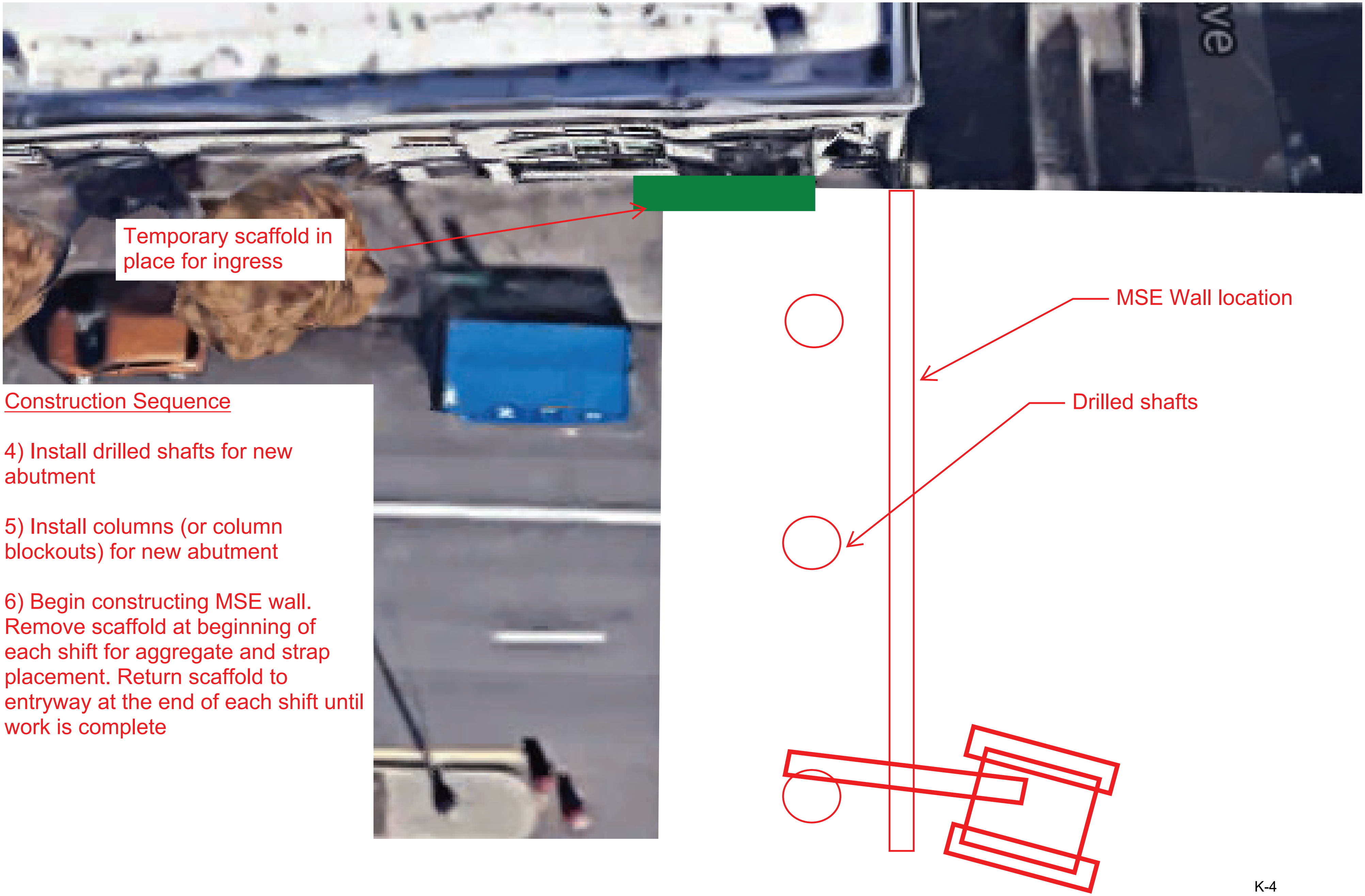
Construction Sequence

2) Station movable scaffold below deck ready to be brought into place against PRM entryway (see next sheet for example of movable scaffold)

3) Demolish span 1 and remainder of west approach

Example of movable scaffold

Single Mast Climber

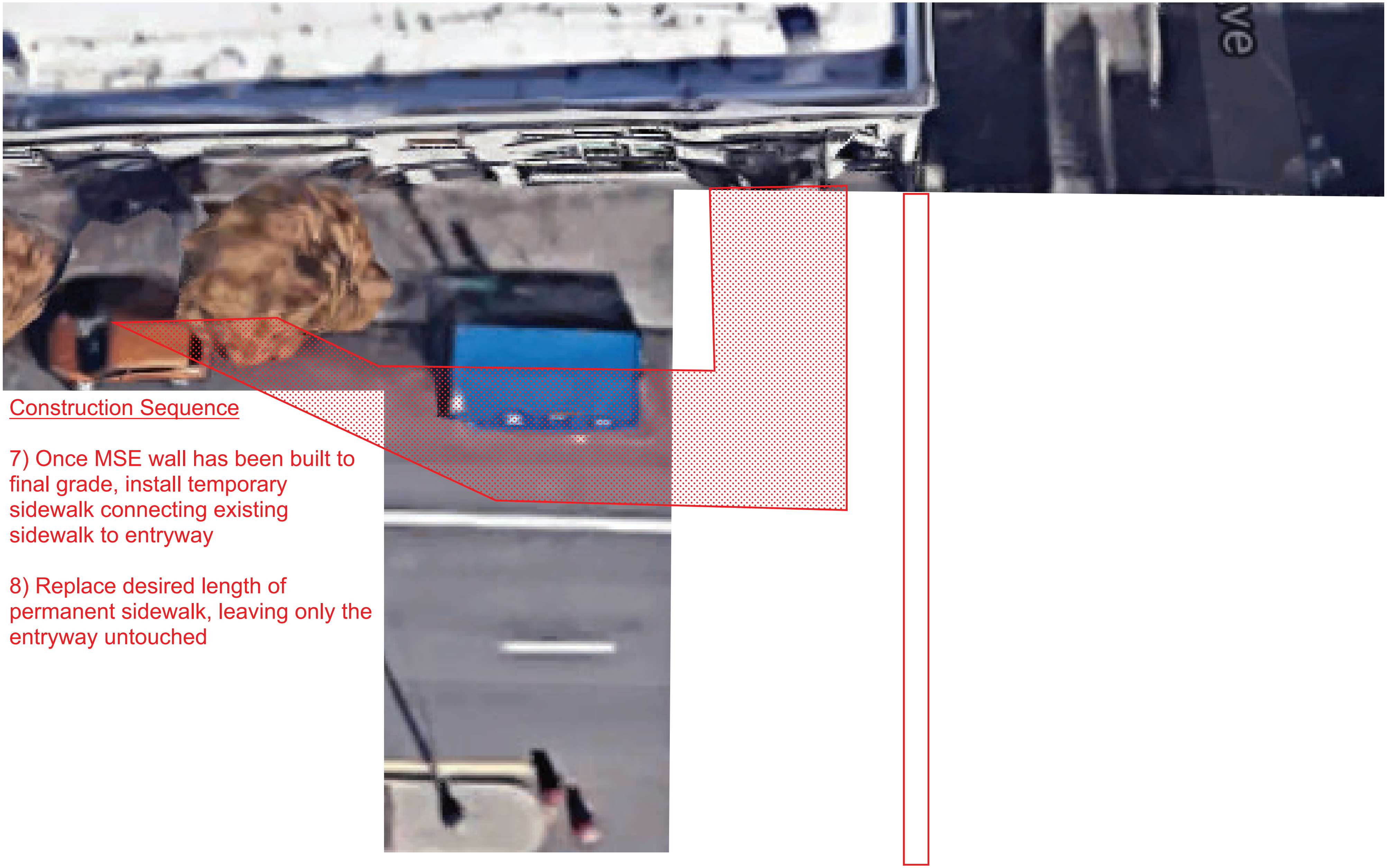


Construction Sequence

4) Install drilled shafts for new abutment

5) Install columns (or column blockouts) for new abutment

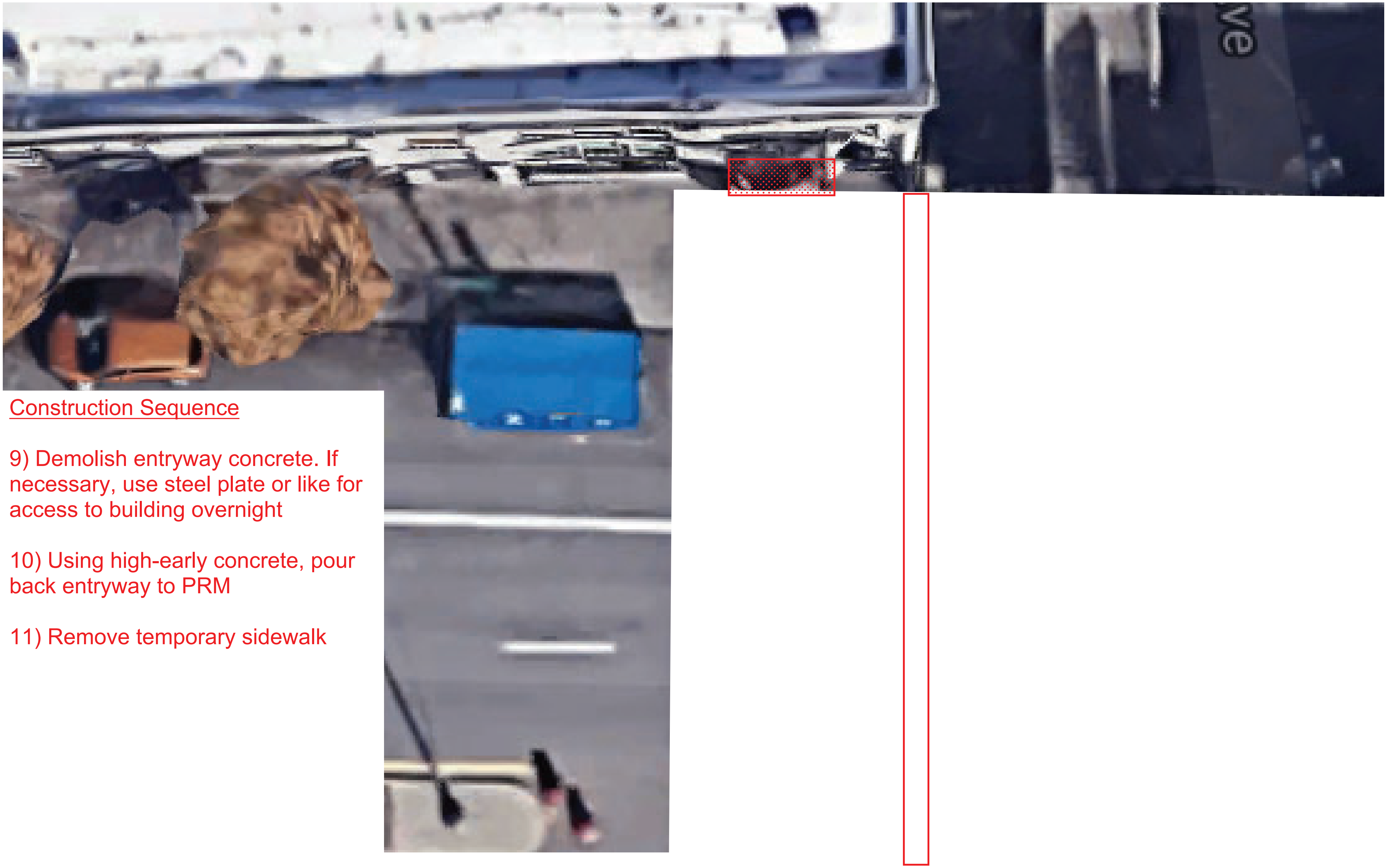
6) Begin constructing MSE wall. Remove scaffold at beginning of each shift for aggregate and strap placement. Return scaffold to entryway at the end of each shift until work is complete



Construction Sequence

7) Once MSE wall has been built to final grade, install temporary sidewalk connecting existing sidewalk to entryway

8) Replace desired length of permanent sidewalk, leaving only the entryway untouched



Construction Sequence

9) Demolish entryway concrete. If necessary, use steel plate or like for access to building overnight

10) Using high-early concrete, pour back entryway to PRM

11) Remove temporary sidewalk