SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation: West Connection Bridge

23 CFR §771.129
Washington State Department of Transportation/Federal Highway Administration

REGION/MODE	SR	PROJECT PROGRAM#	FEDERAL AID #	PROJECT#
ESO Mega Projects	520	852004B	0520.0501, 0520.045	U52004C

PROJECT TITLE, ENVIRONMENTAL DOCUMENT TYPE & DATE APPROVED:

1) SR 520, I-5 to Medina: Bridge Replacement and HOV Project Final Environmental Impact Statement (EIS), approved by FHWA and WSDOT on May 26, 2011.
2) SR 520, I-5 to Medina: Bridge Replacement and HOV Project Record of Decision (ROD), approved by FHWA and WSDOT on August 4, 2011.
3) SR 520, I-5 to Medina: Bridge Replacement and HOV Project SEPA Addendum (Public Place Designation), approved by WSDOT on October 3, 2011.
4) SR 520, I-5 to Medina: Bridge Replacement and HOV Project SEPA Addendum (Floating Bridge and Landings), approved by WSDOT on November 18, 2011.
5) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation (Kenmore Yard), approved by FHWA and WSDOT on December 8, 2011.
6) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA Environmental Reevaluation (Floating Bridge and Landings), approved by FHWA and WSDOT on January 25, 2012.
7) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation (Kenmore Yard Update), approved by FHWA and WSDOT on July 16, 2012.
8) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation (Floating Bridge and Landings Proposed Final Design Features), approved by FHWA and WSDOT on October 22, 2012.
9) SR 520, I-5 to Medina: Bridge Replacement and HOV Project NEPA/SEPA Environmental Reevaluation (Temporary Westside Over-Water Staging Area), approved by FHWA and WSDOT on February 1, 2013.

REASON FOR CONSULTATION:

Due to recent geotechnical findings, the Washington State Department of Transportation (WSDOT) is proposing changes to the construction techniques for the West Connection Bridge phase of the SR 520, I-5 to Medina: Bridge Replacement and HOV Project. These changes include the use of oscillatory pile driving equipment. Due to the weight and twisting motion of this equipment it cannot be operated from floating barges. Therefore, WSDOT is proposing to install temporary over-water work platforms and templates which will be supported by a total of 300 steel piles.

In addition, automated survey equipment will be installed at two locations on the nearby shoreline to ensure the existing bridge structure is not settling during construction.

In this reevaluation, the Federal Highway Administration (FHWA) and WSDOT are evaluating the proposed construction of these work platforms and templates and the potential effects of the steel support piles and over-water structure, as well as the proposed installation of the survey equipment.

DESCRIPTION OF CHANGED CONDITIONS: (See Attachment 1 for more detailed description).

Changes in baseline information include:

1) Installation of temporary over-water work platforms and pile templates in the vicinity of the West Connection Bridge in Lake Washington.
2) Installation of two automated survey instruments on the shoreline of the Edgewater Condominium property.

HAVE ANY NEW OR REVISED LAWS OR REGULATIONS BEEN ISSUED SINCE APPROVAL OF THE LAST ENVIRONMENTAL DOCUMENT THAT AFFECT THIS PROJECT? YES ( ) NO (x) (If yes explain, use additional sheets if necessary)

WILL THE CHANGED CONDITIONS AFFECT THE FOLLOWING DIFFERENTLY THAN DESCRIBED IN THE ORIGINAL ENVIRONMENTAL DOCUMENT? (If yes, attach a detailed summary addressing the impacts and mitigation)

	YES	NO		YES	NO
1) THREATENED or ENDANGERED SPECIES	( )	(x)	5) HAZARDOUS WASTE SITES	( )	(x)
2) PRIME and UNIQUE FARMLAND	( )	(x)	6) HISTORIC or ARCHAEOLOGICAL SITES	( )	(x)
3) WETLANDS	( )	(x)	7) 4 (f) LANDS	( )	(x)
4) FLOODPLAINS	( )	(x)	8) 6 (f) LANDS	( )	(x)

1) Threatened or Endangered Species: WSDOT reinitiated Endangered Species Act consultation with National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) regarding the installation of the temporary work platforms and templates. NMFS and USFWS have modified the ESA Section 7 consultation associated with this project to recognize the described work, and have changed the extent of take due to pile driving, however their conclusions remain unchanged resulting in a "no jeopardy" determination.

6) Historic or Archaeological Sites: WSDOT consulted with the Department of Archaeology and Historic Preservation (DAHP) regarding the installation of survey equipment on the Edgewater Condominiums property. The property has previously been determined eligible for listing in the National Register of Historic Places. It was determined that the activity would have no adverse effects on historic properties.

WILL THESE CHANGES RESULT IN ANY CONTROVERSY? YES () NO (x) (If yes explain)

WILL THESE CHANGES CAUSE ADVERSE IMPACTS IN THE FOLLOWING AREAS: (If yes, address comments below)

	YES	NO		YES	NO
1) AIR QUALITY	( )	(x)	7) WATER QUALITY	( )	(x)
2) NOISE	( )	(x)	8) VISUAL QUALITY	( )	(x)
3) LAND USE	( )	(x)	9) NATURAL RESOURCES and ENERGY	( )	(x)
4) TRAFFIC or TRANSPORTATION	( )	(x)	10) PUBLIC SERVICES and UTILITIES	( )	(x)
5) DISPLACEMENT	( )	(x)	11) VEGETATION and WILDLIFE	( )	(x)
(business or residence)			12) RECREATION	( )	(x)
6) ECONOMIC GROWTH and DEVELOPMENT	( )	(x)	13) SOCIAL IMPACTS	( )	(x)

COMMENTS:

This reevaluation does not change the overall impacts that were discussed in the previously prepared project documents listed at the top of this form.

CONCLUSIONS and/ or RECOMMENDATIONS:

Changes as noted above and described in Attachment 1 would not result in new or significant adverse effects. The SR 520, I-5 to Medina: Bridge Replacement and HOV Project remains compliant with current federal, state, local, and departmental regulations and directives with regard to National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) processes. This reevaluation document, along with supporting information, demonstrates that there would be no new or significant adverse effects resulting from these changes since the Final EIS was approved in May 2011 and the ROD was approved in August 2011.

I concur with the conclusions and recommendations above

Region / Mode Official

2/1/13

Date

FHWA Official

2/1/13

Date

Attachment 1
Description of Changed Conditions and Effects

Environmental Reevaluation/Consultation Form for

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

Final Environmental Impact Statement, approved May 26, 2011;
Record of Decision, approved August 4, 2011;
SEPA Addendum: Public Place Designation, approved October 3, 2011;
SEPA Addendum: Floating Bridge and Landings, approved November 18, 2011;
NEPA/SEPA Environmental Reevaluation: Kenmore Yard, approved December 8, 2011;
NEPA Environmental Reevaluation: Floating Bridge and Landings, approved January 25, 2012;
NEPA/SEPA Environmental Reevaluation: Kenmore Yard Update, approved July 16, 2012;
NEPA/SEPA Environmental Reevaluation: Floating Bridge and Landings Proposed Final Design Features, approved October 22, 2012; and
NEPA/SEPA Environmental Reevaluation: Temporary Westside Over-Water Staging Area, approved February 1, 2013

Description of changed conditions and effects from those described and evaluated in the Final Environmental Impact Statement, Record of Decision, and subsequent Environmental Reevaluations:

The Washington State Department of Transportation (WSDOT) and the Federal Highway Administration (FHWA) have prepared this National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) Environmental Reevaluation for the SR 520, I-5 to Medina: Bridge Replacement and High-Occupancy Vehicle (HOV) Project to evaluate activities proposed during the construction of the West Connection Bridge phase of the project. These activities include the construction of temporary over-water work platforms and templates in Lake Washington and the installation of survey equipment at two locations in the nearby Madison Park neighborhood.

The Final Environmental Impact Statement (EIS) discussed the possibility of phased construction, identifying that in the absence of funding to build the complete west approach structure, an interim connection would be constructed between the new floating bridge and the existing west approach structure. WSDOT is currently proceeding with the planning of this interim connection which is now commonly referred to as the West Connection Bridge phase of the project. As described in the Final EIS, portions of the West Connection Bridge, including the drilled shafts and bridge support columns, would be reused as part of the ultimate west approach structure.

The Final EIS states that construction of the west approach structure would occur from work bridges in shallow water (approximately 10 feet in depth) and from barges in deeper water. The portion of the west

approach that would be built during the West Connection Bridge phase of the project was identified as being deep enough for construction from barges. However, WSDOT has recently identified a need to construct the West Connection Bridge using work platforms despite the deeper water. New geotechnical information has shown that a pressurized underground aquifer would be encountered during construction of the drilled shafts for the West Connection Bridge. This aquifer presents two primary problems during construction that necessitate the use of work platforms rather than barges.

First, the aquifer increases the risk of soil settlement during drilled shaft excavation. To avoid this risk, WSDOT proposes to install deep steel casings to support the sides of the drilled shaft excavations. This change would prevent settlement and protect the nearby existing bridge structures. Because it can be difficult to install deep casings using typical vibratory or impact installation methods, an oscillator could be used to install these casings. An oscillator uses weight and a slow turning motion to twist the casing into the ground. Oscillators produce more torque and reaction forces than can be resisted by an anchored barge; thus the oscillator would be operated from a temporary work platform and shaft template.

Second, the underground aquifer is also at greater hydrostatic pressure than the lake level. This means that the shaft casings would need to extend high enough above the lake level to contain enough drilling slurry to offset the uplifting force of the aquifer. The casing height needed to contain the slurry could be too high to be accommodated by drill rigs working from the surface of barges; thus a work platform would be used for this work. Cranes and drill rigs operating from work platforms can accommodate higher casings because the platform can be constructed at the necessary height above the water surface.

Therefore based on the new geotechnical information and the above needs, WSDOT now proposes to install temporary work platforms and shaft templates for the construction of the West Connection Bridge drilled shaft supports. Additionally because of the increased risk of settlement WSDOT is proposing to install survey equipment on the nearby shoreline to allow for monitoring of the existing bridge structure during construction of the West Connection Bridge.

Temporary Work Platforms and Shaft Templates

The proposed work platforms would be similar in design to the work bridges described in the Final EIS. The work platforms would be supported by steel piles with a maximum diameter of 30 inches. These piles would be installed using vibratory and impact pile driving. Steel beams would be installed on top of the piles, and wooden planks would be laid to form a working deck. Figure 1 shows a typical work platform design supporting drilled shaft construction. Each drilled shaft location would require a work platform 30 feet in width by 30 feet in length, supported by eight piles. Certain portions of the West Connection Bridge structure would have two or three drilled shafts in a row (also known as a pier bent); in these locations, the work platforms would be 60 or 90 feet in length. To complete the West Connection Bridge, eleven work platforms would be needed, totaling 20,000 square feet of over-water structure and supported by 140 piles. Exhibit 1 shows a conceptual layout of the work platforms.

In addition to the work platforms, shaft templates would be installed to properly locate and guide the drilled shaft casings. These templates would consist of driven support piles and steel cross beams to provide a stationary frame to support the casing during installation. Due to the weight and twisting of the oscillator, multiple pilings would be required to support the templates. In total, 160 piles would be needed for the shaft templates on the West Connection Bridge.

Figure 1 – Typical Work platform supporting a crane constructing a drilled shaft foundation

It is likely that the work platforms and templates would be constructed and removed in sequence as the drilled shafts are completed, so that only a portion of the piles and overwater structures would be in place at one time. Current schedules have the West Connection Bridge phase starting in July of 2013 and taking approximately one year to complete. Installation of the work platforms would not start until the beginning of the WDFW-approved in-water work window for impact pile driving. WSDOT estimates that the work platforms can be installed and removed and the drilled shaft work completed within approximately five months, during a single winter in-water construction season.

Consistent with in-water work activities described in the Final EIS, WSDOT would implement various best management practices and minimization measures during installation of the work platforms and templates. A spill prevention, control and countermeasures (SPCC) plan and concrete containment and disposal plan (CCDP) would be prepared to address the potential for spills of hazardous materials and concrete during construction. All in-water impact pile driving would be conducted with noise attenuating bubble curtains. WSDOT will comply with all environmental commitments, including permit conditions and Endangered Species Act documentation related to the protection of water quality and fish and wildlife.

Settlement Monitoring Survey Equipment

WSDOT proposes to install survey equipment at two locations on the shoreline of the nearby Madison Park neighborhood to monitor the existing bridge structure and ensure that it does not settle during construction of the West Connection Bridge. This equipment consists of an automated survey instrument referred to as a "total station" which can take regular measurements of preset locations. The total station will take measurements off of several markers affixed to the existing bridge. In addition to the survey equipment, each total station will include a solar panel for power, a data recorder and wireless transmitting equipment. Each total station would measure approximately 4 feet by 4 feet and up to 6 feet tall. Figure 2 shows examples of automated total stations. Additionally, two small reflective back sight targets, measuring approximately 2 inches square, would be installed to the south of the total stations on existing light poles or similar structures.

The total stations would be installed before the active West Connection Bridge construction begins and removed at the end of the phase, a duration of approximately one year.

Figure 2 – Examples of automated total station survey equipment

In order to obtain consistent, accurate measurements, the total stations must be securely attached to the ground or other structures such as a retaining wall. Potential methods for securing the equipment include: a large concrete block to act as an anchor weight, bolting the equipment to a concrete surface, installing a post in soils or anchoring the system to a wall or other structure. The method of attachment would be identified in coordination with the property owner. Any holes or other disturbance caused by the attachment would be restored once the equipment has been removed.

WSDOT has identified a proposed location for the survey equipment along the shoreline of the Edgewater Condominiums property to the south of the existing bridge. In order to obtain a line of sight to the existing bridge and avoid disturbing vegetation, each total station would be located on existing concrete patios approximately 250 feet apart. Please see the figures in Attachment 2: Section 106 Correspondence for the proposed locations.

Discipline Specific Analyses of Changed Conditions and Effects

The sections below discuss how the proposed changes would affect the natural and built environment, and whether those effects differ from the effects described in the Final EIS and subsequent environmental reevaluations. For this environmental reevaluation, FHWA and WSDOT determined which disciplines had the potential to be affected by the changes described above. The identified disciplines are addressed below, and include ecosystems, environmental justice, and cultural resources. Other disciplines, including air quality, energy, geology and soils, hazardous materials, indirect and cumulative effects, navigable waterways, visual quality, land use, economics, and relocations, noise, recreation, social elements, transportation, and water resources were discussed in the Final EIS but are not discussed below; WSDOT and FHWA concluded that there would be no potential for changes in effects on those resources as a result of these updates.

Ecosystems

The installation of the temporary work platforms and shaft templates has the potential to affect fish and aquatic resources through underwater noise, benthic disturbance, turbidity, and habitat alteration from in-water and over-water structures. Each of these types of effects was discussed in the Final EIS. The Final EIS identified that as many as 2,100 piles would be needed for construction of work bridges in the west

approach area and would result in 7.4 acres of temporary over water structure and 10,500 square feet of benthic disturbance. The Final EIS discussed these impacts as the maximum amount that would be present at any given time and assumed that they would be in place for several years. Because the proposed work platforms and templates for the West Connection Bridge phase would be in place for less than a year and would be removed before any other west approach construction activities, they do not represent a cumulative addition to the Final EIS numbers. As detailed below, the scope of the effects from the proposed work platforms and templates would be similar to those that were described in the Final EIS and would not result in new significant effects.

The potential for the proposed work platforms to cause significant effects is primarily minimized by the timing of the activities. The primary ecological function of the area around the West Connection Bridge is as a migratory corridor for both juvenile and adult salmonids. Juveniles generally exit Lake Washington through this area in spring and early summer. Returning adults pass through the area in summer and fall on the way to spawning areas in tributary streams. The established in-water work windows for the I-5 to Medina project, including the West Connection Bridge phase, are designed to protect these migrations and prohibit in-water activities through the summer. Impact pile driving, which can have adverse noise effects on fish, is prohibited into the fall. Because the installation of the work platforms and shaft templates would not start until the fall in-water work window and the in-water work would be completed over the winter, before juveniles return to the area, there is little chance of adverse effects to salmonids.

Vibratory and impact installation of the 300 support piles for the work platforms and templates is the primary mechanism for underwater noise impacts. This type of activity and impact was discussed in the Final EIS in relation to the work bridges that would be needed for construction of the west approach. Although the newly proposed work platforms and templates are in a different location than the activities discussed in the Final EIS, it is a similar aquatic habitat and therefore is likely to have similar effects. As discussed above, the timing of the West Connection Bridge phase activities reduces the potential for noise effects because salmonids are not likely to be using the area at these times. Consistent with environmental commitments, bubble curtains would be deployed around all impact pile driving activities to further reduce underwater noise levels and potential effects.

The 300 support piles would result in approximately 1,400 square feet of temporary benthic disturbance and their installation and removal has the potential to cause local increases in turbidity. These impacts are similar to those described in the Final EIS for work bridges, drilled shaft casings and other various in-water work. Because the work platforms and templates would be installed and removed in sequence, only a portion of this benthic disturbance is likely to be in place at any given time. Best management practices would be implemented to limit turbidity consistent with water quality permits. Because this habitat area is used primarily for salmonid migration, the temporary benthic disturbance would not decrease the habitat function for fish. Additionally, because the construction would be limited to the approved work windows, there is little potential for fish to be present during these temporary impacts. Due to the soft sediments in this area the benthic substrate would quickly restore any holes left from the piles, avoiding long-term or permanent impacts.

The proposed work platforms and templates would result in approximately 20,000 square feet of temporary over-water structure. As described in the Final EIS, over-water structure can change shading patterns, potentially impacting aquatic vegetation and fish movement and predation. In-water piles can alter the structural complexity of the aquatic habitat which has the potential to increase predation of juvenile salmonids by predators such as smallmouth bass. However, the impacts caused by the proposed work platforms and templates are within the range of permitted impacts for the I-5 to Medina project and would not result in the loss of permanent aquatic habitat function so additional mitigation is not

necessary. Similar to other potential impacts the timing and short duration of the West Connection Bridge phase reduces the likelihood that salmonids would be present in the area and potentially affected.

The temporary installation of the total station survey equipment in a developed terrestrial area does not have the potential to affect ecosystems.

Environmental Justice

Like much of the overall I-5 to Medina project, the West Connection Bridge phase is within the Muckleshoot Indian Tribe's usual and accustomed fishing areas. Similar to the effects discussed in the Final EIS, the proposed work platforms and shaft templates have the potential to affect tribal fishing through direct impacts to fish and habitat or through potential interference with tribal fishing activities.

As described above in the Ecosystems section, salmonids and aquatic habitat would not be significantly affected due to the timing of the West Connection Bridge activities and the implementation of best management practices and permit conditions.

The West Connection Bridge is located within the previously identified limits of construction, which were referenced in the Memorandum of Agreement among WSDOT, FHWA, and the Muckleshoot Indian Tribe and therefore would not additionally interfere with tribal fishing activities. FHWA and WSDOT will continue to coordinate with the Muckleshoot Indian Tribe regarding I-5 to Medina project activities including the West Connection Bridge phase. This commitment regarding continued coordination is documented in the Final EIS, and has been maintained throughout government-to-government consultation.

The temporary installation of the total station survey equipment on land does not have the potential to affect tribal fishing. There are no other changes that would affect low-income, minority, or limited-English proficient populations. Based on this information, the environmental justice determination as described in the Final EIS would not change.

Cultural Resources

The total station survey equipment is proposed to be located on a National Register of Historic Places (NRHP) eligible property. In the Final EIS, the Edgewater Condominiums (Property ID # 226) were identified as NRHP eligible under Criterion C as part of the Seattle Apartment Buildings 1900-1957 multiple property nomination.

To comply with Section 106, WSDOT consulted with the State Historic Preservation Officer (SHPO) at the Washington Department of Archaeology and Historic Preservation (DAHP) about the proposed activities. The temporary installation of the equipment would alter the setting and feeling of the property in a minor way, but this effect would not be permanent and would not diminish any of the characteristics of the historic property that qualify it for inclusion in the NRHP. Please see Attachment 2: Section 106 Correspondence for copies of the DAHP letters.

The proposed work platforms and shaft templates are within the existing limits of construction and would not introduce any additional impacts on cultural resources.

Conclusion

WSDOT and FHWA analyzed the potential impacts to ecosystems, environmental justice, and cultural resources from the construction of the proposed work platforms and shaft templates and the installation of survey equipment.

As described above, WSDOT and FHWA do not expect the proposed work platforms and shaft templates to result in additional significant effects to fish or aquatic habitat beyond those described in the Final EIS. Due to timing of the construction activities there is little potential for juvenile or adult salmonids to be effected beyond those described in the Final EIS. Additionally, because the West Connection Bridge would be completed before other activities described in the Final EIS, it does not represent a cumulative increase in the amount of impacts. A WSDOT Biologist has reviewed the proposed changes described herein. WSDOT reinitiated Endangered Species Act consultation with National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) regarding the installation of the temporary work platforms. NMFS and USFWS have modified the ESA Section 7 consultation associated with the I-5 to Medina project to recognize the described work, and have changed the extent of take accordingly; however, their conclusions remain unchanged, resulting in a "no jeopardy" determination.

WSDOT and FHWA do not expect any additional impacts to tribal fishing or on low-income, minority or limited-English proficient populations that were not previously identified in existing environmental documents. FHWA and WSDOT will continue to coordinate with the Muckleshoot Indian Tribe.

WSDOT has coordinated with DAHP and received concurrence that the proposed installation of the survey equipment would have *no adverse effect* on historic properties. A WSDOT Cultural Resources Specialist has reviewed the proposed work platforms and shaft templates and has considered the potential effects to cultural resources. The proposed activities are located within the limits of construction, and would not introduce additional visual impacts to adjacent historic properties; therefore, the Cultural Resources Specialist has determined that no additional analysis or consultation is necessary for Section 106 or 4(f) compliance.

Based on the above changes and analysis, no new or significant adverse effects are expected to result from the proposed temporary work platforms, shaft templates and survey equipment. As documented above, the I-5 to Medina project remains compliant with current federal, state, local and department regulations and directives with regard to NEPA/SEPA processes, the Endangered Species Act, Section 106 and 4(f).
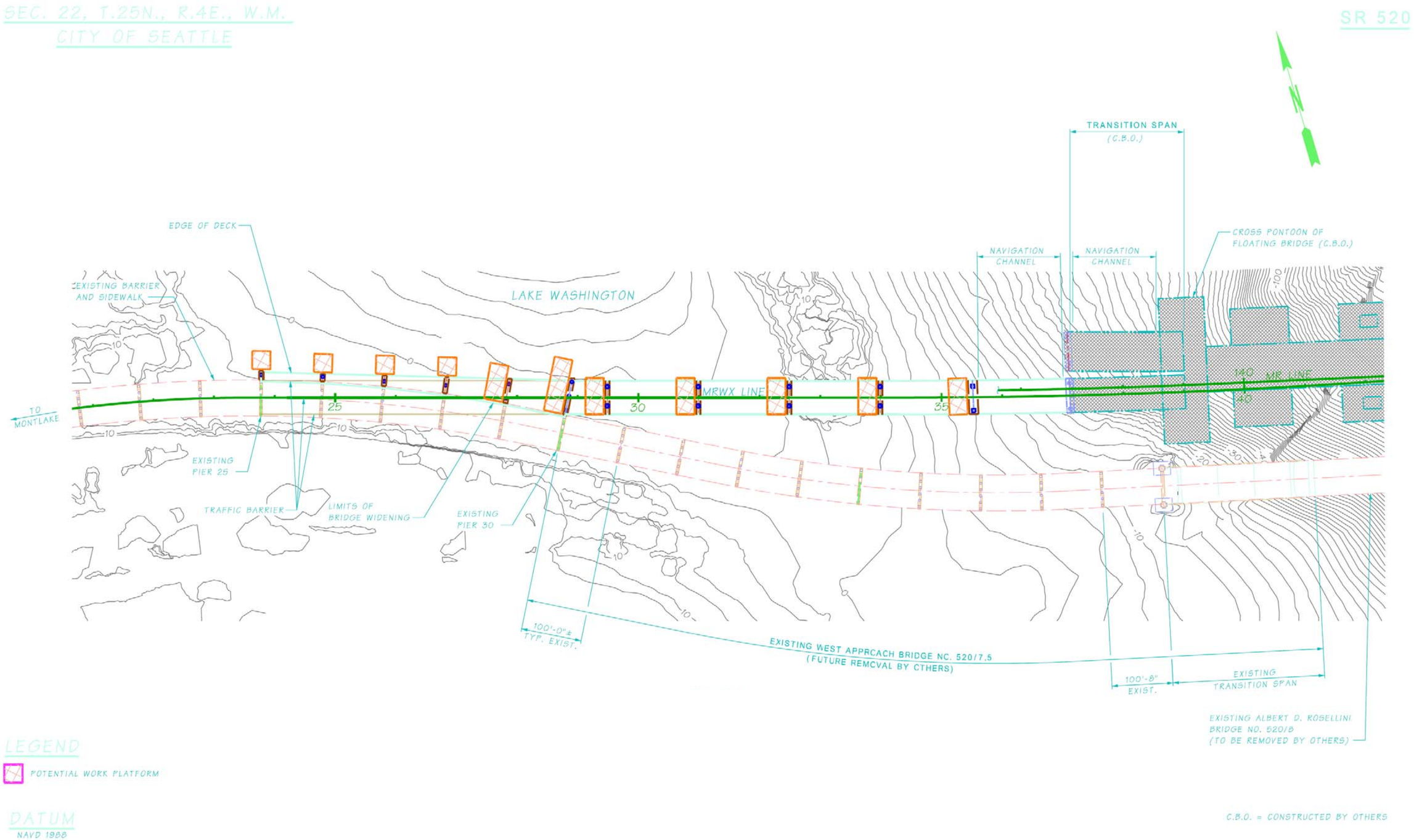
Exhibit 1: Work Platform Locations