

September 24, 2009

TO: Jerry Lenzi
MS: 47315

FROM: Ron Paananen / Linea Laird
MS: NB 82-230 206-267-6834

SUBJECT: SR 99 Bored Tunnel Contract Packaging Recommendation

The Alaskan Way Viaduct and Seawall Replacement Program is a joint effort by the Washington State Department of Transportation (WSDOT), the Federal Highway Administration (FHWA), the Port of Seattle, King County and the City of Seattle to replace a critical element of Seattle's infrastructure: The Alaskan Way Viaduct on State Route 99 (SR 99). Constructed in the 1950s, the double-tiered viaduct is nearly two miles long and parallels Alaskan Way. The viaduct is a vital local and regional transportation link and carries about 110,000 vehicles each day in the mid-town Seattle core.

On January 13, 2009, Governor Gregoire, King County Executive Ron Sims and Seattle Mayor Greg Nickels endorsed a plan to replace the central waterfront portion of the Alaskan Way Viaduct with a roughly two-mile-long bored tunnel beneath downtown; a new waterfront surface street; transit improvements; and improvements to the downtown waterfront as well as other roadway and non-roadway projects. The State, King County and City of Seattle, along with the Port of Seattle, have all agreed to make the SR 99 Bored Tunnel Alternative a reality by working with their legislative bodies to fund respective portions of the Project. Construction of the project is expected to begin in 2011 and be open to the traveling public by the close of 2015.

As a part of the strategy to deliver WSDOT's program for the Alaskan Way Viaduct replacement, the project team had originally identified eleven (11) different contract unit associated with delivery of the bored tunnel. These contract units are all considered to be part of the SR 99 / S. King St. To Lenora St – Central Waterfront Replacement (Bored Tunnel) and were developed in this manner to manage risk and increase the ability to open the corridor to traffic by late 2015. The contract units were identified to allow maximum bidding and procurement opportunities for the consultant and contracting community. With the exception of contracts 3a and 3b (Design-Build Procurement), all of the original contracts were proposed as Design-Bid-Build contracts. Refer to Exhibit A, Table 1 on the attached spreadsheet for a listing of the contract units, phases and original estimates of cost.

Over the last several months as more engineering was completed, the project team continued to identify and develop a feasible strategy for delivery of projects within WSDOT's funding responsibility. Considerations include: the current status and timing of NEPA and approval of the ROD; the aggressive delivery goal of opening the tunnel suite of projects to traffic by 2015; project interfaces, including the need for coordinated work staging areas; financial constraints; and the need to share work opportunities with the broader consultant and contracting community. Many opportunities and constraints were realized as a result of the CEVP and VE processes, and

as preliminary engineering progressed where a better understanding of the work and interfaces was realized.

The Strategic Technical Advisory Team (STAT) also recommended a Contract re-alignment between the design build contract and the eight other design bid build projects They included their recommendations in a memo to Ron Paananen, dated August 17, 2009. They recommended that a concentrated effort be applied to optimize the definition and breakout of work elements, work sequences, including temporary and permanent works, and schedule inter-relationships for the tunnel and adjacent work elements so that contract packages be re-defined to the program as a whole. The goals of the team were to minimize interfaces and potential for conflicts, improve schedule, eliminate conflicts for access and lay-down space, consolidation of resources, and reduce contract procurement and administration. Their initial recommendation was to include portions of design-bid-build contracts 01, 04, 06 and 07 into the design-build Contract 03.

The recommendations included in this memo, closely follow the recommendations of the STAT team. In addition, the Project Team recommends a change in the Contract designation to remove further confusion with changes proposed for new contract packaging. A cross-walk between the proposed contract packaging and the original contract packaging is as follows (the programmatic scope of each contract and its corresponding budget and schedule may be found in Exhibit B):

<u>Proposed Contract #</u>	<u>Recommended Contract Package</u>	<u>Original Contract #</u>
00	Project Wide Elements	00
GI	1 st Avenue Ground Improvements	01
SS	Temp TBM Substation	02
TU	Bore Tunnel	03
	Includes South O&M Bldg	04b
	Includes North Maint. Bldg	07b
SA	South Access Point	04a
SF	South End Surface Streets	05
ND	North Access Detour	06
NA	North Access Point	07a
NF	North End Surface Streets	08
IT	ITS Signage	10
MO	Miscellaneous Other	11
09	Transit Center	09

With the above changes in mind, contracting funds have been re-allocated as shown in Exhibit A, Table 2 on the attached spreadsheet. A comparison between Table 1 and Table 2 indicates that, overall, the funding is still within the original budget. These costs are currently being updated for our latest round of CVEP estimates so some changes in contract value are expected as estimates are updated over the next several months.

While it is not possible to eliminate all adjacent contract and contractor workspace conflicts, we believe that a coordinated management approach and use of contractual milestones will help keep the projects on schedule and minimize overall delay risk. The contract team believes that the proposed scope changes are advantageous when considering the very aggressive schedule to open the tunnel to traffic by 2015, and the limited work space for accomplishing work efforts.

From a financial perspective, the increased scope of work within the design-build contract and the aggressive schedules needed to open the tunnel to traffic by 2015 has some additional impacts to the procurement process. The complexity of the contract increases, and the size of the design-build team and number of sub-contractors will need to be larger than originally anticipated. The increased dollar value also requires that WSDOT utilize State funds, federal funds, and have a commitment for Port of Seattle dollars prior to advertising the RFP for the Design-Build Contract. The project team has been working closely with the Port of Seattle and the City of Seattle on a coordinated approach.

We would be happy to answer any questions and request your approval of this change in contract strategy for delivery of the program.

LL:sa

cc: Jeff Carpenter, MS: 47323

EXHIBIT A

Table 1: Original Contract Packaging Plan- July 2009

Contract #	PE	RW	CN	TOTAL	AD DATE
00 - Project Wide Elements	\$107.80	\$114.40	\$113.10	\$335.24	N/A
01 – 1 st Avenue Ground Improvements	\$8.80	\$0.10	\$62.30	\$71.20	Nov-10
02 – Temporary TBM Sub Station	\$1.70	\$0.10	\$12.30	\$14.10	Nov-10
03a – Bore Tunnel	\$71.70	\$17.60	\$605.30	\$694.60	Jan-11
03b – Tunnel Systems	\$23.90	\$0.10	\$216.30	\$240.30	Jan-11
04a – South Access Point	\$22.30	\$0.10	\$160.80	\$183.20	Mar-12
04b – South O & M Buildings	\$7.50	\$0.10	\$21.60	\$29.20	Mar-12
05 – South End Surface Streets	\$1.60	\$0.10	\$11.50	\$13.20	Jul-15
06 – North Access Detour	\$5.00	\$0.10	\$21.80	\$26.90	Oct-10
07a – North Access Point	\$9.90	\$45.90	\$137.70	\$193.50	Jul-12
07b – North Maintenance Building	0	\$0.10	\$26.00	\$26.10	Jul-12
08 – North End Surface Streets	\$1.00	\$0.10	\$9.00	\$10.10	TBD
10 – ITS Signage	\$3.10	\$0.10	\$21.80	\$25.00	Oct-14
11 – Miscellaneous	\$2.50	\$2.50	\$10.00	\$15.00	TBD
Design Risk	\$22.30			\$22.30	N/A
Sub Total	\$289.10	\$181.40	\$1,429.50	\$1,899.94	
09 Transit Center	\$30.00	\$14.00	\$246.70	\$290.70	Oct-15
Total	\$319.10	\$195.40	\$1,676.20	\$2,190.64	

Table 2: Proposed Contract Packaging Plan- September 2009

Contract #	PE	RW	CN	TOTAL	AD DATE
00 - Project Wide Elements	\$107.80	\$114.40	\$113.10	\$335.24	N/A
GI – 1 st Ave. Ground Improvements	\$8.80	\$0.10	0	\$8.90	Jan-11
SS – Temporary TBM Sub Station	\$0.50	\$0.10	0	\$0.60	Jan-11
TU – Bore Tunnel	\$104.30	\$17.90	\$1,081.80	\$1,204.00	Jan-11
SA – South Access Point	\$22.30	\$0.10	\$112.80	\$135.20	Mar-12
SF – South End Surface Streets	\$1.60	\$0.10	\$6.50	\$8.20	Jul-15
ND – North Access Detour	\$5.00	\$46.00	\$6.80	\$57.80	Oct-10
NA – North Access Point	\$9.90	0	\$67.70	\$77.60	Jul-12
NF – North End Surface Streets	\$1.00	\$0.10	\$9.00	\$10.10	TBD
IT – ITS Signage	\$3.10	\$0.10	\$21.80	\$25.00	Oct-14
MO – Miscellaneous Other	\$2.50	\$2.50	\$10.00	\$15.00	TBD
Design Risk	\$22.30			\$22.30	N/A
Sub Total	\$289.10	\$181.40	\$1,429.50	\$1,899.94	
09 Transit Center	\$30.00	\$14.00	\$246.70	\$290.70	Oct-15
Total	\$319.10	\$195.40	\$1,676.20	\$2,190.64	

EXHIBIT B

Contract Packaging Descriptions/Revisions

Contract 00 – Project Wide Elements: No change

This series of contracts includes those costs expended in the 07-09 biennium to develop alternative concepts for the Alaskan Way Viaduct Removal and Replacement. These efforts also entailed early development of technical engineering documents in support of the original Environmental Impact Statement (EIS). Also included is the current and projected expenditures necessary to develop the Bored Tunnel option to the preliminary engineering level, complete the final EIS, and perform early right-of-way acquisitions necessary to meet the December 2015 operational complete date and commissioning of the tunnel.

Contract 01 – 1st Avenue Ground Improvements: New Design Only Contract “GI”

- *New recommendation: Continue design to 100%, Include construction in tunnel DB contract TU*

The intent of this contract was to remove poor soils, relocate utilities, and remove existing building tie backs in advance of the tunnel bore project to minimize the risk of design-build construction schedule delays. There are many constraints in this area, including limited right of way, historic buildings in poor condition, archeological work, required utility relocation, poor soils, traffic control constraints and sporting event traffic, adjacent condominiums, and temporary building tie-backs. We intend to advance the design work to define a successful way to accomplishing the work and minimize overall program risk. However, as the construction work cannot proceed prior to the ROD there is not sufficient time to complete construction work in advance of the adjacent design-builders’ need to dewater and excavate the tunnel bore pit and establish temporary construction staging areas. Therefore the advanced design of the 1st Avenue ground improvements will be provided in the bored tunnel RFP and the design-build contract will be responsible for completing necessary work on 1st Avenue.

Contract 02 – Temporary TBM Sub-Station: New Power Supply Contract “SS”

- *New recommendation: Include design and construction of temporary substation in tunnel DB contract TU*

The original proposal included relocating utilities and installing a temporary TBM sub-station in advance of the design build contract to advance facility construction where possible. The temporary sub-station is needed to support tunnel machine operations, temporary lighting and power, and associated equipment such as a slurry plant. The available construction staging areas are limited, and the design builder will likely want to control where the sub-station is located. Taking this desire into account, our strategy is to move this work effort to be under the control of the design-builder. We will provide a power source in close proximity to available staging proximity so that the design-builder can optimize both the location and size. There is sufficient time to accomplish this work while the design builder is proceeding with design. Construction of the temporary TBM sub-station will be included in the tunnel bore design-build contract.

Contract 03a - Bore Tunnel and 03b – Tunnel Systems: New Contract TU

- *New recommendation: Include additional work from Contracts 1, 2, 4a, 4b, 7a, 7b*

This work is a single design build procurement effort. Its southern limit will match with Contract SA (South Access) at mainline station 186+00, and its northern limit will match with Contract NA (North Access) at approximate mainline station 301+00.

The Scope of the work is as follows:

- 1st Avenue Ground Replacement (construction only): This portion of the contract will utilize a 100% design developed by the State and will mitigate potential settlement of buildings, utilities and the street from approximately Railroad Way South to King Street. Work will include soil and debris removal, soil strengthening or replacement, protecting or replacing utilities, removing below ground obstructions including tie-backs, excavation support, excavation de-watering, and removing the Railroad Way ramp structures and foundations that are in or near the tunneling area.
- Tunnel Boring Machine (TBM) Substation (final design and procurement / construction): This portion of the contract will utilize a conceptual design provided by the State and will include final design and procurement / construction related to an electrical substation needed to support tunnel machine operations, temporary lighting and power, and associated equipment such as a slurry plant. In order to accommodate the 5 MW power draw expected by the machine a new feed will be required from City Light's South Substation specifically designated as the TBM power source. This scope will specifically include a duct bank, cable, transformer, switchgear and temporary housing to serve as the power source for the TBM. The design build contractor will optimize both the location and size of this substation. Consideration will also be made as to the suitability of the temporary substation to permanently power the tunnel operations system.
- Tunnel (final design and construction):
 - Design and construction of a large-diameter bored tunnel with an approximate interior diameter of fifty-two (52) feet, and approximate length of 9100 lineal feet (not including the cut-and-cover sections).
 - The bored tunnel will be configured with two separate two-lane roadways, including shoulders, with sufficient vertical clearance for standard legal truck sizes. The Southbound roadway lanes will be stacked above the Northbound lanes in order to conform to existing exterior roadway configurations. The design and construction of the stacked interior concrete roadway structures will provide a highway system that will manage approximately 85,000 vehicles per day. It will include appropriate vehicle and pedestrian escape safety features required in a tunnel environment. In the event of a tunnel emergency, motorists will be able to enter an enclosed walkway via emergency exits spaced at about 600-foot intervals that meet minimum NFPA 502 requirements. The work includes providing a continuous enclosed walkway along one side of the tunnel's roadways that will allow pedestrians a safe area of refuge and the ability to walk the length of the tunnel to exits at the North and South Portals. The enclosed walkway will include lighting, ventilation, sprinkler and communication systems including emergency telephones. The current proposed tunnel alignment will then extend along 1st Avenue South, passing under sewer and rail tunnels, to the intersection of Pike Street where it will make a sweeping turn to the east and end at the north portal on SR 99, in the vicinity of John Street. The tunnel will be constructed using a pressurized face TBM (to be procured by the

design build contractor) and supported with a bolted, gasketed, pre-cast concrete lining.

- As an integral part of the tunneling operation, ground movement and building settlement monitoring and mitigation action plans will be required. The contractor will take these actions in accordance with both prescriptive and performance specifications included in the design build contract for protecting buildings and utilities.
- Tunnel Systems (final design and construction): The design build contractor will be responsible for systems work; including, design, fabrication, installation, and complete commissioning of tunnel ventilation, communication, lighting, signaling, low voltage utilities and fire/life safety systems that extend beyond the limits of the tunnel through the North and South Cut-and-Cover areas. It is anticipated the ventilation buildings required to house some of the tunnel systems, will be located at the South and North ends of the tunnel.
- North Access and South Access Site Preparation (final design and construction): Considerable work will be required at the North and South portals to make these areas ready for the tunnel work, including: the design and construction of permanent and temporary retaining walls, relocation of utilities, removal of unsuitable materials and/or soil improvements, removal of adjacent temporary building tie-back supports, providing temporary and permanent power supplies, muck disposal operations, design and construction of vent buildings, and design and construction of connecting cut-and-cover work at both the North and South ends of the tunnel.
- North and South Portals (final design and construction): This scope includes work both north and south of the tunnel eye-walls. The South portal structure matches with Contract SA (South Access) at mainline station 186+00 and extends to the tunnel eye-wall at approximate mainline station 192+50. This area encompasses the launch point for the TBM, located in the vicinity of 1st Avenue South between Charles and Dearborn Streets. The North Portal work extends from the north tunnel eye-wall at mainline station 300+00 northward to approximate mainline station 301+00 (immediately south of Thomas Street), where it matches to Contract NA (North Access). The scope within these limits includes connecting cut-and-cover work, retaining walls, and roadway sections that will complete the roadway system that will connect to Contracts SA and NA.
- South Access Operations and Maintenance Building (final design and construction): This scope includes the maintenance, operations, and ventilation facilities at the south access point of the bored tunnel. These facilities will contain tunnel maintenance and operations staff space, equipment storage; maintenance shops tunnel systems control rooms, electrical mechanical and communications rooms, fire/life safety systems and ventilation fans.
- North Access Maintenance Building (final design and construction): This scope includes maintenance and ventilation facilities at the north access point of the bored tunnel. These facilities will contain minimal tunnel operations and maintenance staff space, additional limited tunnel system control space, equipment storage, electrical, mechanical and ventilation fans.

Contract 04a – South Access Point: New Contract “SA”

○ *New recommendation: Partial scope transfer to tunnel DB contract TU*

The Original proposal included construction of at grade ramps, cut-and-cover sections, temporary and permanent retaining walls, and was intended to provide the permanent connection from the bored tunnel contract to the H2K project. When reviewing contract limits and required construction staging for the required 2015 opening it was determined that the northern portion of the project was in direct conflict with the design-build tunnel access and construction staging. The area requires extensive de-watering and temporary retaining walls to support construction and it was determined that it would be better if one contractor had control of these work activities. In addition, the critical path for tunnel opening most likely lies through the commissioning of the tunnel emergency protection and operating systems. It is desirable to include the cut-and-cover work between the bored tunnel entrance and the vent building into the control of the entity responsible for system commissioning, which is the tunnel design-builder. As a result, the northern portion of the cut-and-cover section of Contract SA is proposed to be moved to the design-build contract. The remaining work will move forward as a separate design-bid-build project, Contract "SA".

Contract 04b – South O & M Building:

○ *New recommendation: Include in tunnel DB contract TU*

This contract provides the maintenance, operations, and ventilation facilities at the south access point of the bored tunnel. These facilities are crucial to the life-safety performance of the tunnel and are expected to contain tunnel maintenance and operations staff space, equipment storage, maintenance shops tunnel systems control rooms, electrical mechanical and communications rooms, fire/life safety systems and ventilation fans. The original proposal assumed that separate contracts would be awarded for design and construction of all the ventilation, and operations and maintenance buildings for the project. Both 04b and 07b would be designed by the same architect. This proposal was based on the assumption that it would be good to share the work with other consultants and contractors and that it would be very difficult to get the building design approved through the City of Seattle Design Commission. The design-builder is ultimately responsible for commissioning all tunnel systems, including equipment and systems required to be installed in the ventilation and O & M buildings. As preliminary design work progressed, we decided that most of the foundations for these structures, and much of the associated equipment space, would be placed deep underground (approx 90') and located adjacent to permanent wall structures within the tunnel portal areas. In addition, some of the larger equipment (such as fan blades) can only be installed as the building is constructed. With these constraints and consideration in mind, it was decided that we would move forward with an outsourced architectural design of the facilities to flesh out a building size and space concept and work with the Seattle Design Commission for architectural features. This work will ultimately be incorporated into the RFP and the design-build contract will be responsible for final design and construction of these facilities.

Contract 05 – South End Surface Streets: **New Contract "SF"**

○ *New recommendation: Partial scope transfer to tunnel DB contract TU*

The South End Surface Improvement Contract included a number of work activities such as the removal of the temporary decking installed as a result of the ground improvement contract (01) and the restoration of First Avenue from King Street to Dearborn, construction of connecting roadways and streets (Weller, Lane, and Dearborn) over and around the South Access structure, landscaping, trails and sidewalks. Work associated with Contract 01 will now be included in the design-build contract TU. Other planned surface street improvements remain the same and the remaining work will move forward as a separate design-bid-build project, Contract SF.

Contract 06 – North Portal Detour: New Contract “ND”

○ *New recommendation: Minor scope transfer to tunnel DB contract TU*

This contract includes the demolition of existing buildings west of Aurora Avenue between John Street and Republic and construction of a temporary detour connecting Aurora at Mercer Street and the Battery Street Tunnel. The work includes portions of the permanent cut walls for the final SR99 alignment, as well as a temporary bridge over SR99 at Harrison Street. The detour includes the relocation of utilities (led by the City of Seattle) at the cross streets to Aurora that will be impacted by the detour and the North Access Structure. Also originally planned for inclusion in this contract was the construction of new utilities to service the tunnel and the north ventilation structure. These last two items of work are now included in the scope of the design-build contract due to their close proximity to the required extraction pit and the need to coordinate work and services for commissioning within the bored tunnel. In addition, a portion of the north vent building is now placed underneath of the detour roadway. This portion of the detour will be built on a temporary bridge spanning the building foundation, and will also be included in the tunnel design-build contract TU. The remaining work will move forward as a separate design-bid-build project, contract ND.

Contract 07a – North Access Construction: New Contract “NA”

○ *New recommendation: Partial scope transfer to tunnel DB contract TU*

This Contract constructs the SR99 mainline and ramps starting at the North Tunnel Portal area and extending north to where it joins Aurora Avenue at Mercer Street. This contract also constructs the lid above SR 99 that will serve as the surface connection from Aurora to Denny, and streets to the north. This contract also includes on and off ramps at Republican Street that connect the mainline to the City streets. This contract was proposed to include the retrieval pit that will be used by the Tunnel Contractor (03) to remove the TBM at the end of the drive and to stage the completion of the interior structural work and systems installation. After further consideration and review of risk impacts we now propose that the retrieval pit and associated retaining wall and structure work in the close vicinity of the tunnel end wall now be included in the design-build contract TU. This will allow the design build contractor to be responsible for work that impacts their own operation and provide a logical break point in the adjacent contract. In addition, the critical path for tunnel opening most likely lies through the commissioning of the tunnel emergency protection and operating systems. It is desirable to include the cut-and-cover work between the bored tunnel entrance and the vent building into the control of the entity responsible for system commissioning, which is the tunnel design-builder. As a result, the southern portion of the cut-and-cover section is proposed to be moved to the design-build contract. The remaining work will move forward as a separate design-bid-build project, Contract NA.

Contract 07b – North Access Maintenance Building:

○ *New recommendation: Include in tunnel DB contract TU*

This contract was proposed to provide the maintenance and ventilation facilities at the north access point of the bored tunnel. The facilities are crucial to the life/safety performance of the tunnel and are also expected to contain minimal tunnel operations and maintenance staff space, additional limited tunnel system control space, equipment storage, electrical, mechanical and ventilation fans. The design-builder is ultimately responsible for commissioning all tunnel

systems, including equipment and systems required to be installed in the ventilation and maintenance building. As preliminary design work progressed, we decided that the foundations for these structures, and much of the associated equipment space, would be placed deep underground (approx 90') and located adjacent to permanent wall structures within the tunnel portal areas and underneath a portion of the detour roadway. In addition, some of the larger equipment (such as fan blades) can only be installed as the building is constructed. The architectural design of these facilities is included in the scope of work for contract 4b. The architect will flesh out a building size and space concept and work with the Seattle Design Commission for architectural features. This work will ultimately be incorporated into the RFP and the design-build contract TU will be responsible for final design and construction of these facilities.

Contract 08 – North End Surface Improvement Contract: New Contract “NF”

This contract includes roadway work at the conclusion of the construction of the main roadway. This contract includes the removal of the detour roadway constructed in Contract ND (North Portal Detour) and completes minor restoration work, landscaping and sidewalks. No change is proposed to this scope of work.

Contract 09 – Alaskan Way Reconstruction Contract: New Contract “AW”

This Contract includes demolition of the Alaskan Way Viaduct from the Battery Street Tunnel to King Street; demolition of the Seneca and Columbia ramps; restoration of Alaskan Way, between King Street and Pine Street; construction of the waterfront parking garage; constructing the Elliott and Western connection to Alaskan Way; construction of the Marion St. Pedestrian Bridge; and the decommissioning of the Battery Street Tunnel. The roadways at Seneca and at Columbia will also need to be reconfigured because the off and on ramps will be demolished in conjunction with the viaduct. No change is proposed to this work.

Contract 10 – ITS Signage Contract: New Contract “IT”

This contract includes the hardware, software, and installation of directional and information signage associated with the tunnel and connecting structures. The contract includes the commissioning of the Active Traffic Management signage, and connection to the communication and control system installed by the tunnel design-build contract TU.

Contract 11 – Miscellaneous Contracts: New Contract “MO”

This is a placeholder for work required to complete the overall Program that has not yet been segregated into other separate contracts. Scope items identified to date include:

- Demolition of Pier 48 and restoration of land-side surfaces
- Emergency Viaduct Warning Systems
- Advance building and utility support
- Tolling System