

CITY COUNCIL AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Authorizing the City Manager to Execute Supplement No. 3 to Contract 8463 with H.W. Lochner in the Amount of \$592,312 for Design and Environmental Services for the SR-523 (N/NE 145 th Street) & Interstate-5 Interchange Project
DEPARTMENT:	Public Works
PRESENTED BY:	Tricia Juhnke, City Engineer
ACTION:	<input type="checkbox"/> Ordinance <input type="checkbox"/> Resolution <input checked="" type="checkbox"/> Motion <input type="checkbox"/> Discussion <input type="checkbox"/> Public Hearing

PROBLEM/ISSUE STATEMENT:

Staff is requesting that the City Council authorize the City Manager to execute Supplement No. 3 to Contract 8463 with H.W. Lochner (Lochner), for design, environmental and right-of-way (ROW) services related to the SR-523 (N/NE 145th Street) & Interstate-5 (I-5) Interchange Project. The proposed scope of work for this Supplement is attached to this staff report as Attachment A.

In July 2022, Lochner delivered the 90 percent design plans and other deliverables to City staff for review. At that time, staff also distributed the 90 percent plans to other project stakeholders for review and comment. This included the Washington State Department of Transportation (WSDOT), Seattle Department of Transportation (SDOT), Sound Transit, Seattle Public Utilities, and Seattle City Light. The City's and stakeholder's reviews were completed in August 2022, and Lochner has incorporated the comments into the design plans.

This Supplement is required for Lochner to advance the design plans from 90 percent to 100 percent design completion, complete technical specifications, final construction estimate, incorporate comments from the final City, WSDOT and stakeholder reviews and provide technical assistance during bidding.

RESOURCE/FINANCIAL IMPACT:

This project is included in the adopted 2021 - 2026 Capital Improvement Plan. The project budget summary is as follows:

EXPENDITURES

City Staff	\$ 200,000
City Direct Expenses	\$ 50,000
<i>Consultant Contracts</i>	
HW Lochner Contract, Including Supplement 1	\$ 2,124,935
HW Lochner Supplement 2	\$ 2,471,183
<i>HW Lochner Supplement 3</i>	592,312
WSDOT Review	\$ 125,000
WSDOT Project Administration	180,000
Right of Way Acquisition	\$ 4,932,000
Construction Administration & Engineering	\$ 2,490,000
Construction	\$ 13,242,516
Construction Contingency	\$ 3,310,629
Total Expenditures	\$ 29,718,575

REVENUE

Secured	
Roads Capital Fund	\$ 1,272,000
Federal STP Grant	\$ 3,982,500
Federal STP Grant	\$ 4,920,000
WSDOT Regional Mobility Grant	\$ 5,000,000
Sound Transit Agreement	\$ 10,000,000
Transportation Improvement Board (TIB) - Construction	\$ 5,000,000
Total Revenue	<u>\$ 30,084,500</u>

Supplement 3 would increase Lochner's contract amount by \$592,312, from \$4,596,118, to \$5,188,430.

RECOMMENDATION

Staff recommends that Council authorize the City Manager to execute Supplement No. 3 to HW Lochner's professional services contract in the amount of \$592,312, for a total contract amount of \$5,188,430 for engineering design, ROW, and environmental permitting services for the SR-523 (N/NE 145th Street) & I-5 Interchange Project.

Approved By: City Manager **DT** City Attorney **MK**

BACKGROUND

In 2016, the City began implementing improvements identified in the [145th Street Multimodal Corridor Study](#) to improve access and safety for all travel modes, and to improve access to Sound Transit's (ST's) 145th Street Light Rail Station. Proposed improvements for the SR 523/145th Street – Interstate 5 interchange included traffic signal optimization, a new non-motorized bridge, and a new northbound I-5 on-ramp. In May 2017, the City Council authorized execution of contract 8463 with H. W. Lochner for engineering, ROW acquisition, and environmental review up to 30 percent design completion. The staff report for this Council authorization can be found at the following link: [City Council execution of Contract 8463 with H.W. Lochner.](#)

During Lochner's initial design work in 2018, WSDOT requested a design evaluation of the intersections at the east and west ends of the existing I-5 overpass at 145th Street. As a result of the design evaluation, called an Intersection Control Evaluation (ICE), the City found that incorporating roundabouts into the design at these two locations will provide significantly greater multi-modal access and mobility than the signal-controlled intersections that were proposed in the City's 2016 corridor study, and at approximately the same total cost.

In January 2020, the City Council discussed the 145th Street/I-5 Interchange project delivery strategy ([available at Jan. 27, 2020 Council Meeting](#)). The Council concurred with staff's recommendation to continue with completion of 30 percent design, environmental review and ROW acquisition, and to then turn the project over to WSDOT for completion of final design, permitting and construction. WSDOT subsequently provided a letter to the City and the US Dept. of Transportation of WSDOT's intent to accept transfer of the project but stipulating that the project must be fully funded at transfer.

In June 2020, [the City Council authorized Supplement 1 to Lochner's contract](#), providing for completion of 30 percent design, design documentation, environmental review and preliminary ROW acquisition work. In February 2020, Lochner delivered the 30 percent design plans and other deliverables to City staff for review. At that time, staff also distributed the 30 percent plans to other project stakeholders for review and comment; this included WSDOT, SDOT, ST, Seattle Public Utilities (SPU), and Seattle City Light (SCL). The City's and stakeholder's reviews were completed in May 2020, and Lochner has incorporated the comments into the design plans.

In July 2021, [the City Council authorized Supplement 2 to Lochner's contract](#), providing for completion of 90 percent design, ROW negotiations and acquisition, additional coordination with ST related to construction overlaps and technical coordination of agreements with utilities and other agencies. The 90 percent plans were completed in July 2022 and the City's and other stakeholders' comments are being incorporated into the construction documents.

DISCUSSION

Supplement 3 to Lochner's contract includes additional design and coordination with the ST Light Rail/Shoreline South Station project, additional signal interconnection and illumination design, combining the Interchange project with the 145th Corridor project for the construction phase, additional support for public outreach, utility coordination and ROW acquisition, and technical support for agreements with SDOT, SPU, SCL, ST, and WSDOT. The detailed scope of work is included as Attachment A.

The project is fully funded, including this Supplement, based on the estimates developed with the 90% design. The cost estimate will be updated again at 100% design which is anticipated in December 2022. Construction bidding is currently scheduled for Spring 2023 and completion of construction in December 2024.

ALTERNATIVE ANALYSIS

The recommended alternative is to continue to progress design, ROW, and final construction planning work to 100 percent completion as planned, engage WSDOT and engage a consulting firm to provide construction administration and inspection. The second alternative is not to execute Supplement No. 3 (not recommended) which would halt the project. This would result in loss of the Federal STP grant and the requirement to return the approximately \$3M of grant funds that has already been paid to the City during design development and 90 percent completion.

COUNCIL GOAL(S) ADDRESSED

This project addresses Goal 2: Continue to deliver highly valued public services through management of the City's infrastructure and stewardship of the natural environment; and Goal 3: Continue preparation for regional mass transit in Shoreline.

RESOURCE/FINANCIAL IMPACT

This project is included in the adopted 2021 - 2026 Capital Improvement Plan. The project budget summary is as follows:

EXPENDITURES

City Staff	\$ 200,000
City Direct Expenses	\$ 50,000
<i>Consultant Contracts</i>	
HW Lochner Contract, Including Supplement 1	\$ 2,124,935
HW Lochner Supplement 2	\$ 2,471,183
<i>HW Lochner Supplement 3</i>	592,312
WSDOT Review	\$ 125,000
WSDOT Project Administration	180,000
Right of Way Acquisition	\$ 4,932,000
Construction Administration & Engineering	\$ 2,490,000
Construction	\$ 13,242,516
Construction Contingency	\$ 3,310,629
Total Expenditures	\$ 29,718,575

REVENUE

Secured	
Roads Capital Fund	\$ 1,272,000
Federal STP Grant	\$ 3,982,500
Federal STP Grant	\$ 4,920,000
WSDOT Regional Mobility Grant	\$ 5,000,000
Sound Transit Agreement	\$ 10,000,000
Transportation Improvement Board (TIB) - Construction	\$ 5,000,000
Total Revenue	<u>\$ 30,084,500</u>

Supplement 3 would increase Lochner's contract amount by \$592,312, from \$4,596,118, to \$5,188,430.

RECOMMENDATION

Staff recommends that Council authorize the City Manager to execute Supplement No. 3 to HW Lochner's professional services contract in the amount of \$592,312, for a total contract amount of \$5,188,430 for engineering design, ROW, and environmental permitting services for the SR-523 (N/NE 145th Street) & I-5 Interchange Project.

ATTACHMENTS

Attachment A – Scope of Work for Lochner Professional Services Contract Supplement No. 3

Attachment A

Scope of Services – Supplement 3

City of Shoreline

SR 523 (NE 145th Street) and I-5

Interchange Improvements

Prepared for:

City of Shoreline, Washington



September 2022

Prepared by:

LOCHNER

915 118th Avenue SE, Suite 130
Bellevue, WA 98005

Table of Contents

Task 1: Interchange Early Works Additional Design and Coordination with Sound Transit LLE L200 3

Task 2: SOW for 1st Avenue NE to 15th Avenue NE Signal Interconnect Upgrade for SDOT 4

Task 3: SOW for Temporary Construction Signal and Temporary Construction Illumination 5

Task 4: SOW for ITS Design for CCTV at 5th Avenue NE and 6th Avenue NE and Addition of Detection Loops on Roundabouts (WSDOT)..... 5

Task 5: Relocate SCL 12.4 kV Feeder Line Civil Design..... 6

Task 6: Additional Hydraulics Design 7

Task 7: Combine Corridor and Interchange Projects 8

Task 8: Additional Graphic Support for Public Outreach and City Council Meeting..... 9

Task 9 - WSDOT turnback agreement for 5th Avenue City of Seattle and City of Shoreline 10

Task 10: Replace SPU Sanitary Sewer Line from 1st Avenue NE to I-5 10

Task 11: SPU Additional WTM Design..... 12

TASK 12: Utility Coordination Services 14

Task 13: Work Zone Capacity Analysis..... 14

Task 14: 3rd Avenue Access for Stormwater Vault Maintenance Access 15

Task 1: Interchange Early Works Additional Design and Coordination with Sound Transit LLE L200 Project

Background:

Sound Transit's LLE L200 project overlaps the City's Interchange project at the intersection of 5th Avenue and NE 145th Street. The LLE L200 project is currently in construction, with construction expected to be complete by October 2023. To make the LLE L200 project forward compatible and avoid tear out of new project element constructed by the LLE L200 project Sound Transit and the City jointly decided to have the Interchange project prepare plans of project elements such as:

- Retaining Wall #4
- Sidewalk on the west side of 5th Avenue
- Sidewalks and concrete around the perimeter of the intersection at 5th Avenue and NE 145th St.
- Concrete street curb on the west side of 5th Avenue
- Stormwater collection and conveyance piping on the west side of 5th Avenue
- Stormwater collection system additions and adjustments around the perimeter of the Intersection
- Street lighting on the west side of 5th Avenue
- Traffic signal revisions at 5th Avenue and NE 145th Street
- Pavement markings throughout the intersection
- Landscaping along the west side of 5th Avenue

Assumptions:

1. Plans will conform to Sound Transit LLE L200 standard
2. Auto CAD will be the design software to use to develop plans
3. LL L200 will provide CAD files to be modified by the Interchange project

1.1: SOW for Interchange Early Works Additional Design and Coordination with Sound Transit LLE L200 Project

1. Coordination meeting with Sound Transit L200 Design Team
2. Coordination meetings with Sound Transit L200 Construction Team
3. Electrical/Signal/ITS/Illumination
 - a. Coordination with WSDOT NWR Traffic for power system for signals and ITS
 - b. Prepare Illumination to relocate streetlight on the westside of 5th Avenue
 - c. Modify electrical power plan for SUA 675 and prepare plans to relocate SUA 675 to the southwest quadrant
 - d. Field site visits with WSDOT and SCL and SDOT ITS to ground truth location and configuration of signal electrical system and ITS systems
4. Coordinate location of Lumen ductbank crossing of Wall #4
5. Structures

- a. Modify Wall 4 to reflect LLE L200 constructability review
 - b. Develop wall detail for utility penetrations
 - c. Deconflict WSDOT SWMH with Wall #4
 - d. Redesign Wall #4 from battered wall section to straight wall section to reduce construction cost
6. Stormwater
 - a. Review LLE L200 Drainage Plans and WSDOT and City of Shoreline Asbuilts
 - b. Modify LLE L200 stormwater conveyance system on the west side of 5h Avenue NE to be compatible with the Interchange roadway and drainage flowline geometrics
 - c. Design conveyance system and connections to LLE 200 proposed system and existing system
 7. Develop plans for LLE L200 project elements to be deleted. Submit plans to Sound Transit LLE L200 Design Team for review
 8. Review LLE L200 specifications for compatibility
 9. Prepare engineer's cost estimate
 10. Prepare plans for permit review
 11. Plan revision from permit review cycles
 12. Prepare plans to be used for construction by LLE L200 contractor

Deliverables:

1. Plans for permitting by City of Shoreline and construction
2. Engineer's cost estimate for additions and deletions

Task 2: SOW for 1st Avenue NE to 15th Avenue NE Signal Interconnect Upgrade for SDOT

The interconnect will be run underground from 1st Avenue NE to 6th Avenue NE, then aerially east from 6th Avenue to 15th Avenue NE.

The CONSULTANT will work with the CITY to facilitate Stakeholder meetings to keep the parties informed about project progress, resolve project issues, and obtain approvals. Design kickoff meeting; over the shoulder intermediate design (30% and 60%); Field visit to verify routing of existing interconnect cable and new route for interconnect cable.

The CONSULTANT will evaluate the impact on the existing signal system and make a preliminary assessment on whether the existing signal system will require modification or relocation, analyze the possible locations of new utility poles, junction boxes and determine the need for additional design to comply with improvements, and current SDOT standards.

- The CONSULTANT will coordinate with SDOT to evaluate existing signal and ITS equipment between 1st Avenue and 15th Avenue on NNE 145th Street; and

- The CONSULTANT will prepare preliminary plans and final plans for the signal interconnect system showing location and preliminary details of poles, fiber optic routes, cabinets, and junction boxes;
- Upgrade of the copper ITS cable to fiberoptic will be incorporated into the Interchange Project bid and construction documents.

Engineering opinion of probable cost will be prepared, and a separate bid group will be established for measurement and payment for SDOT to reimburse the project.

Deliverables:

- Preliminary and final signal interconnect PS&E integrated into the interchange project deliverables

Task 3: SOW for Temporary Construction Signal and Temporary Construction Illumination

The CONSULTANT will prepare a temporary traffic signal and illumination design plan based on the proposed construction staging plan and MOT plan.

The CONSULTANT will evaluate the impact on the existing intersection traffic signal system and illumination system and make a preliminary assessment on whether the existing systems will require modification, analyze the possible locations of temporary illumination/signal poles, the possible locations of temporary signal heads and determine the need for additional illumination and signal devices.

The CONSULTANT will prepare preliminary and final plans for the temporary illumination system and temporary signal system showing location, size, and details.

Assumptions:

- The software used to develop the illumination plans will be AGI-32
- The software used for developing the traffic signal plans will be Synchro 11

Deliverables:

- Preliminary and final temporary illumination and traffic signal plans integrated into the interchange project deliverables

Task 4: SOW for ITS Design for CCTV at 5th Avenue NE and 6th Avenue NE and Addition of Detection Loops on Roundabouts (WSDOT)

The CONSULTANT will review WSDOT Northwest Region ITS design requirements to establish the intelligent transportation system for the I-5 / SR 523 interchange.

The CONSULTANT will design the CCTV cameras located at 5th Avenue NE and 6th Avenue NE at SR 523.

The CONSULTANT will develop a loop detection system with data station for the two roundabouts, at the intersection of I-5 southbound ramp terminal /SR 523 and the intersection of SR 523 /5th Avenue NE.

Assumptions:

- The ITS will be designed in accordance with the WSDOT Northwest Region ITS Design Requirements, April 2020

Deliverables:

- Preliminary and final ITS plan integrated into the Interchange project deliverables (90% submittal)

Task 5: Relocate SCL 12.4 kV Feeder Line Civil Design

Background:

SCL 12.4 kV feeder line is located on the south side of 145th Street. Due to the new roadway geometry the 12.4 kV feeder must be relocated on both sides of Interstate 5. The feeder line also has two underground vaults used for cable splices, one on the east and west side of the SR 523 overpass. These vaults will also need to be removed and replaced due to age and compatibility with new roadway geometry. It is also highly recommended by Seattle Parks to move the feeder line from overhead to underground to avoid additional tree removal along the 145th Street frontage of Jackson Park Golf Course. The distribution line on 4th Avenue and service for Lakeside High School will also be relocated.

Assumptions:

1. Use SCL Standard Details and Specifications
2. Where SCL Standard Details and Specifications are deficient then SDOT Standard and WSDOT Standard will be used in this order.
3. SCL to design overhead power relocation, power poles and guy wire, and power conductor replacement and splices
4. Civil designer responsibility will terminate at riser on SCL terminal poles
5. SCL to provide one-line diagram of feeder line relocation
6. Final Plans, special provisions to be integrated into Interchange Project Ad Ready PS&E

5.1: SOW for Design civil works for 12.4 kV feeder line relocation:

1. Agency Coordination
 - a. Meet with SCL onsite to scope civil design to relocate the 12.4 kV Feeder line
2. Conceptual Design
 - a. Prepare roll plot conceptual design of civil elements to be relocate of move portions of the 12.4 kV feeder line below ground.
 - b. Meet with SCL for over the shoulder review of conceptual design

3. 30% Design
 - a. Once conceptual design has been approved by SCL, the Consultant will prepare 30% Plans and Engineer's Opinion of Cost. 30% Plans will consist of scaled drawings showing feeder line elements to be removed and new civil element for be install in plan view. Cost estimate will be prepare using unit cost based on specific civil element quantities.
 - b. Submit to 30% Plan and Estimate to SCL for review and approval
 - c. Two over the shoulder review meetings with SCL and resolve SCL comments
4. 90% Design Submittal
 - a. plans will be prepared showing plan and profile of civil elements of the feeder line and associated details and or references to SCL standard plans.
 - b. 90% cost estimate will be prepared
 - c. Special Provisions for technical specifications will be prepared as needed for construction feeder line civil works
 - d. Respond to SCL review comments
 - e. Two over the shoulder review meetings with SCL
5. Final Design
 - a. Prepare final plans, special provisions and estimate for civil design of 12.4 kV feeder line relocation

Deliverables:

- Conceptual Design
- 30% Plans and Cost Estimate
- 90% Plans, Special Provisions and Cost Estimate
- Final Plans, Special Provision and Cost Estimate

Task 6: Additional Hydraulics Design

Background:

On the onset of the Interchange project WSDOT was taking responsibility for maintaining project elements within the Limited Access area of the Interchange. After Supplement 3 was approved by the City of Shoreline, WSDOT has changed their position on the project element that will be maintained under their jurisdiction. With this decision the maintenance responsibility for stormwater detention and quality features in the City of Seattle limits has shifted to City of Seattle on the east side of the interchange.

Assumptions:

- a. Design of the detention and water quality features will be as shown on the preliminary detention vault exhibit dated May 25, 2022
- b. Hydraulics report will use the WSDOT report format, from the 60% design submittal

- c. Stormwater pipe capacity is calculated using the WSDOT pipe capacity spreadsheets, included with the 60% design submittal, updated for the revisions to the design
- d. Revisions to the plan and profile drawings will be provided with the 90% design submittal. Coordination with SPU was performed based on the preliminary detention vault exhibit
- e. Stormwater conveyance design in the City of Seattle area uses Type 242 catch basins set in-line

6.1: Additional Hydraulics Design

- a. Preliminary design of alternate detention and treatment features, and create exhibit
- b. Coordination meetings with SPU
- c. WWHM Analysis for detention pipe system
- d. Revise storm drain plans for SPU structures, detention pipe system and alignment change
- e. Revise storm drain profiles for SPU structures, detention pipe system and alignment change
- f. Storm drain details for detention pipe system
- g. Review SPU specifications for inclusion and write additional special provisions
- h. Revise swale 3 design, plan, details
- i. Revise drainage notes for revisions
- j. Revise hydraulics report, exhibits, calculations for revisions

Deliverables:

- a. Preliminary detention vault exhibit (completed 5/25/22 for coordination meetings with SPU)
- b. Revised hydraulics report, exhibits, calculations for the 90% submittal
- c. Revised plan and profile design drawings for the 90% submittal

Task 7: Combine Corridor and Interchange Projects

Background:

The CITY has decided to combine the Phase I of the Corridor and Interchange Project into one construction contract.

Assumptions:

1. Design software for plan development will remain MicroStation
2. Drafting standard to remain WSDOT

7.1: SOW for Combine Corridor and Interchange projects

1. Attend bi-weekly coordination meetings with Corridor Project to develop a single contract package for Corridor and Interchange projects and additional coordination meeting (up to 12 meetings)
2. Weekly design discipline coordination meeting (up to 10 meetings)
3. Revise plans for conform discipline series to conform to the content of the Corridor Project
4. Coordinate special provisions to have a to create single contract package
5. Coordinate bid form and bid groups
6. Coordinate cost estimate
7. Contract workshop to combine projects for 90% design submittal
8. Pre-final workshop to prepare Ad Ready PS&E submittal

Deliverables:

1. Combined 90% Plans, Specifications and Cost Estimate
2. Combined Final Plans Specifications and Cost Estimate
3. Combined Ad Ready Plans Specifications and Cost Estimate

Task 8: Additional Graphic Support for Public Outreach and City Council Meeting

The CONSULTANT will prepare graphics to present information to the public on the 145th Street and I-5 Interchange Project construction phasing. The graphics will be used to produce a video with voice over narrative that explains the construction phasing.

8.1: Develop animated video of Construction Phasing plan showing Maintenance of Traffic (MOT) Concepts

- a. The CONSULTANT will prepare a construction phasing plan and maintenance of traffic in graphical form for use in public outreach and City Council meeting. The graphics will identify project relocated construction task for each construction phase and timeline for the construction phase.
- b. Prepare animated stills for video of phasing plan and MOT plans using still graphics prepare in Task 8.1.a
- c. Prepare base video using animated stills produced in Task 8.1.b
- d. Enhance animated video with traffic simulation
- e. Prepare script for video voice over, and record voice over for video.
- f. Add voice over narrative to animated video and publish video.

Assumptions:

1. Video will be hosted on City's web page and or YouTube Channel

Deliverables:

1. Animated video with voice over

Task 9 - WSDOT turnback agreement for 5th Avenue City of Seattle and City of Shoreline

Background:

5th Avenue NE north of SR 523 is a city street in the incorporated City of Shoreline. 5th Avenue South of SR 523 is within the City of Seattle incorporated limits and is classified as City Street. The west half of 5th Avenue is within WSDOT ROW for I-5. Both cities Shoreline and Seattle are responsible for maintenance and operations of facilities constructed as part of the SR 523 (NE/N 145th Street) and I-5 Interchange Improvements Project.

Assumptions:

- WSDOT will turnback the portion of ROW need for 5th Avenue to City of Shoreline and Seattle
- City of Shoreline on call surveyor to prepare ROW exhibits

9.1: SOW for Turnback Agreement

- a. Prepare WSDOT Turnback Agreement form for City of Shoreline and Seattle
- b. Prepare drawing of area for ROW exhibits to be turned back (two each), coordinate with City's On-Call surveyor
- c. Facilitate WSDOT to prepare conveyance document to transfer deed of properties described in ROW exhibits
- d. Coordinate ROW Turnback with WSDOT (included in Project Management services)

Deliverables:

1. ROW exhibits
2. Completed WSDOT Turnback forms

Task 10: Replace SPU Sanitary Sewer Line from 1st Avenue NE to I-5

Background:

The City of Shoreline is modifying the WSDOT Interchange at NE 145th Street (SR 523) and Interstate 5. As a result of this modification NE 145th Street will be lowered to accommodate the grade change at the intersection of the I-5 southbound ramps at NE 145th Street. There is an existing 8-inch reinforced concrete SPU sanitary sewer line west-flowing in the southern eastbound lane of NE 145th Street until the interchange, and an existing 8-inch SPU sanitary sewer line north-flowing in 4th Avenue NE. Lowering 145th Street reduces the minimum 5-foot cover over the sanitary sewer. In addition, 4th Avenue NE will be dead-ended and a retaining wall, approximately 8-feet in height, will cross the sanitary sewer line perpendicular to its north-south alignment. Where the sanitary sewer on 4th Avenue NE intersects the retaining wall, a drop manhole will be added to make the elevation transition. SPU also desires to have

the size of the NE 145th Street sewer pipe upsized to a 12-inch diameter to match the diameter of the City of Shoreline's new sanitary sewer line exiting north through 3rd Avenue NE.

Assumptions:

1. Sanitary sewer will be designed in accordance with the City of Seattle *Design Standards and Guidelines* and specified through the City of Seattle *2020 Standard Specifications for Road, Bridge, and Municipal Construction*.
2. Specifications, general special provisions, and project specific special provisions will accommodate WSDOT standard specifications format.
3. SPU has specified pipe material as reinforced concrete pipe where a 5-foot minimum cover can be achieved.
4. SPU has specified pipe material as ductile iron where a 5-foot minimum cover cannot be achieved. The minimum cover is 3-feet for new ductile iron sewer pipe.
5. SPU will provide the average daily flow of sewage for design of the new sewer line and include any peaking factors to be applied.
6. The sewer line will be located on the same alignment as the existing sewer line.
7. Minimum slope shall be 0.5%.
8. The diameter of the new sanitary sewer pipe will be 12 inches to match the diameter of the new sanitary sewer line installed by the City of Shoreline on 3rd Avenue NE.
9. A drop manhole will be used on the south side of the NE 145th Street retaining wall where the 4th Avenue NE sanitary sewer line connects to the NE 145th Street sanitary sewer line.
10. Service laterals from the north side of NE 145th Street will not be reconnected to the new SPU sanitary sewer line with designs excluded from this scope of work.
11. Only one existing sewer service (for the Lakeside School on the south side of NE 145th Street) is planned for reconnection to the new sewer main with a tee connection.
12. An over-the-shoulder meeting will be scheduled to review preliminary sewer designs at approximately 30% design.
13. SPU will review 60% design as a standalone submittal from the Interchange project.
14. SPU sanitary sewer plans, special provisions, and estimate (PS&E) will be integrated into the 90%, Final, and Ad-Ready PS&E packages of the Interchange project.
15. A separate bid schedule will be developed for pricing construction of the SPU sanitary sewer.

10.1 Project Management

Internal quality controls of CONSULTANT deliverables will be provided at the 30%, 60%, and 90% design levels.

Project Management will be folded into Project Management under Supplement 2. Invoicing and monthly status reports will be included as part of Supplement 2 invoicing and reporting.

Deliverables:

1. Monthly invoices and status reporting specific to sewer design and management.

10.2 Design and PS&E Package Development for SPU Sanitary Sewer Relocation and Upsizing

The CONSULTANT will prepare plans, special provisions, and an engineer's opinion of cost (PS&E) and SPU-specific construction contract documents (in a separate appendix) to document replacement of approximately 460 feet of existing 8-inch diameter sanitary sewer line and associated manholes.

The CONSULTANT will review SPU design standards and specifications to establish minimum pipe slope and maximum velocity allowed by SPU.

The CONSULTANT will design sanitary sewer using 12-inch diameter reinforced concrete pipe and ductile pipe, as required. The CONSULTANT will develop a spreadsheet model to calculate the velocity of sewage flow using the average daily flow of sewage, provided by SPU, to compute the required slopes of the new sanitary sewer. Velocity will be calculated with the assumption that backwater conditions do not exist in the upstream or downstream systems.

Deliverables:

1. Meeting attendance for project kickoff, intermediate design, and conclusion. Assume three virtual or telephone meetings.
2. Notes from over-the-shoulder, 30% design review.
3. Plan view of the sewer system identifying sewer main and maintenance hole IDs with references to the spreadsheet model evaluation.
4. Table and/or text descriptions of the proposed system including flows and velocities in each sewer main.
5. 60% plans and engineer's estimate submittal for SPU review and comment.
6. 90% plans, special provisions, and engineer's estimate (PS&E) integrated into the Interchange project deliverables.
7. Final PS&E integrated into the Interchange project deliverables.
8. Ad-Ready PS&E integrated into Interchange project deliverables.

Task 11: SPU Additional WTM Design

The improvements to the interchange will affect a 24-inch water transmission main owned by Seattle Public Utilities (SPU). Initially earthquake resistant ductile iron pipe (ERDIP) was chosen

as the material to replace the existing 24-inch main. Design has progressed through the 60% deliverable. However, due to concerns related to supply chain disruption, high demand, and potential long lead times for ERDIP, the City of Shoreline has decided to change to welded steel pipe for the replacement material for the 24-inch main. This supplemental scope of services covers the change in material and required re-work of design and specifications work to date as well as effort required to coordinate the additional requirements of SPU for the welded steel material type.

As design progressed, it became apparent that one of SPU's valve chambers (east of I-5 at intersection of NE 145th St and 5th Ave NE) will need to be replaced. This supplement also includes scope to design the replacement of the valve chamber in accordance with SPU's requirements.

The scope of services included are final design phase, bidding phase, and additional services for the project as described and further detailed in Attachment 2 Engineering Scope and Cost Worksheets.

Assumptions:

1. Base map will be provided by Lochner to Varela in AutoCAD format
2. Site soils will be assessed by others and design parameters provided to Varela
3. Corrosion potential of soils will be assessed by SPU. Corrosion control measures for the welded steel main (if required) will be specified by SPU
4. SPU will determine restraint status of existing pipe at connection points to existing mains and restraint for existing mains required during construction. SPU will provide details successfully used on other projects for thrust restraint at connections to existing main (e.g. thrust rings to be installed on existing mains via welding, epoxy, or other method) for integration into this project.
5. The 24-inch main will be replaced in its existing horizontal alignment (i.e. no horizontal changes), changes will be made to the vertical alignment to accommodate the new roundabout. New vertical alignment of road will be provided by Lochner.
6. SPU will determine and handle any reviews/approvals by DOH. Coordination with DOH, if required (Project Report or other review/approval) will be performed by others or added to Varela's scope at a later date.
7. In accordance with City of Seattle Standard Plans for Municipal Construction (2020) Standard Plan No. 030, the 24-inch main will be replaced where existing bury depth results in less than 3'-0" of cover from top of pipe to top of finished pavement (approximately 600 LF replaced).
8. SPU will provide details successfully used on other projects for replacement of the valve chamber east of I-5 at intersection of NE 145th St and 5th Ave NE for integration into this project.

Deliverables:

1. The original scope included four plan sheets; this scope supplement adds five more plan sheets. The combined plan sheets include:
 - 1.1. One notes sheet
 - 1.2. Three plan/profile and sections sheets for main replacement
 - 1.3. Two details sheets.
 - 1.4. One services list
 - 1.5. Two plan/detail sheets for valve chamber replacement
 - 1.6. Nine plan sheets total.
2. General Special Provisions to integrate SPU Standard Specifications and Details for the welded steel water main work into Lochner prepared contract for Shoreline interchange project.
3. Bid items list for Lochner to integrate into Contract Documents for interchange project.
4. Opinion of Probable Cost for water main, chamber replacement, and appurtenances.

TASK 12: Utility Coordination Services

Molly Toy accepted a position with Kimley-Horn in Boise, Idaho, and the City of Shoreline has expressed the desire to maintain her services for utility coordination given the complexity of the project and Molly's ability to move along the process. Molly will be available up to 10 hours a week through January 1, 2022 to December 31, 2022 to coordinate utility relocation and process of progressing design work through SPU to relocate the 24-inch diameter water transmission main and 8-inch sanitary sewer, Lumen ductbank relocation, Comcast and Zippy communications relocation, PSE gas main relocation, North Water District water main relocation, and SCL feeder line relocation. Facilitate and prepare meeting agendas for biweekly meeting with all project impacted utilities, facilitate one-on-one meetings with utilities to coordinate design and agreements.

Deliverables:

1. Meeting agendas and notes

Task 13: Work Zone Capacity Analysis**BACKGROUND:**

When Supplement 3 (60% to Ad Ready PS&E) was scoped, the Interchange was proposed to be closed during construction. A series of workshops with stakeholders was convened to review different options for maintenance of traffic through the Interchange work zone during construction. The stakeholder working group concluded that the Interchange project should maintain traffic throughout the work zone

of the Interchange and would allow short term partial closures over night or on weekends. Since the Interchange will have long-term temporary channelization and realignments and lane shifts WSDOT requires a detailed capacity analysis to determine the level of impact to traffic during construction.

Assumptions:

1. Traffic data from the Interchange ICE Report will be used for traffic analysis
2. Current traffic data will be provided by WSDOT and the CITY.
3. PSRC will prepare the network analysis

13.1 Prepare Work Zone Traffic Analysis

- a. Model traffic impacts for East and West traffic movements along SR 523 from Corliss Avenue NE to 6th Avenue NE
- b. Model traffic impacts on I-5 South bound and north bound off ramps
- c. Mobility and safety impacts of the Interchange Project and Corridor project
- d. Impacts on nearby intersections and I-5 on and off ramps and mainline of I-5
- e. Impacts on emergency routes
- f. Prepare Work Zone Capacity Report

Deliverables:

- Overall Impact Assessment Report

Task 14: 3rd Avenue Access for Stormwater Vault Maintenance Access

Background:

In effort to save Corridor project budget in ROW cost the stormwater detention vault for the Corridor and Interchange project was relocated from the Lin parcel to the Portal North parcel. And to limit having an additional driveway access within the WSDOT Limited Access area off of NE 145th Street, the City has determined to use the unopen ROW 3rd Avenue NE off of NE 147th Street for maintenance access the stormwater detention vault.

Assumptions:

1. 3rd Avenue NE will be designed using City of Shoreline Development and Engineering Standards
2. 3rd Avenue NE will be designed as a “Local Collector” City of Shoreline Standard Detail 201
3. Access width with of 3rd Avenue will be in accordance with Appendix F of the EDM, 22 feet wide from face of curb to face of curb.
4. 3rd Avenue NE will not have a sidewalks or amenity zones
5. ROW and or TCEs will not be required to construct 3rd Avenue NE
6. The CITY will provide topographic survey and survey of ROW for design purposes
7. The CITY will provide code enforcement to have neighboring encroachments removed from ROW
8. Construction of 3rd Avenue will be included as part of the Interchange project
9. Environmental permitting for 3rd Avenue is covered under the NEPA and SEPA documents prepared for the Interchange project.
10. City EDM will be used to determine the pavement cross section

14.1 Design 3rd Avenue NE from NE 147th for Stormwater Detention Vault Maintenance Access

The CONSULTANT will prepare PS&E documents to extend 3rd Avenue NE from NE 147 Street for maintenance access to the stormwater detention vault located on the Portal North parcel.

- a. Prepare existing ground digital terrain model of 3rd Avenue NE utilizing existing survey data.
- b. Prepare proposed digital surfaces for final grade of 3rd Avenue NE.
- c. Prepare horizontal and vertical roadway geometrics.
- d. Prepare design of MSE retaining wall on fill slope
- e. Specifications will be prepared
- f. Cost estimate at 30% and 90% design stage will be prepared
- g. Prepare 30% and 90% plans
- h. Integrate 3rd Avenue into Ad Ready PS&E
- i. Prepare stormwater design variances for detention and water quality requirements.

DELIVERABLES:

- 30% Plans
- 90% Plans, specifications and cost estimate