CLACKAMAS COUNTY

DAN JOHNSON
DIRECTOR

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD OREGON CITY, OR 97045

March 24, 2022

Board of County Commissioners
Clackamas County

Members of the Board:

Approval of an Intergovernmental Agreement between Clackamas County and the City of Happy Valley related to the 172nd Ave Improvement Project

Purpose/Outcomes	Using TSDC Joint District funds and local funds from the City of Happy Valley, this agreement allows Clackamas County to proceed with design and construction of street widening and intersection improvements along SE 172nd Ave between SE Misty Dr and SE Maple Hill Ln. The proposed improvements include constructing additional travel lanes, bike lanes, and sidewalks along 172nd Ave and traffic signals or roundabouts at major intersections.
Dollar Amount and Fiscal Impact	Overall Project Cost Estimate: $53,278,800 City of Happy Valley funds: $51,936,108 Transportation System Development Charges (TSDC) Joint District funds: $1,142,900 Cash Acknowledgement funds: $199,792
Funding Source	City of Happy Valley Funds, TSDC Joint District funds, and Cash Acknowledgement funds.
Duration	Completion of the Project or December 31, 2031, whichever is sooner.
Previous Board Action	3/22/22 Discussion item at issues
Strategic Plan Alignment	• The public's increasing expectation that the transportation system will be safer and support a healthier community • The project will: a. Build a strong infrastructure, and b. Ensure safe, healthy and secure communities.
Counsel Review	Date of Counsel review: 03/09/22, NB
Procurement Review	*Was the item processed through Procurement? No. This is an IGA*
Contact Person	Jonathan Hangartner, Civil Engineer Ext. 4649

BACKGROUND:
This is a project agreement between Clackamas County and the City of Happy Valley to construct improvements along SE 172nd Ave from SE Misty Dr to SE Maple Hill Ln. The project will provide roadway widening to a 5-lane section, bicycle lanes and sidewalks, street lighting, and undergrounding of overhead utilities. Additionally, a traffic signal will be installed the intersection of SE Troge Rd, a roundabout at the intersection of SE Hemrich Rd, a roundabout at the intersection of the future 190th Connector, and the existing roundabout at Scouters Mountain Rd will be expanded to a multi-lane roundabout.
The project's total estimated cost is $53,278,800. The City of Happy Valley Fund is expected to contribute up to $51,936,108 and the County will contribute former City/County Transportation

System Development Charges Joint District Funds in the amount of $1,142,900 and Cash Acknowledgement Funds (private development fee in-lieu) in the amount up to $199,792. No County General Funds are being used for this project. The design of the project is anticipated to be completed by April of 2025.

RECOMMENDATION:
Staff respectfully recommends that the Board of County Commissioners approve the attached Intergovernmental Agreement between Clackamas County and the City of Happy Valley related to the 172nd Ave Improvement Project as listed in the agreement.

Respectfully submitted,

Jonathan Hangartner

Jonathan Hangartner,
Civil Engineer

INTERGOVERNMENTAL AGREEMENT BETWEEN THE CITY OF HAPPY VALLEY AND CLACKAMAS COUNTY RELATING TO THE 172ND AVE. IMPROVEMENT PROJECT

THIS INTERGOVERNMENTAL AGREEMENT ("Agreement") is entered into between the City of Happy Valley, an Oregon municipal corporation ("City"), and Clackamas County, a political subdivision of the state of Oregon ("County"), collectively referred to as the "Parties" and each a "Party."

RECITALS

A. This Agreement is entered into pursuant to ORS 190.010, which confers authority on local governments to enter into agreements for the performance of any and all functions and activities that a party to the agreements, its officers or agencies have authority to perform.

B. The Parties plan to design improvements within the 172nd Ave. transportation corridor. The 172nd Ave. Project (the "Project") is proposed to be a five-lane arterial and will include the work identified in **Exhibit B** to this Agreement, which lies within the Misty Drive/Vogel Road to through the "190th Connector Road" two-lane roundabout and tapering back into the existing 172nd Ave. public right-of-way to the north as identified in **Exhibit A** to this Agreement (the "Project Area").

C. The Parties desire to provide the basis for a cooperative working relationship for the purpose of providing design and right of way acquisition services as part of the Project.

D. The Parties have determined it is in the public interest to cooperate in the planning and execution of the Project.

AGREEMENT

Now, therefore, based on the foregoing, the Parties agree as follows:

1. **Term.** This Agreement becomes effective as of the last date of signature by a Party indicated below. Unless terminated earlier pursuant to Section 5 of this Agreement, this Agreement will expire upon the completion of each and every obligation of the Parties set forth in this Agreement, or by December 31, 2031, whichever is sooner.

2. **City Obligations.**

   a. Scope of Work. The City agrees to the scope of work set out in **Exhibit B**. Prior to bid, the City will approve the plans, estimates, and specifications for materials and workmanship to be used in the County's procurement materials and contracts for work associated with the Project. The City's approval shall not be unreasonably withheld.

   b. Project Schedule. The City agrees to the proposed project schedule set out in **Exhibit C**. The City acknowledges that the attached schedule is an estimate and may change due to conditions outside of the reasonable control of the Parties. Except as otherwise provided in this Agreement,

neither Party may be held liable for failure to adhere to the attached schedule where that Party proceeds with reasonable diligence and in good faith to advance the Project.

c. Management of Project. The City will co-manage the Project with the County. The City's project manager (the "City PM") is identified below in Section 7 of this Agreement. The City PM will work to resolve any dispute with the County PM (defined below).

d. Project Coordination. The City PM shall coordinate in the design, bidding, and public right-of-way acquisition of the project, and assist the County when necessary to provide timely responses to requests for information from the design team, bidders and contractors. The City will have equal input in the selection of the design consultant. The City will provide timely engineering review, comments, information or approval, as required to the County or to the County's consultant for purposes of fulfilling the purpose of this Agreement.

e. Project Management, Design and Right of way Acquisition. As provided in Section 3(e), the costs associated with County staff time shall be funded from the remaining balance of the former City/County TSDC Joint District Fund. The City shall be responsible for all Project costs, as set forth in **Exhibit D** to this Agreement, not funded from or exceeding the remaining balance of the former City/County TSDC Joint District Fund.

f. Payment Obligations. Except as provided in Section 3(e), the City will be responsible for all costs associated with the Project and the work identified in **Exhibit B**, and **Exhibit D** to this Agreement. The City agrees as consideration for the work listed in **Exhibit B** to pay the County for those design and public right-of-way acquisition, phase services as described in **Exhibit B** through completion of the Project. The City further agrees:

i. To reimburse the County for administrative and staff costs the County incurs in the administration of the Project in excess of the amount specifically set forth in Section 3(e).

ii. To pay the County within 30 days of the receipt of the County's invoice to the City.

3. County Obligations.

a. Scope of Work. The County will contract for the scope of work set out in **Exhibit B**. The County will have equal input in the selection of the design consultant. The County will coordinate design work, permitting and land use entitlements. The County will review and be the approving authority for any design exceptions for the project including any ADA design exceptions. The County will acquire the right of way necessary to

complete the project. Prior to bid, the County will provide the City with plans, estimates, and specifications for materials and workmanship to be used in the County's procurement materials and contracts for work associated with the Project.

b. Project Schedule. The County agrees to the proposed Project schedule set forth in **Exhibit C**. The County acknowledges that the attached schedule is an estimate and may change due to conditions outside of the reasonable control of the Parties. Except as otherwise provided in this Agreement, neither Party may be held liable for failure to adhere to the attached schedule where that Party proceeds with reasonable diligence and in good faith to advance the Project.

c. Management of the Project. The County will co-manage the Project with the City. The County's project manager (the "County PM") is identified below in Section 7 of this Agreement. The County will manage the Project, as set forth in **Exhibit B** of this Agreement, and will timely administer the associated engineering, design and construction contracts. The County will manage the right-of-way process and utilize County templates and processes in acquiring rights of way for the project.

The County is responsible for the procurement of consultants and contractors under ORS 279C as necessary for the design and right of way activities described in this Agreement, including but not limited to architects, engineers, surveyors and other consultants, subject to coordination with the City under Section 2.d above.

d. Project Cost. The County shall be responsible to contribute administrative and staff time to the Project. The value of the County's contribution shall be funded via the remainder monies in the former City/County TSDC Joint District Fund. For purposes of calculating the value of the County's contribution under this section, the County shall keep accurate records of administrative and staff time spent in connection with the Project and will assign a value based on the actual employee costs, including benefits and overhead. If the value of the County's contribution of staff time exceeds the County's estimated staff costs for the project of the remainder TSDC Joint District Fund, the overage shall be funded from the City. The City shall be responsible for all Project costs, as set forth in **Exhibit D** to this Agreement, not funded from the remaining balance of the former City/County TSDC Joint District Fund.

e. Invoice Obligations. The County will invoice the City monthly. With the exception of the administrative and staff costs described in Section 3(e), the County shall not invoice the City, and the City shall not be liable for, amounts in excess of that which is listed in **Exhibit D**, unless the Parties amend this Agreement by modifying the scope of work set out in **Exhibit B**.

f. Jurisdiction. 172nd Ave. is a County Road, as defined in ORS 368, and is currently under the jurisdiction of the County. Jurisdiction of 172nd Ave. shall not transfer to the City as a result of this Project.

4. **Attachments.** The Parties understand and agree that **Exhibit A**, **Exhibit B**, **Exhibit C** and **Exhibit D** are attached and incorporated into this Agreement as if fully set forth herein.

5. **Dispute Resolution and Termination.**

a. In the event of a dispute arising under the terms of this Agreement that is not resolved by the City PM and the County PM, the City of Happy Valley Economic and Community Development Director and County Department of Transportation Assistant Director shall attempt to resolve the dispute. In the event this does not resolve the dispute, the City of Happy Valley City Manager and County Department of Transportation Director shall attempt to resolve the dispute. In the event the dispute cannot be resolved, either Party may pursue any legal or equitable claims to which that Party may be entitled.

b. During the design and right of way acquisition period covered by this Agreement, either the City or the County may terminate the Agreement by giving thirty (30) days written notice to the other Party, or at such later date as may be established by the terminating Party. The Parties may terminate this Agreement at any time by mutual written agreement.

c. Either the City or the County may terminate this Agreement in the event of a breach of the Agreement by the other. Prior to such termination however, the Party seeking the termination shall give the other Party written notice of the breach and of the Party's desire to mutually terminate. If the breaching Party has not entirely cured the breach within ten (10) days of deemed or actual receipt of the notice, then the non-breaching Party may terminate the Agreement at any time thereafter by giving written notice of termination to the other Party stating the effective date of the termination; provided however, if the default is of such a nature that it cannot be completely remedied within such 10-day period, this provision shall be complied with if the breaching Party begins correction of the default within the 10-day period and thereafter proceeds with reasonable diligence and in good faith to effect the remedy as soon as practicable.

d. The City or the County shall not be deemed to have waived any breach of this Agreement by the other Party except by an express waiver in writing. An express written waiver as to one breach shall not be deemed a waiver of any other breach not expressly identified, even though the other breach is of the same nature as that waived.

e. Nothing herein shall prevent the Parties from meeting to mutually discuss the Project.

f. Any termination of this Agreement shall not prejudice any rights or obligations accrued to the Parties prior to termination.

6. Indemnification.

a. Subject to the limits of the Oregon Constitution and the Oregon Tort Claims Act or successor statute, the County agrees to indemnify, save harmless and defend the City, its officers, elected officials, agents and employees from and against all costs, losses, damages, claims or actions and all expenses incidental to the investigation and defense thereof (including legal and other professional fees) arising out of or based upon damages or injuries to person or property caused by the negligent or willful acts of the County or its officers, elected officials, owners, employees, agents or its subcontractors or anyone over which the County has a right to control.

b. Subject to the limits of the Oregon Constitution and the Oregon Tort Claims Act or successor statute, the City agrees to indemnify, save harmless and defend the County, its officers, elected officials, agents and employees from and against all costs, losses, damages, claims or actions and all expenses incidental to the investigation and defense thereof (including legal and other professional fees) arising out of or based upon damages or injuries to persons or property caused by the negligent or willful acts of the City or its officers, elected officials, owners, employees, agents, or its subcontractors or anyone over which the City has a right to control.

7. Party Contacts.

a. Sally Curran or her designee will act as project manager for the City for the Project.

Contact Information:
Sally Curran
City of Happy Valley
16000 SE Misty Drive
Happy Valley, OR 97086
(503) 783-3814
sallyc@happyvalleyor.gov

b. Joel Howie or his designee will act as project manager for County for the Project.

Contact Information:
Joel Howie
Clackamas County
150 Beavercreek Road
Oregon City OR 97045
(503) 742-4658

JHowie@clackamas.us

c. Either Party may change the Party contact information, or the invoice or payment addresses by giving prior written notice thereof to the other Party at its then current notice address.

8. General Provisions.

a. **Oregon Law and Forum.** This agreement shall be construed according to the laws of the State of Oregon, without giving effect to the conflict of law provisions thereof.

b. **Applicable Law.** The Parties hereto agree to comply in all ways with applicable local, state and federal ordinances, statutes, laws and regulations.

c. **Non-Exclusive Rights and Remedies.** Except as otherwise provided herein, the rights and remedies expressly afforded under the provisions of this Agreement shall not be deemed exclusive and shall be in addition to and cumulative with any and all rights and remedies otherwise available at law or in equity. The exercise by either Party of any one or more of such remedies shall not preclude the exercise by it, at the same or different times, of any other remedies for the same default or breach, or for any other default or breach, by the other Party.

d. **Record and Fiscal Control System.** All payroll and financial records pertaining in whole or in part to this Agreement shall be clearly identified and readily accessible. Such records and documents should be retained for a period of three (3) years after receipt of final payment under this Agreement; provided that any records and documents that are the subject of audit findings shall be retained for a longer time until such audit findings are resolved.

e. **Access to Records.** The Parties acknowledge and agree that each Party shall have access to each Party's books, documents, papers, and records which are directly pertinent to this Agreement for the purpose of making audit, examination, excerpts, and transcripts for a period of three (3) years after final payment. Copies of applicable records shall be made available upon request. The cost of such inspection shall be borne by the inspecting Party.

f. **Debt Limitation.** This Agreement is expressly subject to the debt limitation of Oregon counties set forth in Article XI, Section 10, of the Oregon Constitution, and is contingent upon funds being appropriated. Any provisions herein which would conflict with law are deemed inoperative to that extent.

g. **Severability.** If any provision of this Agreement is found to be unconstitutional, illegal or unenforceable, this Agreement nevertheless

shall remain in full force and effect and the offending provision shall be stricken. The court or other authorized body finding such provision unconstitutional, illegal or unenforceable shall construe this Agreement without such provision to give effect to the maximum extent possible the intentions of the Parties.

h. **Integration, Amendment and Waiver.** Except as otherwise set forth herein, this Agreement constitutes the entire agreement between the Parties on the matter of the Project. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. No waiver, consent, modification or change of terms of this Agreement shall bind either Party unless in writing and signed by both Parties and all necessary approvals have been obtained. Such waiver, consent, modification or change, if made, shall be effective only in the specific instance and for the specific purpose given. The failure of either Party to enforce any provision of this Agreement shall not constitute a waiver by such Party of that or any other provision.

i. **Interpretation.** The titles of the sections of this Agreement are inserted for convenience of reference only and shall be disregarded in construing or interpreting any of its provisions.

j. **Independent Contractor.** Each of the Parties hereto shall be deemed an independent contractor for purposes of this Agreement. No representative, agent, employee or contractor of one Party shall be deemed to be a representative, agent, employee or contractor of the other Party for any purpose, except to the extent specifically provided herein. Nothing herein is intended, nor shall it be construed, to create between the Parties any relationship of principal and agent, partnership, joint venture or any similar relationship, and each Party hereby specifically disclaims any such relationship.

k. **No Third-Party Beneficiary.** Neither Party intends that this Agreement benefit, or create any right or cause of action in, or on behalf of, any person or entity other than the County or the City.

l. **No Assignment.** No party shall have the right to assign its interest in this Agreement (or any portion thereof) without the prior written consent of the other Party, which consent may be withheld for any reason. The benefits conferred by this Agreement, and the obligations assumed hereunder, shall inure to the benefit of and bind the successors of the Parties.

m. **Nonwaiver of Government Rights.** Subject to the terms and conditions of this Agreement, by making this Agreement, the County is specifically not obligating itself, or any other governmental entity with respect to any discretionary governmental action relating to the Project or any associated development, operation and use of the improvements to be constructed on the Project Area, including, but not limited to,

condemnation, comprehensive planning, rezoning, variances, environmental clearances or any other governmental approvals that are or may be required.

n. **Counterparts.** This Agreement may be executed in any number of counterparts (electronic, facsimile, or otherwise) all of which when taken together shall constitute one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart. Each copy of this Agreement so executed shall constitute an original.

o. **Authority.** Each Party represents that it has the authority to enter into this Agreement on its behalf and the individual signatory for a Party represents that it has been authorized by that Party to execute and deliver this Agreement.

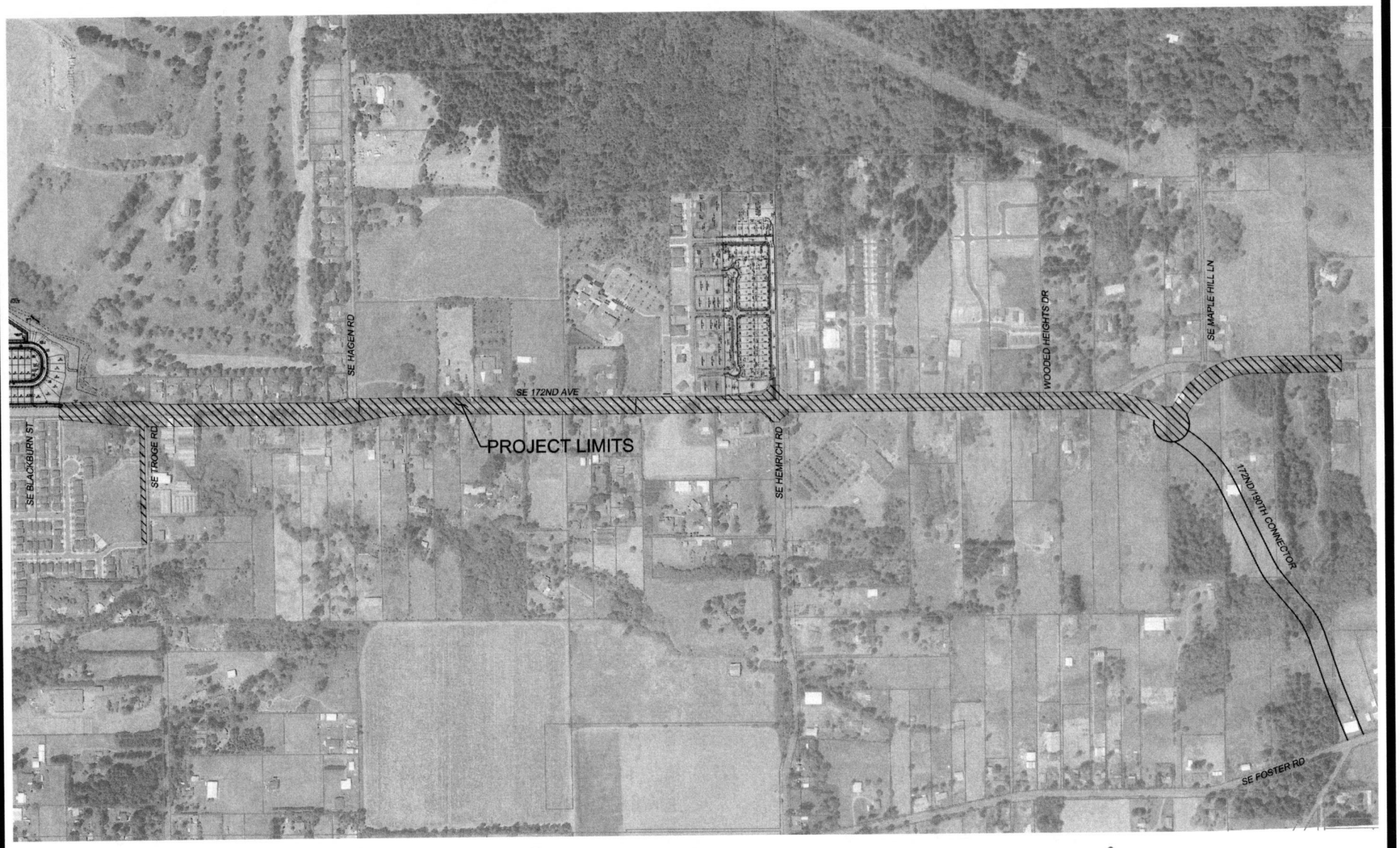
p. **Necessary Acts.** Each Party shall execute and deliver to the others all such further instruments and documents as may be reasonably necessary to carry out this Agreement.

IN WITNESS HEREOF, the Parties have executed this Agreement by the date set forth opposite their names below.

Clackamas County	City of Happy Valley
Tootie Smith Chair, Board of County Commissioners	Jason A. Tuck, ICMA City Manager
Date	Date 3/1/2022

EXHIBIT A - PROJECT AREA

172ND AVE. IMPROVEMENT PROJECT



CLACKAMAS COUNTY

EXHIBIT B

SCOPE OF WORK

3.1. INTRODUCTION

The City of Happy Valley, hereafter referenced as "City" and Clackamas County Department of Transportation and Development ("DTD"), hereafter referenced as "County", are seeking the services of a qualified consultant to provide project management, survey, environmental studies and permitting services, stormwater and hydraulic services, utility coordination, geotechnical, traffic engineering, public outreach, and the development of both preliminary design criteria and final PS&E (Plans, Specifications and Estimates) design, right-of-way services, and bid assistance for the "172nd Ave. Project".

BACKGROUND

SE 172nd Ave. is identified as a major arterial roadway and noted as a priority improvement project in the City's and County's transportation system plans (TSP's) to widen to five lanes between Sunnyside Road and Maple Hill Lane. Maple Hill Lane is the approximate location of a future connector between 172nd Ave. and Foster Road. There are parts of 172nd Ave that are already constructed to five lanes between Sunnyside Road and Blackburn Road.

PROJECT UNDERSTANDING

This project will design and identify public right-of-way acquisition of 172nd Ave. between Misty Drive/Vogel Road and Maple Hill Lane by adding two travel lanes in each direction, center turn lane (as applicable), bike lanes/cycle track, sidewalks, planter strips, culverts/bridges, roundabouts, street lighting, undergrounding of utilities, and ADA ramp improvements as necessary at intersection roads. In addition, the project will include half-street improvements on the south side Troge Road from 172nd Ave. to Olympic Street.

Lane Configuration and Geometry:
Generally, 4-lane (11 to 12-ft wide each) cross section with 14-ft wide center planter median with turn lanes at some intersections, 6-8-ft. wide bicycle lanes/cycle track, planter strips, and 7 ft.-wide sidewalks. Centerline geometry within project corridor to be analyzed for conformance with AASHTO design standards.

Stormwater Management:
Best Management Practices (BMP's) utilized per City of Happy Valley design standards or Water Environment Standards as adopted by Clackamas County Department of Transportation and Development.

Lighting:
New street lighting along the corridor – as applicable where adjacent frontage improvements have not already installed.

Franchise Utilities:
Relocate and underground utilities.

Natural Resources:
Environmental permits will be required related to Rock Creek culvert replacement at Troge Rd. /172nd Ave. Additional environmental permit requirements will be determined during design.

Landscaping:
Bark mulch or grass seed shall be shown to match existing landscaping beyond improvements. Low maintenance water quality grass mixes in water quality facilities, although trees and shrubs may be needed for stormwater management facilities. Trees in the center planter median.

Public Involvement and Outreach:
Public involvement will consist of providing information for County's and City's website and attending community open houses, and in-person meetings with adjacent property owners. It is anticipated a virtual open house will be required in addition to an in-person open house meeting.

Right-of-Way (ROW):
Assumed 73 files for ROW and easement acquisitions shall be required; 10 parcels are assumed to be valued less than $10k and utilize ADJCs; 63 are assumed to require appraisals.

SPECIFIC SCOPE OF SERVICES

3.2. SUMMARY OF WORK

Project management, survey, environmental and stormwater/hydraulic services, utility coordination, geotechnical, traffic engineering, public outreach, and the development of both preliminary design criteria and final PS&E (Plans, Specifications and Estimates) design, right-of-way services, and bid assistance up through bid award for this project based on the scope of services described herein.

Task 1.0 Project Management and Project Coordination

Task 2.0 Survey, Field Investigations and Mapping

Task 3.0 Environmental Reconnaissance and Permitting

Task 4.0 Stormwater / Hydraulics Related Services

Task 5.0 Utility Coordination

Task 6.0 Geotechnical and Geologic Services

Task 7.0 Traffic Engineering and Management

Task 8.0 Preliminary Design (30%)

Task 9.0 Public Involvement/Outreach

Task 10.0 Final Design (60%, 90%, and 100% Bid Ready)

Task 11.0 Right-of-Way Research, Descriptions, Appraisals and Acquisitions

Task 12.0 Bid and Award Assistance

The duration of the design of this project is assumed to be from June 2022 through January 2025 for the completion of design and right-of-way tasks. Bidding will occur between January and April 2025. This scope of services does not include construction engineering or construction support but may be added at the discretion of the County and City towards the end of the design phase through a contract amendment.

Task 1.0 Project Management and Project Coordination

1.1 Project Management

Consultant shall:

- Document action items from meetings, comments, and responses in a master comment/response log.
- Document risks, opportunities, and task decisions in individual deliverables such as meeting minutes and memoranda included within each task.
- Prepare monthly invoices and progress reports. Consultant assumes a 42-month timeframe for the project to be designed and bid for construction.

1.2 Project Coordination

The proposed approach to project coordination during design is to hold project meetings with key project team members and representatives from the County and City. The Consultant Project

Manager shall direct all meetings and provide direction to the rest of the team as the project progresses. These meetings shall have a specific agenda with a predefined objective and outcome to address and resolve project issues as they are encountered. Agendas shall be distributed a minimum of 3 days in advance of the meeting.

- It is assumed in-person or zoom coordination meetings (2 hours each) shall be held during the design phase of the project (42-month time frame for a total of up to 8 meetings). Meetings to be held at County office or via Zoom. Up to 4 consultant personnel are expected to attend each meeting. Consultant shall prepare agenda in advance of deliverable review and other meetings as needed and provide minutes after each meeting including action items.
- A total of up to 8 telephone conference calls with the Project Team (1 hour each). Up to 3 consultant personnel are expected to phone into each meeting.
- A total of up to 72 bi-weekly telephone check-in meetings with the Consultant PM (1/2 hour each).
- Consultant shall prepare a project schedule at the on-set of design. Consultant shall provide an updated project schedule, as needed, with all major deliverables (30%, 60%, 90%, and 100%).

Task 1.0 Deliverables:

- *Monthly Invoices and Progress Reports*
- *Project Schedule with Periodic Updates*
- *Meeting Agendas and Minutes for In-Person Coordination Meetings*

Task 2.0 Survey, Field Investigations and Mapping

***2.1* Topographic Survey**

Consultant shall complete a topographic survey in English units (International feet) for the project area.

- Features to be shown include trees six inches or more in diameter (dbh), ornamental trees, utilities, utility poles, overhead wires, fences, area lights, culverts, driveways (including width and length), walks, crown line of streets, edge of pavement, ditches, traffic and other permanent signs, and structures as accessible.
- Underground features such as utility line sizes, rim elevations, invert elevations, fuel tanks, wells, septic tanks, and drain fields shall be shown as indicated by surface features and other information including as-built drawings and utility company data. Consultant assumes County shall vacuum clean all structures prior to survey field work.
- Existing striping shall be located where needed to design the project striping.
- All significant features within 25 feet of the existing ROW (or up to the face of building, whichever is closer) shall be tied.
- Photos of site conditions shall also be taken.
- The Horizontal Datum to be NAD 83(2011) epoch 2010.00 PDX Zone, utilizing the Oregon Real Time Network. The Horizontal Network shall be resolved using differential Real Time Kinematic (RTK) GPS observations along with terrestrial ground measurements. The Vertical Datum shall be NAVD 88. Closed loop differential level measurements shall run through all of the on-site Control.
- Collect river cross sections as required to perform HEC-RAS modeling of Rock Creek at 172nd Ave. and Troge Rd crossings.

The project limits shall include:

- 172nd Ave. at Misty Drive/Vogel Road to 500 feet past where the northern extension of 172nd Ave. would reconnect with the existing 172nd Ave. public right-of-way after travelling through the "190th Connector Road" two-lane roundabout as illustrated within the 172nd Ave./190th Drive Corridor Management Plan.
- 500 feet down side streets including Tristin Ave., Crossroads Ave., Katmai St, Cuyahoga Way, Blackburn St, Troge Rd.(to Olympic St.), Hagen Rd., Rob's Way, Coyote Way, Hemrich Rd., Rhododendron St., Huckleberry St., and Wooded Heights Dr.

The field topographic data shall be incorporated into a topographic survey base map and digital terrain model utilizing AutoCAD Civil 3D 2019 or newer.

2.2 Horizontal Control, Monument Recovery, and Pre-Construction Record-of-Survey

Consultant shall:

Retrace all existing ROW within the project corridor. Consultant shall search survey records on file with Clackamas County, to reestablish existing centerlines of each ROW.

Research deeds and Record Surveys, including but not limited to property surveys, county road surveys, original county road resolutions, public land corner surveys, and Donation Land Claim (DLC) surveys.

Keep copies of the research data collected, including but not limited to surveys, deeds, assessors' maps, county road maps, government corner surveys, and horizontal and vertical control data sheets Consultant's Project file. Consultant shall provide project-related data and records to the County at the end of the project.

Survey found property corners, property line fences and the existing edges of pavement to establish existing road centerlines and rights-of-way. Consultant shall tie at least one (1) Public Land Survey System (PLSS) corner as necessary to show a relationship to the road centerlines. Consultant shall provide at least one (1) PLSS corner tie for ROW descriptions and the filing of a Record Survey.

Show adjacent property lines and existing ROW on the Project Base Map using Consultant's ROW retracement. Consultant shall prepare and file a Pre-Construction Record of Survey conforming to applicable County standards with the County Surveyor's office to perpetuate monument locations as required under ORS 209.155. Scale for survey map shall be 1"=40', or as approved.

Task 2.0 Deliverables:

- *Base maps drawings in AutoCAD and PDF*
- *Pre-Construction Record of Survey*

Task 3.0 Environmental Reconnaissance and Permitting

The County will obtain Rights of Entry (ROE) for field reconnaissance work. The Consultant will provide a list of properties requiring ROEs for research disciplines no less than six (6) weeks before such ROEs are required to perform work on private parcels. Consultant shall provide County with an exhibit map for each property showing the approximate location of any invasive test sites on the property, e.g. anything more than minor shovel sampling, test pits, etc.

The following tasks will be completed by the Consultant to identify issues and ensure compliance with the regulating agencies:

3.1 Wetland and Waters Delineation

Consultant shall conduct a site visit of the project's Area of Potential Impact (API) and delineate wetlands, streams, or ditches within the API. The wetland and waters delineation will be conducted in accordance with the routine on-site wetland determination methodology described in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual: Wetlands Research Program Technical Report Y-87-1, supplemented by the Western Mountain, Valleys, and Coast Regional Supplement, the Code of Federal Register (CFR) Title 33, Part 329.11, and Oregon Administrative Rules (OAR) Chapter 141, Division 85, Section 0515.
In accordance with the USACE Wetland Delineation Manual, Consultant shall:

- Obtain representative soil samples to assess hydric soil conditions and wetland hydrology.
- Determine dominant vegetation for each cover class at these sampling locations.
- Provide flags on site demonstrating wetland and waters feature boundaries to assist surveyors in mapping wetlands.

Consultant shall prepare a draft and final wetland delineation report in accordance with Oregon Department of State Lands (DSL) standards. Consultant shall submit the draft wetland delineation report to the County for review. Consultant shall submit the final, County-reviewed report to the DSL electronically for concurrence. Consultant shall address questions from DSL during concurrence review regarding the wetland delineation report to facilitate DSL concurrence of the wetland delineation.

Assumptions

- The City, County and Consultant will agree to a final project API prior to completion of the wetland delineation field work. Consultant will provide draft and final API maps.
- The County will coordinate property access and entry approval for completion of the wetland delineation.
- Wetland/waters delineation boundary flag locations will be surveyed by a Professional Land Surveyor.
- CADD, Microstation, or GIS data provided to Consultant engineer for surveyed boundaries and sample plot locations will include projection, units (inches, feet, meters, etc.), and the coordinate system.
- The Ordinary High-Water Mark (OHWM) of waters/ditches within the API will be delineated based on field indicators; a hydrologic analysis of stream gage data is not included in this task. No groundwater monitoring or analysis is included in this task.
- The County will pay the DSL wetland delineation report review fee.

3.2 Natural Resource Assessment and Report

Consultant shall complete a Sensitive Area Natural Resource Assessment to demonstrate the project's compliance with the Clackamas County Code (Code) Section 4.3. Consultant shall conduct a field investigation to collect data on the sensitive areas present in the API, as described in the Code 4.3.3: Scope of Assessment. Consultant's assessment of sensitive areas will include a delineation of the OHWM of stream features in the API, per Code 4.3.4.2.2 (top of bank of the defined channel, or the surface elevation of a 2-year, 24-hour storm event). Consultant shall delineate wetland boundaries

within the API per Task 3.1. Consultant shall provide flags on site demonstrating wetland and waters feature boundaries to assist surveyors in mapping sensitive areas. Consultant will also determine the existing sensitive area Buffer condition. The Buffer condition assessment will include:

- Identification and characterization of the plant community type(s) (Code 4.3.4.4.1).
- Collection of representative sample points to capture vegetation characteristics including native, invasive, and noxious species (Code 4.3.4.4.2, 4.3.4.4.3, and 4.3.4.4.4).
- A base map depicting the sensitive areas, Buffers, and data collected within the Buffers (Code 4.3.4.4.5).

Consultant shall utilize GPS-enabled handheld digital tablets to collect the Buffer condition data while on-site. Results of the Natural Resource Assessment will be documented in the Natural Resources Assessment report.
Consultant shall prepare a Natural Resources Assessment Report that will include the following to satisfy Code 4.3.4.5:

- Documentation of sensitive area(s) located in the API and within 200 feet on adjacent properties.
- Descriptions of plant communities.
- Data assessment forms from the wetland and water delineation and Buffer analysis.
- Base map depicting the results of the field investigation.

Consultant shall also prepare the Clackamas County Sensitive Areas Certification Form that will be submitted to the County along with the Natural Resources Assessment report. Consultant shall prepare a wetland and stream Buffer variance application due to expected unavoidable Buffer impacts resulting from the project. The wetland and stream buffer variance application shall be prepared to satisfy Code 4.4.

Assumptions

- The Natural Resource Assessment will be conducted by two Consultant biologists over the course of one day. No other sites visits are included in this task.
- Prior to completing this task, the County will attempt to gain permission for Consultant biologists to access 200 feet of properties adjacent to the API to complete assessment per County code. If access is denied by adjacent landowners, Consultant biologists will apply off-site assessment methodology to those areas (e.g. visual observation, reliance on mapped resources, etc.).
- Consultant shall submit the final Natural Resource Assessment report, Sensitive Areas Certification Form, and Wetland and Stream Buffer Variance Application to County planning staff.
- The County will pay fees associated with submittal of Natural Resource Assessment report.
- Any required Buffer enhancement and/or mitigation will be satisfied through County purchase of environmental mitigation bank credits, in-lieu-fee, payment in-lieu, or on-site within the API. The project will not require off-site permittee-responsible Buffer enhancement or mitigation.

3.3 Stream and Wetland Function Assessments

Consultant shall complete a Stream Function Assessment Methodology (SFAM) assessment of Rock Creek at 172nd Ave. and Troge Rd. within the API to quantify lost stream functions and values if project impacts exceed 0.5 acre of permanent wetland impact and/or the project cannot meet the DSL's criteria for a Transportation-Related Structures General Permit. Consultant shall complete all required office based SFAM work prior to the site assessments. Consultant shall collect all required field data for the SFAM assessments in required DSL format during a two-day site visit for two Consultant staff. If required, Consultant shall post-process all SFAM field data for inclusion in the Joint Permit Application (JPA) for the project (Task 3.4).

Assumptions

- If required, stream functional assessments will be conducted by two Consultant biologists over the course of two days. No other site visits or meetings are included in this task.

3.4 Joint Permit Application (JPA)

Consultant will prepare a draft and final JPA to apply for a USACE Clean Water Act Section 404 Nationwide Permit (NWP) and for a DSL General Permit (GP) in accordance with requirements set forth in OAR 141-085-0025. If project impacts to wetlands and waters of the U.S. and State exceed NWP and/or GP thresholds, the JPA will be used to obtain an Individual Permit (IP) from the respective agency requiring an IP.

Clean Water Act Section 401 certification from the Oregon Department of Environmental Quality (DEQ) will be required for the project as pollutant-generating impervious surfaces will be increased a result of project implementation. The 401 certification will be facilitated by Consultant's submittal of the JPA, and a Stormwater Management Plan prepared by Consultant, in DEQ format to DEQ for review and approval.

Preparation of the JPA may include correspondence with regulatory agencies in the form of telephone calls, letters, and memorandums to document permit needs. Consultant will:

- Prepare brief narratives and descriptions on project purpose and need, potential impacts, and project alternatives using information provided by Consultant and County, as necessary to complete the JPA.
- Provide pre-submittal coordination with representatives of the USACE and DSL to confirm permitting requirements and application procedures. This coordination will include pre-application correspondence.
- Prepare all necessary non-engineering drawings, maps, and photographs for inclusion in the JPA.
- Evaluate potential wetland/waters impacts and methods for avoidance or minimization measures.
- Respond to questions or comments raised by the agencies during their review of the JPA. This task may include correspondence and clarification of the JPA and related tasks as necessary to clarify regulatory agency concerns and to facilitate the issuance of USACE's and DSL's permits for the proposed project.
- Provide the draft JPA to County for review and comment, revise the draft JPA once each per review comments and prepare the final JPA for submittal to the USACE and DSL.

Assumptions

- Wetland impacts will be below 0.2-acre and will therefore not require a Principal Objective Analysis or Oregon Rapid Wetland Assessment Protocol (ORWAP) or Hydrogeomorphic functional assessment. A best professional judgement functional assessment for wetlands and

waters impacts is included in preparation of the JPA under this task. If wetland impacts exceed 0.2-acre, Task 3.3 will be authorized.

- If project impacts exceed 0.5 acre of permanent wetland impact and/or the project cannot meet the DSL's criteria for a Transportation-Related Structures General Permit, Task 3.3 will be authorized.
- Additional fieldwork beyond the wetland/water delineation effort (Task 3.1) will not be required for this task.
- Permittee-responsible wetland mitigation or plans will not be required. If necessary, permanent wetland and/or waters impact mitigation will be satisfied through County purchase of environmental mitigation bank credits, in-lieu-fee, or payment in-lieu. If on-site restoration is required for temporary wetland impacts or for any temporary waters impacts, Consultant biologist will provide a simple restoration planting list with selected species. Any formal landscape plans required for the bid package will be provided by Consultant. No monitoring of restoration activities is included.
- USACE/DSL permit conditions will not change during the application phase.
- Consultant will prepare a Stormwater Management Plan in required DEQ format and provide it to Consultant biologist for submittal to DEQ for the project 401 Certification.
- Payment of DEQ Stormwater Management Plan review will be the responsibility of the County.
- Engineering drawings, cross sections, details, impact calculations and project description support for inclusion in the JPA will be provided by Consultant.
- DSL may require a permit fee, depending on the type of authorization required, and the amount of fill or excavation to be performed in wetlands and/or waters. Payment of the DSL permit fees will be the responsibility of the County.
- If compensatory wetland/waters mitigation is addressed by use of a mitigation bank, in-lieu-fee, or payment in-lieu, the County is responsible for any payment required.
- The County will acquire signatures from all appropriate parties as required for completion of the JPA, including applicants, landowners, and local planning officials.
- Up to 16 hours of pre- and post-submittal coordination with the DSL and USACE are included in this task.
- Permit close-out inspection and reporting services will be provided under a separate contract or an amendment to this contract, if requested in the future.

3.5 SLOPES V Endangered Species Act Compliance Documentation

Steelhead of the Upper Willamette Distinct Population Segment (DPS) are known to occur in the Rock Creek within the project corridor. This DPS is listed as Threatened under the federal Endangered Species Act (ESA). The project could affect the water quality in Rock Creek as a result of project-related in-water work activities, increases in impervious surfaces and alterations to existing local drainage patterns. The receipt of a NWP from the USACE provides a federal nexus with the ESA and the regulatory need for the project to demonstrate compliance with ESA standards for avoiding or minimizing downstream effects on listed steelhead.

Consultant will determine if programmatic ESA compliance processes such as the Standard Local Operating Procedures for Endangered Species (SLOPES V) programmatic Biological Opinion can be used for project ESA compliance. If programmatic ESA compliance cannot be obtained for the project, consultant will prepare of a Biological Assessment (BA) to initiate individual consultation with the National Marine Fisheries Service (NMFS).

Assumptions

- The project will not result in impacts on federally listed wildlife or plant species.
- Use of the SLOPES V programmatic ESA compliance process will be determined shortly after the 30% design milestone.
- SLOPES V transportation project compliance standards will not change during project design and construction.
- If the project does not qualify for SLOPES V programmatic ESA compliance, preparation of a BA and individual ESA consultant with NMFS will be required.
- Coordination with NMFS will be conducted via telephone and email transmittals. A site visit or meeting with NMFS will not be required.
- Fieldwork for this task will be completed during Task 3.1.
- SLOPES V documentation will be submitted to the USACE with the project JPA. USACE will deliver the SLOPES V documentation to NMFS for review.

3.6 Oregon Fish Passage Plan – Rock Creek

Rock Creek is known to support Native Migratory Fish (NMF) per Oregon's Fish Passage Law (OARs 635-412-0005 to 625-412-0040). The replacement of the existing culverts that conveys Rock Creek under 172nd Ave. and Troge Rd. will trigger application of the Fish Passage rules. Crossing designs must therefore meet Oregon Department of Fish and Wildlife (ODFW) hydraulic or streambed simulation fish passage design criteria. Consultant will prepare a fish passage plan in ODFW format that documents post-project fish conditions and compliance with applicable fish passage criteria.

Assumptions

- Delineation of the Rock Creek Active Channel Width (ACW) and streambed sediment grain size analysis will occur during Task 3.1.
- Both culvert replacements will be designed and constructed in compliance with applicable Oregon's Fish Passage Laws.
- The crossings will not require a fish passage exemption, waiver, or mitigation. If a fish passage waiver and mitigation is required, an amendment to the Consultant contract would be required to authorize preparation of and coordination for fish passage waiver/mitigation documentation.

3.7 City/County Permits

The project may require additional local permits such as compliance with County land use code requirements in addition to compliance with section 4.3 of the County's code discussed in this SOW. Consultant shall research local permit jurisdictional requirements and clarify the development review process with County Planning staff to confirm code compliance approval requirements and timelines. Consultant shall document local permit requirements in the design memorandum at the 30% design milestone under Task 8.6 that identifies:

- potential local jurisdictional requirements
- potential County development codes or rules triggered by the project,
- the County agency that is responsible for administration of the code or rules,
- specific permitting pathways for each development review requirement triggered, and
- code compliance/permit issuance timeline for each triggered code compliance requirement.

The memorandum will be used to confirm specific local land use compliance requirements and other potential permits once preliminary design is completed.

Assumptions

- A Habitat Conservation Area Application may be required as part of this work.
- The existing Clackamas County DTD 1200-CA permit will address erosion control requirements.
- Payment of any local land use permit review fees will be the responsibility of the County.
- Consultant shall submit final local land use compliance documentation to County planning staff.

3.8 Hazardous Materials Corridor Assessment ("HMCA")

Consultant shall perform the HMCA within the Project Area of Project Impact ("API") and according to accepted environmental procedures as outlined in the Hazardous Waste Guide for Project Development (1990), by the *American Association of State Highway and Transportation Officials (AASHTO)* Special Committee on Environment, Archaeology and Historic Preservation, and the 2020 ODOT Hazardous Materials Program Procedures Guide available on the Agency website at:

https://www.oregon.gov/odot/GeoEnvironmental/Docs_GeologyGeotech/HazMat_Program_Manual.pdf

Consultant shall prepare the HMCA Report per the most recent version of the Level 1 Hazardous Materials Corridor Study report template.

Consultant shall:

- Review available federal and state environmental records for hazardous waste generators, documented leaking or permitted underground storage tanks ("USTs"), sites with known or suspected releases, landfill sites, and Superfund sites using government web-based databases or using a commercial database search report. Consultant shall use the search radii set forth in American Society for Testing and Materials ("ASTM") Standard E1527-05 for these database searches. Consultant shall review Oregon Department of Environmental Quality ("DEQ") files for all sites that could impact the Project corridor to determine the nature and extent of contamination.
- Conduct a site reconnaissance of the Project API that consists of systematically traversing the Project API and viewing adjacent properties from roadways and public access areas. Consultant shall include photographs documenting Project API observations in the HMCA Report. Consultant shall use the reconnaissance to identify potential sources of contamination that could impact the proposed Project during construction or that could result in Clackamas County acquiring contaminated property.
- Conduct historical research to assess past uses of the Project API and adjacent properties starting in 1920 and at 10-year intervals to present time. Consultant shall note data gaps in the HMCA Report. Consultant shall make recommendations for additional research if the historical resources are insufficient in describing the Project API land use history for the last 50 years. The historical research must include a review of historic aerial photographs and at least 1 or more of the following:
  - Topographic maps
  - Sanborn Fire Insurance maps
  - Historic property ownership/occupancy records
- Contact local Agency Maintenance and Engineering staff to get an accounting and records relating to prior maintenance activities that have occurred in the Project Area that may relate to hazardous materials.

- Prepare an AASHTO Initial Site Assessment Checklist according to AASHTO guidelines. Consultant shall incorporate the checklist into the HMCA Report.
- Prepare a draft and final HMCA Report to include a description of field observations, information from state and federal environmental databases, DEQ file review information, historic land use, a scaled map showing the location of all identified potential sources of contamination and sample locations and depths (as applicable), photographs, copies of historic data, copies of state and federal databases, results of any testing, and any other relevant documentation. The HMCA Report must include conclusions that identify specific sources of contamination that could impact the Project or the proposed construction work, and recommendations for further investigation or remediation.

Consultant shall prepare a draft HMCA Report for client review and comment. Consultant shall prepare a final HMCA Report based on client review comments and acceptance of the draft document.

3.9 Cultural Resource/Archaeological Survey

Consultant shall perform an alternatives analysis of the project area followed by a cultural resource/archaeological survey of the selected Area of Potential Effect (APE). The work will be directed by Consultant archaeologists and architectural historians who meet the Secretary of the Interior's Standards and Guidelines in Archaeology and Historic preservation. The cultural resource survey will be done to meet federal, state, and local compliance. The study will be designed to meet the requirements of Section 106 of the National Historic Preservation Act, in anticipation of review by the USACE. The survey will also be done to meet the guidelines of the Oregon State Department of Historic Preservation (SHPO). No buildings or structures are known to be within the APE.

Alternatives Analysis

A cultural resource review of the combined alternative alignments will consist of a review of existing information on resources, possible resources, and prior studies; and a field reconnaissance. The deliverable will be a memo to support the preliminary design efforts and selection of the preferred alternative. The review will be performed to inform the selection of a preferred alignment for the road. The review will include the following sub-tasks.

- The background review will include cultural resource survey data and records on file with the State Historic Preservation Office (SHPO) and documents in Consultant's library, including survey reports, historical maps (early USGS, regional, etc.) of the area, and General Land Office maps of the project area. The objective will be to identify recorded archaeological and historic resources and areas that have been previously surveyed for cultural resources.
- Consultant will conduct a reconnaissance by vehicle to assess the existing conditions for the alignment alternatives, and to determine if previously recorded resources may have been removed by developments over the past few years.
- For areas that have not been surveyed for archaeological or historic resources, Consultant will estimate the probability of encountering a significant resource using the statewide archaeological probability model.
- The results will be summarized in a short technical memo. The location of any 'red flags' will be noted.

Cultural Resource Survey

After an alternative is selected, a cultural resource survey will be conducted to support the JPA and assumed resultant USACE jurisdiction of the entire project. The APE is assumed to be the same as

the API. The area on each side of these roads will be surveyed within the right of way, and up to 30 feet beyond the right of way may be surveyed, if within the APE and where access is allowed.

The archaeological fieldwork will include a pedestrian survey of the APE, walking each side of the road. If needed, up to 20 shovel tests will be excavated where ground-disturbing activities are anticipated to occur, to determine if an archaeological site is present. Consultant assumes there are no historic resources (i.e., buildings, structures, sites, objects, and districts constructed at least 45 years before the date of survey) within the APE. Up to one resource may be identified in the APE.

The tasks will include the following.

- Confirmation of the APE.
- Background review of the previous studies conducted in the vicinity (largely completed under the Alternatives Analysis task).
- A systematic pedestrian archaeological survey of the APE walking each side of the road, up to 30 feet beyond the right of way edge.
- Shovel testing in places not previously impacted where intact archaeological deposits are suspected.
    - Up to 20 shovel tests may be excavated.
    - Shovel tests will be 12 inches (in) (30 centimeters [cm]) in diameter and excavated to a minimum depth of 20 in (50 cm).
    - If artifacts are encountered, SHPO archaeological site/isolate form(s) will be prepared and appended to the cultural resource technical report. It is assumed that up to one resource may be identified.
    - Artifacts will not be collected if found on the surface or if found during shovel testing on privately owned land.
    - On public land (county road right of way), shovel testing will require an archaeological excavation permit from the SHPO. Up to one permit may be obtained.
    - If artifacts are encountered, they must be collected, if found during excavations under a SHPO permit; artifacts from public land must be curated at the Oregon Museum of Natural and Cultural History; up to 20 artifacts may be collected under a SHPO excavation permit.

The deliverable will be a cultural resource report. The report will be provided in draft; comments and questions will be addressed and a final report will be prepared.

If a permit from SHPO was needed for completion of shovel testing, the report will be submitted to SHPO to meet compliance with the permit. The USACE will submit the report for review and concurrence to meet Section 106 review.

***Task 3.0 – Deliverables**:*

- *Draft and Final Wetland Delineation Report*
- *Draft and Final Natural Resource Assessment Report and Stream Buffer Variance Application*
- *Clackamas County Sensitive Areas Certification Form*
- *Draft and Final SFAM assessment documentations for County review and inclusion in the project JPA*
- *Draft and Final JPA for County review and submittal to USACE and DSL*
- *USACE 404 permit authorization/DSL Removal/Fill Authorization*
- *Draft and Final SLOPES V (or BA) documentation for County review and inclusion in the JPA*

- *Draft and Final Fish Passage Plan in ODFW format for County review and submittal to ODFW*
- *Up to two Draft and Final land use permit applications*
- *Draft and Final HMCA Report*
- *Cultural Resource/Archaeological Alternatives Technical Memo*
- *Cultural Resource Report*

Task 4.0 Stormwater / Hydraulics Related Services

***4.1* Hydraulic Site Investigation**

The purpose of this task is to identify existing information and field conditions. Consultant shall:

- Obtain the Flood Insurance Study ("FIS") report and if applicable to Rock Creek the Flood Insurance Rate Map using the Federal Emergency Management Agency ("FEMA") web site.
- Review local floodplain ordinances to determine if there are any applicable to Rock Creek within the project limits.
- Determine if applicable stream gauge records exist, and obtain them, if possible.
- Locate and obtain existing topographic maps of the tributary drainage basin.
- Visit the bridge/culvert Project site to observe site conditions, physical properties, and collect data needed to perform a thorough hydraulic study.
- Evaluate the site and determine survey data requirements for hydraulic analysis.
- Conduct a pebble count at two locations and collect 2 streambed sediment samples in the vicinity of the bridge for grain size analysis.
- Determine channel and floodplain hydraulic roughness values (document with photographs).
- Record observations with respect to the following:
    - Lateral channel stability.
    - Stream channel hydraulic roughness.
    - Aggradation or degradation of bed material.
    - Existing evidence of scour and/or erosion.
- Coordinate with County and City PM and review geotechnical report with regard to lateral stream stability and scour potential.

***4.2* Hydrologic Analysis**

The purpose of this task is to perform hydrologic analysis to determine appropriate flow rates for design of various Project elements. Consultant shall:

- Review Clackamas County specific hydrologic data sources to determine the most appropriate 2-, 10-, 25-, 50-, 100-, and 500-year design flows for the proposed Project.
- Analyze available stream gauge records to calculate flood frequency and flow duration values to support hydraulic analysis and design.

  In the absence of stream specific data, Consultant shall delineate the tributary drainage basin utilizing available topographic maps and utilize the regional regression equations described in the U.S. Geological Survey ("USGS") magnitude and frequency of floods in Western Oregon to predict design flows.

- Determine the temporary water management discharge estimates for the portion of the year when construction will take place to be used in temporary water management design recommendations and included in the technical specifications for the Project.
- Determine the fish passage high flow and fish passage low flow.

4.3 Hydraulic Analysis

The purpose of this task is to perform a variety of hydraulic analyses in support of design and provide hydraulic design recommendations related to the culvert conveying Rock Creek and associated tributaries within the project limits. Consultant shall:

- Analyze the downstream conveyance system in conformance with County and/or SLOPES Programmatic Biological Opinion guidelines.
- Simulate existing hydraulic conditions of the culvert site using a computer model to determine current water surface profiles, velocities, depths, and flow area for the various design flows.
- Provide culvert size and material recommendations for two crossings at 172nd Ave and Troge Road.

Bridge/Culvert Hydraulics

Consultant shall:

- Create a model for up to 3 alternatives to simulate proposed culvert or proposed bridge at each water way crossing to determine water surface profiles, velocities, depths, and flow area for the various design flows.
- Provide minimum bridge and culvert size and material recommendation.
- Prepare Hydraulic data table.

Scour Analysis

Consultant shall:

- Evaluate up to 3 bridge and culvert scour alternatives following the methods as described in the Federal Highway Administration ("FHWA") publication HEC-18, Evaluating Scour at Bridges, and HEC-23, Bridge Scour and Stream Instability Countermeasures.
- Review past culvert inspection reports that might include evidence of past scour problems.
- Conduct a scour analysis using results from the hydraulic analysis including, evaluation of pier scour and contraction scour.
- Coordinate with the bridge and geotechnical engineers on the design of the bridge foundation
- Provide scour countermeasure design recommendations.
- Conduct supporting design calculations (e.g. riprap size calculations).

4.4 Hydraulics Report

The purpose of this task is to summarize the findings of the hydraulic related services and document the design recommendations. Consultant shall prepare a draft version of the Hydraulics Report per County WES/City guidelines containing preliminary design recommendations for the hydraulic related services.

Consultant shall prepare a final Hydraulics Report to reflect City and County review comments and to include changes to hydraulic related design recommendations that need to be modified due to advancement of the overall Project design.

4.5 Stormwater Design Report

The purpose of this task is to provide stormwater design recommendations and document the final stormwater facility design. Consultant shall prepare documentation per County and/or SLOPES Programmatic Biological Opinion guidelines. Consultant shall:

- Prepare a concept stormwater management plan that includes options for stormwater collection and conveyance to existing and proposed systems.
- Evaluate up to two (2) alternatives and summarize findings within a memorandum. Develop a conceptual cost estimate comparison between a Low Impact Development Approaches (LIDA) facility for water quality and detention and other similar BMP alternatives.
- Stormwater framework should meet current municipal separate storm water sewer system (MS4) permit requirements

Consultant shall prepare a preliminary (prior to 60% plans) and final (with 90% plans) Stormwater Design Report to reflect County and regulatory agency review comments on stormwater facility design recommendations, changes to stormwater facility design due to advancement of the overall Project design and supporting documentation of the final stormwater facility design.

4.6 Stormwater Operation and Maintenance (O&M) Manual

The purpose of this task is to provide an Operations and Maintenance Manual documentation of all proposed stormwater management facilities so that the County has a record of the stormwater facilities that need to be as-built, operated and how to maintain them after the Project is constructed.

Consultant shall prepare up to one (1) Draft Operation and Maintenance ("O&M") Manual, documenting each stormwater BMP facility anticipated for the Project, per Chapter 4, Section 4.6.6 of the ODOT Hydraulics Manual (latest edition).

Consultant shall prepare operational plans as outlined in Technical Bulletin GE 16-01 (B) titled "Stormwater Control Facility Operation and Maintenance Plan Development Drafting Guidance".

4.7 Temporary Water Management Design

The purpose of this task is to prepare temporary water management design recommendations, special provisions, and plan for inclusion in the construction documents.

Consultant shall:

- Identify the construction activities requiring temporary water management
- Determine the timeframe for which each temporary water management effort will need to be in place (often the in-water work period)
- Summarize the requirements for temporary water management due to the chosen environmental permitting method
- Prepare a plan and special provisions for flow and sediment control of surface water and groundwater seepage during construction activities based on site conditions.

Task 4.0 Deliverables:

- *Concept Stormwater Management Plan With Cost Estimate Comparison (30%)*
- *Concept Stormwater Drainage Memorandum (30%)*
- *Preliminary Hydraulics and Stormwater Reports (prior to 60%)*
- *Final Hydraulics and Stormwater Design Reports (with 90%)*
- *Operations & Maintenance Manual (prior to 60%)*
- *Temporary water management plan and special provisions*

Task 5.0 Utility Coordination

5.1 Utility Coordination

Consultant shall initiate coordination with utilities and incorporate utility provided relocation plans into the design documents. The locations and elevations of existing utilities and options for resolving conflicts shall be investigated. This work shall include working with the County and utility companies to "pothole" crossings and other areas to identify and eliminate conflicts. It is expected that potholing shall be provided by the utility companies. Once "potholing" data is obtained and mapped, the Consultant shall incorporate the data into any plan changes.

The known utility companies and agencies with facilities in the area are as follows:

- PGE
- NW Natural
- Clackamas County DOT
- Sunrise Water Authority
- Comcast Corporation
- Ziply Fiber
- Century Link Local
- Century Link National
- Water Environment Services

It is assumed up to two additional utility (10 total) will require coordination.

Consultant shall:

- Develop a utility contact information list and email project information letters (in email format) to utility companies involved to explain the nature of the work.
- Prepare a Utility Conflict Spreadsheet and send utility conflict letters with 30% plans to the affected utility companies describing the conflicts that exist, and the required adjustment to eliminate the conflict. A spreadsheet of centerline reference points and elevations shall be provided to utility companies for use in excavating existing utilities (potholing) at points of potential conflicts. Consultant shall also provide the conflict list to an independent potholing service who shall provide quotes to the utilities and coordinate with the Project team to aid in gathering pothole data. The schedule for making the necessary adjustment ahead of the beginning of road construction shall be identified.
- Review pothole data provided by the utilities and make recommendations to the project design to minimize utility relocation.
- Prepare and send a Utility Relocation Letter of conflict with 60% plans for each utility notifying them of unavoidable conflicts with a mandatory relocation date.
- Organize and lead a group utility coordination meeting after 60% design.
- Conduct up to six coordination meetings with individual utilities.
- Provide 90% plans to each utility, perform ongoing coordination with utilities to resolve utility conflicts and finalize utility relocation requirements as appropriate.
- Provide County standard 60-day and 30-day utility notice letters (from start of construction).

***Task 5.0 Deliverables**:*

- *Utility contact list*
- *Utility Conflict Spreadsheet(s) and Letter(s)*

- *The final utility relocation plan(s) submitted to the County Project Manager (CPM) within 10 days after acceptance.*
- *Final Notice Letter(s) submitted to each utility and CPM 30 business days after submittal of 90% Plans to County.*

Task 6.0 Geotechnical and Geologic Services

The Consultant will obtain Rights of Entry (ROE) for field reconnaissance work. If needed, the Consultant will provide a list of properties requiring ROEs for research disciplines no less than six (6) weeks before such ROE's are required to perform work on private parcels. Consultant shall provide County with an exhibit map for each property showing the approximate location of any invasive test sites on the property, e.g. anything more than minor shovel sampling, test pits, etc. prior to initiating ROEs.

Consultant shall conduct geotechnical field investigations to explore the subsurface conditions of embankments, retaining wall, and traffic signal pole foundations and pavement rehabilitation and new pavement for widening areas. Consultant shall provide a Geotechnical Report summarizing and presenting the results of the investigation, analyses, and recommendations. Assessment of Material Sources and Disposal Sites is not included in these Services.

Consultant shall complete the geotechnical and geological Services in accordance with County design standards, AASHTO, and FHWA. Consultant shall summarize the findings in a Geotechnical Report. County will provide relevant historic geotechnical reports and field investigation data from its prior work for inclusion with the Project Geotechnical Report. Consultant shall perform the following subtasks for the foundation investigation.

***6.1* Site Reconnaissance, Exploration and Testing Work Plan**

Consultant shall perform site reconnaissance. The site reconnaissance must include the following. Consultant shall:

- Observe surface conditions indicative of subsurface conditions;
- Identify site constraints and staging concerns (for exploration and construction);
- Identify potential exploration locations;
- Attend meetings with County or other parties to discuss, review, and ascertain site conditions relevant to the geotechnical project work.

The site reconnaissance will facilitate understanding of the site constraints for field explorations, construction, and traffic staging. Proposed boring locations will be staked or painted on the ground.

Consultant shall perform visual pavement assessment in accordance with ODOT's Good-Fair-Poor (GFP) Pavement Condition Rating Manual and Distress Survey Manual. The primary goal shall be to identify and map areas of severely distressed existing pavement to determine the cause of the distresses and to determine potential mitigation strategies. Mapping will identify surface manifestation of weak, poor, or failing subgrade, and locations of pavement failure such as longitudinal cracking or raveling; in addition, subsurface drainage conditions shall be assessed based on surface evidence. The mapped locations shall be identified using a measuring wheel.

Consultant shall prepare an Exploration and Site Plan figure to show the proposed exploration locations and Traffic Control Plans (TCPs). The traffic control plan must be prepared by a flagging company licensed to work in the State of Oregon. The TCP must address a minor road encroachment as well as a single lane closure for activities associated with drilling exploratory borings from the

roadway. Consultant shall submit the figure and TCPs to the County for approval. Consultant shall obtain ROW permit from the County.

6.2 Field Exploration and Laboratory Testing

Consultant shall perform the geotechnical explorations and reconnaissance for pavement design and at traffic signal pole, stormwater facilities, embankments and retaining walls to evaluate subsurface conditions and develop geotechnical recommendations for the foundation designs as shown in the following table.

STRUCTURE	EST # OF BORINGS	ESTIMATED BORING DEPTH
Embankment & Retaining Walls	6	50 feet below ground surface with 10 feet of rock coring if encountered. Obtain pavement core if within pavement area.
Culvert crossings	4	40 feet below ground surface with 10 feet of rock coring if encountered. Obtain pavement core if within pavement area.
Pavement design	3	10 feet below ground surface with pavement cores.
Stormwater facilities (infiltration testing)	4	3 to 5 feet below ground surface for infiltration test.

Consultant shall perform geotechnical field explorations to determine the subsurface conditions for the express purpose of characterizing subsurface conditions within the project limits and determining the foundation and pavement design recommendations for the items listed in the table above.

Four (4) infiltration tests will be performed at two locations outside of the existing roadway prism and as part of the geotechnical borings. The infiltration tests will be performed using the Encased Falling Head method, in general accordance with Clackamas County Service District No. 1 Stormwater Standards, Appendix E. The test depth is between 3 and 5 feet bgs.

Falling Weight Deflectometer (FWD): Consultant shall perform FWD testing at 200-foot spacing in the outside wheel path of each travel lane to measure existing pavement and subgrade stiffness. The 200-foot test interval spacing will be offset by 100 feet between adjacent lines therefore a test will be performed for each 100 feet of roadway.

TEST METHOD	EST # OF TESTS	TEST LOCATION(S)
FWD tests	36	On existing 172nd Ave

Consultant shall perform exploration work in accordance with Federal, State, and Local regulations. Consultant shall perform the subsurface exploration work in conformance with the ETWP as described in Task 6.1.

Exploration tasks include following. Consultant shall:

- Obtain a drilling permit from Clackamas County;
- The permit fee will be waived;
- Locate utilities in the vicinity of the proposed borings by and through the One-Call system prior to the fieldwork;
- Drill all borings with a truck-mounted drill rig using mud-rotary drilling techniques;
- If rock is encountered above the target depth, switch to HQ-size core drilling;
- Notify the County immediately and place drill cuttings/fluids in separate drums, labeled with the boring #, depth, and date and transport drums to a location designated by the County, if contaminated soil/groundwater is encountered. The geotechnical investigation does not include any services related to environmental or hazardous materials;
- By and through the drilling subcontractor, drum and dispose of all cuttings offsite;
- The field explorations will be performed during weekdays between 8 am and 6 pm;
- Provide traffic control that will be consistent with requirements for shoulder and single lane closures;
- Temporary traffic control (rolling closures) for FWD will be required;

Consultant shall provide an engineer or geologist to supervise the field operations and log the borings. Subsurface explorations must be conducted in general accordance with American Association of State Highway Transportation Officials (AASHTO). Soil samples must be obtained at 2.5-foot to 5-foot intervals using either a standard penetration sampler or a Shelby tube sampler.

Laboratory Testing: Consultant shall conduct water contents, sieve analyses, and Atterberg limits tests on soil samples obtained from the borings to classify the soils and estimate their engineering properties. If soft soils are encountered, a consolidation and direct shear test may be performed by Consultant to assist with the engineering studies.

6.3 Geotechnical Analysis

Consultant shall perform analyses of the field and laboratory test data to develop geotechnical recommendations for embankment and retaining wall, and signal pole foundation design and construction.
The Consultant shall provide the analysis and design for the foundation in accordance with County's design standard, FHWA, AASHTO, design guidelines. Geotechnical analysis must include:

- Embankment stability;
- Internal and external stability of retaining wall structure;
- Lateral sliding, bearing resistance and settlement of retaining wall structure;
- Minimum embedment depth and footing diameter for signal pole foundation;
- Broms or LPile analysis as appropriate for drilled pier type foundation for signal pole; and
- Drainage considerations.

6.4 Geotechnical Report

Consultant shall prepare a Geotechnical Report summarizing the subsurface conditions, design, and construction recommendations. The Geotechnical Report must summarize the field observations, subsurface conditions, laboratory test data, analysis results, construction issues and geotechnical recommendations for the project. Consultant shall prepare the Geotechnical Report in accordance

with the Geotechnical Report and Documentation requirements contained in the most current version of the ODOT Geotechnical Design Manual.

Consultant shall provide special provisions relating to the foundation system. Special Provisions shall be per ODOT Standard Specifications format.

6.5 Asphalt Pavement Analysis and Report

Consultant shall conduct field investigations in Task 6.2 to explore the subsurface conditions of the existing roadway and conditions of the existing pavement, perform pavement rehabilitation analyses of the existing pavement section, perform pavement design for roadway widening sections, and provide a report which summarizes and presents the results of the investigation, analyses, and pavement recommendations. The results of pavement design for widening areas should be checked with County standard pavement section. Pavement recommendations and report will be included in Geotechnical Report, Task 6.5. A separate pavement design report will not be prepared. The pavement rehabilitation evaluation and design services shall include:

Data Review
Consultant shall review available existing information to evaluate the geologic and subsurface conditions, construction, and maintenance history of 172nd Ave. Consultant shall review available information from the following sources (as applicable and as provided by the County):

- Existing published and unpublished literature from County records;
- Previous pavement and geotechnical reports from federal, city, County, or other officials, Consultants, groups, or individuals pertinent to the project;
- As-built roadway plans (as available); and
- Maintenance records.

Pavement Analysis and Design
Consultant shall develop pavement design criteria, design parameters, and pavement sections for an acceptable pavement design to be used in this application. Pavement rehabilitation design will be provided for existing roadway. Also, pavement design recommendations will be provided for the widening sections based upon the borings located on the existing roadway. The results of pavement design for widening areas will be checked with County standard pavement section. The pavement design recommendations will use FWD and borings performed as part Task 6.2. Develop preliminary flexible pavement section recommendations for roadway widening sections with a design life of 20 years. Pavement section design will be performed in accordance with the current ODOT Pavement Design Guide, AASHTO Guide for Design of Pavement Structures, and applicable County requirements.

Assumptions:
- Life cycle cost analysis is not included.
- Portland Cement Concrete (PCC) pavement will not be included as a potential pavement option.
- Consultant will use traffic counts obtained in Task 7.1 and traffic growth rate to compute the equivalent 18-kip single axle loads (ESALs) within the project limits as required for the pavement design analysis.

***Task 6.0 Deliverables**:*

- *Exploration and Site Plan*
- *Draft and Final Geotechnical Report*

Task 7.0 Traffic Engineering and Alternatives Analysis

***7.1* Data Collection**

- Obtain the five (5) most recent years of crash data at the intersections throughout the corridor and their approaches.
- Obtain the current future traffic demand model from the County or Metro. It is assumed that if the model is required from Metro, the County will cover the cost of the model request.
- Obtain from recent projects within the study area existing turn movement counts and roadway network traffic volumes.
- Conduct or obtain weekday morning (7-9 a.m.) and evening (4-6 p.m.) peak period traffic counts to include pedestrian counts, bicycle counts, and truck percent, at the major intersections along 172nd Ave.
- Conduct 24-hour bi-directional tube count on 172nd Avenue at two locations on 172nd Ave. The tube count will be conducted for a seven (7) day period and will include hourly traffic volumes, vehicle classifications, and travel speeds.

Assumptions:

- Metro traffic demand model request cost will be covered by the County.

***7.2* Traffic Operations Analysis**

Consultant will prepare a traffic analysis to identify existing and proposed conditions. Capacity analysis will be based on current Highway Capacity Manual 6th edition ("HCM") methodology. Services will include:

- Conduct weekday AM and PM peak hour traffic analysis for existing traffic conditions at major intersections.
- Conduct weekday AM and PM peak hour traffic analysis for future conditions (approximately 20 years) based on County's TSP.
- For major intersections for future weekday AM and PM peak hour conditions, conduct a level-of-service and queuing analysis to determine delays, recommended a lane configuration, and storage length needs.
- Summarize traffic operations analysis to be incorporated into the Intersection Control Evaluation Report (see Task 7.3).

***7.3* Traffic Analysis / Intersection Control Evaluation Report**

This task will combine and summarize the work completed for Tasks 7.1 and 7.2 for all of the intersections into a Draft Traffic Analysis/ Intersection Control Evaluation Report. Consultant will incorporate agency comments and submit a Final Traffic Analysis/ Intersection Control Evaluation Report.

Task Deliverables:

- Draft Traffic Analysis / Intersection Control Evaluation Report in PDF format.
- Final Traffic Analysis / Intersection Control Evaluation Report incorporating comments from the County in PDF format.

Task 8.0 Preliminary Design (30%)

Consultant shall develop preliminary design plans generally described as follows:

8.1 **Design Criteria**

Consultant shall prepare draft and final design criteria. Design criteria shall be consistent with AASHTO's A Policy on Geometric Design of Highways and Streets; Clackamas County Transportation System Plan (TSP), and Clackamas County Roadway Standards. Consultant shall present the design criteria in a table or matrix format listing all conditions, assumptions and minimum standards for the roadway design elements of the Project. This includes the following:

- Determine design speed
- Determine sight distance considerations
- Determine cross slope, horizontal curves, and super-elevation
- Determine maximum grade, vertical curves
- Determine cross section elements:
- Number and width of travel lanes
- Shoulders
- Bikeways
- Guardrail criteria and length of need
- Retaining wall types and design parameters
- Bridge or Culvert types and design parameters
- Stream preservation/restoration criteria

8.2 Horizontal and Vertical Alignments (30% submittal)

This task shall develop alternatives to be evaluated based on the design criteria to meet the overall project needs, as well as to reach agreement on the preferred alternative.

Consultant shall:

- Analyze the existing centerline geometry along 172nd Ave. for conformance with the design criteria developed in Task 8.1. For deficient elements with more than one improvement option, assess and provide up to two options for each deficient design element for up to five deficient elements. Assess options in conjunction with widening options. Consolidate chosen options into one horizontal and vertical alignment for the 172nd Ave. corridor.
- Provide roundabout designs for the intersections of Hemrich Rd. and 172nd Ave. as well as near Wooded Heights Drive (190th Connector Rd.), per the City's TSP and the 172nd Ave./190th Drive Corridor Management Plan.
- Provide two horizontal and vertical alignment alternatives for required bridge/intersection work at the intersection of Troge Rd. and 172nd Ave.

- Collaborate with City/County staff to assist County in determining the overall preferred alternative.

8.3 Stormwater Conveyance Concept Alignment and Grade (30% submittal)

The Consultant shall develop conceptual drainage layout and profile grades for the preferred alternative. This shall validate the stormwater disposal locations and depth of the storm system. This shall also provide locations of potential utility conflicts and potholing needs. Consultant shall:

- Determine the locations of stormwater flow entering and leaving the Project right-of-way.
- Review existing conditions downstream of locations where flow is leaving the Project right-of-way for deficiencies and document observations.
- Delineate on-site drainage basins, calculate peak flow rates for design, model the proposed pipe network, and calculate hydraulic grade line to check that proper freeboard design requirements are being met.
- Check inlet capacity and inlet spacing, calculate gutter flow to check spread, and provide design recommendations for inlet locations.
- Provide design recommendations for pipe network, associated pipe sizes, pipe material recommendations, and manhole access design recommendations (i.e-spacing, location within a travel lane, etc.).
- Provide manhole diameter design recommendations based upon analysis of pipe connections at each manhole.
- Compare pipe network against known utilities in the Project area and provide design recommendations to minimize utility conflicts or to adjust existing utilities.
- Provide Stormwater Outfall design and energy dissipator design recommendations in compliance with applicable Project permits.
- Model ditches to calculate water surface elevation, depth, and velocity and provide channel lining design recommendations per HEC-15, Design of Roadside Channels with Flexible Linings.
- Identify treatment Best Management Practice ("BMP") types applicable for the site.
- Identify potential locations to site facilities within and outside the existing right-of-way.
- Estimate facility size, type and space needs at each of the potential locations.
- Evaluate constraints to siting a stormwater facility (i.e.-drainage area, adjacent grades, roadway safety, presence of existing utilities, protected resource areas, etc.)

8.4 Retaining Wall Alternatives Analysis

Consultant shall evaluate retaining wall alternatives at needed locations. Consultant shall develop up to 2 wall alternatives. Wall types to be considered include cantilever concrete, gravity block, soldier pile and lagging, and tie back retaining wall. The evaluation of each wall section will include an analysis of the wall to determine its dimensions, including footing size, wall thickness, or pile size and embedment length. The wall sections will also be analyzed for sliding, overturning, and soil bearing pressure.

Consultant shall document type, size, and location of each design alternative within the Design Memorandum including typical wall section, potential aesthetic treatments, and a construction cost.

The recommended alternative will be identified at the conclusion of the report and shown conceptually in the 30% Strip Map.

Consultant shall design retaining walls in accordance with AASHTO Bridge Design Specifications.

8.5 Construction Estimate

Consultant shall develop approximate costs early in the 30% design process for use in decision making. Consultant shall provide quantities and 30% construction cost estimate for design alternatives considered and the preferred alternative.

8.6 Design Memorandum

Consultant shall provide a 30% design memorandum summarizing the preferred alternative. The memorandum will reference the other applicable reports, memorandums, and documents supporting the preliminary design.

8.7 Design Exceptions

Consultant shall develop draft and final design exception memorandums for deviations in the design not meeting the design criteria. Consultant shall use County's template design exception form. It is assumed that up to five (5) design exceptions will be required for documentation with decisions made during the preliminary design process prior to submittal.

Task 8.0 Deliverables:

- *Draft design criteria electronically (one electronic copy in PDF form)*
- *Final design criteria electronically (one electronic copy in PDF form)*
- *30% Strip Map of Preferred Alternative (one electronic copy in PDF form)*
- *Cost Estimate (one electronic copy in PDF form and one copy in Excel form)*
- *Design Memorandum (one electronic copy in PDF form)*
- *Draft (at 30%) and Final (at 60%) Design Exceptions*

Task 9.0 Public Involvement/Outreach

The Consultant will assist the City and County's community relations specialists with preparation of documents to be distributed or made available to the general public. Tasks related to public involvement include:

- Coordinating with the City's and County's community relations specialists, City and County PMs and other relevant staff.
- Preparing up to three (3) flyers to be mailed to area businesses and residents. The County will develop the mailing list and mail the flyers.
- Providing up to three (3) information boards, utilizing content from the flyer, to be used during open house and Community Planning Organization (CPO) meetings.
- Develop a fly-thru animation showing the corridor improvements. The animation will require the following tasks:
    - 3D Development –Utilize CAD design files and any other resources to develop a project 3D model and the surrounding areas. The 3D model will contain the following objects
        - Buildings – All buildings will be generic shapes without textures. The buildings will be used as background context.

        - Vegetation – Trees, plants, and grasses will be added to the scene and closely match the current conditions and/or landscape plans for the corridor
        - Street Collateral –Add key features such as signs, streetlights, etc. to the scene.
        - Pedestrians and Bicyclists
        - Automobiles
    - Texture and Environmental Conditions–Add realistic textures and lighting to objects in the project corridor. Additionally, utilize high-resolution aerial imagery as the base ground for the project and extended areas
    - Animation –Create a storyboard that helps define the desired message from the animation. Work with the team to define a corridor fly-thru path, camera views and the different types of interactions between vehicles, pedestrians, and cyclists that need to be captured along the corridor. The animation length should be between 2 and 3 minutes long, and the video output will be in HD format (1920 x 1080).
    - Video Production –Post-process the animation to include the following
        - Title screen containing project branding, project title, and/or logos
        - Scene transitions
        - Exit screen
        - Video file format will be saved in an industry standard video file format
- Developing an online open house including:
    - Develop a webpage designed to lead the viewer through the project with the ability to jump ahead or navigate back to the start. The webpage shall be designed to allow the user to scroll from top to bottom versus using button links to other pages as this helps lead the viewer through the project versus wandering from page to page. The virtual open house page will contain the following features:
        - Title Screen – The webpage will contain a title screen containing project branding, title, and any contact information.
        - Background – This page will contain text and/or graphics to provide project background.
        - Project Design – Page containing design graphics and visual simulations.
        - Public Feedback – Viewers will be able to view the different improvement features and provide feedback by clicking on the map and entering comments and other details in a form.
        - Feedback Trends –Create a live infographic page providing summary details from public comments. This page will show the different trends based on the comments made in the map.
        - Contacts – This page will contain contact information if viewers had additional questions.
    - The Online Virtual Open House service will be created on and maintained using consultants web services.
- Providing project graphics and information for inclusion on the City's and County's websites.

Task 9.0 Deliverables:

- *Up to 3 Flyers*
- *Public meeting information boards*
- *Project graphics and information for City/County project website*

- *Project Corridor Fly-thru animation in HD format (1920 x 1080)*
- *Hosted website for an Online Virtual Open House*

Task 10.0 Final Design (60%, 90% and Final Bid Ready) - Plans, Specifications, and Estimate (PS&E)

The Consultant shall advance the recommended alternative from the Preliminary Design (30% design) stage to the 100% complete stage.

Consultant shall:

- Conduct work sessions (per Task 1) with City/County staff.
- Complete engineering drawings for submittal to the County at 60%, 90%, and Final milestones and perform quality assurance and in-house independent design checks and plan review of all drawings and related quantities including constructability reviews. Plans will be drafted with the latest version of AutoCAD software and the final CAD drawings provided through an FTP site.
- Provide relevant plan drawings per the anticipated sheet list below for submittal to County for review. Drawings shall include sufficient information for review and bidding including ROW lines, alignments, elevations, etc. with the assumption that more detailed staking and layout information necessary for construction will be provided electronically to the Contractor after notice of intent to award. Standard details and drawings will be attached at the end of the plan set without the need for a title block. Additional specific plan sheet requirements include:
  - Index of Drawings: Provide a list of the standard details and drawings utilized with a link to the location where they can be found.
  - Roadway Plan and Profile: Consultant shall prepare roadway construction plans in accordance with County design standards, AASHTO, and Oregon Standard Specifications for Construction with ROW information shown as applicable.
  - Roadway Cross Sections: Assumes cross sections prepared at intervals and/or at locations of interest for the proposed improvements. Sections will be prepared to display the existing ground, finish grade, subgrade, retaining walls, and right-of-way.
  - Driveway Details: Assumes 2 driveway plans and profiles per sheet.
  - ADA Ramp/Intersection Details: Assumes 2 intersection corners per sheet and all intersections will require ADA Ramps.
  - Drainage, Utilities & Grading Plans: Consultant shall prepare grading and drainage plans in accordance with County design standards. Drainage profiles will accompany the same sheet as the juxtaposed plan. Franchise utility (water, sewer, gas, communication, power) relocation designs are excluded from the utility plans, however Consultant will coordinate with County staff to include new County fiber design on these sheets.
  - Bridge or Culvert: Consultant shall prepare bridge/culvert plans, profiles and details in accordance with AASHT Bridge design standards. Each bridge or culvert will include plan, typical section and profile sheets and up to four detail sheets.
  - Erosion Control: Consultant shall prepare erosion control plans in accordance with the 1200-CA permit.
  - Retaining Walls: Retaining wall plans will include plan & profile sheets for each wall. Also, each wall type will include one typical section sheet and up to three detail sheets.
  - Traffic Control: Consultant shall prepare traffic control plans in accordance with County design standards, the MUTCD, and Oregon Standard Specifications for Construction. Plans are anticipated to include staging plans, lane shifts, lane and shoulder widths, temporary barriers, delineation, and signing.
  - Landscaping: Sheets will be prepared by a registered landscape architect.

- Signing/Striping: Consultant shall prepare signing and striping plans per County and MUTCD standards. A sign inventory will be completed to evaluate existing sign conditions and verify compliance with current MUTCD standards.

- Consultant shall complete a detailed photometric analysis of 172nd Ave using AGI32 software. Light pole and luminaire types will be from the PGE approved equipment list. The lighting analysis results will be shown on the plan sheets. Based on the light pole layout from the analysis, individual street lighting plans will be developed for the roundabout alternative and shown on the traffic signal plans for the signal alternative.
- Calculate quantities and develop an engineer's construction cost estimate for submittal at each plan development milestone (60%, 90%, Final).
- Develop an anticipated construction schedule (90%, Final)
- Prepare relevant sections of specifications based on the current Oregon Standard Specifications for Construction. Produce special provisions for the project using standard ODOT boilerplate special provisions and County boilerplate special provisions to the specifications in Part 00100 – General Requirements.
- Revise and submit final Special Provisions based on comments received during County reviews.
- Make corrections as required by County and submit final plans to County (both documents and electronic copies).

The anticipated sheet count is as follows:

Name of Sheet	Estimated # of Sheets	60% PS&E	90% PS&E	Final PS&E
Title Sheet	1	X	X	X
Index of Drawings	1	X	X	X
Legend & Abbreviations	1	X	X	X
Horizontal Control	1	X	X	X
Typical Sections	4	X	X	X
Details	5		X	X
Roadway Plan and Profile Key Map	1	X	X	X
Roadway Plan and Profile (1"=30')	34	X	X	X
Roadway Cross Sections	8	X	X	X
Driveway Details	16	X	X	X
ADA Ramp/Intersection Details	24	X	X	X
Drainage, Utilities, and Grading Plan and Profiles (1"=30')	34	X	X	X
Drainage and Grading Details	3		X	X
Culvert Temporary Water Management Plan	1	X	X	X
Culvert Plan, Typical Section and Profile	1	X	X	X
Bridge/Culvert Notes and Design Criteria	1	X	X	X
Bridge/Culvert Channel Grading Details	1	X	X	X
Bridge/Culvert Wing Wall Details Upstream	1	X	X	X
Bridge/Culvert Wing Wall Details Downstream	1	X	X	X
Bridge/Culvert Foundation Data Sheet	1	X	X	X
Bridge/Culver Details	2	X	X	X

Erosion Control Cover & Notes	1		X	X
Erosion Control Plans (1"=50' stacked)	10	X	X	X
Erosion Control Details	1		X	X
Retaining Wall Plan and Profile (1"=30')	4	X	X	X
Retaining Wall Sections	3	X	X	X
Retaining Wall Details	9		X	X
Temporary Traffic Control Plans (1"=50' stacked)	12	X	X	X
Temporary Traffic Control Details	4		X	X
Temporary Pedestrian Accessible Routes (TPAR)	12		X	X
Landscaping Plans (1"=50')	6	X	X	X
Landscaping Details	2		X	X
Signing and Striping Plans (1"=50' stacked)	10	X	X	X
Signing and Striping Details	3	X	X	X
Sign and Post Data Table	2		X	X
Total Estimated Sheet Count	221	182	221	221

Consultant will provide services for each deliverable per the following subtasks:

***10.1* 60% Design**
Provide 60% complete plans and estimate as described above.

***10.2* 90% Design**
Provide 90% complete plans, specifications, estimate, and construction schedule as described above.

***10.3* Final Design**
Provide Final plans, specifications, estimate, and construction schedule as described above.

***Task 10.0 Deliverables (all electronic)**:*

- 60%, 90%, and Final Engineering Drawings (11"X17")
- 90% and Final Construction Schedule
- 90% and Final Specifications and Bid Schedule
- Documentation of 60% and 90% review comments
- 60%, 90%, and Final Engineer's Estimate
- Updated Comment/Response Log at each milestone
- Roundabout Design (*contingency*) design documentation figures (11"x17") detailing associated truck turning templates, intersection sight distance and fastest path analysis according to NCHRP 672, 2nd Ed. at 60%, 90%, and Final.

Task 11.0 Right-of-Way Research, Descriptions, Appraisals and Acquisitions

***11.1* Right-of-Way and Real Property Acquisition Services**

Consultant shall conduct the ROW activities for all properties in accordance with the most current version of the following:

- ORS 35, with reference to the "Uniform Appraisal Standards for Federal Land Acquisitions"
- Uniform Act
- County ROW acquisition policies and procedures (which are guided by the ODOT ROW Manual)
- Hold an initial ROW coordination meeting with City, County and Consultant ROW staff to discuss County policy and procedure and ROW acquisition strategy.

Consultant shall use County versions of all forms, spreadsheets, brochures and pamphlets referenced in the *"ODOT Right of Way Manual"* and needed to complete work associated with Task 11.0. These forms, spreadsheets, brochures and pamphlets shall not be altered without written permission from the County. They may be obtained through the County Right-of-Way Manager or Designee.

Consultant shall track status for all ROW files to be acquired for the project in the Excel spreadsheet format provided by County. Consultant should coordinate the details of this process with the County Right-of-Way Manager or Designee at the ROW Coordination meeting.

Consultant shall provide ROW acquisition services, following County policies and procedures. It is assumed a total of 68 acquisitions are required for the project for which title reports for all permanent easements will be needed in addition to maps and descriptions, General Information Notice (GIN) letters, limited appraisals and reviews, and acquisition and closing assistance will be needed.

The County intends to acquire the temporary and permanent easements that are estimated to be valued less than $10,000 using an ADJC process. It is assumed 10 of the 73 acquisitions will follow the ADJC process led by the County and 63 will require consultant appraisal. ADJC values will be determined and prepared by County staff through analysis and review of the sales used in the appraisal of a similar zoned property. One appraisal and appraisal review for each type of property and/or each property considered to be complex and outside the scope of the ADJC process will be needed. It is assumed that appraisals will be taking and damage appraisal formats.

The County intends to utilize its "alternative acquisition for driveway transition" process for any Temporary Easements needed for simple driveway transitions. The County's process is similar to the process outlined in Section 6.325 of the ODOT Right of Way Manual.

It is assumed that all acquisitions shall be acquired in the County's name as easement and that there will be no "displaced persons" as defined in the uniform Act, Subpart A.

***11.2* Right-of-Way Research**

Consultant shall complete ROW research as needed to locate and identify existing easements and property ownership. Preliminary Title Reports will be necessary for each property from which a Permanent Easement will be required.

Consultant shall prepare a preliminary ROW estimate for use in estimating ROW costs at 30% design. The estimate shall include all Project ROW costs, including separate Consultant, and Agency costs. The estimate shall include dollar amounts for the following items: Land & Improvements;

Damages/Cost to Cure; Relocation; Demolition; Personnel & Administration; Legal & Contingencies and totals for all Items. The estimate shall be submitted to the County Right of Way Manager or Designee for review.

Consultant shall revise and re-submit estimate, incorporating comments received from the County.

11.3 Right-of-Way Strip Map

Consultant shall develop ROW map showing existing and proposed Right-of-Way lines and permanent and temporary easement lines. ROW maps are to be provided to the ROW staff upon delivery of 60% construction plans. ROW maps are to be updated as construction plans are updated and produced. ROW maps are to be delivered with construction plans. File numbering for the acquisitions will be reviewed and approved by County Right-of-Way Manager or Designee.

- Scale for the ROW maps, shall be in English units, the scale is to be an appropriate Engineering scale such as 1"=20', 1"=40', 1"=60', 1"=100'.
- For each parcel, show map and tax lot number, site address, vested owner name and deed number, and file number.
    - Major improvements within the easement areas and within 20 feet of the outer most area of acquisition shall be shown. If no acquisition is being acquired for a particular parcel, then show major improvements 20 feet from the existing ROW line. (Examples of major improvements to be shown on the ROW map are: houses, outbuildings, driveways, fences and other miscellaneous features needed for determining Just Compensation.)

11.4 Right-of-Way Descriptions, Exhibit Maps, and Impact Maps

Consultant shall:

- Prepare and assemble all title documents, including vesting deeds and preliminary title reports for each impacted property.
- Consultant shall develop and provide a centerline description from one end of the project limits to the other on 172nd Ave. and Troge Rd. in the realignment areas to be used by County with their Resolution of Necessity for the project. County will provide an example if needed. County will review and provide feedback to Consultant if needed. Consultant will make any necessary changes requested by County.
- Prepare ROW Maps and Descriptions (Exhibits A and B) according to the guidelines and example provided by the County. County will review and provide feedback to Consultant if needed. Consultant will make any necessary changes requested by County. Maps and descriptions will be made on 8 1/2" x 11" paper. Written legal description should be referenced as "Exhibit A" and the map as "Exhibit B". Each description will include the following:
    - Exhibits shall be dated and stamped by a professional land surveyor licensed in the State of Oregon.
    - Descriptions for the properties shall reference the last recorded deed by type of deed, owner's name, book and page, and date recorded. This information is to be taken from the last vesting deed.
    - Descriptions shall reference easements as "Permanent" i.e. (Permanent Right of Way for Road Purposes Easement, Permanent Slope Easement, Permanent Public Utilities Easement, Etc.) or as "Temporary" i.e. (Temporary Construction Easement, Temporary Mitigation Easement, Etc.).

- Descriptions shall reference ROW easements as Parcel 1 and other easements as subsequently numbered parcels. Multiple easements per Parcel are acceptable (e.g. Parcel 2- Permanent Slope and Public Utilities Easement, Parcel 3 - Temporary Construction Easement).
- Descriptions shall reference centerline stations on the map. Show the distance from the centerline to existing ROW line and from centerline to proposed ROW and/or easement line(s) on the parcel map.
- On each parcel map provide a legend showing with a hatch, the areas being acquired. Give the areas for each parcel in square feet. Note: Legend should be consistent from file to file. For example, a hatch used for a permanent slope easement would be the same for all files on the project.
- On each parcel map, provide tax lot numbers, last vesting deed number, owners' name, and address if other than situs.
- Show north arrow, appropriate scale, project name, County project number and date exhibit was prepared.
- Feet are to be shown on all distances in "Exhibit B" (excluding centerline).

- Prepare Right of way Impact Maps according to the guidelines and example provided by the County. An 8.5" x 11" color Impact Map shall be prepared for each file showing the proposed right of way acquisitions overlaid upon an aerial photo. These are to be used in conjunction with the appraisal/ADJC preparation along with the Exhibits A and B.

11.5 Right-of-Way Staking

Consultant shall:

Stake proposed and existing ROW and easements for appraisals and acquisition process.

11.6 Preliminary Activities

Upon receipt of authorization to proceed with ROW Acquisition, Consultant shall set up ROW parcel files and deliver a General Information Notice (GIN), acquisition and relocation brochures, and a copy of the applicable portion of the ROW Acquisition map (marked Preliminary and showing the right of way to be acquired) to all owners and occupants of affected properties. Consultant shall mail GINs via regular mail. Consultant shall use County GIN form. Consultant shall email a copy of each GIN as a separate file to the County ROW Program Manager or Designee. County shall provide GIN form and brochures.

Consultant shall prepare and maintain a chronological Diary of Personal Contact for each file. The Diary of Personal Contact must include dates associated with the mailing of the GIN in addition to the date, place of contact, parties contacted, what was delivered and explained, and a summary of what was discussed, for all contact with affected property owners and/or their representatives.

Consultant shall inform County immediately if property owner is represented by legal counsel. Reference to legal counsel and their contact information will be documented in the ROW Status Report spreadsheet and the Diary of Personal Contact.

11.7 Appraisal and Appraisal Review

Consultant shall use appraisers who are licensed in the State of Oregon, experienced and competent in eminent domain appraising, and on ODOT's Qualified Appraisers List. Appraisals for this purpose shall be made in accordance with ORS Chapter 35 and USPAP. One appraisal and appraisal review for each type of property and/or each property considered to be complex and outside the

scope of the ADJC process will be needed. Appraisal and Appraisal Review shall be made by different appraisers. It is assumed that appraisals will be taking and damage appraisal formats. It is assumed that appraisal reviews will include a field review of subject and sales used in the valuation process. Special Benefits, if any, must be quantified by the appraiser whether or not there are any compensable damages to the property. Tenant owned improvements included in the acquisition must be identified and segregated in the appraisal.

An initial analysis will be made to determine which files will need appraisals. The analysis will be based on the Exhibits A and B produced in Task 11.4. Consultant will bring the results of the analysis to County ROW Program Manager and CPM for discussion and decision. An appraisal will be needed for all files wherein the acquisitions are estimated to be valued above $10,000.

Consultant shall provide 1 hard copy and 1 digital copy of each appraisal and appraisal review to the County for review. The County shall recommend Just Compensation based on the appraisal. Just Compensation shall be no less than the reviewed appraisal amount. Consultant shall also ensure the appraiser produces two additional hard copies of the appraisal for the Consultant's acquisition process.

Assumption: 63 files will require appraisal and appraisal review. 10 files will use the ADJC process.

11.8 ROW Acquisition

All ROW shall be acquired in the name of the County as easement. Consultant shall conduct negotiations, on behalf of the County, in good faith and in compliance with all state laws and regulations and County policies and procedures. Consultant shall conduct negotiations for acquisition of real property based on Just Compensation issued by County. Consultant shall use Acquisition Agents who are licensed in the State of Oregon to conduct real estate transactions, experienced and competent in negotiating and acquiring real property rights under the rules and regulations related to the power of eminent domain.

Consultant shall consult with County to determine the extent to which Consultant will be responsible for clearing title encumbrances identified on the Preliminary Title Report or making the offer subject to clearing title encumbrances. Consultant shall discuss the condition of the title with the property owner at the offer presentation or as soon as possible after the offer is mailed. The discussion will address the County's intention to clear the lender's interest in the acquisition, if any. Consultant shall present any requests for taking title subject to one or more outstanding interests to County for approval. Fee owners' and contract purchasers' ownership interests must be addressed. Lender's interests must be addressed. When impacted by the taking, lessees' interests must also be addressed.

Consultants shall prepare and present to County a draft Offer Packet for review before any offers are made. All offers will be made by consultant as County's Buyer's Agent. These Offer Packets shall include, but are not limited to, acquisition and relocation brochures, offer-benefit letter, acquisition and relocation summary statements, County's Obligations Agreement if appropriate, copy of appraisal or ADJC, map of acquisition, instruments of conveyance and W-9 form (if money is exchanged). Offers will be made to all owners and all negotiations shall be conducted with all owners unless all owners have designated a representative in writing or are represented by legal counsel. Consultant shall notify County as soon as possible when legal counsel enters the acquisition process.

To every reasonable extent possible, Consultant shall make offers in person, especially where the acquisition involves either a major impact to the property or the displacement of persons occupying the property. If this is deemed not possible, Consultant shall send via certified mail with return receipt request. Dates of delivery and an accounting of the events leading to the decision to mail the

offer must be documented in the Diary of Personal Contact and the file. It is recommended that delivery be periodically tracked to ensure there are no problems. When offers are mailed, Consultant shall make every reasonable effort to contact the owners ahead of delivery to make introductions and alert them of the mailing. No less than weekly communication with owners until agreement is reached is expected.

Consultant shall make every reasonable effort to acquire the ROW expeditiously by negotiation. Consultant shall give property owners reasonable opportunity to consider the offer (statutorily 40 calendar days). Counter offers from the owner should be accompanied by information the owner believes is relevant to determining the value of the property and reviewed with the County Right of Way PM promptly. Consultant shall attempt to negotiate an approved administrative settlement, but shall not take any coercive action in order to induce an agreement on the price to be paid for the property (49 CFR 24.102(h)).

- IF the OFFER is ACCEPTED, Consultant shall present a Final Report Packet covering the acquisition of ROW to County for final approval, acceptance, payment, conveyance of title and recording. The Final Report Packet shall include County's Final Report and Transmittal of Documents form and all other documentation associated with the ROW activities conducted for this file. Consultant shall include satisfactory documentation of signer's authority to sign if Grantor is a Trust, Corporation, Partnership, or Non-Profit. Consultant shall mail or deliver the Final Report Package and email a digital scan of the Final Report Package to the County Right-of-Way Program Manager or Designee in a reasonable amount of time after all signed offer documents have been received by Consultant.
- IF a COUNTER OFFER is received, Consultant shall submit the proposed COUNTER OFFER (exceeding the estimate of just compensation) with a written justification and owner supplied supporting documentation to County for approval. If accepted see above.
- IF an acceptable agreement is not reached within the timeframe set by County, Consultant shall prepare and submit a Recommendation for Condemnation (RC) Packet. The RC Packet shall include County's RC form and all other documentation associated with the ROW activities conducted for this file. Consultant shall mail or deliver the packet and email a digital scan of the packet to the County Right of Way Program Manager or Designee in a reasonable amount of time after the decision to RC the file is made. Consultant shall also provide to County the Microsoft Word (editable) versions of any and all documents upon request (e.g. Diary, Obligations Agreement, Conveyance Documents, Offer Letter, Acquisition and Relocation Summaries).

Consultant shall continue documenting the Diary of Personal Contact for each file until the file is transmitted to the County. The Diary of Personal Contact must include a dated record in chronological order of all contact with property owners and or their representatives and all occupants and or their representatives, including but not limited to the means by which the communication took place (email, fax, telephone, in person, etc.), the location of the contact, efforts to achieve amicable settlements, owners' suggestions for changes in plans, responses to owners' counterproposals, etc.

No communications with property owners or occupants and or their representatives are to be made via text. The County is to be notified as soon as possible upon engagement with a property owner's legal representation.

Task 11.0 Deliverables:

- *Preliminary Title Reports and supporting documents*
- *Preliminary Right-of-Way Estimate*

- *Right-of-Way Strip Map (one strip map per plan submittal)*
- *Right-of-Way Descriptions and Maps (73 files)*
- *Right of Way Impact Maps (73 files)*
- *Right-of-way Staking (73 files)*
- *General Information Notice Letters (73 files)*
- *Appraisals and Appraisal Reviews (63 files)*
- *Acquisition/Negotiation/RC files (73 files)*

Task 12.0 Bid and Award Assistance

This task includes the preparation of four to six addenda, as needed, and responding to questions during the bidding phase. Consultant shall respond to questions from County and Construction Contractors about the plans and specifications during the bidding process.

Consultant's Project Manager, or Consultant's designee(s) approved by County, shall assist County with questions regarding the bid documents and bid process. Consultant shall respond to all questions in writing within 3 days to the CPM.

Consultant shall, during the bidding process, assist the County with the communications with Construction Contractors and suppliers in a manner that assures that no Construction Contractor or supplier is provided with information not in the bidding documents and that could provide a bidding advantage or disadvantage. Consultant shall prepare a written log to document conversations and questions asked by construction contractors or suppliers and the answers provided to the County. Consultant shall maintain the written log in the project file and provide upon request of the CPM.

Task 12.0 - Consultant Deliverables

- *Written log of conversations, questions and answers, provided to the CPM upon request.*
- *Up to two addenda*

EXHIBIT C

PROJECT SCHEDULE

1. Assumed execution of Intergovernmental Agreement – February of 2021
2. Draft Request for Proposal – March of 2022
3. Final Request for Proposal – March of 2022
4. Proposals Received – April of 2022
5. Notice to Proceed to Consultant – June of 2022
6. 30% Submittal – January of 2023
7. 60% Submittal – May of 2023
8. Final Exhibit Maps and Descriptions and Permit Applications – July of 2023
9. Initiate ROW – July 2023
10. 90% PS&E Submittal – January 2024
11. Complete ROW – December 2024
12. 100% PS&E Submittal – January 2025
13. Signed PS&E Submittal – February 2025
14. Advertise for Bids – April 2025

EXHIBIT D - PROJECT COST
172nd Ave. Improvement Project

November 10, 2021

Project Limits: 172nd Ave from SE Misty Dr to 190th Connector; Troge Rd from 172nd Ave to Olympic St

Assumptions: Classification: Major Arterial, Design Speed: 45 mph

Cross Section: ROW: 104-ft, PUE: 8-ft, TCE: 5-ft, Travel lanes (4): 12-ft, Center planter median (w/ turn pockets): 14-ft, Bike lane: 8-ft, Landscape: 5-ft, Sidewalk: 7-ft and 78-ft wide pavement (including planter median/turn pockets)

Intersections: Traffic Signal @ Troge, Multi-lane Roundabout @ Hemric, existing roundabout at Scouters Mountain Rd expanded to multi-lane, Multi-lane Roundabout @ future 190th Connector

Project Length: 8,260 LF

ITEM	SPEC	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Part 00100 - General Conditions						
1	00196	EXTRA WORK AS AUTHORIZED	LS	1	$500,000.00	$500,000.00
		General Conditions Subtotal				**$ 500,000.00**
Part 00200 - Temporary Features and Appurtenances						
2	00210	MOBILIZATION (10%)	LS	1	$2,013,100.00	$2,013,100.00
3	00225	TEMPORARY WORK ZONE TRAFFIC CONTROL, COMPLETE (10%)	LS	1	$1,830,100.00	$1,830,100.00
4	00280	EROSION CONTROL (5%)	LS	1	$806,500.00	$806,500.00
5	00290	POLLUTION CONTROL PLAN	LS	1	$1,250.00	$1,250.00
		Temporary Features and Appurtenances Subtotal				**$ 4,650,950.00**
Part 00300 - Roadwork						
6	00305	CONSTRUCTION SURVEY WORK	LS	1	$ 150,000.00	$150,000.00
7	00310	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1	$ 200,000.00	$200,000.00
8	00320	CLEARING AND GRUBBING	LS	1	$ 300,000.00	$300,000.00
9	00330	GENERAL EXCAVATION	CY	23,800	$ 35.00	$833,000.00
10	00331	18 INCH SUBGRADE STABILIZATION (15% OF WIDENING AREA)	SY	8,000	$ 30.00	$240,000.00
11	00350	SUBGRADE GEOTEXTILE	SY	53,400	$ 1.50	$80,100.00
11		TROGE RD HALF-STREET IMPROVEMENTS, COMPLETE	LS	1	$ 418,000.00	$418,000.00
12		FRONTAGE RD (TROGE TO HAGEN), COMPLETE	LS	1	$ 864,000.00	$864,000.00
12		SCOUTERS MOUNTAIN RD ROUNDABOUT EXPANSION, COMPLETE	LS	1	$ 150,000.00	$150,000.00
		Roadwork Subtotal				**$ 3,235,100.00**
Part 00400 - Drainage and Sewers						
13	00415	MAIN LINE VIDEO INSPECTION	FT	2,910	$ 5.00	$14,550.30
14	00445	12-INCH STORM SEWER PIPE	FT	11,640	$ 85.00	$989,420.40
15	00445	15-INCH STORM SEWER PIPE	FT	2,500	$ 100.00	$250,000.00
16	00445	18-INCH STORM SEWER PIPE	FT	600	$ 120.00	$72,000.00
17	00470	CONCRETE STORM SEWER MANHOLES	EACH	20	$ 4,500.00	$90,000.00
18	00470	CONCRETE STORM SEWER MANHOLES, FLOW CONTROL	EACH	10	$ 7,500.00	$75,000.00
19	00470	CONCRETE CURB INLETS, TYPE CG-30 (@ 250-FT SPACING)	EACH	83	$ 1,800.00	$149,544.00
20	00470	PRIVATE AREA DRAIN	EACH	25	$ 1,200.00	$30,000.00
21	00490	ADJUSTING BOXES	EACH	40	$ 250.00	$10,000.00
		Drainage and Sewers Subtotal				**$ 1,680,514.70**
Part 00500 - Structures						
22	00587	THRIE BEAM RAIL	FT	236	$ 60.00	$14,160.00
23	00590	REINFORCED CONCRETE BOX CULVERT, 3-SIDED (ROCK CREEK @ TROGE RD)	LS	1	$ 200,000.00	$200,000.00
24	00590	REINFORCED CONCRETE BOX CULVERT, 3-SIDED (ROCK CREEK @ 172ND AVE)	LS	1	$ 400,000.00	$400,000.00
25	00596	RETAINING WALL	SF	5,000	$ 150.00	$750,000.00
		Structures Subtotal				**$ 1,364,160.00**
Part 00600 - Bases						
26	00620	COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	SY	22,680	$ 5.00	$113,400.00
27	00640	AGGREGATE BASE	TON	40,000	$ 35.00	$1,400,000.00
		Bases Subtotal				**$ 1,513,400.00**
Part 00700 - Wearing Surfaces						
28	00744	LEVEL 3, 1/2 INCH DENSE ACP MIXTURE @ 2" DEEP (Wearing Course)	TON	9,315	$ 110.00	$1,024,650.00
29	00744	LEVEL 3, 1/2 INCH DENSE ACP MIXTURE @ 5.5" DEEP (Base / Leveling Course)	TON	18,745	$ 110.00	$2,061,950.00
30	00749	EXTRA FOR ASPHALT MINOR STREET APPROACHES	EACH	9	$ 5,000.00	$45,000.00
31	00749	EXTRA FOR ASPHALT DRIVEWAY APPROACHES	EACH	62	$ 850.00	$52,700.00
32	00755	REINFORCED CONCRETE PAVEMENT, 9 INCHES THICK (HEMRICH & 190TH RAB'S)	SY	5,600	$ 80.00	$448,000.00
33	00759	CONCRETE WALKS	SF	115,640	$ 8.00	$925,120.00
34	00759	CONCRETE CURBS, STANDARD CURB	FT	550	$ 25.00	$13,750.00
35	00759	CONCRETE CURBS, CURB AND GUTTER	FT	33,040	$ 30.00	$991,200.00

EXHIBIT D - PROJECT COST
172nd Ave. Improvement Project

November 10, 2021

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Assumptions: Classification: Major Arterial, Design Speed: 45 mph

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Intersections: Traffic Signal @ Troge, Multi-lane Roundabout @ Hemric, existing roundabout at Scouters Mountain Rd expanded to multi-lane, Multi-lane Roundabout @ future 190th Connector

36	00759	CONCRETE CURBS, MOUNTABLE (HEMRICH & 190TH RAB'S)	FT	1,000	$ 30.00	$30,000.00
37	00759	TRUNCATED DOMES ON NEW SURFACES	EACH	55	$ 200.00	$11,000.00
38	00759	EXTRA FOR NEW SIDEWALK RAMPS	EACH	55	$ 1,500.00	$82,500.00
		Wearing Surfaces Subtotal				**$ 5,685,870.00**
Part 00800 - Permanent Traffic Safety and Guidance Devices						
39	00810	31 INCH GUARDRAIL, TYPE 2A	FT	300	$ 30.00	$9,000.00
40	00810	GUARDRAIL TERMINALS, NON-FLARED	EACH	8	$ 2,500.00	$20,000.00
41	00860	THERMOPLASTIC, EXTRUDED, SURFACE, NON-PROFILED	FT	72,000	$ 0.75	$54,000.00
42	00867	PAVEMENT LEGEND, TYPE B-HS: BICYCLE LANE STENCIL	EACH	72	$ 250.00	$18,000.00
		Permanent Traffic Safety and Guidance Devices Subtotal				**$ 101,000.00**
Part 00900 - Permanent Traffic Control and Illumination Systems						
43	00930	PERFORATED STEEL SQUARE TUBE SLIP BASE SIGN SUPPORTS	LS	1	$ 10,000.00	$10,000.00
44	00940	TYPE "R" SIGNS IN PLACE	LS	1	$ 20,000.00	$20,000.00
45	00970	SIGNAL, PUSH BUTTONS & DETECTION, COMPLETE (TROGE RD)	LS	1	$ 500,000.00	$500,000.00
46	00970	ILLUMINATION, COMPLETE (@ 175-FT POLE SPACING)	LS	1	$ 607,200.00	$607,200.00
47	00990	SCHOOL ZONE FLASHER INSTALLATION	LS	1	$ 40,000.00	$40,000.00
48	00990	RECTANGULAR RAPID FLASHING BEACON INSTALLATION, COMPLETE	LS	1	$ 25,000.00	$25,000.00
49	00990	INTERCONNECT FIBER	LS	1	$ 275,000.00	$275,000.00
		Permanent Traffic Control and Illumination Systems Subtotal				**$ 1,477,200.00**
Part 01000 - Right-of-Way Development and Control						
50	01010	WATER QUALITY FACILITY, COMPLETE (1.5 TO 1.2-ACRE POND)	LS	1	$ 2,000,000.00	$2,000,000.00
51	01030	PERMANENT SEEDING (8-FT WIDE BEHIND SIDEWALK)	ACRE	7.9	$ 8,000.00	$63,200.00
52	01040	TOPSOIL	CY	11,700	$ 30.00	$351,000.00
53	01070	SINGLE MAILBOX SUPPORTS	EACH	33	$ 250.00	$8,250.00
54	01070	MULTIPLE MAILBOX SUPPORTS, DOUBLE	EACH	19	$ 300.00	$5,700.00
55	01070	MAILBOX CONCRETE COLLARS	EACH	52	$ 150.00	$7,800.00
		Right-of-Way Development and Control Subtotal				**$ 2,435,950.00**
		CONSTRUCTION CONTINGENCY (30%)				**$6,643,300**
		CONTRACTOR'S 3-YEAR BID ESCALATION (12%)				**$2,657,300**
		TOTAL ESTIMATED CONTRACTOR'S BID				**$31,944,745**
		CONSULTANT CONSTRUCTION ENGINEERING AND INSPECTION ASSISTANCE (6%)				**$1,916,700**
		CITY CO-CONSTRUCTION INSPECTION AND ADMINISTRATION				**$427,000**
		COUNTY CO-CONSTRUCTION INSPECTION AND ADMINISTRATION				**$427,000**
		UNDERGROUNDING POWER (PGE TO PERFORM WORK, $425/LF)				**$3,520,000**
		WETLAND MITIGATION / WETLAND RESTORATION (0.5 ACRE @ $300K/ACRE)				**$150,000**
		TOTAL ESTIMATED CONSTRUCTION PHASE				**$38,385,000**
		CONSULTANT SURVEY, DESIGN ENGINEERING, PERMITTING AND PS&E (12%)				**$3,833,400**
		CITY PROJECT DESIGN REVIEW (1%)				**$319,500**
		COUNTY PROJECT MANAGEMENT & DESIGN REVIEW (2%)				**$638,900**
		TOTAL ESTIMATED DESIGN PHASE				**$4,791,800**
		CONSULTANT RIGHT-OF-WAY APPRAISALS AND NEGOTIATIONS (73 FILES)				**$766,500**
		COUNTY RIGHT-OF-WAY REVIEW COORD AND PROCESSING				**$77,000**
		RIGHT-OF-WAY ACQUISITION/PURCHASE (ROW & PUE)				**$7,940,500**
		RIGHT-OF-WAY CONTINGENCY (15%)				**$1,318,000**
		TOTAL ESTIMATED RIGHT OF WAY PHASE				**$10,102,000**
		TOTAL ESTIMATED PROJECT COST				**$53,278,800**