CITY OF ALBANY, OREGON

PUBLIC WORKS – ENGINEERING

CONTRACT DOCUMENTS

FOR

ST-22-08

ALBANY WATERFRONT PROJECT PHASE I

Issue Date: March 14, 2022

Due Date: ~~2:00 p.m., March 29, 2022~~ 3:00 p.m., March 31, 2022

Public Works Director.....**Chris Bailey**
City Engineer ..... **Staci Belcastro, P.E.**
Economic Development Manager.....**Seth Sherry**

For more information on this project,
contact Staci Belcastro, 541-917-7645.

CITY OF ALBANY

ST-22-08, Albany Waterfront Project Phase I

TABLE OF CONTENTS

BIDDER'S SUBMITTAL CHECKLIST

Any bid submitted after the designated closing time or to any other location will be determined nonresponsive and will not be opened. It is the responsibility of the Bidder to deliver the bid by the indicated deadline to the designated location, as indicated in the Invitation to Bid. The City is not responsible for late or mishandled delivery.

If contractor obtains these documents by means of a website or copied from a Plan Center, it is the responsibility of the contractor to check for addenda to this contract prior to bid opening. To be notified of addenda, contractor may email pw.quotes@cityofalbany.net and request to be added to the Plan Holder's list.

Failure to include any signed addenda could result in the disqualification of your bid.

All bids must be submitted on City-provided forms that do not contain unauthorized alterations. Bids should be received in non-editable PDF format. The total size limit for each email submittal response should be less than 20 MB. An automated response will be generated back to the sender stating, "Proposal has been received by the City." If you do not receive a notification, you may contact Diane Murzynski at contracts@cityofalbany.net or 541-917-7522. Bidders should submit responses within a reasonable amount of time before the bid opening date and time to ensure timely email delivery.

All bids must include the following submittals or may be considered nonresponsive:

- ☐ Signed Proposal (*two pages*) - *with all applicable blanks completed*
- ☐ Completed Schedule of Contract Prices - *signed by an authorized representative of the company who can "execute bids"*
- ☐ Bid Bond – *using City-provided Bid Bond form with no alterations; a scanned copy is acceptable.*
- ☐ Employee Drug Testing Certification form
- ☐ Retainage Election Form, if applicable
- ☐ Pay Equity Training Certificate, if applicable
- ☐ Signed Addenda *(acknowledge on Proposal if addenda have been issued)*

Submitted within two hours after bid closing time (required under ORS 279C.370):

- ☐ First-Tier Subcontractor Disclosure form – signed and if "none" indicate as such

Other than what is listed above, it is not necessary to submit any additional pages with the bid.

See Addendum No. 2 for changes to this section.

NOTICE TO CONTRACTORS
CITY OF ALBANY
INVITATION TO BID

Category of Bid:
Engineer's Estimate: $2,200,000
Bids due at ~~2:00 p.m., March 29, 2022~~ 3:00 p.m., March 31, 2022

The City of Albany hereby extends an invitation to submit bids for:

ST-22-08, Albany Waterfront Project Phase 1: This project includes approximately 1,020 linear feet of street reconstruction on Water Avenue, the northern boundary of Albany's Historic downtown and located just south of the Willamette River. Street work includes curbs, sidewalks, ramps, storm drain, landscaping, lighting improvements, construction of three intersections using concrete unit pavers, rehabilitation of an existing parking lot, and approximately 2,500 linear feet of 12-inch ductile iron water line; and related appurtenances. Work will be coordinated with planned rail crossing improvements.

Bids must be submitted to procurement@cityofalbany.net **not later than ~~2:00 p.m., March 29, 2022~~ 3:00 p.m., March 31, 2022**. Bids will be considered time-stamped and received by the City when received in the procurement email inbox. The email subject line must include the project number and name as follows: **ST-22-08, Albany Waterfront Project Phase I**. The body of the email must plainly identify (1) the project name, (2) the bid opening time and date, (3) the bidder's name, and (4) the contractor's license number (per ORS 701). Immediately following the filing deadline, the bids will be opened and publicly read using a virtual hosted meeting, https://global.gotomeeting.com/join/623409989. Interested parties can also dial in using their phones (1-571-317-3122, access code 623-409-989). Bid totals will be posted on the City's website at https://cityofalbany.net/bids.

Contract bid documents may be downloaded from the City of Albany website at https://cityofalbany.net/bids. It is imperative those who download the contract bid documents check the website regularly for addenda, clarifications, and other pertinent notifications. All who are known by the City of Albany to have received a complete set of the contract bid documents will receive notification when additional items are posted. Please email pw.quotes@cityofalbany.net to be added to the Plan Holder's list.

Each bidder must have access to a current set of City of Albany *Standard Construction Specifications*, which can be found on the City's website at https://www.cityofalbany.net/standard-construction-specifications. All public improvements are required to conform to these specifications and bid prices must reflect these specifications. For project information, contact Staci Belcastro at 541-917-7645 or staci.belcastro@cityofalbany.net.

All City contracts contain a statement declaring that the bidder agrees to comply with the provisions of ORS 279C.800 through 279C.870 regarding payment of prevailing wages. The City's contract contains a clause which incorporates by reference all of the provisions of ORS Chapter 279C which are applicable to public contracts. Bidders are expected to be familiar with these provisions including, but not limited to, recent changes to ORS Chapter 279C.

No bid will be received or considered unless the bidder is licensed by the Construction Contractors Board for construction projects or licensed with the State Landscape Contractors Board for landscaping projects.

A 10% bid bond, certified check, or cashier's check must accompany each bid on all projects and must be forfeited if the bidder fails to enter into a Contract with the City of Albany within 10 days after the date of the Notice of Award. A scanned copy must be submitted with the bid.

DATED this 14th day of March, 2022.

Diane M. Murzynski, CPPO, CPPB
Purchasing Coordinator

PUBLISH: Daily Journal of Commerce on Monday, March 14, 2022
Albany Democrat-Herald on Monday, March 14, 2022

PROPOSAL

To the Honorable Mayor and City Council
Albany, Oregon 97321

BIDDER'S DECLARATION AND UNDERSTANDING

The undersigned Bidder declares that the Contract Documents for the construction of the proposed improvement have been carefully examined; that the site has been personally inspected; that the Bidder is satisfied as to the quantities of materials, items of equipment and conditions or work involved including the fact that the description of the quantities of work and materials as included herein is brief and is intended only to indicate the general nature of such items and to identify the said quantities with the detailed requirements of the Contract Documents; and that the Bidder's proposal is made according to the provisions and under the terms of the Contract Documents, which documents are hereby made a part of this proposal.

The Bidder further declares that the only persons or parties interested in this proposal are those named herein; that this proposal is in all respects fair and without fraud; that it is made without collusion with any official of the City of Albany, and that the proposal is made without any connection or collusion with any person making another proposal on this Contract.

The Bidder further declares by the signing of this proposal that all the provisions required by ORS 279C.800 through 279C.870 relating to the payment of prevailing wage rates for work performed under the Contract with the City of Albany must be complied with.

The Bidder further agrees that its own judgment has been exercised regarding the interpretation of subsurface information and all data which it believes pertinent from the Engineer, Owner, and other sources in arriving at these conclusions have been utilized.

The bidder further certifies that they have authority and knowledge regarding the payment of taxes and that to the best of their knowledge are not in violation of any Oregon Tax Laws. For purposes of this certification, "Oregon Tax Laws" are those tax laws imposed by ORS 320.005 to 320.150 and ORS 403.200 to 403.250 and ORS Chapters 118, 314, 316, 317, 318, 321, and 323; the elderly rental assistance program under ORS 310.630 to 310.706; and any local tax laws administered by the Oregon Department of Revenue under ORS 305.620.

CONTRACT EXECUTION, BONDS, AND INSURANCE

The Bidder agrees that if this proposal is accepted:

- A Contract with the City of Albany, Oregon, will be executed, within 10 days after the date of the Notice of Award, in the form of Contract annexed hereto, and will at that time, deliver to the City of Albany the 100 percent Performance Bond and 100 percent Payment Bond, and will, to the extent of this proposal, furnish all machinery, tools, apparatus, and other means of construction and do the work and furnish all the materials necessary to complete all work as specified or shown in the Contract Documents.
- A Request for Taxpayer Identification Number and Certification (W-9) will be completed as a condition of the City's obligation to make payment. In the event the Bidder shall fail to complete and return the W-9 to the City, payment to Bidder may be delayed, or the City may, in its discretion, terminate the Contract.
- Automatic Clearing House (ACH) Direct Payment Authorization. The City prefers to pay Contractor invoices via electronic funds transfers through the ACH network. To initiate this more timely, efficient, and secure payment method, Contractors must complete the City's ACH Vendor Direct Payment Authorization Form. This form is available on the City website at https://www.cityofalbany.net/images/stories/finance/eft_form.pdf. Information provided on the form is exempt from public records disclosure under ORS 192.501(27).
- **For contracts that exceed $500,000, the Contractor must elect retainage to be held in an interest-bearing escrow account, or an alternate method in lieu of cash retainage as a condition of payment and as required by ORS 279C.570(2).** Contractor must complete an Escrow Account Agreement if funds are to be held in an interest-bearing account, otherwise Contractor must provide a deposit of bonds, securities or other instruments, or Contractor must provide a surety bond in an amount equal to five percent of the total bid. City may recover from Contractor additional costs incurred in the handling of retainage alternatives, whether a deposit of bonds, securities, or other instruments, surety bond, or for an interest-bearing account, ORS 279C.560(3).

CERTIFICATES OF INSURANCE

The Bidder agrees to furnish the Owner, before commencing the work under this Contract, the certificates of insurance as specified in the *Standard Construction Specifications*.

ADDENDA ACKNOWLEDGEMENT: No(s). ___ Dated _____ No(s). ___ Dated _____ No(s)___ Dated _____

START OF CONSTRUCTION AND CONTRACT COMPLETION DATE

If awarded this contract, the Bidder agrees to begin work within 10 calendar days after the date of the Notice to Proceed for the Contract and to complete the construction, in all respects, as set forth in the Special Provisions of these Contract Documents.

LIQUIDATED DAMAGES

In the event the Bidder is awarded the Contract and fails to complete the work within the time stated above or extended time agreed upon, as more particularly set forth in the Contract Documents, liquidated damages must be paid to the City of Albany, Oregon, as provided under General Requirements, Subsection 108.06.00 of the City of Albany *Standard Construction Specifications*.

BID BOND

Accompanying this proposal is a certified check, cashier's check or Bidder's bond in the sum of (10% of Bid Total) _____ Dollars ($_____), according to the General Requirements of the Contract Documents which is to be forfeited as liquidated damages, if, in the event that this proposal is accepted, and the Bidder fails to execute the Contract and furnish satisfactory Performance and Payment Bond under the conditions and within the time specified in the Contract Documents; otherwise said check or bond is to be returned to the Bidder.

SURETY

If the Bidder is awarded a construction Contract on this proposal, the Surety who provides the Performance Bond will be _____ whose address is (street and city) _____ and Payment Bond will be _____ whose address is (street and city) _____.

LUMP SUM OR UNIT PRICE WORK

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following lump sum or unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. The Bidder agrees that the lump sum prices and the unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents.

BIDDER

The name of the Bidder submitting this proposal is _____ doing business at (street and city) _____, which is the address to which all communications concerned with this proposal and with the Contract must be sent.

In accordance with ORS 279A.120, Bidder hereby declares that it (circle correct designation) is / is not a resident Bidder. The names of the principal officers of the corporation submitting this proposal, or of the partnership, or of all persons interested in this proposal as principals are as follows:

_____ _____

If Sole Proprietor or Partnership: IN WITNESS hereto the undersigned has set his/her hand this _____ day of _____ 2022.

_____ _____

Signature of Bidder Title

If Corporation: IN WITNESS WHEREOF the undersigned corporation has duly authorized the execution of this agreement on behalf of the corporation by the officer named below this _____ day of _____ 2022.

_____

name of corporation

By: _____

Name: _____

(please print name)

Title: _____

SCHEDULE OF CONTRACT PRICES

SCHEDULE A					
ITEM NO.	**BID ITEMS**	**APPROX. QUANTITY**	**UNIT OF MEASURE**	**UNIT PRICE DOLLARS/CTS**	**TOTAL AMT. DOLLARS/CTS**
A-1	Mobilization	1	Lump Sum		
A-2	Temporary Traffic Control	1	Lump Sum		
A-3	Erosion Prevention and Sediment Control	1	Lump Sum		
A-4	Coordinate with Pacific Power	1	Lump Sum		
A-5	Coordinate with Railroad and Railroad Contractor	1	Lump Sum		
A-6	Unclassified Excation	1700	Cubic Yard		
A-7	Overexcavation and Foundation Stabilization	300	Cubic Yard		
A-8	Subgrade Geotextile Fabric	3000	Square Yard		
A-9	Crushed Aggregate Base	2100	Ton		
A-10	Latex Modified Slurry Seal	30	Ton		
A-11	Emulisified Asphalt Tack Coat	1500	Square Yard		
A-12	3/4-Inch Warm Mix Asphalt Concrete	400	Ton		
A-13	1/2-Inch Warm Mix Asphalt Concrete	200	Ton		
A-14	Transition Paving	20	Ton		
A-15	10-Inch Concrete Pavement - Vehicular	520	Cubic Yard		
A-16	Concrete Pavers	3600	Square Yard		
A-17	Standard Curb and Gutter	1300	Linear Foot		
A-18	Standard Straight Curb	850	Linear Foot		
A-19	4-Inch PCC Sidewalk	650	Square Yard		
A-20	8-Inch PCC Driveway Approach	140	Square Yard		
A-21	Concrete Stairs and Handrails	1	Lump Sum		
A-22	Truncated Dome	200	Square Foot		
A-23	Curb Drain	60	Linear Foot		
A-24	6-Inch PVC Storm Drain	10	Linear Foot		
A-25	8-Inch PVC Storm Drain	180	Linear Foot		

A-26	10-Inch PVC Storm Drain	460	Linear Foot		
A-27	12-Inch PVC Storm Drain	50	Linear Foot		
A-28	36-Inch Casing w/24-Inch PVC Carrier Pipe	30	Linear Foot		
A-29	Property Line Clean-Out	3	Each		
A-30	Sewer/Storm Mainline Mini-Manhole Cleanout	1	Each		
A-31	Construct Streetside Planter	160	Square Foot		
A-32	Plant and Establish Stormwater Quality Plantings	1	Lump Sum		
A-33	Adjust Manhole Rim to Grade	4	Each		
A-34	Standard Precast Manhole	4	Each		
A-35	72-Inch Precast Manhole	3	Each		
A-36	Connect to Existing Manhole	3	Each		
A-37	Extra for Manholes Over Existing Pipes	4	Each		
A-38	Standard Curb Inlet	10	Each		
A-39	Catch Basin	7	Each		
A-40	Catch Basin - Private	4	Each		
A-41	Shoulder Catch Basin	5	Each		
A-42	Remove Existing Storm Drain	80	Linear Foot		
A-43	Remove Existing Catch Basin	2	Each		
A-44	Abandon Existing Storm Culvert	1	Lump Sum		
A-45	4-Inch Yellow Profiled Thermoplastic Stripe	100	Linear Foot		
A-46	4-Inch White Non-Profiled Thermoplastic Stripe	270	Linear Foot		
A-47	12-Inch White Non-Profiled Thermoplastic Stripe	390	Linear Foot		
A-48	24-Inch White Non-Profiled Thermoplastic Stripe	160	Linear Foot		
A-49	Painted Yellow Curb	60	Linear Foot		
A-50	Install New Street Signs	1	Lump Sum		
A-51	Landscape Restoration	1	Lump Sum		
A-52	Root Barrier	340	Linear Foot		
A-53	Soil Amendment	460	Cubic Yard		

A-54	Hydroseeding	7000	Square Yard		
A-55	Reinforced Lawn Paving	60	Square Yard		
A-56	Bark Mulch	240	Square Yard		
A-57	Plant and Establish Street Trees and Shrubs	1	Lump Sum		
A-58	Bollard	17	Each		
A-59	Removable Bollard	2	Each		
A-60	Adjust Water Fixtures to Finish Grade	1	Lump Sum		
A-61	Installation of Park Light and Footing	1	Each		
A-62	PVC Lighting Conduit	130	Linear Foot		
A-63	Wiring	380	Linear Foot		
				TOTAL SCHEDULE A	

SCHEDULE B

ITEM NO.	BID ITEMS	APPROX. QUANTITY	UNIT OF MEASURE	UNIT PRICE DOLLARS/CTS	TOTAL AMT. DOLLARS/CTS
B-1	Mobilization	1	Lump Sum		
B-2	Temporary Traffic Control	1	Lump Sum		
B-3	Erosion Prevention and Sediment Control	1	Lump Sum		
B-4	6-Inch Ductile Iron Water Line	80	Linear Foot		
B-5	8-Inch Ductile Iron Water Line	230	Linear Foot		
B-6	12-Inch Ductile Iron Water Line	2510	Linear Foot		
B-7	6-Inch Gate Valve	7	Each		
B-8	8-Inch Gate Valve	5	Each		
B-9	12-Inch Butterfly Valve	12	Each		
B-10	1-Inch Combination Air/Vacuum Release Valve	1	Each		
B-11	Standard 1-Inch Service Assembly	16	Each		
B-12	Standard 2-Inch Service Assembly	1	Each		
B-13	Standard Fire Hydrant Assembly	6	Each		
B-14	Remove Fire Hydrant Assembly	6	Each		

B-15	6-Inch x 6-Inch Connection Assembly	1	Lump Sum		
B-16	8-Inch x 8-Inch Connection Assembly	2	Lump Sum		
B-17	12-Inch x 12-Inch Connection Assembly	4	Lump Sum		
B-18	Phase 1 Connection Assembly Sta 32+91	1	Lump Sum		
B-19	Phase 2 Connection Assembly Sta 34+12	1	Lump Sum		
B-20	24-Inch Casing w/12-Inch DI Carrier Pipe	26	Linear Foot		
B-21	24-Inch Casing w/8-Inch DI Carrier Pipe	24	Linear Foot		
B-22	4-Inch Blow-off Assembly	3	Each		
B-23	Install 12-Inch End Cap	2	Each		
B-24	Abandon 12-Inch x 8-Inch Connection	1	Lump Sum		
B-25	Abandon 12-Inch x 6-Inch Connection	1	Lump Sum		
B-26	Remove Abandoned Valve Box	12	Each		
B-27	Install 32# Sacrifical Anode	47	Each		
B-28	Abandon Existing Water Lines	1	Lump Sum		
B-29	Remove Existing Water Lines	140	Linear Feet		
B-30	7-Inch Asphalt Trench Patch	940	Square Yard		
B-31	Remove and Replace 4-Inch PCC Sidewalk	50	Square Yard		
B-32	Remoe and Replace Curb and Gutter	24	Linear Feet		
				TOTAL SCHEDULE B	
				TOTAL SCHEDULE A + SCHEDULE B	

NOTE: Subject to change if addition or extensions are in error.

REPLACED BY ADDENDUMS #1 & 2

Bidder's Signature _____ Company Name (*please print*) _____ Date _____

Bidder's Name (*please print*) _____ Mailing Address (*please print*) _____ CCB License Number _____

Bidder's Title (*please print*) _____ City, State Zip _____ Federal Tax ID Number _____

Telephone No.: _____ Fax No.: _____ Email: _____

BID BOND

BOND NO. _____

AMOUNT OF BID: $ _____

KNOW ALL MEN BY THESE PRESENTS, that _____ hereinafter called the PRINCIPAL, and _____ a corporation duly organized under the laws of the State of _____ having its principal place of business at _____, in the State of _____, and authorized to do business in the State of Oregon, as SURETY, are held firmly bound unto the City of Albany, Oregon, hereinafter called the OBLIGEE, in the sum of _____ _____DOLLARS ($_____), for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the PRINCIPAL is herewith submitting his/her/its Bid Proposal for **ST-22-08, ALBANY WATERFRONT PROJECT PHASE I**, said Bid Proposal, by reference thereto, being hereby made a part hereof.

NOW, THEREFORE, if the Bid Proposal submitted by the PRINCIPAL is accepted, and the Contract awarded to the PRINCIPAL, and if the PRINCIPAL executes the proposed Contract and furnishes such Performance Bond and Payment Bond as required by the Contract Documents within the time fixed by the documents, then this obligation shall be void; if the PRINCIPAL shall fail to execute the proposed Contract and furnish the bond, the SURETY hereby agrees to pay to the OBLIGEE the said sum as liquidated damages, within ten (10) days of such failure.

Signed and sealed this _____ day of _____ 2022.

_____	_____
PRINCIPAL	SURETY
By: _____	By: _____
	Attorney in Fact

EMPLOYEE DRUG TESTING PROGRAM CERTIFICATION

ORS 279C.505 (2) requires that bidders shall demonstrate and disclose to the City of Albany that he/she has an employee drug testing program in place before a public contract can be awarded.

Therefore, by signing this Certification, the Bidder does hereby certify and confirm that, as the proposed general contractor for City of Albany Project **ST-22-08, Albany Waterfront Project Phase I** that he/she has an employee drug testing program in place that is consistent with, and satisfies the intent of, the above-referenced legislation.

CONTRACTOR: _____

BY: _____

TITLE: _____

DATE: _____

FIRST-TIER SUBCONTRACTOR DISCLOSURE - *See Addendum No. 2 for changes to this section.*

PROJECT NAME: Albany Waterfront Project Phase I **BID NUMBER:** ST-22-08

BID CLOSING DATE: ~~March 29, 2022~~ March 31, 2022 **TIME:** ~~2:00 p.m.~~ 3:00 p.m.

This form must be submitted at the location specified in the Invitation to Bid on the advertised bid closing date and within two working hours after the advertised bid closing time.

List below the name of each subcontractor that will be furnishing labor or will be furnishing labor and materials and that is required to be disclosed, the category of work that the subcontractor will be performing and the dollar value of the subcontract.

Enter "**NONE**" if there are no subcontractors that need to be disclosed.
(***Attach additional sheets if needed.***)

Failure to submit this signed form by the disclosure deadline will result in a nonresponsive bid.
A nonresponsive bid will not be considered for award.

Subcontractor's Name	Category of Work	Dollar Value
1.		$
2.		$
3.		$
4.		$
5.		$
6.		$
7.		$
8.		$
9.		$

Form submitted by (bidder name): _____ Phone No.:_____
(Signature)

Contact Name:_____ Company: _____

ORS 279C.370 First-tier subcontractor disclosure. (1)(a) Within two working hours after the date and time of the deadline when bids are due to a contracting agency for a public improvement contract, a bidder shall submit to the contracting agency a disclosure of the first-tier subcontractors that:
(A) Will be furnishing labor or will be furnishing labor and materials in connection with the public improvement contract; and
(B) Will have a contract value that is equal to or greater than five percent of the total project bid or $15,000, whichever is greater, or $350,000 regardless of the percentage of the total project bid.
(b) For each contract to which this subsection applies, the contracting agency shall designate a deadline for submission of bids that has a date on a Tuesday, Wednesday or Thursday and a time between 2 p.m. and 5 p.m., except that this paragraph does not apply to public contracts for maintenance or construction of highways, bridges or other transportation facilities.
(c) This subsection applies only to public improvement contracts with a value, estimated by the contracting agency, of more than $100,000.
(d) This subsection does not apply to public improvement contracts that have been exempted from competitive bidding requirements under ORS 279C.335 (2).
(2) The disclosure of first-tier subcontractors under subsection (1) of this section must include the name of each subcontractor, the category of work that each subcontractor will perform and the dollar value of each subcontract. The information shall be disclosed in substantially the following [above] form:
(3) A contracting agency shall accept the subcontractor disclosure. The contracting agency shall consider the bid of any contractor that does not submit a subcontractor disclosure to the contracting agency to be a nonresponsive bid and may not award the contract to the contractor. A contracting agency is not required to determine the accuracy or the completeness of the subcontractor disclosure.
(4) After the bids are opened, the subcontractor disclosures must be made available for public inspection.
(5) A contractor may substitute a first-tier subcontractor under the provisions of ORS 279C.585.
(6) A subcontractor may file a complaint under ORS 279C.590 based on the disclosure requirements of subsection (1) of this section.

State of Oregon WH-179 (08-10-10)

SAMPLE CONTRACT

THIS CONTRACT is made between the CITY OF ALBANY, a municipal corporation, hereinafter called "City" and _____, hereinafter called "Contractor."

WITNESSETH:

The Contractor, in consideration of the sums to be paid and other covenants herein contained, agrees to perform and complete the work herein described and to furnish all necessary machinery, tools, apparatus, equipment, supplies, materials, and labor and perform all work in accordance with the applicable *Standard Construction Specifications*, the Special Specifications (aka Specifications, Special Provisions) found herewith, and in accordance with such alterations or modifications of the same as may be made by the City, and according to such directions as may from time to time be made or given by the Engineer under the authority and within the meaning and purpose of this Contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the Contractor.

The applicable Drawings, the applicable *Standard Construction Specifications*, all sections of Special Provisions, and the Schedule of Contract Prices bound herewith are hereby specifically referred to and by reference made a part hereof and shall by such reference have the same force and effect as though all of the same were fully inserted herein.

The Contractor must faithfully complete and perform all of the obligations of this Contract, and in particular, must promptly, as due, make payment of all just debts and obligations incurred in the performance of said Contract and must not permit any lien or claim to be filed or prosecuted against the City.

The Contractor must furnish to the City a 100% Performance Bond and a 100% Payment Bond. In addition to the required Payment Bond and Performance Bond, unless exempt under ORS 279C.836 (7), (8), or (9), the contractor is required to file a $30,000 Public Works Bond with the Construction Contractor's Board to be used exclusively for unpaid wages determined to be due by BOLI. The general contractor is required to verify that subcontractors have filed a public works bond before permitting a subcontractor to start work on a project unless exempt under ORS 279C.836 (7), (8) or (9).

The Contractor, its subcontractors, if any, and all employers working under this Contract are subject employers under the Oregon Workers' Compensation Law and must comply with ORS 656.017, which requires them to provide workers' compensation coverage for all their subject workers.

The Contractor agrees to protect, indemnify, and hold harmless the City against any and all loss, claims, or suits (including costs and attorney's fees) for or on account of injury to or death of persons, damage to, or destruction of property belonging to either the City or others occurring by reason of the act or neglect of the Contractor, Contractor's employees, or agents (including subcontractors) in connection with the performance of this Contract.

It is expressly understood that this Contract must be governed by the laws of the State of Oregon. The statutes of the State of Oregon for public works contracts, specifically but not exclusively ORS Chapter 279 A-C as amended or superseded, including the latest additions and revisions, are incorporated by reference as part of the contract documents, and the party contracting with the City of Albany hereby covenants and agrees to comply with all of the obligations and conditions applicable to public contracts pursuant to ORS 279 A-C, et seq, as though each obligation or condition were set forth fully herein. In addition, if the contract identified above calls for a public improvement as that term is defined by ORS 279A.010, the party contracting with the City of Albany further agrees to comply with all obligations and conditions applicable to public contracts for public improvements pursuant to ORS 279C, et seq, as though each obligation or condition were set forth fully herein. Contractor and its subcontractors, if any, agree to comply with the Oregon Consumer Information Protection Act, ORS Sections 646A.600 through 646A.628.

The Contractor further declares by the signing of this Contract that all the provisions required by ORS 279C.800 through 279C.870 relating to the payment of prevailing wage rates for work performed under the Contract with the City of Albany must be complied with, and that daily/weekly/holiday/weekend overtime will be paid, unless the amount of the contract is $50,000 or less, in which case the prevailing wage rate requirement shall not apply. If Contractor fails, neglects, or refuses to make prompt payment for labor or services, the City can pay and withhold these amounts from payments due the contractor (ORS 279C.515). Contractor must indemnify the City from claims of damages resulting from actual or alleged violations of these obligations.

As required by ORS 279C.520, Contractor must comply with ORS 652.220 and ORS 659A, and must not unlawfully discriminate against any of Contractor's employees in the payment of wages or other compensation for work of comparable character on the basis of an employee's membership in a protected class. Contractor's compliance with this section constitutes a material element of this Agreement and a failure to comply constitutes a breach that entitles the City to terminate this Agreement for cause. **Contracts valued at $500,000 with employers that have 50 or more employees are required to take Pay Equity Training and submit a certificate as proof before awarded a contract.** Contractor must certify they have taken the required Pay Equity Training and provide a certificate to the City.

The Contractor understands that if the price of this Contract exceeds $500,000, the City will deposit amounts withheld as retainage into an interest-bearing escrow account for the benefit of the City as outlined in ORS 279C.570(2), unless the Contractor elects an alternative in lieu of cash retainage, such as bonds, securities or other instruments, or a deposit of a surety bond. The Contractor must receive interest on the retained moneys from the date the Contractor's related payment request is fully approved by the City until the date the retained moneys are paid by the City to the Contractor. Payment of retainage is deemed to be "paid" when the payment is transmitted to the Contractor.

In consideration of the faithful performance of all of the obligations herein set out, and in consideration of the faithful performance of this Contract, the City agrees to pay to the Contractor the amount earned, as determined from the actual quantities of work performed and prices and other basis of payment specified, taking into consideration any amounts that may be deductible, under the terms of the Contract.

The Contractor agrees to complete the work within the time specified herein and to accept as full payment hereunder the amounts computed as determined by the Contract Documents and based on the said proposal.

Said improvements must be completed by the date specified in said Contract Documents and if not so completed, unless said time for completion is extended, as provided in the Contract Documents, or if extended, if the same is not completed within the time extended, the City will be caused to incur liquidated damages as specified in the Contract Documents. Liquidated damages must be retained out of any monies due or to become due under this agreement.

Payments must be made as provided in the Contract Documents. Notwithstanding anything in this agreement to the contrary, the City's obligation to pay money beyond the current fiscal year shall be subject to and dependent upon appropriations being made from time to time by the City Council for such purpose; provided, however, that the city manager or other officer charged with the responsibility for preparing the City's biennial budget must include in the budget for each fiscal year the amount of the City financial obligation payable in such year and the city manager or such other officer must use his/her best efforts to obtain the annual appropriations required to authorize said payments.

The Parties acknowledge that the parties and their counsel have reviewed this Agreement and that the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting Party shall not be employed in the interpretation of this Agreement or any exhibits or amendments hereto.

Should suit or action be undertaken to enforce any of the terms of this agreement or to seek damages for its breach, the prevailing party shall be entitled to an award of its reasonable attorney fees, costs, and expenses, including expert witness fees, incurred therein, and such costs and fees as may be required on appeal, including those incurred on appeal. Jurisdiction for litigation must be vested exclusively in the courts of Oregon, Oregon law must apply, and venue must lie in the Circuit Courts in and for Linn County, Oregon.

The date this Agreement is signed by the last party to sign it (as indicated by the date associated with that party's signature) will be deemed the date of this Agreement. If a party signs but fails to date a signature the date that the other party receives the signing party's signature will be deemed to be the date that the signing party signed this Agreement and the other party may inscribe that date as the date associated with the signing party's signature.

IN WITNESS WHEREOF, the undersigned duly authorized officials have caused this contract to be executed on behalf of their respective parties.

CONTRACTOR:

DATE: _____

By: _____
Title: _____

By: _____

Title: _____

(Note: Signatures of two officers are required for a corporation.)

_____
Construction Contractor's Board License Number

Tax Identification No.: _____
Telephone Number: ( ) _____

CITY OF ALBANY, OREGON:

DATE: _____

By: _____
Chris Bailey, Public Works Director

PERFORMANCE BOND

BOND NUMBER: _____

TOTAL BID AMOUNT: $_____

KNOW ALL MEN BY THESE PRESENTS that we, _____, as CONTRACTOR (Principal), and _____, a corporation, duly authorized to do a general surety business in the State of Oregon as SURETY, are jointly and severally held and bound unto the City of Albany, Oregon, (Obligee) in the sum of (100% of Contract) _____ _____ Dollars ($_____) for the payment of which we jointly and severally bind ourselves, our heirs, executors, administrators, and assigns or successors and assigns firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH that, whereas the principal has made and entered into a certain contract, a copy of which is attached hereto, with the City of Albany, Oregon, which contract, together with the applicable plans, Standard Specifications, Special Provisions, and schedule of contract prices, is by this reference made a part, whereby the principal agrees to perform in accordance with the certain terms, conditions, requirements, plans, and specifications which are set out in the contract and all authorized modifications of the contract which increase the amount of the work and the amount of the contract. Notice to the surety of any of the immediately foregoing are waived.

NOW, THEREFORE, if CONTRACTOR must faithfully and truly observe and comply with the terms, conditions, and provisions of the Contract, in all respects upon the terms set forth therein, and within the time prescribed therein and must indemnify and save harmless the City of Albany, Oregon, its officers, employees, and agents against losses and expenses and any damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the said Contract and must honor all claims for defective work within the warranty period(s) established by the *Standard Construction Specifications* and Special Provisions, after the acceptance of said Contract, then this obligation is to be void, otherwise to remain in full force and effect for the duration of the warranty period(s). The establishment and warranty periods for plantings must be two years as outlined in Section 107.15.02 of the *Standard Construction Specifications*. The warranty for all other work must be for a one-year period as outlined in Section 107.15.00.

PROVIDED, HOWEVER, that this bond is subject to the following further conditions:

a) Losses and expenses include but are not limited to attorney's fees to defend all claims, proceedings, lawsuits, and judgments arising out of or resulting from the fault of the principal, the principal's agents, representatives, or subcontractors, in the performance of or failure to perform this contract. However, principal must not be required to indemnify any indemnitee to the extent the damage, loss, or expense is caused by the indemnitee's negligence and must in all respects perform said contract according to law.

b) All material suppliers and all persons who must supply such laborers, mechanics, or subcontractors with material, supplies, or provisions for carrying on such work, must have a direct right of action against CONTRACTOR and SURETY on this bond, second only the right of the City of Albany, Oregon, under this bond, which right of action must be asserted in proceedings instituted in the name of the City of Albany, Oregon, to the use and benefit of the person, firm, or corporation instituting such action and all other persons, firms, or corporations having claims hereunder, must have the right to be made a party to such proceeding and to have such claim adjudicated in such action and judgment rendered thereon.

c) In no event shall SURETY be liable for a greater sum than the penalty of this Bond, or subject to any suit, action, or proceeding thereon that is instituted past the expiration of the warranty period(s) after the complete performance and acceptance of said Contract and final settlement thereof.

d) The said SURETY, for the value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations of this bond; and it does hereby waive notice of any such

change, extension of time, alteration, or addition to the terms of the Contract, or to the work, or to the Contract Documents.

IN WITNESS THEREOF, the parties hereto have caused this bond to be executed this _____ day of _____ 2022.

_____
Principal

By: _____
Signature

_____
Print or type

_____
Street/City Address

_____
Surety

By: _____
Signature

_____
Print or type

_____
Street/City Address

_____
Telephone Number

Surety Witness:

By: _____

_____
Street/City Address

PAYMENT BOND

BOND NUMBER: _____

TOTAL BID AMOUNT: $_____

KNOW ALL MEN BY THESE PRESENTS that we, _____, as CONTRACTOR (Principal), and _____, a corporation, duly authorized to do a general surety business in the State of Oregon as SURETY, are jointly and severally held and bound unto the City of Albany, Oregon, (Obligee) in the sum of (100% of Contract) _____ _____ Dollars ($_____) for the payment of which we jointly and severally bind ourselves, our heirs, executors, administrators, and assigns or successors and assigns firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH that, whereas the principal has made and entered into a certain contract, a copy of which is attached hereto, with the City of Albany, Oregon, which contract, together with the applicable plans, Standard Specifications, Special Provisions, and schedule of contract prices, is by this reference made a part, whereby the principal agrees to perform in accordance with the certain terms, conditions, requirements, plans, and specifications which are set out in the contract and all authorized modifications of the contract which increase the amount of the work and the amount of the contract. Notice to the surety of any of the immediately foregoing are waived.

NOW, THEREFORE, if CONTRACTOR must make payment promptly, as due to all subcontractors and to all persons supplying to the Contractor or its subcontractors, equipment, supplies, labor, or materials for the prosecution of the work, or any part thereof, provided for in said contract; and must, in performing the contract, pay and cause to be paid not less than the State of Oregon Bureau of Labor and Industries (BOLI) prevailing wage rates in effect as of the date of the bid advertisement by City of Albany, Oregon, unless the amount of the contract is $50,000 or less, in which case the prevailing wage rate requirement shall not apply; and pay per hour, day, and week for and to each and every worker who may be employed in and about the performance of the contract; and pay all contributions or amounts due to the State Accident Insurance Fund and the State Unemployment Trust Fund from such Contractor or subcontractors; and pay all sums of money withheld from the Contractor's employees and payable to the State Department of Revenue; and must pay all other just debts, dues, and demands incurred in the performance of the said contract; and must pay the City of Albany, Oregon such damages as may accrue to the City of Albany, Oregon, under the contract, then this obligation is to be void, otherwise to remain in full force and effect, provided that surety will remain liable to satisfy the claim of any worker affected by the failure of the principal or any subcontractor under the contract to pay the minimum rate of wage in accordance with the contract in the amount of minimum wages and an additional amount equal thereto as liquidated damages.

a) All material suppliers and all persons who shall supply such laborers, mechanics, or subcontractors with material, supplies, or provisions for carrying on such work, shall have a direct right of action against CONTRACTOR and SURETY on this bond, second only the right of the City of Albany, Oregon, under this bond, which right of action must be asserted in proceedings instituted in the name of the City of Albany, Oregon, to the use and benefit of the person, firm, or corporation instituting such action and all other persons, firms, or corporations having claims hereunder, must have the right to be made a party to such proceeding and to have such claim adjudicated in such action and judgment rendered thereon.

b) The said SURETY, for the value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations of this bond; and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract, or to the work, or to the Contract Documents.

IN WITNESS THEREOF, the parties hereto have caused this bond to be executed this _____ day of _____ 2022.

_____
Principal

By: _____
Signature

_____
Print or type

_____
Street/City Address

_____
Surety

By: _____
Signature

_____
Print or type

_____
Street/City Address

_____
Telephone Number

Surety Witness:

By: _____

_____
Street/City Address

RETAINAGE ELECTION

In accordance with ORS 279C.570(2) and OAR 137-049-0820, contracts that exceed $500,000 require the City to deposit amounts withheld as retainage into an interest-bearing escrow account in a bank, savings bank, trust company, or savings association. Retainage in the amount of five percent (5%) of the contract price of the work completed will be held by the City until such time as the project has been completed and accepted by the City.

Oregon law allows specific alternatives for the holding and accounting of retainage at the Contractor's election. If the City incurs additional costs as a result of the Contractor's election, the City may recover such costs from the Contractor, ORS 279C.560(3). Failure to execute and submit this form prior to execution of the contract agreement will result in the automatic selection of the first option. **Contractor must select one of the following options in providing for retainage for this project ONLY if the bid exceeds $500,000.**

☐ **1. Interest-bearing escrow account.**

The City will set up an interest-bearing account in a bank, savings bank, trust company, or savings association in the name of the City of Albany. The City will make deposits of retainage withheld from each progress payment into the interest-bearing escrow account. Funds in the escrow account will be released to the Contractor within 30 days of final acceptance of the project by the City.

Contractor must execute documentation and instructions to establish the interest-bearing escrow account prior to contract execution. Interest earned on the account shall accrue to the Contractor. Amounts retained and interest earned will be included in the final payment and may be offset by costs incurred. Contractor shall receive interest from the date the Contractor's related payment request is fully approved by the City until the date the retained moneys are paid by the City to the Contractor. Retainage is deemed to be paid when the payment is transmitted to the Contractor.

☐ **2. Deposit of bonds, securities, and other instruments.**

No later than the Contractor's execution of the contract, the Contractor will deposit acceptable bonds or securities, in an amount equivalent to five percent retainage of the contract amount, with the City or with a bank or trust company in Oregon. The bank or trust company will provide a safekeeping receipt to the City. The securities must cover all of the retainage.

Name of Lending Institution: _____

Acceptable bonds and securities to be held in lieu of retainage:

a. Bills, certificates, notes, bonds or other obligations of the United States, its agencies or its wholly-owned corporations.
b. Indebtedness of the Federal National Mortgage Association.
c. General obligation bonds of the State of Oregon or a political subdivision of the State of Oregon.
d. Irrevocable letters of credit issued by an insured institution, defined in ORS 706.008.

☐ 3. **Deposit of a retainage surety bond.**

The Contractor may, with approval of the City, deposit a surety bond for the benefit of the City, in a form acceptable to the City, in lieu of the five percent retainage. The bond should be received from the same surety providing the performance and payment bonds for the project.

Name of Surety/Lending Institution: _____

Therefore, by signing this retainage election the Bidder does hereby certify and confirm that as the general contractor for this City of Albany project, they have elected the above retainage option which satisfies the intent of the above-referenced legislation.

CONTRACTOR: _____ Project # ST-22-08

TITLE/SIGNATURE: _____

Date: _____

SECTION I: GENERAL REQUIREMENTS AND TECHNICAL SPECIFICATIONS

I-1. DESCRIPTION OF WORK

ST-22-08, Albany Waterfront Project Phase 1: This project includes approximately 1,020 linear feet of street reconstruction on Water Avenue, the northern boundary of Albany's Historic downtown and located just south of the Willamette River. Street work includes curbs, sidewalks, ramps, storm drain, landscaping, lighting improvements, construction of three intersections using concrete unit pavers, rehabilitation of an existing parking lot, and approximately 2,500 linear feet of 12-inch ductile iron water line; and related appurtenances. Work will be coordinated with planned rail crossing improvements.

I-2. STANDARD CONSTRUCTION SPECIFICATIONS

Each bidder must have access to a current set of City of Albany *Standard Construction Specifications*, which can be found on the City of Albany's website at https://www.cityofalbany.net/standard-construction-specifications or a printed set may be purchased for $100. All public improvements are required to conform to these specifications and bid prices must reflect these specifications.

I-3. AWARD OF CONTRACT

The Contract, if awarded, will be awarded to the lowest responsive, responsible bidder based on the lowest total bid amount, as determined by the City of Albany, and on the City's sole and absolute judgment to best serve its interest.

The City reserves the right to postpone the acceptance of the proposal and the award of the contract to a responsible bidder for a period not to exceed sixty (60) calendar days, or to reject any and all proposals received and further advertise the project for bids. The City may reject any bids not in compliance with all prescribed public contracting procedures and requirements, including the requirement to demonstrate the bidder's responsibility under ORS 279C.375(3)(b), and may reject for good cause any or all bids upon a finding of the City it is in the public interest to do so.

List of Subcontractors. Contractor is required to submit a list of subcontractors in accordance with ORS 279C.370. The City will submit a copy of this disclosure of first-tier subcontractors to the Bureau of Labor and Industries (BOLI) along with the completed BOLI form WH-81.

Failure to submit the list of subcontractors form by the disclosure deadline will result in a nonresponsive bid. A nonresponsive bid will not be considered for award. If no subcontractors need to be disclosed, this form must still be submitted indicating such.

Electronic Signature. Any signature (including any electronic symbol or process attached to, or associated with, a contract or other record and adopted by a person with the intent to sign, authenticate, or accept such contract or record) hereto or to any other certificate, agreement, or document related to this transaction, and any contract formation or record-keeping through electronic means shall have the same legal validity and enforceability as a manually executed signature or use of a paper-based recordkeeping system to the fullest extent permitted by applicable law.

Communicable Diseases. Contractor understands the risk to have contact with individuals, who have been exposed to and/or have been diagnosed with one or more communicable diseases, including but not limited to COVID-19 or other medical conditions, diseases, or maladies that exist, and it is impossible to eliminate the risk that Contractor could be exposed to and/or become infected through contact with or close proximity with an individual with a communicable disease. CONTRACTOR KNOWINGLY AND FREELY ASSUMES ALL SUCH RISKS, both known and unknown, EVEN IF ARISING FROM THE NEGLIGENCE OF THE RELEASEES OR OTHERS, and assumes all full responsibility for Contractor's participation.

I-4. CONTRACT COMPLETION TIME AND LIQUIDATED DAMAGES

At the Contractor's option, the City will issue the Notice to Proceed any time after both parties have executed the contract. The Contractor will be required to give the City seven days advance notice of intent to begin

construction. Once the Notice to Proceed is issued, regardless of the actual construction start date, all work specified in the contract documents must be completed, in every respect, by April 1, 2023, the ultimate completion date.

Liquidated damages will be assessed against the Contractor for each day over the maximum number of calendar days allotted plus each day beyond the stated ultimate completion date until the work is satisfactorily completed and accepted by the City. The schedule of liquidated damages is listed in the *Standard Construction Specifications*, Section 108.06.00.

I-5. PRECONSTRUCTION CONFERENCE

A preconstruction meeting will be required and will be held virtually. The meeting will be scheduled to take place a minimum of one week prior to beginning of construction. The Contractor must submit the following submittals at the preconstruction conference:

- Project Schedule
- Traffic Control Plan
- Erosion and Sediment Control Plan

I-6. PROJECT SCHEDULE

A detailed construction schedule of all work relating to this project must be submitted in advance by email to the Engineer for discussion at the preconstruction conference. The schedule must show how the contractor plans to complete the project on or before the ultimate completion date. The Contractor must take appropriate measures to expedite work items that are behind schedule, including the use of outside forces to complete the work, without additional compensation.

I-7. TEMPORARY TRAFFIC CONTROL SEE ADDENDUM #1 FOR CHANGES TO THIS ITEM

All temporary traffic control must be in accordance with the current edition of the *Manual on Uniform Traffic Control Devices* (MUTCD); the ODOT *Short-Term Traffic Control Handbook*; City of Albany *Standard Construction Specifications*, Section 202; and as stated herein. The Contractor must provide traffic control devices as may be required at locations where construction is of short-term duration (i.e., street intersections and access to private property), as well as traffic control devices that are expected to be in place for the duration of the project.

Construction operations must be conducted in a manner that will provide for uninterrupted movement of traffic on all public and private roadways within the construction area. At a minimum, the Contractor must maintain one lane of traffic in each direction or provide flaggers to control alternating traffic through a single lane. Temporary ramps must be installed and maintained at intersections and driveways for the duration of the project. At no time shall the flow of traffic be stopped completely without the approval of the Engineer. Approval for short-term, temporary closures or detours, if given, will be limited to a specific instance and will not be approved as standard practice.

The Contractor must limit all construction traffic, including material delivery and spoil removal, to those streets where there are construction activities taking place. The City will immediately suspend work in the Contractor does not limit construction traffic to approved streets. Work will be allowed to resume only after the Contractor has submitted a construction traffic routing plan limiting construction traffic to approved streets. This plan will be reviewed and approved by the City prior to its implementation. Damage to streets resulting from unapproved construction traffic must be corrected by the Contractor at no expense to the City.

The Contractor must submit traffic control plans to the Engineer for review one week prior to commencing construction. The traffic control plan must include a description of the traffic control devices, signing, and flaggers that are to be provided. Work must not begin until the City approves the traffic control plans. Following approval, the plan must be adhered to at all times.

On streets where parking is normally allowed, the Contractor must furnish and place at least three "No Parking" signs on each side of each block of the street where parking is to be prohibited. The signs must be highly visible to motorists from all approaches to the area where parking will be restricted. The signs must be posted at least two full working days in advance of any construction activity and must state the date and times when parking will be prohibited.

Construction operations must not commence until all construction signing is in place. Construction signing required for the project must be furnished and maintained by the Contractor.

All public and private roadways and driveways within the project area must be fully opened to local traffic at the end of each workday and at all times when no work is taking place. When the progress of the work requires temporary closures of residential driveways, the Contractor must provide notice to the affected residential properties 48-hours in advance of the closure. Access to residential driveways must be reestablished as soon as possible. The Contractor must maintain continuous access to commercial and industrial properties except during paving operations. The Contractor must meet on-site with the manager of each business a minimum of 72-hours in advance of any work affecting access to their property and inform them of the measures taken to maintain access. The Contractor must place and maintain "DRIVEWAY OPEN" signs at commercial driveways to guide customers and deliveries to the appropriate entrances during the work. The signs must be repositioned on a continuous basis as the progress of the work requires.

After working hours, construction equipment must be parked outside traveled portions of the roadways and must be isolated with construction fencing and lighted barricades.

In the event the Contractor fails to provide and maintain proper barricades, signs, and other traffic control devices within one hour after notification by the Engineer, the City may install the traffic control devices at the Contractor's expense. The City will deduct two times (200 percent) the City's actual cost, which will include all labor, equipment, and materials involved, from any payments due or coming due to the Contractor.

I-8. NOTIFICATIONS

The Contractor must provide written notice to the front office of the following agencies, three (3) working days in advance of beginning construction. The written notice must include the construction schedule and must explain the extent and duration of expected traffic disruptions. Agency contact information may be found in the table below.

Agency	Address	Phone Number
U.S. Postal Service	525 Second Avenue SW, Albany, OR 97321	541-926-8829
Albany Transit System	112 Tenth Avenue SW, Albany, OR 97321	541-917-7667
Republic Services	1214 Montgomery Street SE, Albany, OR 97321	541-928-2551
Albany Fire Department Administrative Office	611 Lyon Street SE, Albany, OR 97321	541-917-7700
Greater Albany Public Schools District Office	718 Seventh Avenue SW, Albany, OR 97321	541-967-4501
Albany Police Department	2600 Pacific Boulevard SW, Albany, OR 97322	541-971-7680
Linn County Sheriff's Office	1115 Jackson Street SE, Albany, OR 97322	541-967-3950

The Contractor must notify the above-named agencies and the public of any schedule changes that are made by the Contractor, required by the City, or are the result of weather or other unforeseen circumstance. The Contractor must submit a copy of each notification to the City for review and approval prior to delivering the notices.

The Contractor must provide written notification to all affected residents and businesses three working days in advance of scheduled work that will result in traffic disruptions and blocked access to driveways or parking areas. Written notifications must explain the extent and duration of the disruption of traffic and/or blocked access and must include alternate routes or parking areas as appropriate.

I-9. ENTERING AND WORKING WITHIN CONFINED SPACES

Contractors working on any public improvement project, while under contract with the City or a private entity, must comply with the following regulations as they pertain to entering and working within confined spaces (as defined by OR-OSHA):

1. Identify any confined space entry that is required to perform the work and submit a list of the locations to the City.
2. Follow the City's confined space entry procedures or submit an alternate procedure that meets or exceeds OR-OSHA confined space entry regulations.

3. Submit written notice to the City of any hazardous situation that is encountered during the entry of or while working within a confined space.

I-10. RAILROAD COORDINATION

SEE ADDENDUM #1 FOR CHANGES TO THIS ITEM

This project is in close proximity to railroad tracks owned by Burlington Northern Santa Fe Railway (BNSF) and operated by Portland & Western Railroad (PNWR). The tracks within the project limits are located within the Water Avenue Right-of-Way (ROW) which is under the jurisdiction of the City of Albany. The railroads will be constructing crossing improvements that are permitted by ODOT Rail under a separate contract. Contractor shall familiarize themselves with the scope and schedule of the of rail improvements and coordinate access, stagging, and layout areas with the railroad's contractor. Contractor shall provide a minimum four weeks' notice to the PNWR Rail Master, Davin Helms at (503) 816-8010 prior to starting work and additional notice as specified in Special Provisions and on Construction Drawings.

I-11. WORK ON PRIVATE

Permits will be required for all plumbing, electrical, and site work on private property. Permits may be obtained from the Building Department at City Hall, 333 Broadalbin Street SW, Albany, Oregon, or are also available via the City's website, which is www.cityofalbany.net. Payment for obtaining permits will be considered incidental to the appropriate bid items.

I-12. TEMPORARY ASPHALT TRENCH PATCHING

Temporary hot mix asphalt trench patching will be required on all excavations on Water Avenue and intersecting streets. The Contractor will be allowed to maintain gravel trench surfaces outside the traveled roadway and on sidewalks during construction provided the gravel surfaces are maintained in good condition and loose rock is swept up on a daily basis. If the Engineer determines that trenches are not being maintained in good condition, temporary hot mix or cold mix trench patching shall be placed at the Contractor's expense. In addition, temporary asphalt trench patching may be required in high maintenance areas as directed by the Engineer. Temporary trench patching shall be considered incidental to other bid items.

I-13. WORK AROUND FIBER OPTIC LINES

The Contractor must give Verizon /MCI & AT&T 48-hours advance notice of each instance where construction will occur in the vicinity of the fiber optic lines. It shall be the Contractor's responsibility to comply with all imposed requirements and to protect the fiber optic lines during construction operations. Verizon /MCI & AT&T may require that their lines be excavated by hand to minimize the risk of damage. Verizon /MCI & AT&T may want their own inspector on-site during construction in the vicinity of their fiber optic lines.

I-14. LOCATION OF UNDERGROUND UTILITIES

The Contractor must determine the horizontal and vertical alignment of existing public and private utilities well enough in advance to make adjustments to the work. Special care must be taken to avoid compromising concrete thrust restraint on the existing water system. Locating utilities ahead of construction and providing protective measures where required are incidental to other bid items.

I-15. FRANCHISE UTILITY COORDINATION

The City has notified affected franchise utility companies of this project and has directed them to relocate their facilities as needed to provide for the construction of this project. Franchise utilities include Pacific Power, NW Natural, CenturyLink, Comcast, LS Networks, AT&T, and Verizon/MCI. The Contractor must coordinate with the franchise utility companies to allow them to perform their relocation work. No additional contract time will be allowed for delays resulting from a lack of coordination with franchise utilities. See additional requirements and information related to franchise utility coordination in Special Provisions and Construction Drawings.

Franchise Utility contacts for this project are provided below:

Utility	Contact	Telephone	Email
Pacific Power	Tucker Hill	541-967-6161	Tucker.Hill@PacifiCorp.com

NW Natural	Dave Bellinger	541-926-4253 x8238	d6b@nwnatural.com
CenturyLink	Travis Vaughn	503-365-5555	travis.vaughn@lumin.com
Comcast	Chris Cranford Ryan Hansen	503-476-2477 541-230-0079	Chris_Cranford@comcast.com Ryan_Hansen@comcast.com
LS Networks	Dan McGraw Craig McPherson	503-349-9134 971-291-7873	osp@LSNetworks.net cmcpherson@LSNetworks.net
AT&T	Chris Hopkins Steve Duppenthaler	541-246-5583 425-286-3822	ch7932@att.com sd1891@att.com
Verizon/MCI	Brandon Qualls Jeremy Noble	503-403-5134	brandon.s.qualls@verizon.com jeremy.noble@verizon.com

I-16. REPAIR OF EXISTING UNDERGROUND UTILITIES

City-owned, underground infrastructure damaged during construction must be repaired as directed by the Engineer. All completed repair work will require approval of the Engineer prior to covering the work. General repair guidelines are:

1. Existing sanitary sewer mains and service laterals that are damaged must be replaced with like materials and solid-sleeve couplings. Where like materials are not available, the existing pipe must be replaced with ASTM 3034 PVC pipe and solid-sleeve transition couplings.
2. Existing storm drainage pipe that is damaged must be replaced with like materials and mechanical-type couplings. Where like materials are not available, storm drainage pipe must be replaced with Class III concrete pipe or ASTM 3034 PVC pipe with appropriate mechanical-type couplings.

I-17. STREET CONSTRUCTION

Street excavation, placement of geotextile fabric, and rock backfill must be conducted in one continuous operation. Only tracked vehicles will be allowed on the subgrade. Geotextile fabric must be placed on the subgrade following excavation. No vehicles will be allowed to drive directly on the fabric. Cutting or digging through the geotextile fabric will not be allowed once it has been placed. Crushed aggregate base must be placed to within 25 feet of the end of street excavation by the end of each working day. Care must be taken to avoid damage to existing public and private utilities.

I-18. INSPECTION AND APPROVAL OF WATER LINE MATERIALS

Contractor must not begin excavation for water mains and water service lines until all pipe and fittings have been delivered to the site and have been inspected and approved by the Engineer. Contractor shall be responsible to coordinate material inspections with the Engineer. Delays to the construction schedule resulting from rejection and replacement of materials will not be cause for additional contract time.

I-19. EXCAVATION AND BACKFILL REQUIREMENTS

All excavations must be backfilled daily. Only that portion of the excavation where the next day's work is to resume may be left open. All open trenches in streets must be covered with secured, steel sheets at the end of work each day. All other excavations must be backfilled.

Select backfill must be used in all excavations within the public right-of-way to the limits shown below, regardless of location, and in all driveways subject to vehicle travel.

Paved Area: Use select compacted backfill to finished subgrade elevation.

Unpaved Area: Use select compacted backfill to within 18 inches of finish grade. Complete backfill with topsoil meeting requirement of Section 01010 – Topsoil of the Oregon Department of Transportation's Standard Specifications for Highway Construction, 1996 Edition.

A fill permit will be required to deposit excavated materials, in excess of 50 cubic yards at any one tax lot, from this project regardless of whether the site is publicly or privately owned. For property located within the city

limits, fill permits may be obtained from the Public Works Department at City Hall, 333 Broadalbin Street SW, Albany, Oregon. For property located outside the city limits, fill permits may be obtained from the Linn County Building Department at the Linn County Court House, Fourth Avenue and Ellsworth Street, Albany, Oregon.

I-20. SCHEDULED INTERRUPTION OF WATER SERVICE

Work involving existing water lines must be scheduled in a manner that will minimize disruption of local water service. Interruption of water service must not be scheduled to occur on a Friday or City Holiday. As a general rule, scheduled interruptions of local water service shall not occur prior to 9:00 a.m. or after 2:00 p.m. The Contractor must give written notice to each affected water customer a minimum of 48 hours in advance of a scheduled interruption of water service. Commercial and industrial water customers require a minimum 72-hour advance notice prior to scheduled interruption of water service. In addition, a representative of the Contractor must personally visit each affected business to deliver the notice to the owner or a responsible employee and answer any questions regarding the shutdown. The Contractor must coordinate with affected businesses to make meter switch-overs and mainline connections at times convenient for their normal operation. In some circumstances it may be necessary to schedule water shutdowns outside of normal working hours. No extra compensation will be due the Contractor for work performed outside of normal working hours.

Each situation involving a scheduled interruption of water service must be limited to four hours, unless extended by the Engineer. If the Contractor does not complete the work within the allotted time, mitigating circumstances notwithstanding, the City will impose liquidated damages of $225 per each hour, or fraction thereof, beyond the time limit established by the Engineer.

The Engineer will be responsible for supervising the operation of existing valves as required during the course of the work at all locations and for providing the Contractor with maps detailing individual properties requiring shutoff notices.

I-21. BACKFLOW PREVENTION ASSEMBLIES

There may be backflow prevention assemblies on the customer side of the meter where sprinkler systems and landscape irrigation systems are present. These devices are usually located outside of the meter box. The contractor shall be responsible for costs associated with cleaning and testing of these devices and other fixtures that are disabled by debris from the new water line. The Contractor must promptly resolve issues involving fixtures of devices plugged by debris as a result of construction operations. In the event that the Contractor does not promptly respond to correct the problem the City will have the work done and Contractor shall be charged.

I-22. CONNECTION TO EXISTING WATER LINES

The Contractor must be responsible for scheduling and conducting exploratory excavations as necessary to determine material requirements for work involving connections to, or abandonment of, existing water lines. The outside diameter of existing water lines may vary significantly from industry standard specifications (where available) or from information provided on the plans. The Contractor must be solely responsible for excavating each specific location where there is work involving an existing water line and to determine the actual pipe type and diameter before ordering materials. The City will not compensate the Contractor for components that are found to be incompatible with existing materials. Potholing connections to existing water lines is considered incidental to other bid items.

Existing abandoned water lines or other utilities must not be used as permanent bracing or as backing for permanent concrete thrust restraint where mechanical restraint is not appropriate. The use of concrete thrust restraint where mechanical restraint is specified will require the approval of the Engineer.

I-23. MINIMUM WATER LINE COVER REQUIREMENT

Except where shown and specified otherwise on the Construction Drawings, all new main line water pipe work must have three feet of minimum cover from the new roadway surface grade to the top of the new line. Depending on the depth of existing utilities and other requirements, new water pipe work may require a deeper bury to maintain minimum cover.

I-24. WATER SUPPLY

The City will provide water required for the completion of the work. The Contractor must only take water from approved fire hydrants as designated by the Engineer.

I-25. DIGITAL PROJECT FILES

If requested by the Contractor, the City of Albany will provide the AutoCAD Civil 3D electronic files used to create the Construction Drawings. While these files include electronic surfaces and other data, they are not intended to be used for construction purposes. The City will require the Contractor to sign a City-provided release document acknowledging that the files are to be used at the Contractor's own risk.

I-26. PROTECTION OF EXISTING TREES

Trees to remain in place must be protected at all times. If roots three inches in diameter or greater are encountered during construction, including excavation and trenching activities, the root must be protected and reported to the Engineer. If the root must be removed, the City Forester must be consulted prior to pruning. Root pruning must be accomplished by a sharp cut made with a hand saw or chain saw. Cut or exposed root ends must be kept moist at all times until backfill is placed to cover the roots. Cut roots three inches or greater must be wrapped in burlap and kept moist for the entire time the roots are exposed. Cut or exposed roots must be backfilled as soon as possible.

If the Contractor causes the destruction of trees that are to remain, the City will deduct the value of the tree as determined by the City Forester using the methods described in the International Society of Arboriculture's "Valuation of Landscape Trees, Shrubs, and Other Plants: A Guide to the Methods and Procedures for Appraising Amenity Plants."

SECTION II: STATE AND FEDERAL CONTRACTING LAW

II-1. PREVAILING WAGES

Contractor must comply with all of the provisions required by ORS 279C.800 through ORS 279C.870 relating to the payment of prevailing wage rates for work performed under the Contract with the City of Albany.

Each worker in each trade or occupation employed in the performance of this contract either by the contractor, subcontractor, or other person doing or contracting to do, or contracting for the whole or any part of the work on this contract, must be paid not less than the applicable state prevailing rate of wage, or the applicable federal prevailing rate of wage, whichever is higher.

Oregon law requires that the higher of the state prevailing wage rates (PWR) or federal Davis-Bacon rates be paid to workers on projects subject to both the state PWR law and federal Davis-Bacon Act.

ST-22-08, Albany Waterfront Project Phase I does not use federal funds and does not require Davis-Bacon rates. Only Oregon BOLI Prevailing Wage Rates apply to this project.

Each year the Oregon Bureau of Labor and Industries (BOLI) publishes rates and amendments that are available by calling 971-673-0839 or online at the BOLI website at:

https://www.oregon.gov/boli/employers/Pages/prevailing-wage-rates.aspx

The publication that applies to this contract is the January 1, 2022, Prevailing Wage Rates for Public Works Contracts in Oregon.

Daily/weekly/holiday/weekend overtime must be paid. If a contractor fails to pay for any labor or services, the City can pay for this labor or services and withhold these amounts from payments due the contractor. ORS 279C.520; OAR 839-025-0020(2)(b).

Contractors and subcontractors are required to prepare weekly certified payroll reports and statements and submit them to the City by the fifth business day of each month (ORS 279C.845; OAR 839-025-0010). Contractor payment will be withheld until the City is in receipt of these certified weekly payroll reports. Information submitted on certified statements may be used only to ensure compliance with the provisions of ORS 279C.800 through ORS 279C.870.

II-2. PERFORMANCE, PAYMENT, AND PUBLIC WORKS BONDS

In addition to the required payment bond and performance bond, unless exempt under ORS 279C.836 (7), (8), or (9), the contractor is required to file a $30,000 Public Works Bond with the Construction Contractor's Board to be used exclusively for unpaid wages determined to be due by BOLI. The general contractor is required to verify that subcontractors, unless exempt, have filed a public works bond before permitting a subcontractor to start work on a project.

The Statutory Public Works Bond form is available from BOLI upon request or may be downloaded from https://www.oregon.gov/boli/employers/Documents/public-works-bond.doc.

II-3. RECIPROCAL PREFERENCE LAW

Oregon's reciprocal preference law, ORS 279A.120 and ORS 279A.125, requires public contracting agencies, in determining the lowest responsible bidder, to add a percent increase to each out-of-state bidder's bid price that is equal to the percent of preference given to local bidders in the bidder's home state. That is, if the low bidder is from a state that grants a 10 percent preference to its own in-state bidders, the Oregon agency must add 10 percent to that bidder's price when evaluating the bid.

For details, check Oregon's Reciprocal Preference Law website at:

https://www.naspo.org/reciprocity1

Bidders in need of any assistance in the application of this law should call the State Procurement Office at 503-378-4642, or contact them at State of Oregon - Department of Administrative Services, State Procurement Office, 1225 Ferry Street SE, U-140, Salem, OR 97301-4285.

II-4. AFFIRMATIVE ACTION/NONDISCRIMINATION

By submitting a bid/proposal, the Bidder/Proposer agrees to comply with the Fair Labor Standards Act (FLSA); Title VII of the Civil Rights Act of 1964; Executive Order 11246, (as amended); Fair Employment Practices; Equal Employment Opportunity Act; Section 503 of the Rehabilitation Act of 1973, as amended; Vietnam Era Veterans' Readjustment Assistance Act of 1974; Americans with Disabilities Act; Age Discrimination in Employment Act of 1967 (ADEA); and Oregon Revised Statutes (ORS). By submitting a bid/proposal, the Bidder/Proposer specifically certifies, under penalty of perjury, that the Bidder/Proposer has not discriminated against minority, women, or emerging small business enterprises in obtaining any required subcontracts.

If the contract is awarded on the basis of the contractor's certification as a Disadvantaged Business Enterprise (DBE), Minority/Women Business Enterprise (MWBE) and Emerging Small Business (ESB) certifications (collectively known as MWESBs), the contractor must remain certified during the entire term of the contract. Contractors must include a similar provision in any subcontracts for the project.

II-5. PAY EQUITY COMPLIANCE AND TRAINING CERTIFICATION

Pay Equity Compliance. As required by ORS 279C.520, Contractor must comply with ORS 652.220 and ORS 659A, and must not unlawfully discriminate against any of Contractor's employees in the payment of wages or other compensation for work of comparable character on the basis of an employee's membership in a protected class. Contractor's compliance with this section constitutes a material element of this Agreement and a failure to comply constitutes a breach that entitles the City to terminate this Agreement for cause. Contracts valued at $500,000 with employers that have 50 or more employees are required to take Pay Equity Training and submit a certificate as proof before awarded a contract. Contractor must certify they have taken the required Pay Equity Training and provide a certificate to the City.

Free training is available through the state of Oregon's Department of Administrative Services. Details are available at https://www.oregon.gov/das/Procurement/Pages/PayEquity.aspx.

II-6. LICENSE REQUIRED FOR ASBESTOS ABATEMENT PROJECT

This contract does not require the contractor or subcontractor to be licensed under ORS 468A.720, regarding asbestos abatement.

II-7. CONSTRUCTION AND DEMOLITION DEBRIS/YARD WASTE MATERIALS – ORS 279C.510

The contractor is responsible for:

1. Salvaging or recycling construction and demolition debris, if feasible and cost-effective.
2. Composting or mulching yard waste material at an approved site, if feasible and cost-effective.

II-8. PROVISIONS CONCERNING ENVIRONMENTAL AND NATURAL RESOURCES LAWS

Contractor is responsible to abide by ORS 279C.525 regarding enacted ordinances, rules, or regulations as set forth by the Albany Municipal Code, Oregon Department of Environmental Quality, Department of State Lands, Environmental Protection Agency, and/or the US Army Corps of Engineers, or any other federal, state, and local agency, in regards to the prevention of environmental pollution and preservation of natural resources.

II-9. PAYMENT, CONTRIBUTIONS, LIENS, WITHHOLDING – ORS 279C.505

The contractor shall:

1. Make payment promptly, as due, to all persons supplying to the contractor labor or material for the performance of the work provided for in this contract.
2. Pay all contributions or amounts due the Industrial Accident Fund from the contractor or subcontractor incurred in the performance of the contract.

3. Not permit any lien or claim to be filed or prosecuted against the City on account of any labor or material furnished.
4. Pay to the Department of Revenue all sums withheld from employees under ORS 316.167

II-10. PAYMENT OF CLAIMS BY PUBLIC OFFICERS, PAYMENT TO PERSONS FURNISHING LABOR OR MATERIALS, AND COMPLAINTS – ORS 279C.515; OAR 839-025-0020(2)(a)

1. If the Contractor fails, neglects, or refuses to pay promptly a person's claim for labor or services that the person provides to the Contractor or a subcontractor in connection with this contract as the claim becomes due, the City may pay the amount of the claim to the person that provides the labor or services and charge the amount of the payment against funds due or to become due the Contractor by reason of this contract.
2. If the Contractor or a first-tier subcontractor fails, neglects, or refuses to pay a person that provides labor or materials in connection with this contract within 30 days after receiving payment from the City or Contractor, the Contractor or first-tier subcontractor owes the person the amount due plus interest charges that begin at the end of the 10-day period within which payment is due under ORS 279C.580 (4) and that end upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest on the amount due is nine percent per annum. The amount of interest may not be waived.
3. If the Contractor or a subcontractor fails, neglects, or refuses to pay a person that provides labor or materials in connection with the public improvement contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580.

II-11. CONTRACTOR'S RELATIONS WITH SUBCONTRACTORS – ORS 279C.580(3)(4)

Contractor is required to include in each subcontract for property or services the contractor enters into with a first-tier subcontractor, including a material supplier, for the purpose of performing a construction contract:

1. A payment clause that obligates the contractor to pay the first-tier subcontractor for satisfactory performance under the subcontract within 10 days out of amounts the City pays to the contractor under this contract.
2. A clause that requires the contractor to provide a first-tier subcontractor with a standard form that the first-tier subcontractor may use as an application for payment or as another method by which the subcontractor may claim a payment due from the contractor.
3. A clause that requires the contractor, except as otherwise provided in this paragraph, to use the same form and regular administrative procedures for processing payments during the entire term of the subcontract. A contractor may change the form or the regular administrative procedures the contractor uses for processing payments if the contractor:
   a. Notifies the subcontractor in writing at least 45 days before the date on which the contractor makes the change; and
   b. Includes with the written notice, a copy of the new or changed form or a description of the new or changed procedure.
4. An interest penalty clause obligating the Contractor, if the contractor does not pay the first-tier subcontractor within 30 days after receiving payment from the City, to pay the first-tier subcontractor an interest penalty on amounts due in each payment the Contractor does not make in accordance with the payment clause included in the subcontract under paragraph (1.) above. A contractor or first-tier subcontractor is not obligated to pay an interest penalty if the only reason that the contractor or first-tier subcontractor did not make payment when payment was due is that the contractor or first-tier subcontractor did not receive payment from the City or Contractor when payment was due. The interest penalty applies to the period that begins on the day after the required payment date and that ends on the date on which the amount due is paid and is computed at the rate specified in ORS 279C.515(2).
5. A clause must be included in each of the Contractor's subcontracts requiring the first-tier subcontractor to include a payment clause and an interest penalty clause that conforms to the standards of this sub-section, paragraphs 1-4 above, in each of the first-tier subcontractor's subcontracts and to require each of the first-tier subcontractor's subcontractors to include such clauses in the first-tier subcontractors' subcontracts with each lower-tier subcontractor or supplier.

6. A mandate that all subcontractors, if they were awarded a subcontract on the basis of certification as a disadvantaged, minority-owned, women-owned, or emerging small business enterprise, to maintain certification through the term of the contract.

II-12. CONDITION CONCERNING HOURS OF LABOR – ORS 279C.520

Any worker employed by the Contractor may not be employed for more than 10 hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or when the public policy absolutely requires it, the employee must be paid at least time and a half pay as follows:

1. For all overtime in excess of eight hours in any one day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday; or for all overtime in excess of 10 hours in any one day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday; and
2. For all work performed on Saturday and on any legal holiday specified in ORS 279C.540.

Contractor must give notice in writing to employees, who work on a public contract, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that the employees may be required to work.

Contractor must comply with the prohibition set forth is ORS 652.220, that compliance is a material element of the contract and that a failure to comply is a breach that entitles the contracting agency to terminate the contract for cause.

Contractor may not prohibit any of its employees from discussing the employee's rate of wage, salary, benefits, or other compensation with another employee or another person and may not retaliate against an employee who discusses the employee's rate of wage, salary, benefits, or other compensation with another employee or person.

II-13. TIME LIMITATION ON CLAIM FOR OVERTIME – ORS 279C.545

Any worker employed by the Contractor shall be foreclosed from the right to collect for any overtime provided in ORS 279C.540 unless a claim for payment is filed with the Contractor within 90 days from the completion of the contract, providing the contractor has:

1. Caused a circular clearly printed in boldfaced 12-point type and containing a copy of ORS 279C.545 to be posted in a prominent place alongside the door of the timekeeper's office or in a similar place that is readily available and freely visible to workers employed on the work; and
2. Maintained the circular continuously posted from the inception to the completion of the contract on which workers are or have been employed.

II-14. CONDITION CONCERNING PAYMENT OF MEDICAL CARE AND PROVIDING WORKERS' COMPENSATION – ORS 279C.530

1. Contractor shall promptly, as due, make payment to any person, co-partnership, association or corporation furnishing medical, surgical, and hospital care services or other needed care and attention, incident to sickness or injury, to the employees of the contractor, of all sums that the contractor agrees to pay for the services and all moneys and sums that the contractor collected or deducted from the wages of employees under any law, contract or agreement for the purpose of providing or paying for the services.
2. All subject employers working under this Contract must comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Contractor must ensure that each of its subcontractors complies with these requirements.

SCHEDULE A: STREET AND STORMDRAIN CONSTRUCTION

Item No. A-1 – Mobilization:
See *Standard Construction Specifications*, Section 201.

Payment for this bid item will be on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-2 – Temporary Traffic Control:
See *Standard Construction Specifications*, Section 202; the Special Provisions; and the Construction Drawings.

Payment for this bid item will be on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-3 – Erosion Prevention and Sediment Control:
This item includes all work related to procuring, installing, and maintaining erosion prevention and sediment control (EPSC) measures for the duration of the project as shown on the Construction Drawings. The Contractor must submit an EPSC plan at the preconstruction conference for approval by the Engineer. This plan must include measures to achieve the followings goals:

- Prevent the erosion of exposed soils by wind or rain
- Prevent sediment-laden waters from running onto streets, or into storm drains, ditches, drainage features, wetlands, creeks, streams, lakes, or rivers.
- Maintain clean street and sidewalk surfaces
- Quickly respond to rainfall events with additional measures as needed

The plan must emphasize measures designed to prevent erosion rather than control sediment. This will require that sediment-laden water from trench dewatering to be processed through mechanical or chemical treatment prior to discharge. Sole reliance on inlet protection to control sediment will be prohibited in most cases. The approved EPSC plan must be implemented prior to the beginning of ground disturbing activities.

In the event the Contractor fails to provide and maintain EPSC measures that prevent sediment from leaving the construction site, the City may require that work be stopped immediately. The City will not grant contract extensions for work stoppages based on the Contractor's failure to provide and maintain EPSC measures that prevent sediment from leaving the construction site. If sediment-laden water continues to leave the site after one working day following notification by the Engineer, the City may install additional EPSC measures at the Contractor's expense. The City will deduct two times (200 percent) the City's actual cost, which will include all labor, equipment, and materials involved, from any payments due or coming due to the Contractor.

Payment for this bid item will be on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-4 – Coordinate with Pacific Power:
See Special Provisions and Construction Drawings.

This bid item includes all coordination with Pacific Power. The Contractor is required to coordinate work around power pole relocation, temporary power pole locations, and installation of new permanent light poles.

Work required to coordinate with all other franchise utilities shall be considered incidental to appropriate bid items.

Payment for this bid item will be on a lump-sum basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-5 – Coordinate with Railroad and Railroad Contractor:
See Special Provisions, Construction Drawings and Appendix E.

This bid item includes all coordination with BNSF Railway (track owner), Portland & Western Railroad (PWRR, track operator), and Genesee Wyoming Inc. (real estate manager for PWRR) and Railroad Contractor, to be determined later. The Contractor is required to fill out and submit a no cost right-of-entry application to Genesee Wyoming prior to construction. Application is provided under Appendix E. All improvements will be coordinated with the Railroad Contractor. All railroad related expenses, including but not limited to railroad flagging, monitoring and insurance, will be covered by the railroad. The Contractor will not be responsible for these expenses.

This bid item also includes coordination with PWRR's contractor to replace and/or abandon rail crossing as shown on the Construction Drawings The Contractor shall install and maintain all temporary traffic control required for AERC to complete their work.

Payment for this bid item will be on a lump-sum basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-6 – Unclassified Excavation:
See *Standard Construction Specifications*, Section 204 and the Special Provisions.

Payment for this bid item will be on a neat line cubic-yard basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-7 – Overexcavation and Foundation Stabilization:
See *Standard Construction Specifications*, Section 204.

The Contractor shall coordinate with the Engineer to perform a proof roll using a loaded dump truck after unclassified excavation has been completed to identify areas of poor subgrade. Limits and depth of overexcavation shall be as directed by the Engineer. Subgrade geotextile fabric must be placed at the bottom of the excavation prior to backfill. Geotextile Fabric shall be paid for under a separate bid item.

Payment for this bid item will be made on a cubic-yard basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-8 – Subgrade Geotextile Fabric:
See the Special Provisions.

This bid item must include placing subgrade geotextile fabric to the construction limits shown on the plans or as directed by the Engineer.

The subgrade geotextile fabric must meet the Standard Specifications for Construction, Section 00350, Geosynthetic Installation, and Table 02320-1, Geotextile Property Values. The fabric must be spread uniformly over the subgrade surface to the limits as shown on the Construction Drawings and as directed by the Engineer. For areas greater than the fabric width or length, the fabric must be overlapped. The overlap must be a minimum of 24 inches. No vehicles, including construction equipment, shall be allowed directly on the fabric. All underground utilities must be tested and accepted prior to placing the geotextile fabric. No cutting or trenching through the geotextile fabric will be allowed.

Payment for this bid item will be on a square-yard basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-9 – Crushed Aggregate Base:
See *Standard Construction Specifications*, Sections 205 and 302 and the Special Provisions.

Crushed aggregate base must consist of 100 percent fractured face rock.

This bid item also includes crushed aggregate base placed under curbs, sidewalks, driveway approaches, transition paving and concrete pavers.

Prior to screeding the bedding sand for the concrete pavers, the base surface tolerance shall be +/- 3/8 inch over a 10-foot straight edge.

Payment for this bid item will be on a per-ton basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-10 – Latex-Modified Slurry Seal:
See Construction Drawings and Appendix A, Latex Modified Emulsified Asphalt Slurry Seal Surface Treatment Specifications.

No payment shall be made for quantities in excess of the maximum application rate, as specified. All labor; equipment; emulsion, latex, mineral filler, water additive, and other materials; pavement preparation and cleaning; cleanup; and other requirements of the contract documents will be considered incidental to the item.

Payment for this bid item will be on per-ton-of-aggregate basis and will include all labor, equipment, materials and incidentals required to complete the work.

Item No. A-11 – Emulsified Asphalt Tack Coat:
Emulsified asphalt used for tack coat shall be CSS-1, CSS-1h, CMS-2, CMS-2S, CMS-2h, CRS-1, CRS-2, HFRS-2 or HFMS-2 as selected by the Contractor. Limit pumping between the bulk storage tank, hauling transportation, field storage tanks and distributor to an absolute minimum to maintain proper viscosity. Dilution of the tack coat material may be allowed to a maximum 1:1 ratio with prior approval of the Engineer. Water shall be added as recommended by the asphalt supplier.

Surfaces that are to receive a tack coat shall be thoroughly cleaned of dust, dirt and loose debris immediately prior to placing tack.

Tack coat shall be placed to the previous lift of asphalt concrete when more than twelve hours have elapsed before the time of placing the subsequent lift. Tack coat shall be applied at a temperature of between 140ºF and 185ºF, and at the rates shown below:

Surface Type	Residual Rate (gallons per square yard)
New Asphalt	0.02 to 0.05
Existing Asphalt	0.04 to 0.08

Tack coat shall be applied using an asphalt distributor that can apply the asphalt on variable surface widths up to 16 feet, at readily controlled rates and with uniform pressure. The distributor equipment shall include a tachometer, pressure gauges, accurate volume measuring devices and a thermometer for measuring the temperature of tank contents. Distributor equipment shall be equipped with a positive power unit for the asphalt pump and full circulation spray bars adjustable both laterally and vertically. The spray bar height shall be set for triple lap coverage. Tack coat applications shall be uniform both transversely and longitudinally. Applications that are streaked shall not be allowed. The tack coat shall not be applied during wet weather or when the temperature is below 40ºF and shall be applied in advance of paving operations as is appropriate to maintain a tacky, sticky condition of the asphalt. Asphalt concrete shall not be placed on the tack coat until the emulsified asphalt has separated from the water.

Tack coat shall also be applied to all edges of existing pavement, gutter surfaces, manhole castings, inlet boxes and like items prior to placement of the first lift of asphalt. Placement of tack in these areas shall be incidental to this item.

Failure to apply tack coat as described above will result in the associated asphalt concrete being rejected.

Payment for this bid item will be on a square-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-12 – 3/4-Inch Warm Mix Asphalt Concrete:
See *Standard Construction Specifications*, Sections 205 and 304 and the Special Provisions.

The Contractor must schedule a pre-paving meeting with the Engineer at least one week prior to paving and submit a paving plan for review and approval. The plan must outline the width, direction, and order of paving panels, expected production rates, installation of pavement markings, and how the hot mat will be protected from truck or other heavy traffic until the panel is ready to be reopened to traffic.

The Contractor must provide a Superpave mix design for dense graded, Level 2, ¾-inch warm mix asphalt concrete. A mix design approved within the previous 12 months may be submitted. Temperature-viscosity curves must be provided

for each mixture. The mix design must include recommended temperature ranges for mixing and placement, must be signed by a Certified Mixture Design Technician, must be prepared according to the appropriate sections of the *Oregon Standard Specifications for Construction.*

Payment for this bid item will be on a per-ton basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-13 – 1/2-Inch Warm Mix Asphalt Concrete:
See *Standard Construction Specifications*, Sections 205 and 304 and the Special Provisions.

The wearing course must be placed in one 2-inch lift. The Contractor must place the wearing course of asphalt the entire width of the street, including the side street intersections, on the same day. The use of multiple independently operated paving machines may be required to meet this requirement. Tack coat must be placed prior to paving. The Contractor must schedule a pre-paving meeting with the Engineer at least one week prior to paving and submit a paving plan for review and approval. The plan must outline the width, direction, and order of paving panels, expected production rates, installation of pavement markings, and how the hot mat will be protected from truck or other heavy traffic until the panel is ready to be reopened to traffic

The Contractor must provide a Superpave mix design for dense graded, Level 2, ½-inch warm mix asphalt concrete. A mix design approved within the previous 12 months may be submitted. Temperature-viscosity curves must be provided for each mixture. The mix design must include recommended temperature ranges for mixing and placement, must be signed by a Certified Mixture Design Technician, must be prepared according to the appropriate sections of the *Oregon Standard Specifications for Construction.*

Payment for this bid item will be on a per-ton basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-14 – Transition Paving:
See *Standard Construction Specifications*, Section 205 and 304.

This bid item must include all labor, equipment, and materials required to complete transition paving as shown on the plans and as directed by the Engineer. Paving must be completed using ½-inch asphalt concrete. Unless otherwise shown on the Construction Drawings or directed by the Engineer, transition paving must be four-inches thick over six inches of compacted crushed aggregate base. Saw cutting of existing pavement must be incidental to this item. Base rock must be paid under Crushed Aggregate Base. Restoration of painted driveway direction arrows shall be incidental to this item.

Payment for this bid item will be made on a per-ton basis and will cover all labor, equipment, and materials required to complete the work.

Item No. A-15 – 10-Inch Concrete Pavement - Vehicular: **SEE ADDENDUM #2 FOR CHANGES TO THIS ITEM**
See *Standard Construction Specifications*, Section 305 and the Special Provisions.

Portland cement concrete shall have a minimum three-day compressive strength 4,000 psi.

Reinforcing steel, were shown on the Construction Drawings, and sawcutting for contraction joints shall be incidental to this item.

Payment for this bid item will be on a cubic-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-16 – Concrete Pavers: **SEE ADDENDUM #1 FOR CHANGES TO THIS ITEM**
See *Appendix B, Specifications for Concrete Paver Installation*

Manufacturer: Willamette Graystone. 2405 NE 244th Ave. Wood Village, OR 97060. Phone: 503-669-7619

Product: Holland stones, interlocking pavers

Size: 4x8, 3 1/8" thickness

Color: Classic blend

Bedding and jointing sand is incidental to this item.

Payment for this bid item will be on a square-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-17 – Standard Curb and Gutter:
See *Standard Construction Specifications*, Section 306.

Concrete used for this work must have a three-day compressive strength of 4,000 psi. Removal of existing curb and gutter will be paid for under unclassified excavation.

Payment for this bid item will be on a linear-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-18 – Standard Straight Curb:
See *Standard Construction Specifications*, Section 306.

Concrete used for this work must have a three-day compressive strength of 4,000 psi.

Payment for this bid item will be on a linear-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-19 – 4-Inch PCC Sidewalk:
See *Standard Construction Specifications*, Section 306.

Concrete used for sidewalk located behind driveway approaches must have a three-day compressive strength of 4,000 psi. Removal of existing sidewalk and private driveways will be paid for under unclassified excavation.

Payment for this bid item will be on a square-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-20 – 8-Inch PCC Driveway Approach:
See *Standard Construction Specifications*, Section 306.

Concrete used for this work must have a three-day compressive strength of 4,000 psi. Removal of existing driveway approaches will be paid for under unclassified excavation. Concrete used for sidewalk located behind driveway approaches shall be paid for under this bid item.

Payment for this bid item will be on a square-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-21 – Concrete Stairs and Handrails:
Cast-in-place concrete stairs and stainless steel handrails per drawings and Appendix G Exterior Metal Railinngs.

Cast-in-place concrete used for this work must have a three-day compressive strength of 4,000 psi. All reinforcing steel shall be detailed, fabricated and placed in accordance with ACI Detailing Manual 315.

Form grooved nosing in stair treads where indicated on Drawings. Embed detectable warning strip in plastic concrete where indicated on Drawings per manufacturer's printed instructions. Hold ends of warning strip 1 inch from edges of concrete and 1 inch from face of stair nosing. Finish concrete around warning strip to match adjacent stair and landing finish. Protect warning strip from concrete splatter throughout process.

Payment for this bid item will be on a lump-sum basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-22 – Truncated Domes:
See *Standard Construction Specifications*, Section 306.

Truncated domes must be as shown in the applicable Standard Drawings.

Payment for this bid item will be on a square-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-23 – Curb Drain:
See *Standard Construction Specifications*, Section 306.

Curb drain locations will be marked in the field by the Engineer and are shown on the Construction Drawings. Connections to existing downspouts where shown on plans are incidental to this bid item. Detail for connections included in Construction Drawings.

Payment for this bid item will be on a linear-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-24, A-25, A-26 and A-27 – 6-Inch, 8-Inch, 10-Inch and 12-Inch PVC Storm Drain:
See *Standard Construction Specifications*, Section 401.

Payment for this bid item will be on a linear-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-28 – 36-Inch Casing w/24-Inch PVC Carrier Pipe:
See *Standard Construction Specifications,* Section 207

This bid item provides for open trench installation of a 36-inch steel casing pipe under the PNWR rail line as shown on the Construction Drawings. The 24-inch PVC storm main inside the casing and connections to existing pipes with solid sleave transition couplings are included in this bid item.

The casing must be 36-inch diameter ASTM A53, Type E, with minimum wall thickness of 0.625 inches. Calpico Model M-8-SS pipe insulators with standard type skids must be installed every six feet along the length of the pipe with one insulator in the middle of each stick of pipe and one insulator installed within two feet of each bell. Each end of the steel casing must be plugged with a minimum 6 inches of grout to prevent the movement of material into the casing. No material shall be placed in the annular space between the casing and carrier pipes.

The Contractor shall be responsible for potholing existing utilities and verifying depth prior to the installation. The cost of potholes and repairs must be incidental to this bid item. The Contractor shall be responsible for any damage to underground utilities resulting from the boring.

Payment for the 36-inch steel casing and installation must be made at the unit price bid per linear foot and must be full compensation for all excavation, shoring, casing pipe, pipe skids, coordination with the rail, insurance, potholes, and other miscellaneous items required to complete the work.

Item No. A-29 – Property Line Clean-Out:
See Standard Drawing No. 411 and *Standard Construction Specifications*, Section 401.

This bid item provides for the construction of 4-inch cleanouts on storm drain service laterals at property lines as shown on the Construction Drawings.

Payment for this bid item will be on a per-each basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-30 – Sewer/Storm Mainline Mini-Manhole Cleanout:
See *Standard Construction Specifications* Sections, 402 and the Construction Drawings.

Payment for this bid item will be on a per-each basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. 31 – Construct Streetside Planter:
See *Standard Construction Specifications*, Section 601, 602, 603, and 604 and the Construction Drawings.

PVC pipe required to connect to storm drain curb inlets is incidental to this item. Cleanouts and cleanouts/overflows are incidental to this item.

Excavation and backfill of stormwater quality planters must be completed with 48 hours.

Plantings must be paid for under a separate bid item.

Payment for this bid item will be on a square-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-32 – Plant and Establish Stormwater Quality Plantings:
See *Standard Construction Specifications*, Section 605, and the Construction Drawings.

This item provides for the provision, installation, and establishment of plants in curbside stormwater quality planters as shown on the Construction Drawings.

Contractor must mix in a minimum of ½ cup of Myco-Fusion Rhizo-Charge and one tablespoon of Myco-Fusion Green 150 by Santiam Organics of Albany, Oregon, or approved equal, with the growing medium in each planting hole.

All warranty-related expenses must be included in this item.

Payment for this bid item will be made on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-33 – Adjust Manhole Rim to Grade:
See *Standard Construction Specifications*, Section 402.

All manholes within the new roadway shall be paved over and adjusted to grade after paving is completed per Standard Drawing No. 409 using circular sawcutting. Diamond cutting will not be allowed. Manholes within sidewalks and driveway approaches must be adjusted to grade prior to final placement of concrete. Removal and replacement of the frame and cover is included in this item.

Payment for this bid item will be on a per-each basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-34 – Standard Precast Manhole:
See *Standard Construction Specifications* Sections, 402 and 403 and the Construction Drawings.

This bid item includes construction of a new standard precast manhole per the *Standard Construction Specifications*, applicable Standard Details, and the Construction Drawings. Pipe connections to the manhole must be incidental to this bid item.

Payment for this bid item will be on a per-each basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-35 – 72-Inch Precast Manhole:
See *Standard Construction Specifications* Sections, 402 and 403 and the Construction Drawings.

This bid item includes construction of a new 72-inch diameter precast manhole per the *Standard Construction Specifications*, applicable Standard Details, and the Construction Drawings. Pipe connections to the manhole must be incidental to this bid item. Interior joints between new precast manhole components must be sealed with approved non-shrink grout. The bench must be constructed with a 1:12 slope to the springline of the pipe.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-36 – Connect to Existing Manhole:
See *Standard Construction Specifications* Sections, 402 and 403 and the Construction Drawings.

This bid item includes construction of new connections to existing manholes per the *Standard Construction Specifications*, applicable Standard Drawings, and the Construction Drawings. Pipe connections to the manhole must be incidental to this bid item. New pipe connections to manholes must be core drilled.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-37 – Extra for Manholes Over Existing Pipes:
See *Standard Construction Specifications* Sections, 402 and 403 and the Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to connect new storm manhole over an existing 12-inch or 36-inch storm main as shown on the Construction Drawings.

Payment for this bid item will be made on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-38 – Standard Curb Inlet:
See *Standard Construction Specifications*, Section 402.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-39 – Catch Basin:
See *Standard Construction Specifications*, Section 402.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-40 – Catch Basin – Private:
See *Standard Construction Specifications*, Section 402.

This item provides for provision and installation of a private catch basin and associated private storm drain piping as shown on the Construction Drawings. All work must conform with the local plumbing code. The City will provide the required plumbing permits for this work.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-41 – Shoulder Catch Basin:
See *Standard Construction Specifications*, Section 402, and Construction Drawings.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-42 – Remove Existing Storm Drain:
See *Standard Construction Specifications*, Section 403.

This item provides for removal of existing storm drains and backfilling with select backfill as shown on the Construction Drawings and as directed by the Engineer.

Payment for this bid item will be on a linear-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-43 – Remove Existing Catch Basin:
See *Standard Construction Specifications*, Section 403.

Backfill will be paid for under Crushed Aggregate Base.

Payment for this bid item will be on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-44 – Abandon Existing Storm Culvert:
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to abandon the existing 72-inch storm culvert in-place as shown on the Construction Drawings. Pipes to be abandoned shall be pumped full of flowable controlled density fill. The flowable controlled density fill shall be able to flow through the existing pipes to fill all voids and shall have a compressive strength between 50 and 200 psi. The Contractor shall provide a mix design for approval by the Engineer prior to the start of work. The Contractor shall monitor the pumping of cellular

concrete or flowable controlled density fill and ensure the material does not overflow. Any additional excavation required to complete this work shall be incidental to this bid item.

There are approximately 80 feet of the 72-inch culvert to be abandoned and filled, as well as sections to remove in order to install the new utility lines.

Payment for this bid item will be made on a lump-sum basis and shall include all equipment, labor, materials, and incidentals required to complete the work.

Items No. A-45, A-46, A-47 and A-48 – Thermoplastic Pavement Markings:
See *Standard Construction Specifications*, Section 304

These items must include all work to furnish and install pavement markings. Lane line markings must be extruded profiled or extruded non-profiled (Method A) thermoplastic as specified on the Construction Drawings and as in Section 00865 of the *Oregon Standard Specifications for Construction*. Markings used for legends, symbols, crosswalks, and stop bars must be PreMark as manufactured by Flint Trading, Inc., or approved equal. All pavement markings must be installed in accordance with the Construction Drawings and Special Provisions, the *Manual on Uniform Traffic Control Devices*, and the *Oregon Standard Specifications for Construction*.

Payment for these bid items will be on a linear-foot basis, as indicated in the Schedule of Contract Prices and will include all labor, equipment, materials, and incidentals required to complete the work.

Item Number/Description	Pay Unit
A-45. 4-inch Yellow Profiled Thermoplastic Stripe	Linear foot
A-46. 4-inch White Non-Profiled Thermoplastic Stripe	Linear foot
A-47. 12-inch White Non-Profiled Thermoplastic Stripe	Linear foot
A-48. 24-inch White Non-Profiled Thermoplastic Stripe	Linear foot

Item No. A-49 – Painted Yellow Curb:
See *Standard Construction Specifications*, Section 304

The street curb must be painted yellow where shown on the Construction Drawings and as directed by the Engineer. Painting materials must conform to the Oregon Department of Transportation's Specifications for White and Yellow Water-Borne Traffic Line Bead Binder Paint.

Payment for this bid item will be on a linear-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-50 – Install New Street Signs:
See the Construction Drawings.

This bid item includes provision and installation of all new street signs shown on the Construction Drawings. All new street signs must be in place prior to the paving of the final lift of asphalt.

The new sign base must be a V-Loc Socket, installed flush with the finish surface with the wedge pointed towards approaching traffic. Sign posts must be round, 2⅜-inch, 0.095 gauge, galvanized, steel pipe posts. The signs must be mounted on the post with Hawkins, Single Clamp on, U-Brackets, with hex-head screws. Galvanized, press-on pipe caps must be installed. New signs must use diamond grade sheeting as manufactured by 3M.

Payment for this bid item will be on a lump-sum basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-51 – Landscape Restoration:
See Special Provisions and the *Standard Construction Specifications*, Section 209.

This item provides for basic restoration of front lawns and landscape strip areas. Lawn and landscape strip areas with existing soil must be prepared with a minimum of six inches of new topsoil. Areas without topsoil must be prepared with a minimum of 18 inches of topsoil. All topsoil must be lightly compacted to prevent settling.

Hydroseeding must be applied to all disturbed areas unless otherwise directed by the Engineer. Use one of the following seed mixes or approved equal:

1. Dwarf Grass Mix (low height, low maintenance)
   Dwarf Perennial Ryegrass, 80 percent by weight
   Creeping Red Fescue, 20 percent by weight
   Application rate: 100 pounds minimum per acre

2. Standard Height Grass Mix
   Annual Ryegrass, 40 percent by weight
   Turf-type Fescue, 60 percent by weight
   Application rate: 100 pounds minimum per acre

All hydroseeding must be completed by September 1 unless otherwise approved by the Engineer. Any disturbed areas not hydroseeded by September 1 must be hydroseeded with a layer of EcoBlanket with Terraseeding by Rexius, Inc., or approved equal. No additional payment will be made for the use of EcoBlanket and Terraseeding. Seeded areas must be maintained, including watering, spot weeding, mowing, and reseeding, until a full, uniform, vigorously growing stand of grass free of weeds, undesirable grass species, disease, and insects is achieved and accepted by the Engineer.

Unless specifically called out for removal in these Specifications or the Construction Drawings, any trees, shrubs, bushes, or plants destroyed by construction activities must be replaced with new trees, shrubs, bushes, and plants obtained from a reputable nursery. New trees must be of the same species with a minimum height of six feet. New shrubs, bushes, and plants must be of the same species as those removed. The original trees, shrubs, bushes, and plants must not be replanted.

The Contractor must anticipate that a portion of the existing planter strips between the curb and sidewalk has private irrigation installed in it. The City does not know the extent of the area that has irrigation or the layout of any of the irrigation systems. The Contractor must make repairs to irrigation lines and sprinklers that are damaged as a result of construction with like materials.

Also included in this bid item is dismantling and reassembling boardwalks, decks and fences for the purpose of completing the work. Restoration of private property impacted by sanitary sewer work will be paid for under a separate bid item.

Payment for this bid item will be made on a lump-sum basis and will constitute full compensation for all materials, equipment, labor, and incidentals to complete the work.

Item No. A-52 – Root Barrier:
Manufacturer: DeepRoot Green Infrastructure, LLC
Contact: 101 Montgomery St. Suite 2850, San Francisco, CA 94104. Phone: 800-458-7668
Product: Rigid interlocking polypropylene panels.
Model: UB 24-2.

Payment for this bid item will be on a liner-foot basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-53 – Soil Amendment:
See Appendix C, Soil Preparation Specifications.

Imported topsoil, conforming to USDA classification for Loam or Sandy Loam.

Improve 15" below finish grade for shrub planting area, and improved 36" below finish grade for tree pits.

Payment for this bid item will be on a cubic-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-54 – Hydroseeding:
This item must include the provision and placement of hydroseeding as shown on the Construction Drawings and as directed by the Engineer.

Hydroseeding must be applied to all disturbed areas unless otherwise directed by the Engineer. Use one of the following seed mixes or approved equal:

1. Dwarf Grass Mix (low height, low maintenance)
   Dwarf Perennial Ryegrass, 80 percent by weight
   Creeping Red Fescue, 20 percent by weight
   Application rate: 100 pounds minimum per acre

2. Standard Height Grass Mix
   Annual Ryegrass, 40 percent by weight
   Turf-type Fescue, 60 percent by weight
   Application rate: 100 pounds minimum per acre

All hydroseeding must be completed by September 1 unless otherwise approved by the Engineer. Any disturbed areas not hydroseeded by September 1 must be hydroseeded with a layer of EcoBlanket with Terraseeding by Rexius, Inc. or approved equal. No additional payment will be made for the use of EcoBlanket and Terraseeding. Seeded areas must be maintained, including watering, spot weeding, mowing, and reseeding, until a full, uniform, vigorously growing stand of grass free of weeds, undesirable grass species, disease, and insects is achieved and accepted by the Engineer.

Payment for this work will be on a square-yard basis and must include all labor, equipment, and materials required to complete the work.

Item No. A-55 – Reinforced Lawn Paving:
Manufacturer: GeoCHEM, Inc., Renton ,WA, or approved equal.

Contact: Richard E. Linton, Tele. 1- 425-738-1474, Email rich@geocheminc.com

Product: Presto Geosystems GeoBlock 5150 available

Topsoil, fill, engineering base and geotextile fabric is incidental to this item.

Payment for this bid item will be on a square-yard basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-56 – Bark Mulch:
This item must include the provision and placement of four inches of medium grade fir/hemlock bark mulch on top of a layer of filter fabric in landscape strip and lawn areas as shown on the Construction Drawings and as directed by the Engineer. The existing ground surface must be cleared of weeds and other unwanted vegetation prior to placement of filter fabric and bark mulch.

Payment for this work will be on a square-yard basis and must include all labor, equipment, and filter fabric and other materials required to complete the work.

Item No. A-57 – Plant and Establish Street Trees and Shrubs:
See *Standard Construction Specifications*, Section 210, and *Appendix D, Plants Specifications*.

This item provides for the provision, installation, and establishment of street trees as shown on the Construction Drawings. All warranty and establishment related expenses will be included in this item.

Payment for this bid item will be on a lump-sum basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-58 – Bollards:
Manufacturer: Reliance Foundry

Contact: 6450 148th Street, Unit 207, Surrey BC, Canada V3S 7G7. Phone: 1-877-789-3245

Product: R8323 – Flexible Bollard

Payment for this bid item will be on a per-each basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-59 – Removable Bollards:
Manufacturer: Reliance Foundry

Contact: 6450 148th Street, Unit 207, Surrey BC, Canada V3S 7G7. Phone: 1-877-789-3245

Product: #R-7902

Payment for this bid item will be on a per-each basis and will include all labor, equipment, materials, and incidentals required to complete the work.

Item No. A-60 – Adjust Water Fixtures to Finish Grade:
See *Standard Construction Specifications*, Section 501 and the Construction Drawings.

This item provides for adjusting water valve boxes to finished grade. Damaged valve boxes must be replaced at the Contractor's expense.

Payment for this bid item will be made on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-61 – Installation of Park Light and Footing:
See Construction Drawings.

This item provides provision for installation of the light fixture and pole as specified in the Construction Drawings, or approved equal. Design and installation of light pole footings shall be considered incidental to this bid item. All work will meet local building and electrical codes. All permits required for installation will be considered incidental to this bid item.

Payment for this item will be made on a per-each basis and shall include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-62 – PVC Lighting Conduit:
See Construction Drawings.

This item provides provision for installation of 2-inch street lighting conduit as shown on the Construction Drawings. All conduit shall be installed using horizontal directional drilling unless otherwise approved by the Engineer. All conduits shall be Schedule 40 PVC. All couplers, bends, risers, caps and any other required fittings or materials shall be considered incidental to this bid item. Bends shall be fiberglass unless otherwise directed by the Engineer. All work shall meet local building and electrical codes. All permits required for installation shall be considered incidental to this bid item.

Payment for this item will be made on a linear-foot basis and shall include all equipment, labor, materials, and incidentals required to complete the work.

Item No. A-63 – Wiring:
See Construction Drawings.

This bid item provides provision for installation of the electrical wiring system serving the new park path light. All work shall meet local building and electrical codes. All permits required for installation will be considered incidental to this bid item.

Payment for this item will be made on a linear-foot basis and shall include all equipment, labor, materials, and incidentals required to complete the work.

SCHEDULE B: WATER LINE CONSTRUCTION

Item No. B-1 – Mobilization:
See *Standard Construction Specifications*, Section 201.

Payment for this bid item will be on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-2 – Temporary Traffic Control:
See *Standard Construction Specifications*, Section 202; the Special Provisions; and the Construction Drawings.

Payment for this bid item will be on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-3 – Erosion Prevention and Sediment Control:
This item includes all work related to procuring, installing, and maintaining erosion prevention and sediment control (EPSC) measures for the duration of the project as shown on the Construction Drawings.

In the event the Contractor fails to provide and maintain EPSC measures that prevent sediment from leaving the construction site, the City may require that work be stopped immediately. The City will not grant contract extensions for work stoppages based on the Contractor's failure to provide and maintain EPSC measures that prevent sediment from leaving the construction site. If sediment-laden water continues to leave the site after one working day following notification by the Engineer, the City may install additional EPSC measures at the Contractor's expense. The City will deduct two times (200 percent) the City's actual cost, which will include all labor, equipment, and materials involved, from any payments due or coming due to the Contractor.

Payment for this bid item will be on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-4, B-5 and B-6 – 6-Inch, 8-Inch and 12-Inch Ductile Iron Water Line:
See *Standard Construction Specifications*, Section 501.

Payment will be made on a linear-foot basis for pipe that has successfully passed pressure testing and disinfection procedures and must include all equipment, labor, materials, and incidentals required to complete the work. Pipe that has been installed but not successfully pressure tested and disinfected will be paid for in an amount equal to 50 percent of the length of the untested pipe.

Item No. B-7 and B-8 – 6-Inch and 8-Inch Gate Valve:
See *Standard Construction Specifications*, Section 502.

Provision and installation of retainer glands on valves, when specified on the Construction Drawings, is incidental to this bid item.

Payment will be made on a per-each basis and must include all equipment, labor, materials, and incidentals to complete the work.

Item No. B-9 – 12-Inch Butterfly Valve:
See *Standard Construction Specifications*, Section 502.

Provision and installation of retainer glands on valves, when specified on the Construction Drawings, is incidental to this bid item.

Payment will be made on a per-each basis and must include all equipment, labor, materials, and incidentals to complete the work.

Item No. B-10 – 1-Inch Combination Air/Vacuum Release Valve:
See *Standard Construction Specifications*, Section 502.

No additional compensation will be made to the Contractor if this bid item is not used or if bid quantities are reduced/increased. Payment for this bid item will be made on a per-each basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-11 – Standard 1-Inch Service Assembly:
See *Standard Construction Specifications*, Section 504

All service line piping shall be copper. The Engineer will visually inspect all copper services prior to backfilling. The Contractor must coordinate with the Engineer to ensure these inspections occur in a timely manner.

Provision and installation of meter boxes, including adjustment to finish grade, will be incidental to this bid item. Provision and installation of 1-inch angle meter valve and customer service valve must be incidental to this bid item.

In addition to provision and installation of all components specified on the Construction Drawings, *Standard Construction Specifications*, and Special Provisions, this bid item includes labor, equipment, and materials required to locate existing private service lines where necessary, provision and installation of unspecified materials that will be necessary to connect the existing private service to the new meter assembly, abandonment of existing meter assemblies where specified, removal and reinstallation of pressure reducing valves where encountered, and any costs associated with cleaning and testing backflow devices and other fixtures disabled by debris from the new water line.

All materials and workmanship completed on the private side of the meter must be in accordance with the current local Plumbing Code and must be performed by a licensed plumber. The City has acquired the necessary plumbing permit(s) required for work on private property related to this bid item. The Contractor is responsible for all work required to coordinate and schedule required inspections. Contractor must protect existing trees and landscaping. Restoration of private driveway and sidewalk, if necessary, will be paid for under a separate bid item.

Existing water meters will be reused unless otherwise noted on the Construction Drawings. The City will supply new water meters where required. The Contractor must be responsible for supplying required adapters on the public and private side of all water meters.

When changing out meters, Contractor must place the old meter on top of the meter box. The City inspector will collect old meters and record pertinent information.

Payment for this bid item will be made on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-12 – Standard 2-Inch Service Assembly:
See *Standard Construction Specifications*, Section 504.

All service line piping shall be copper. The Engineer will visually inspect all copper services prior to backfilling. The Contractor shall coordinate with the Engineer to ensure these inspections occur in a timely manner.

Provision and connection to meters, will be incidental to this bid item. Provision and installation of 1-inch angle meter valve and customer service valve shall be incidental to this bid item.

In addition to provision and installation of all components specified on the Construction Drawings, Standard Construction Specifications, and Special Provisions, this bid item includes labor, equipment, and materials required to locate existing private service lines where necessary, provision and installation of unspecified materials that will be necessary to connect the existing private service to the new meter assembly, abandonment of existing meter assemblies where specified, removal and reinstallation of pressure reducing valves where encountered, and any costs associated with cleaning and testing backflow devices and other fixtures disabled by debris from the new water line.

Existing water meters will be reused unless otherwise noted on the Construction Drawings. The City will supply new water meters where required. The Contractor shall be responsible for supplying required adapters on the public and private side of all water meters.

When changing out meters, Contractor shall place the old meter on top of the meter box. The City inspector will collect old meters and record pertinent information.

Payment for this bid item will be made on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-13 – Standard Fire Hydrant Assembly:
See *Standard Construction Specifications*, Section 503.

Provision and installation of retainer glands and locking gaskets in these assemblies is incidental to this bid item. Payment for six-inch ductile iron piping is included in this bid item. Payment for the six-inch gate valves will be paid under a separate bid item.

The street curb must be painted yellow for 10 feet on both sides of the fire hydrant or as directed by the Engineer. Painting materials must conform to the Oregon Department of Transportation's Specifications for White and Yellow Water-Borne Traffic Line Bead Binder Paint. A blue raised reflectorized pavement marker must be placed on the street in front of the fire hydrant, offset from the street centerline towards the hydrant approximately eight inches or as directed by the Engineer.

Payment for this bid item will be made on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-14 – Remove Fire Hydrant Assembly:
This item provides for removing the fire hydrant assembly in full, including the valve box and lid, and disposal of the materials in a legal manner off-site. Hydrants to be removed are shown on the Construction Drawings. The City reserves the right to salvage any fire hydrant.

Surface restoration must be paid under the appropriate separate bid items.

Payment for this bid item will be made on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work

Item No. B-15 – 6-Inch × 6-Inch Connection Assembly:
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to connect the existing 6-inch water line and the new 6-inch Ductile Iron water line and coordination of a scheduled water shutdown. Abandoned piping must be plugged with concrete a minimum distance equal to two pipe diameters.

Provision and installation of locking gaskets and retainer glands are incidental to this bid item. Payment for ductile iron piping will be included in this bid item.

Payment for this bid item will be made on a lump-sum basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-16 – 8-Inch × 8-Inch Connection Assembly: **SEE ADDENDUM #1 FOR CHANGES TO THIS ITEM**
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to connect the existing 8-inch asbestos cement water line and the new 8-inch Ductile Iron water line and coordination of a scheduled water shutdown. Abandoned piping must be plugged with concrete a minimum distance equal to two pipe diameters.

Provision and installation of locking gaskets and retainer glands are incidental to this bid item. Payment for ductile iron piping will be included in this bid item.

Payment for this bid item will be made on a lump-sum basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-17 – 12-Inch × 12-Inch Connection Assembly: **SEE ADDENDUM #1 FOR CHANGES TO THIS ITEM**
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to connect the existing 12-inch water line and the new 12-inch Ductile Iron water line and coordination of a scheduled water shutdown. Abandoned piping must be plugged with concrete a minimum distance equal to two pipe diameters.

Provision and installation of locking gaskets and retainer glands are incidental to this bid item. Payment for ductile iron piping will be included in this bid item.

Payment for this bid item will be made on a lump-sum basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-18 – Phase 1 Connection Assembly – Station 32+91:
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to connect the existing 12-inch ductile iron water line at station 32+91 and the new 12-inch Ductile Iron water line and coordination of a scheduled water shutdown. Abandoned piping must be plugged with concrete a minimum distance equal to two pipe diameters.

Provision and installation of locking gaskets and retainer glands are incidental to this bid item. Payment for 12-inch D.I. piping and the 12-inch gate valve must be included in this bid item.

Payment for this bid item will be made on a lump-sum basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-19 – Phase 2 Connection Assembly – Station 34+12:
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to connect the existing 12-inch ductile iron water line at station 34+12 and the new 12-inch Ductile Iron water line and coordination of a scheduled water shutdown. Abandoned piping must be plugged with concrete a minimum distance equal to two pipe diameters.

Provision and installation of locking gaskets and retainer glands are incidental to this bid item. Payment for 12-inch D.I. piping and the 12-inch gate valve must be included in this bid item.

Payment for this bid item will be made on a lump-sum basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-20 & B-21 – 24-Inch Casing w/12 or 8-Inch D.I. Carrier Pipe:
See *Standard Construction Specifications,* Section 207

This bid item provides for open trench installation of a 24-inch steel casing pipe under the PNWR rail line as shown on the Construction Drawings. The 12 or 8-inch ductile iron water line inside the casing and connections to existing pipes with solid sleave transition couplings are included in this bid item.

The casing must be 24-inch diameter ASTM A53, Type E, with minimum wall thickness of 0.625 inches. Calpico Model M-8-SS pipe insulators with standard type skids must be installed every six feet along the length of the pipe with one insulator in the middle of each stick of pipe and one insulator installed within two feet of each bell. Each end of the steel casing must be plugged with a minimum 6 inches of grout to prevent the movement of material into the casing. No material shall be placed in the annular space between the casing and carrier pipes.

The Contractor shall be responsible for potholing existing utilities and verifying depth prior to the installation. The cost of potholes and repairs must be incidental to this bid item. The Contractor shall be responsible for any damage to underground utilities resulting from the boring.

Payment for the 36-inch steel casing and installation must be made at the unit price bid per linear-foot and must be full compensation for all excavation, shoring, casing pipe, pipe skids, coordination with the rail, insurance, potholes, and other miscellaneous items required to complete the work.

Item No. B-22 – 4-Inch Blowoff Assembly:
See *Standard Construction Specifications*, Section 501 and Construction Drawings.

Payment for this bid item will be made on a per-each basis and must include all equipment, labor, materials, and incidentals to complete the work.

Item No. B-23 – Install 12-Inch End Cap:
See *Standard Construction Specifications*, Section 501 and Construction Drawings.

Payment for this bid item will be made on a per-each basis and must include all equipment, labor, materials, and incidentals to complete the work.

Item No. B-24 – Abandon 12-Inch × 8-Inch Connection:
See Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to abandon the existing 12-inch x 8-inch connection as shown on the Construction Drawings and coordination of a scheduled water shutdown. The work shall be done as shown on the Construction Drawings and as directed in the field by the Engineer. Abandoned piping shall be plugged with concrete a minimum distance equal to two pipe diameters.

Payment for this bid item will be made on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-25 – Abandon 12-Inch × 6-Inch Connection:
See Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to abandon the existing 12-inch x 6-inch connection as shown on the Construction Drawings and coordination of a scheduled water shutdown. The work shall be done as shown on the Construction Drawings and as directed in the field by the Engineer. Abandoned piping shall be plugged with concrete a minimum distance equal to two pipe diameters.

Payment for this bid item will be made on a lump-sum basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-26 – Remove Abandoned Valve Box:
The existing valve box and lid must be removed and the void backfilled with the appropriate material (either select fill or native depending on location of the valve box) before final surface restoration. Surface restoration must be paid under the appropriate separate bid items.

Payment for this bid item will be made on a per-each basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-27 – Install 32# Sacrificial Anode:
See *Standard Construction Specifications*, Section 501 and Construction Drawings.

This item provides for installation of sacrificial anodes on ductile iron fittings with flanged connections and new live tap assemblies as shown on the Construction Drawings. Sacrificial anodes shall be 32-pound UltraMag High Potential Magnesium Anodes (Type 32D5) with a minimum 10-foot #12 THHN solid wire by Farwest Corrosion Control Company, or approved equal.

Sacrificial anodes shall be attached as described in Section 501.01.08 of the *Standard Construction Specifications* and as shown on the Construction Drawings.

Payment for these bid items will be made on a per-each basis as listed in the Schedule of Contract Prices and shall include all equipment, labor, materials, and incidentals required to complete the work

Item No. B-28 – Abandon Existing Water Lines:
See the Special Provisions and Construction Drawings.

This bid item includes provision and installation of all specified and unspecified materials necessary to abandon the existing water lines in-place as shown on the Construction Drawings. Pipes to be abandoned must be pumped full of cellular concrete or flowable controlled density fill. The cellular concrete or flowable controlled density fill must be able to flow through the existing pipes to fill all voids and must have a compressive strength between 50 and 200 psi. The Contractor must provide a mix design for approval by the Engineer prior to the start of work. The Contractor must monitor the pumping of cellular concrete or flowable controlled density fill and ensure the material does not overflow. Any additional excavation required to complete this work will be incidental to this bid item.

There are approximately 2,400 feet of 12-inch pipe to be abandoned. Payment for this bid item will be made on a lump-sum basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-29 – Remove Existing Water Lines:
See the Special Provisions and Construction Drawings.

This bid item includes provision and all specified and unspecified materials necessary to remove the existing water lines in-place as shown on the Construction Drawings. Any additional excavation required to complete this work will be incidental to this bid item.

Payment for this bid item will be made on a linear-foot basis and must include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-30 – 7-Inch Asphalt Trench Patch:
See *Standard Construction Specifications* 304.

This bid item includes all trench patch work on side streets and at railroad crossings. The base lifts shall be ½-inch asphalt with a maximum thickness of 3 inches. The top lift shall be 3/8-inch asphalt with a thickness of 2 inches.

Sawcutting of existing pavement is incidental to this bid item.

Payment for this item will be made on a square-yard basis and shall include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-31 – Remove and Replace 4-Inch PCC Sidewalk:
See *Standard Construction Specifications* 306.

Concrete used for sidewalk located behind the driveway approaches must have a three-day compressive strength of 4,000 psi. Sawcutting and removal of existing concrete is incidental to the bid item.

Payment for this bid item will be made on a square-yard basis and will include all equipment, labor, materials, and incidentals required to complete the work.

Item No. B-32 – Remove and Replace Standard Curb and Gutter:
See *Standard Construction Specifications* 306.

Concrete used for this work must have a three-day compressive strength of 4,000 psi. Sawcutting and removal of existing concrete is incidental to the bid item.

Payment for this bid item will be made on a linear-foot basis and will include all equipment, labor, materials, and incidentals required to complete the work.

LIST OF APPENDICES

A. LATEX MODIFIED EMULSIFIED ASPHALT SLURRY SEAL SURFACE TREATMENT SPECIFICATIONS

B. CONCRETE PAVER INSTALLATION SPECIFICATIONS

C. SOIL PREPARATION

D. PLANT SPECIFICATIONS

E. RIGHT-OF-ENTRY APPLICATION

F. DECEMBER 22, 2020 GEOTECHNICAL ENGINEERING REPORT

G. EXTERIOR METAL RAILINGS

CONSTRUCTION DRAWINGS (11" × 17") – *included as separate document*

APPENDIX A - LATEX MODIFIED EMULSIFIED ASPHALT SLURRY SEAL SURFACE TREATMENT SPECIFICATIONS

A. DESCRIPTION

1. GENERAL:
   The slurry seal shall consist of a mixture of latex modified emulsified asphalt, mineral aggregate, water, and approved additives. The materials shall be properly proportioned, mixed, and uniformly spread over a properly prepared surface as outlined in the special provisions. The completed slurry seal shall leave a homogeneous mat, adhere firmly to the prepared surface, and have a friction resistant surface texture throughout its service life.

2. PROJECT EXTENT:
   The extent of the slurry seal shall conform to the dimensions shown on the plans or as directed by the Engineer.

B. SPECIFICATIONS

1. MATERIALS:
   a. Asphalt Emulsion: The emulsified asphalt shall be grade LM-CQS-1h, as specified in ASTM D 5840, with the following exception: the allowed polymer shall be Ultrapave SBR Latex, or approved equal, only. The latex shall be co-milled into the emulsion through the water phase during manufacturing. It shall be homogeneous and shall show no separation after thorough mixing with the other materials. It shall break and set on the aggregate within five (5) minutes and be ready for traffic within 90 minutes.

   Each load of polymer modified asphaltic emulsion shall be accompanied with a certificate of analysis/compliance from the manufacturer to assure that it is the same as that used in the mix design. The certificate shall state the percentage of polymer added by weight of the asphalt as well as the composition of the polymer. The addition of latex to the emulsion after emulsion manufacturing is prohibited.

   The polymer modified asphalt emulsion shall conform to the following specifications:

   Tests on Emulsions

Test	Test Method	Requirement
Viscosity, SSF	ASTM D244 or	15 – 90
@77°F, seconds	AASHTO T59	
Asphalt Content (residual)	ASTM D244	60% minimum
Particle Charge	ASTM D244	Positive

   Test on Residue from Distillation Test

Test	Test Method	Requirement
Penetration	ASTM D5	40-90
SBR Polymer Content	CTM 401	2 ½% minimum

   *Solid polymer content based on weight of residual asphalt.

   b. Polymer Modifier: The amount of latex polymer modifier shall be determined by the laboratory performing the mix design. The amount required will be based on bitumen weight content and will be certified by the emulsion supplier. A minimum of 2-1/2 percent polymer solids, based on asphalt weight, is required.

   c. Aggregate: Aggregate shall be for Type II slurry seal. It shall come from sources approved by the City and consist of manufactured crushed stone such as granite, slag, limestone, or other high-quality aggregates or a combination thereof. To assure the material is totally crushed, 100 percent of the parent aggregate will be larger than the largest stone in the gradation. The aggregate shall be free of organic matter.
   The aggregate, (including the mineral filler) shall conform to the following graduation, per ASTM C136 and ASTM C117:

Sieve Size	% Passing
3/8”	100
#4	90-100
#8	65-90
#16	45-70
#30	30-50
#50	18-30
#100	10-21
#200	5-15

The aggregate shall meet the following test requirements:

Test	Test Method	Requirements
Sand Equivalent	ASTM D2419	60 Minimum
Soundness	ASTM C88	9% max using $Na_2 SO_4$
		Or 12% Max using $MgSO_4$
Abrasion Resistance	ASTM C131	35% Max

The mix design shall set the target gradation. The stockpile(s) shall meet the gradation as set in the mix design, within the ranges specified above.

Aggregate shall be stockpiled at a single location obtained by the Contractor. Precautions shall be taken to prevent segregation of the aggregate during storage and handling. The Contractor shall have written permission from the owner of the property and supply the City with a copy of that written permission. A plan outlining the proposed stockpiling, including protection from contamination and moisture, shall be submitted to and meet the approval of the City prior to stockpiling. Any streets or private property surrounding the stockpile area shall be kept clean and dust-free.

The aggregate will be accepted at the stockpile. The stockpile shall be accepted based on the average of five samples per 500 tons of aggregate tested in conformance with ASTM D75. If the average of the five tests is within the gradation set by the mix design, the material will be accepted. If the material is outside this specification, the Contractor shall remove the material or blend it with other aggregates to bring it into compliance with the specification. Materials used to blend must meet all specifications as stated herein. The Contractor shall pay the cost of retesting the stockpile until it meets this specification. A new mix design may be required by the Engineer if the original stockpile does not pass the gradation tests.

Screening shall be required at the stockpile.

d. Mineral Filler: Mineral filler shall be either Portland Cement, hydrated lime, limestone dust, fly ash, or other approved filler meeting the requirements of ASTM D242 and shall be used if required by the mix design. The mineral filler shall be considered part of the aggregate.

e. Water: The water used in the slurry seal shall be potable, free of harmful salts and contaminates.

f. Additives: Additive may be used to accelerate or retard the mixing and setting characteristics of the slurry seal or improve the resulting finished surface. The use of additive in the slurry mix (or individual materials) shall be made initially in quantities predetermined by the mix design with field adjustments if required. If the use of additive during application exceeds ±1 percent (±1%) deviation from the recommendations of the mix design, a new mix design will be required to verify system performance at the altered additive levels.

2. MIX DESIGN

The mix design shall cover the specific materials to be used on the project. Compatibility of the aggregate, emulsion, mineral filler, and additives shall be verified by the mix design. Liquid retardants and mineral fillers may be used when their amounts can be metered; the mix design shall determine the maximum amounts that can be used to improve the workability of the mix or gradation of the aggregate. The mix design shall include the same aggregate gradation that the Contractor shall provide on the project. (Aggregate sources will be approved after submission of the mix design.) A lab certified mix design shall be submitted by the Contractor at the preconstruction conference.

The lab shall also report the quantitative effects of moisture content on the unit weight of the aggregate. The report must show the proportions of aggregate, mineral filler, water, additives, use for each additive, and asphalt emulsion based on the dry weight of the aggregate. The proportions may be adjusted slightly during construction only upon approval of the Engineer. No application may take place until the Engineer approves the mix design in writing. Proportions of the materials shall be within the following limits:

RESIDUAL ASPHALT	7.5%-13.5% Based on the dry weight of the aggregate
MINERAL FILLER	0%-2% Based on the dry weight of the aggregate
ADDITIVES	As needed to control mixing and setting times. To be determined by the mix design.
WATER	As needed for mix consistency. To be determined by the mix design.

After the mix design has been approved, no substitution of materials shall be permitted. If changes in materials are required, a new mix design, using the new materials, shall be submitted to the City for approval prior to the start of application. A new mix design will be required if any of the materials delivered to the site deviate from those in the mix design.

The mix design shall be current to within 30 days of the start of slurry seal application. The laboratory performing the mix design shall have at least two years' experience with slurry seal mix design and shall be capable of performing all tests outlined below.

The following are International Slurry Seal Association (ISSA) tests:

Test	Description	Specification
TB-113	Mix Time*	Controllable to 180 seconds minimum
TB-139	Wet Cohesion 60 minutes minimum	20kg-cm minimum
TB-109	Excess Asphalt By LWT sand adhesion	50g/ft2 maximum (538 g/m2 maximum)
TB-114	Wet Striping	Pass (90% minimum)
TB-100	Wet Track Abrasion* Loss – one-hour soak	75g/ft2 maximum (807 g/m2 maximum)
*The Mix Time and set time test should be done at the maximum temperatures expected during construction. **The Wet Track Abrasion test is used to determine the minimum asphalt content.		

At the request of the Engineer, the Contractor shall submit samples of the materials in the mix design. The Contractor shall submit each material in the following quantity with its corresponding MSDS Sheet(s):

Asphalt - 1 Gallon
SBR Latex - 1 Pint
Asphalt Emulsion - 1 Quart
Aggregate - 50 Pounds

3. CONSTRUCTION METHODS

a. Pavement Preparation and Cleaning: It shall be the responsibility of the Contractor to prepare pavement surfaces to ensure proper bonding. The surface shall be free of any loose dust, dirt, or debris.

All cracks shall be free of organic and loose material. This shall include the joint between the curb/gutter and the pavement. Organic material shall be removed by flame torch or mechanical means. Chemical removal will not be allowed. All foreign and loose material shall be completely removed with compressed air, flushing, sweeping, or other repairs as necessary to ensure cleanliness, immediately prior to slurry application. **Inspection emphasis shall be placed on a clean street with all cracks free of organic matter.**

New paint pavement markings shall be slurried over without protection and repainted under the striping pay items. The Contractor shall scarify newly painted pavement markings to ensure that the slurry properly bonds to the street. Raised reflectorized pavement markers shall be removed and replaced.

Oil, grease, or other material detrimental to the adhesion of the slurry seal shall be removed with non-toxic chemical remover. The chemical shall be specifically formulated for oil and grease removal without damage to the pavement. The Contractor shall submit the proposed product name, sample label, and MSDS sheets to the Engineer for approval prior to use.

The Contractor shall sweep and clean the street from curb to curb immediately prior to application of the slurry seal. Sweeping shall be done with a vacuum-type sweeper and be completed no more than 24-hours prior to application of the slurry seal. If the Contractor is delayed more than 24 hours between cleaning and sealing, the Contractor shall re-clean at no additional cost. Flushing and hand cleaning of streets shall be done as needed or as directed by the Engineer.

b. Utility Covers: Before slurry seal is to be applied to any area, all utility lids, including manholes, catch basins, valve boxes, and vault covers shall be securely covered. The cover shall be secure and leak-free and shall protect the utility. The lids shall be cleaned as quickly as possible after the application of the slurry seal and not later than the final set. If necessary, slurry residual shall be cleaned from the interior of the utilities.

c. Water: Water, in proportions shown in the approved mix design, shall be used to develop a good mix. The City will provide water free of charge. At the preconstruction conference, the City and the Contractor shall agree on a fire hydrant to be used as the water source for the project. The Contractor shall then take water only from the approved hydrant and no other. The Contractor's equipment shall be equipped with approved backflow prevention devices in good working order. The City shall strictly enforce the backflow device requirement.

d. Mixing and Spreading Equipment: All machines, equipment, and tools used in the performance of this work shall be maintained in satisfactory working order at all times. In addition to the slurry application equipment, suitable surface preparation equipment, traffic control equipment, hand tools, and other needed support equipment shall be provided in sufficient quantity to perform the work.

The slurry mixing and spreading equipment shall be specifically designed and manufactured for slurry seal application. The slurry shall be mixed with a self-propelled slurry-mixing machine. The unit shall be capable of accurately delivering and proportioning the aggregate, emulsified asphalt, mineral filler, control setting additive, and water to the mixing chamber. The mixing unit shall be capable of thoroughly blending all ingredients together. The aggregate shall be proportioned using a belt feeder operated with an adjustable cutoff gate. The height of the gate opening shall be readily determinable. The aggregate shall be moistened

immediately prior to mixing with the emulsion. The mixing unit shall be equipped with an approved fines feeder that provides an accurate metering device to add the mineral filler to into the mixer at the same time and location as the aggregate. The emulsion shall be proportioned by a positive displacement pump. A variable rate emulsion pump, if used, shall be equipped with a mechanism that locks the pump in its calibrated position.

The mixing unit shall be equipped with a water pressure system and fog type spray bar. It shall be capable of completely fogging the pavement surface with between 0.05 - 0.10 gal/sy of water. The fog spray shall precede the spreading equipment.

The mixing unit shall have sufficient storage capacity for each material used in the mix design to maintain an adequate supply to the proportioning controls. The proportioning controls must be clean and easy to read and properly marked. The appropriate settings/readings will have been determined during calibration of the equipment. No slurry seal shall be applied until the slurry mixing and spreading units have been calibrated to the satisfaction of the Engineer. Excessive mixing shall not be permitted. The mixed slurry shall be discharged in a uniform continuous flow.

The slurry shall be spread with a conventional surfacing spreader box attached to the mixer and equipped to agitate and spread the material evenly throughout the box. A front seal shall be provided to insure no loss of the mixture at the road contact point. The rear seal shall act as a final strike-off and shall be adjustable. The spreader box and rear strike-off shall be designed and operated to provide a free flow of uniformly consistent slurry to the rear strike-off. The spreader box shall have adjustable controls to compensate for variation in the pavement geometry, width, crown, and grade. The box shall be kept clean. Buildup of asphalt and aggregate shall not be permitted. A burlap drag or other approved screed may be attached to the rear of the spreader box to provide a uniform, highly textured mat.

e. Calibration: Before application can begin the City and the Contractor shall calibrate each mixer-spreader truck to be used on the job. Each truck shall be calibrated to determine the delivery rate of aggregate, mineral filler, emulsion, water and other additives. The calibration shall confirm appropriate gauge readings\settings for each material. The Contractor shall arrange for scales to be used during calibration. Each application truck shall be weighed empty and after loading of the aggregate. Calibration of each unit shall provide the Engineer with a visual reference between tons of aggregate and fill level for each application truck. The calibration shall demonstrate that delivery rates of each material are within the limits of the approved mix design.

   The Contractor shall provide written calibration documentation for each mixer-spreader truck to be used on the job. The written calibration documentation must cover the exact materials to be used, as specified in the mix design. The documentation must have been completed within the previous calendar year. The documentation shall include an individual calibration of each material at various settings, which can be related to the machine's metering devices. No machine will be allowed to work on the project until the calibration has been completed and accepted by the Engineer.

   It is the responsibility of the Contractor to check stockpile moisture content and to set the machine accordingly to account for aggregate bulking.

f. Rate of Application: The rate of application of dry aggregate per square yard shall be 10 to 14 pounds for Type II. The application shall be sufficient to provide minimum depths of 3/16-inch for Type II. The depth of the slurry seal will be sufficient to correct surface conditions, fill surface voids, provide sealing, and a minimum-wearing surface.

g. Weather: Slurry seal shall only be applied when the atmospheric temperature is at least 50°F and rising. Slurry seal shall not be placed after 2:00 p.m. unless authorized by the City. The slurry seal shall not be applied during periods when weather conditions inhibit curing such that streets cannot be opened within three (3) hours of slurry seal application.

h. Application of Slurry Seal: When required by local conditions, the surface shall be pre-wetted by fogging ahead of the spreader box. The rate of application of the fog spray shall be adjusted during the day as

pavement temperatures and humidity change. No free water shall be on the pavement surface following the fog spray.

The slurry mixture shall have a smooth and uniform consistency upon leaving the mixer. The spreader shall be uniformly full, with no empty pockets, to insure complete coverage of the pavement surface. The slurry shall be applied within the mix time, as determined by the mix design. No excessive breaking of the emulsion will be allowed in the spreader box. The application rate shall be as specified herein and the mixer-spreader truck's speed shall insure the application rate is met. Overloading of the spreader box shall be avoided.

No streaks, such as those caused by oversized aggregate, will be left in the finished surface. No lumping, balling, or unmixed aggregate shall be permitted. No segregation of the emulsion and aggregate fines from the coarse aggregate will be permitted. If the coarse aggregate settles to the bottom of the mix, the slurry will be removed from the pavement surface.

In the case of a concrete gutter, the slurry seal shall cover the crack sealed gutter line joint but shall not overlap onto the gutter. In the case of no concrete gutter, ensure a good seal at curb lines. The flow line at curbs shall allow storm runoff to flow to the catch basins without ponding. Streets that cross this project that have been recently slurry sealed or overlaid will not be slurry sealed. At intersections and curb returns, the sealing shall be to the limits identified by the Engineer.

Longitudinal joints shall correspond with the edges of traffic lanes. All through-lanes shall be spread in full-lane-width pulls only. Longitudinal joints, common to two driving lanes shall be butt joints with overlaps not to exceed three (3") inches. Building paper shall be placed at transverse joints over previously placed slurry seal. No excessive buildup or unsightly appearance shall be permitted on longitudinal or transverse joints. Care shall be taken to insure straight lines along curbs and shoulders. Lines at intersections shall be kept straight.

All incidental work, such as driveway aprons, street returns etc., shall be done concurrently with the street they abut.

Approved hand squeegees with burlap drags shall be used to spread slurry in areas not accessible to the spreader box.

Upon completion of the work, the pavement surface shall be free of holes, bare spots, or cracks. The finished surface shall present a uniform and skid resistant texture satisfactory to the Engineer.

i. Curing: The cure rate of the polymer modified slurry seal shall allow the area to be opened to traffic within two (2) hours after application without tracking or damage to the surface. Streets shall be opened to traffic upon approval of the Engineer. The City shall not be responsible for any damage to the slurry prior to approval to open the street. Any damage to the slurry shall be repaired at no additional cost to the City.

j. Clean up: The Contractor shall be responsible for immediate cleanup of any spills caused by the Contractor. Damage caused by the Contractor's operations shall be repaired or replaced to an equal to or better than existing condition, by the Contractor, at the Contractor's expense. Damage restoration must meet the approval of the Engineer.

All material swept or blown onto sidewalks, all trash, all discarded slurry seal materials or other refuse shall be collected daily, removed, and properly disposed of. All project sites must be cleaned to the satisfaction of the Engineer prior to final payment.

k. Sample: A sample strip of Type II slurry seal utilizing materials and machinery to be used on the job shall be laid at the City of Albany maintenance yard or other approved location. The strip shall consist of two panels approximately 50-feet long, placed side by side to form a typical seam between them. The width of the panels shall be the same as the Contractor plans to use on the streets. The strip shall be placed at least 24 hours prior to the beginning of the actual work. If it is determined by the City on the basis of this test strip that there are deficiencies in the mix design, method of application, or rate of drying, the City may

require the Contractor to revise the mix design or repair or modify equipment or application. After all corrections are made, a new sample strip shall be laid.

4. QUALITY CONTROL AND TESTING

a. Application Rate Verification: The specified application rate shall be verified with aggregate delivery receipts. The Contractor shall provide the Engineer with receipts for all aggregate delivered to the stockpile. At the end of each day the Contractor shall provide the Engineer the following information:

1. Tons of dry aggregate used that day.
2. Tons of asphalt emulsion consumed that day.
3. The square yards of pavement slurry sealed that day.

This information is due to the Engineer by 10:00 a.m. the following morning.

The estimate of the aggregate used shall be based on the amount each mixer-spreader truck can hold, obtained from the calibration tests. Payment deductions shall be made for insufficient and excessive application rates as outlined in the bid item description. Payment deductions shall be made, based on the above information supplied to and verified by the Engineer.

b. Testing: The following tests will be performed by the City daily. The Contractor shall provide access to all materials to be tested.

Component	Test	Specification
Oil	Residue	ASTM D244
Aggregate	Gradation	ASTM C136 & ASTM C117
	Sand Equivalent	ASTM D2419
	Moisture Content	
Slurry Mixture	Extraction	ASTM D2172
	Gradation	ASTM C136 & ASTM C117
	Residue	ASTM D244

Samples of the slurry seal will be taken directly from the slurry units at a minimum rate of one sample per mixing unit per day. Aggregate will be sampled at the stockpile and oil will be sampled from the delivery tanker.

SLURRY SEAL TESTING SUMMARY

A. MANUFACTURER CERTIFICATIONS

The following tests and/or certifications shall be supplied by the Contractor and/or manufacturer:

1. **Asphalt Emulsion:** A Certificate of Analysis/Compliance must accompany each load of asphalt emulsion supplied. This certificate shall indicate that the results of the following tests on the emulsion:

Tests on Emulsions:

	Test Method	Requirement
Viscosity, SSF #77°F, seconds	ASTM D244 or AASHTO T59	15-90
Asphalt Content (residual)	ASTM D244	60% minimum
Particle Charge	ASTM D244	Positive

Test on Residue from Distillation Test

	Test Method	Requirement
Penetration	ASTM D5	40-90
SBR Polymer Content	CTM 401	2-1/2% minimum*

*Solid polymer content based on weight of residual asphalt.

2. **Aggregate:** The Contractor shall supply documents showing that the aggregate conforms to the following gradation:

Sieve Size	% Passing	Stockpile Tolerance
¾"	100	±5%
#4	90-100	± 5%
#8	65-90	±5%
#16	45-70	±5%
#30	30-50	± 5%
#50	18-30	±4%
#100	10-21	±3%
#200	5-15	±2%

The Contractor shall also supply reports showing the aggregate meets the following test requirements:

Test	Test Method	Requirements
Sand Equivalent	ASTM D2419	60 Minimum
Soundness	ASTM C88	9% Maximum using $NA_2 SO_4$ or 12% Maximum using $Mg SO_4$
Abrasion Resistance	ASTM C131	35% Maximum

3. **Mix Design:** The mix design submitted for approval shall use the following materials in proportions within the following limits:

Residual Asphalt	7.5%-13.5% Based on the dry weight of the aggregate.
Mineral Filler	0%-2% Based on the dry weight of the aggregate.
Additives	As needed to control mixing and setting times. To be determined by the mix design.
Water	As needed for mix consistence. To be determined by the mix design.

The Mix Design should also show the following International Slurry Seal Association (ISSA) tests:

Test	Description	Specification
TB-113	Mix Time	Controllable to 180 Seconds Minimum
TB-139	Wet Cohesion 60-Minute Minimum	20kg-cm Minimum
TB-109	Excess Asphalt By LWT Sand Adhesion	50g/ft2 Maximum (538 g/m2 Maximum)
TB-114	Wet Stripping	Pass (90% Minimum)
TB-100	Wet Track Abrasion* Loss – One Hour Soak	75g/ft2 Maximum (807 g/m2 Maximum)

*The Wet Track Abrasion test is used to determine the minimum asphalt content. The mix time and set time test should be done at the maximum temperatures expected during construction.

B. CONSTRUCTION MONITORING TESTS

1. **Daily Testing:** The following tests should be performed by a City-hired testing lab daily:

Component	Test	Specification
Oil	Residue	ASTM D244
Aggregate	Gradation Sand Equivalent Moisture Content	ASTM C136 & ASTM C117 ASTM D2419
Slurry Mixture	Extraction Gradation Residue	ASTM D2172 ASTM C136 & ASTM C117 ASTM D244

Samples of the slurry seal will be taken directly from the slurry units at a minimum rate of one sample per mixing unit per day. Aggregate will be sampled at the stockpile and oil will be sampled from the delivery tanker.

PART 1 GENERAL

1.01 SUMMARY

Section Includes:

1. Interlocking Concrete Paver Units (manually installed).
2. Bedding and Joint Sand.
3. Edge Restraints.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C 33, Standard Specification for Concrete Aggregates.

2. C 67, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8, Freezing and Thawing.

3. ASTM C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

4. ASTM C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

5. ASTM C 144, Standard Specification for Aggregate for Masonry Mortar.

6. ASTM C 936, Standard Specification for Solid Concrete Interlocking Paving Units.

7. ASTM C 979, Standard Specification for Pigments for Integrally Colored Concrete.

8. ASTM D 698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft3 (600 kN-m/m3)).

9. ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

10. ASTM D 2940, Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.

B. Interlocking Concrete Pavement Institute (ICPI):

1. ICPI Tech Spec Technical Bulletins

1.03 SUBMITTALS

A. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, concrete paver layout, patterns, color arrangement, and installation details.

B. Sieve analysis per ASTM C 136 for grading of bedding and joint sand.

C. Concrete pavers:

1. Four representative full-size samples of each paver type, thickness, color, finish that indicate the range of color variation and texture expected in the finished installation. Colors shall be as specified in the Special Provisions and selected by the Engineer from manufacturer's available colors.

2. Accepted samples become the standard of acceptance for the work.

3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.

4. Manufacturer's certification of concrete pavers by ICPI as having met applicable ASTM standards.

5. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

D. Paver Installation Subcontractor:

1. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

2. Job references from projects of a similar size and complexity. This information shall be provided on the Statement of Experience form provided at the end of this specification with the Contractor's bid in conformance with the Special Provisions.

1.04 1.04 QUALITY ASSURANCE

A. Qualifications:

1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.

2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Mock-Ups:

1. Install a 7 ft × 7 ft (2 × 2 m) paver area.

2. Use this area to determine surcharge of the bedding sand layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job.

3. This area will be used as the standard by which the work will be judged.

4. Subject to acceptance by owner, mock-up may be retained as part of finished work.

5. If mock-up is not retained, remove and properly dispose of mock-up.

1.05 DELIVERY, STORAGE and HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.

1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

2. Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.

3. Unload pavers at job site in such a manner that no damage occurs to the product.

D. Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials.

1. Cover bedding sand and joint sand with waterproof covering if needed to prevent exposure to rainfall or removal by wind. Secure the covering in place.

1.06 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not install sand or pavers during heavy rain or snowfall.

2. Do not install sand and pavers over frozen base materials.

3. Do not install frozen sand or saturated sand.

4. Do not install concrete pavers on frozen or saturated sand.

1.07 MAINTENANCE

A. Extra Materials: Provide a minimum of 5% of the installed area additional material of each type of concrete paver specified for use by owner for maintenance and repair.

B. Pavers shall be from the same production run as installed materials.

PART 2 PRODUCTS

2.01 INTERLOCKING CONCRETE PAVERS

A. Manufacturer: Willamette Graystone, or approved equal.

1. Contact: [Specify ICPI member manufacturer contact information.].

B. Interlocking Concrete Pavers:

1. Paver Type: Holland.

a. Material Standard: Comply with material standards set forth in ASTM C 936.

b. Colors: “classic” and “uncolored concrete”

c. Color Pigment Material Standard: Comply with ASTM C 979.

d. Size: 8-inches × 4-inches × 3⅛-inches (80 mm) thick.

e. Average Compressive Strength (C140): 8000 psi (55 MPa) with no individual unit under 7200 psi (50 MPa) per ASTM C 140. *Note: Since 3-1/8 in. (80 mm) thick pavers are specified, their compressive strength test results per ASTM C 140 should be adjusted by multiplying by 1.18 to equate the results to that from 2 3/8 in. (60 mm) thick pavers.*

f. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.

g. Freeze/Thaw Resistance (ASTM C 67): Resistant to 50 freeze/thaw cycles with no greater than 1% loss of material. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.

2.02 PRODUCT SUBSTITUTIONS

Substitutions will be allowed at the sole discretion of the Engineer.

2.03 BEDDING AND JOINT SAND

A. Provide bedding and joint sand as follows:

1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.

2. Do not use limestone screenings, stone dust, or sand for the bedding sand material that does not conform to conform to the grading requirements of ASTM C 33.

3. Do not use mason sand or sand conforming to ASTM C 144 for the bedding sand.

4. Where concrete pavers are subject to vehicular traffic, utilize sands that are as hard as practically available.

5. Sieve according to ASTM C 136.

6. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 1.

Table 1

Grading Requirements for Bedding Sand

ASTM C 33

Sieve Size	Percent Passing
⅜ in. (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075 mm)	0 to 1

7. Joint Sand Material Requirements: Conform to the grading requirements of ASTM C 144 as shown with modifications in Table 2 below:

Table 2

Grading Requirements for Joint Sand

ASTM C 144	ASTM C 144	
Natural Sand	Manufactured Sand	
Sieve Size	Percent Passing	Percent Passing

No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 100
No. 50 (0.300 mm)	10 to 35	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075 mm)	0 to 1	0 to 10

2.04 EDGE RESTRAINTS

A. Provide edge restraints installed around the perimeter of all interlocking concrete paving unit areas as follows:

1. Portland Cement Concrete as shown on the Construction Drawings

2.05 ACCESSORIES

A. Provide accessory materials as follows:

1. Geotextile Fabric:

a. As specified in the Special Provisions.

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS. See experience requirements above.

3.02 EXAMINATION

A. Acceptance of Site Verification of Conditions:

1. General Contractor shall inspect, accept and certify in writing to the paver installation subcontractor that site conditions meet specifications for the following items prior to installation of interlocking concrete pavers.

a. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.

b. Verify that geotextiles, if applicable, have been placed according to Construction Drawings and specifications.

c. Verify that aggregate base base materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.

d. Verify location, type, and elevations of edge restraints, concrete collars around utility structures, and drainage inlets.

2. Do not proceed with installation of bedding sand and interlocking concrete pavers until subgrade soil and base conditions are corrected by the General Contractor or designated subcontractor.

3.03 PREPARATION

A. Verify base is dry, certified by General Contractor as meeting material, installation and grade specifications.

B. Verify that base and geotextile is ready to support sand, pavers and imposed loads.

3.04 INSTALLATION

A. Spread bedding sand evenly over the base course and screed to a nominal 1 in. (25 mm) thickness, not exceeding 1-1/2 in. (40 mm) thickness. Spread bedding sand evenly over the base course and screed rails, using the rails and/or edge restraints to produce a nominal 1 in. (25 mm) thickness, allowing for specified variation in the base surface.

1. Do not disturb screeded sand.

2. Screeded area shall not substantially exceed that which is covered by pavers in one day.

3. Do not use bedding sand to fill depressions in the base surface.

B. Lay pavers in patterns shown on the Construction Drawings. Place units hand tight without using hammers. Make horizontal adjustments to placement of laid pavers with rubber hammers and pry bars as required.

C. Provide joints between pavers between 1/16-inch and 3/16-inch (2 and 5 mm) wide. No more than 5% of the joints shall exceed 1/4 in. (6 mm) wide to achieve straight bond lines.

D. Joint (bond) lines shall not deviate more than ±1/2 in. (±15 mm) over 50 ft. (15 m) from string lines.

E. Fill gaps at the edges of the paved area with cut pavers or edge units.

F. Cut pavers to be placed along the edge with a double blade paver splitter or masonry saw.

G. Adjust bond pattern at pavement edges such that cutting of edge pavers is minimized. All cut pavers exposed to vehicular tires shall be no smaller than one-third of a whole paver.

H. Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and joint sand.

I. Use a low-amplitude plate compactor capable of at least minimum of 4,000 lbf (18 kN) at a frequency of 75 to 100 Hz to vibrate the pavers into the sand. Remove any cracked or damaged pavers and replace with new units.

J. Simultaneously spread, sweep and compact dry joint sand into joints continuously until full. This will require at least 4 to 6 passes with a plate compactor. Do not compact within 6 ft (2 m) of unrestrained edges of paving units.

K. All work within 6 ft. (2 m) of the laying face shall be left fully compacted with sand-filled joints at the end of each day or compacted upon acceptance of the work. Cover the laying face or any incomplete areas with plastic sheets overnight if not closed with cut and compacted pavers with joint sand to prevent exposed bedding sand from becoming saturated from rainfall.

L. Remove excess sand from surface when installation is complete.

M. Surface shall be broom clean after removal of excess joint sand.

3.05 FIELD QUALITY CONTROL

A. The final surface tolerance from grade elevations shall not deviate more than ±3/8-inch (±10 mm) under a 10 ft (3 m) straightedge.

B. Check final surface elevations for conformance to drawings.

Note: For installations on a compacted aggregate base and soil subgrade, the top surface of the pavers may be 1/8 to 1/4 in. (3 to 6 mm) above the final elevations after compaction. This helps compensate for possible minor settling normal to pavements.

C. The surface elevation of pavers shall be 1/8 in. to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

D. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.

3.06 PROTECTION

A. After work in this section is complete, the General Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

APPENDIX C - SOIL PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish labor, material and equipment required for weed removal, placement and amendment of soil for areas to be planted, and the establishment of finish grades as shown on the Drawings and as specified herein.

B. Coordinate work with installation of other site work including earthwork, irrigation, seeding, and planting.

C. Related sections include the following:

1. City of Albany Municipal Code 7.98.215 “Protecting residual trees” and City of Albany Standard Construction Specifications for protecting trees remaining on-site that are affected by site operations.
2. Special Provisions Section III “Hydroseeding” for the procedures and requisite timing for seeding of lawns following topsoil preparation.
3. Appendix D “Plants” for planting placement of amended topsoil backfill.

1.2 DEFINITIONS

A. Finish Grade: Elevation of finished surface of amended topsoil soil.

B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil

C. Amended Topsoil: Native or imported topsoil or surface soil modified with soil amendments and fertilizers.

D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

E. Topsoil: See Part 2 – Products.

F. Soil Ripping: Loosening the soil by dragging a ripping shank or chisel thru the soil to the depths and spacing specified, and further defined in this specification.

G. Soil Tilling: Loosening the surface of the soil to the depths specified with a rotary tine tilling machine, roto tiller, (or spade tiller), and further defined in this specification.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Fertilizers, including application rates.
2. Soil Amendments.
3. Herbicides.

B. Samples for Verification: For the following:

1. 1/2 cubic foot compost.
2. 1/2 cubic foot of each imported topsoil. Furnish one sample from each site from which soil is to be furnished.
3. Retain soil and compost submittals on site in sealed, accessible container for comparison to delivered soils.

C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:

1. Manufacturer's certified analysis for standard products.
2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

D. Qualification Data: For testing agencies.

E. Material Test Reports: Date of testing on all reports shall be a maximum of 90 days prior to the date of submittal for review.

1. Soil Fertility and Agricultural Suitability Analyses and Recommendations Reports for the following:

a. Imported topsoil: Minimum 30 days prior to beginning soil preparation work.
b. Amended topsoil: Provide soil analyses and results for soil samples taken from 3**]** typical locations as selected by Owner's Representative, minimum 7 days after soil preparation work has been completed and prior to installing plants.

2. Compost Analysis: Provide analysis for one representative sample of compost minimum 30 days prior to compost being delivered to Project Site.
3. Compost Maturity: Provide results of Compost Maturity Test when submitting Compost Analysis Report and sample.
4. Soil Compaction Test: Provide results of soil compaction tests minimum of 7 days prior to planting and seeding.

F. Delivery Slips: Provide delivery slips for each load of delivered material as proof of shipment of specified materials.

G. Soil Placement Map: Contractor shall provide a plan showing placed location of each load of delivered soil, referenced to delivery slips.

1.4 QUALITY ASSURANCE

A. Soil Fertility and Agricultural Suitability-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

1. Acceptable Soil Testing Laboratories are:

a. A & L Western Agricultural Laboratories, (503) 968-9225.
b. Western Laboratories, Inc, (800) 658-3858.
c. Soil and Plant Laboratory, Inc., (503) 557-4959.

B. Soil Analyses: Furnish soil analyses by a qualified soil-testing laboratory stating:

1. Soil Composition: USDA particle size analysis indicating percentages of sand, silt and clay, and percent organic matter.
2. Macro and micro nutrient fertility tests as determined by pH, salinity, nitrate nitrogen, ammonium nitrogen, phosphate phosphorous potassium, calcium, magnesium, soluble copper, zinc, manganese, iron, saturation extract boron and sodium analyses.
3. Sodium Absorption Ratio (SAR).
4. A Cover Letter shall be provided summarizing existing soil conditions and the Laboratory's recommendations.
5. Recommendations by the soil testing lab for fertilizer and soil amendments in pounds per 1,000 square foot or tons per acre, as necessary to correct soil deficiencies.
6. Noxious Weed Germination Test: a minimum of one 36 inch square by 3 inch deep soil sample for each topsoil source considered for use on the project. Place soil in tray with adequate drainage layer beneath, keep soil moist (not saturated) for 7 days in a temperature controlled greenhouse environment, provide photos and written report summarizing germination results.

C. Compost Testing Laboratory Qualifications: An independent laboratory, with the experience and capability to conduct the testing indicated following U.S. Composting Council Seal of Testing Assurance (STA) procedures, or equivalent.

1. Acceptable STA Compost Testing Laboratories are:

a. A & L Western Agricultural Laboratories, (503) 968-9225.
b. Control Laboratories, (831) 724-5422.

D. Compost Analysis: Provide documentation from supplier that compost has reached a monitored temperature of 140 degrees Fahrenheit for at least one week. Engage an independent soil testing laboratory to test representative sample(s) of compost and furnish compost analysis report for the following parameters:

1. Percent organic matter, percent moisture, percent inerts (foreign matter), pH, soluble salts, and particle size.
2. Nutrient content, including: Nitrogen (N), Phosphorus (P), Potassium (K), Calcium (Ca), and Magnesium (Mg) and Sulfur (S).

3. Trace Metals, including: Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), and Zinc (Zn).
4. Maturity Indicator. Provide bio-assay results. Provide Carbon-Nitrogen ratio.
5. Stability Indicator: Provide respiration test results.

E. Request inspection and allow observation by Owner's Representative of prepared soils before planting.

F. Soil Compaction Testing: Furnish soil compaction standard tests per ASTM 698. Request inspection and allow observation by Owner's Representative of prepared soils before planting.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver packaged materials in manufacturer's unopened containers fully identified by name, brand, type, weight and analysis.

B. Store and handle packaged materials to prevent damage and intrusion of foreign matter.

C. Store stockpiled topsoil in area designated by Owner's Representative. Provide erosion control measures for stockpiled topsoil on site to prevent contamination of the soil.

1.6 SOIL AMENDMENT BID QUANTITIES

A. Bid quantities and types of soil amendments shall be based upon those listed in this Section. Types of amendments required and quantities shall be adjusted as necessary based upon actual results of soil fertility and agricultural suitability analyses and recommendations for on-site topsoils.

B. Amount per 6-inch lift of topsoil over 1000 square-feet of landscape area:

1. 25 lbs. Gypsum (Calcium sulfate)
2. 35 lbs. Calcium carbonate limestone 'Calpril'
3. 35 lbs. Dolomite limestone 'Dolpril'
4. 8 lbs. Treble superphosphate (0-45-0)
5. 3 lbs. Ammonium nitrate
6. 4 ozs. Zinc sulfate
7. 8 ozs. Manganese sulfate
8. 1 oz. Laundry Borax
9. 6 cu-yds Compost

1.7 SITE CONDITIONS

A. Topsoil placement and soil preparation shall not take place during periods where saturated soil or surface water is present in work areas.

B. Work shall not take place when temperature is less than 32 degrees Fahrenheit, or when frozen soil exists on site.

1.8 COORDINATION

A. Coordinate soil preparation with site grading such that topsoil, soil amendments and fertilizers are incorporated into ground fill areas in specified lifts and to specified depths below finish grade for planting and lawn areas. Topsoils shall be amended per recommendations of the Soils Testing Laboratory.

B. Coordinate soil preparation with timing and procedures for installation of related site work including irrigation, seeding, and planting.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil Definition: ASTM D 5268; natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles, conforming to USDA classification for Loam or Sandy Loam; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inches in any dimension; and free of weeds, roots, and other deleterious materials, with the following physical properties:

1. Organic Matter: 6 percent minimum to 10 percent maximum.
2. Sodium Adsorption Ratio (SAR): less than 6.0.
3. Saturation Extract concentration for Boron: less than 1.0
4. pH range of from 6.5 to 7.5 (Saturation Extract Conductivity: less than 4.0 dS/m @ 25 degrees Celsius as determined in a saturation extract.
5. Non-soil components: less than 1 percent by volume.
6. Heavy metal concentrations: below the USDA per year load limit.
7. Minimal weed seed.

    a. If regenerative noxious weeds (including, but not limited to, quack grass, nutsedge grass, and horsetail) are present in the soil, all resultant growth including roots shall be removed throughout one-year period after acceptance of work at no additional cost to Owner.

B. Topsoil Source: Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth. Ensure no contamination of the soils occurs during earthwork and grading, and that the soil remains friable and free of debris.

1. Import Topsoil: Supplement on-site topsoil with imported or manufactured topsoil from off-site sources when quantities are insufficient. Import topsoil is subject to approval and shall conform to USDA soil texture class “Loam” certification by Soil Testing Analysis, no more than 12 months prior to delivery to the site. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.
    a. Provide one of the following as Import Topsoil:
        1) Rexius, Blended Soil Mix, (503) 635 5865
        2) ProGro, Landscaped Blend #2, (800) 682 3501
        3) Or approved equal

2.2 INORGANIC SOIL AMENDMENTS

A. Dolomitic Lime: Natural, agricultural limestone (calcium and magnesium carbonate) containing a minimum of 20 percent calcium and 11 percent magnesium and as follows:

1. Screen Analysis: 100 percent passing through No.30 sieve; 70 percent passing through No. 100 sieve; and minimum 30 percent passing through No.325 sieve.
2. Provide lime in form of granulated, prilled, dolomitic limestone, 'DoloPril' by Pacific Calcium, Inc., (877) 571-3555, or equal.

B. Calcitic Lime: Natural, agricultural limestone (calcium carbonate) containing a minimum of 36 percent calcium and as follows:

1. Screen Analysis: minimum of 100 percent passing through No. 10 sieve and a minimum of 80 percent passing through No. 100 sieve.
2. Provide lime in form of granulated, prilled, limestone, 'CalPril' by Pacific Calcium, Inc., (877) 571-3555, or equal.

C. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.

D. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

E. Aluminum Sulfate: Commercial grade, unadulterated.

F. Gypsum: Agricultural gypsum; minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.

G. Sand: Clean washed river sand, free of calcium, chlorides and other deleterious substances.

2.3 ORGANIC SOIL AMENDMENTS

A. Compost: Well-decomposed, commercially manufactured, stable, and weed-free organic matter, no food waste shall be a part of the compost. pH range of 5.5 to 7.5; 100 percent passing through 1/2-inch sieve; soluble salt content of 2.5 to 7.5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and shall conform as follows:

1. Tested, at minimum, every six months for noxious weeds.
2. Organic matter source (feedstock): Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
3. Organic Matter Content: 50 to 70 percent of dry weight as determined by ash method.
4. Moisture Content: 40 to 55 percent by weight
5. Free of refuse (less than 1 percent by dry weight), plastics, contaminants or any material toxic to plant growth.
6. Processed to meet U.S. Composting Council's Seal of Testing Assurance (STA) Program, or equivalent.

7. Carbon to Nitrogen Ratio: 30 to 1 or lower.
8. Composted for a minimum of 120 days and reach a monitored temperature of 140 degrees Fahrenheit for at least one week.
9. Available Products and Suppliers:

    a. Rexius Forest By-Products, Inc., Garden Compost , phone (541) 342-1835.
    b. Fine Como-Stuff by McFarlane's Bark, phone (503) 659-4240 (www.mcfarlanesbark.com).
    c. Or approved equal.

2.4 FERTILIZER

A. Fertilizer composition and rate to be determined based upon soil analysis. For bidding purposes, assume: 10 Nitrogen (N), 10 Phosphorus (P), 10 Potassium (K), 5 Sulfur (S) applied at a rate of 10 pounds per 1000 square feet in all planting beds and seeded areas.

B. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.

C. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

D. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent of urea formaldehyde, phosphorous, and potassium in the following composition:

    1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

E. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium derived from natural organic and inorganic sources in the following composition:

    1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.5 MISCELLANEOUS PRODUCTS

A. Post-Emergent Herbicide: Select one of the following: "Glyphogan Plus" by Mana, "Envoy Plus" by Valent, "Crossbow" by Dow AgroSciences, "Landmaster BW" by Agri Star or approved equal.

B. Contact Herbicide for controlling nutsedges: "SedgeHammer" by Gowan.

PART 3 - EXECUTION

3.1 EXAMINATION OF SITE CONDITIONS

A. Examine for site conditions that will adversely affect execution, permanence, quality of work, and survival of plant material and grasses.

B. Identify areas to receive planting and lawn on site.

C. Verify that subgrades and slopes of lawn and planting areas are acceptable to Owner's Representative prior to commencing work of this Section.

D. Should the Contractor find any discrepancies between the Drawings and the physical conditions, inform the Owner's Representative immediately for clarification.

E. Begin Work required under this Section only after conditions are satisfactory.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, and existing lawns and exterior plants from damage caused by soil preparation operations.

B. Prepare soils at a time when moisture conditions will permit proper cultivation.

C. Remove stones over 1-inch diameter, sticks, roots, mortar, concrete, rubbish, debris, and all materials harmful to plant life, and legally dispose of them off Owner's property.

D. Remove or spray as required to eradicate noxious weed growth and roots.

1. Achieve complete removal or kill of all weeds within all areas receiving new plantings and lawn areas.
2. In planting beds, kill achieved by working soil is permissible for annual non-noxious broad-leaf type weeds.
3. Apply post-emergent herbicide over all areas of weed or grass growth within landscaped area to eradicate weed growth and roots. Apply in two applications at manufacturer's maximum recommended rate, as follows:

    a. First application: Apply 7 days prior to performing soil preparation.
    b. Second application (to kill new vegetation): Apply after soil preparation has been completed and minimum of 48 hours prior to planting.
    c. Observe manufacturer's recommended period prior to working in treated areas.

4. Apply contact herbicide directly onto foliage of nutsedges. In areas of established lawn grasses infested with nutsedge, apply herbicide by wicking. Do not spray.
5. Do not apply herbicide when raining or when wind exceeds 10 mph.

E. Locate and securely mark or flag irrigation sprinkler heads, area drains, catch basins, clean outs, manholes, valve boxes, and other site improvements not extending above finish grade.

F. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, in accordance with drawings and City of Albany standards

3.3 SOIL PREPARATION FOR PLANTING AREAS

A. This article pertains to those shrub bed areas indicated as "Shrub and Groundcover Planting Areas" on the Drawings where mass plantings of trees, shrubs and ground cover plants are scheduled.

B. Excavate 24 inch deep by 12 inch wide pits for percolation testing where planting areas occur in soils compacted due to construction traffic, materials staging, stockpiles exceeding 72 inch height and areas of soil surcharging. Prepare a minimum of ten (10) test pits in locations selected by the Owner's Representative representing the full range of planting areas on site.
   1. Fill holes to the top with water and let stand for 1 hour minimum.
   2. Refill hole to top with water and measure total depth.
   3. Allow hole to drain for 2 to 3 hours and measure total depth of water.
   4. If soil drains at a rate of less than 2 inches per hour prepare subgrades in accordance with procedures for poor draining soils.

C. Planting area subgrade preparation:
   1. Prepare subgrades by excavating and removing soil, rock and other construction material to 15 inches below finish grade. Cross-rip subgrades to depth of 6 inches prior to placing topsoil.
   2. In areas of poor draining soils prepare subgrades by excavating and removing soil, rock and other construction material to 24 inches minimum below finish grade. Cross-rip subgrades to depth of 6 inches prior to placing topsoil. Retest percolation and modify subgrade until 2 inches per hour percolation is obtained.
   3. See Division 31 Section "Earth Moving" for excavation and preparation of subgrades.

D. Place 6 inches topsoil, compost, soil amendments, and fertilizers as recommended in Agricultural Soil Suitability Report per 1,000 square feet and rototill thoroughly to a depth of 8 inches. Compost shall constitute 5% of the amended soil. Place remainder of topsoil, compost, soil amendments, and fertilizers as recommended in Agricultural Soil Suitability Report per 1,000 square feet and rototill thoroughly to a depth of 8 inches, allowing for compaction, natural settlement, and depth of specified mulch.

   1. It is the Contractor's option to set up a facility on-site for the preparation and amendment of topsoils, instead of preparing and amending the topsoils in place as indicated in the paragraph above.
   2. Set up facility in location as directed by Owner's Representative.

E. Water lightly and allow planting mix to settle. Add additional material at mixture indicated in paragraph above to bring soil level to grades shown on the Drawings with allowance at pavement edges for mulch placement. Provide compaction to 80 percent maximum relative density or as indicated in Division 31 Section "Earth Moving."

F. Meet lines, grades and elevations shown, after light rolling and natural settlement. Fine grade shrub and ground cover areas to smooth even surface with loose, uniformly fine texture. Rake and drag shrub and ground cover areas to remove ridges and fill depressions to obtain firmness and finish grades preparatory to receiving planting.

G. Remove stones over 1/2-inch in any dimension and sticks, roots, rubbish and other extraneous matter.

3.4 SOIL PREPARATION FOR SEEDED LAWNS

A. This article pertains to new lawns and grasses as shown on Drawings and existing lawn and grass areas disturbed by construction activities.

B. Lawn area subgrade preparation:
   1. Prepare subgrades by excavating and removing soil, rock and other construction material to 6 inches below finish grade. Cross-rip subgrades to depth of 6 inches prior to placing topsoil.
   2. In areas of poor draining soil prepare subgrades by excavating and removing soil, rock and other construction material to 12 inches below finish grade. Cross-rip subgrades to depth of 6 inches, retest and modify subgrade until 2" per hour percolation is obtained, prior to placing topsoil.
   3. See Division 31 Section "Earth Moving" for excavation and preparation of subgrades.

C. Place topsoil and compost in 6 inch lifts as recommended in Agricultural Soil Suitability Report per 1,000 square feet. Rototill thoroughly to a depth of 8 inches, tilling topsoil into top 2 inch layer of sub-soil. Place sufficient topsoil allowing for compaction and natural settlement.

D. Place remaining soil amendments, and fertilizers as recommended in Agricultural Soil Suitability Report per 1,000 square feet.

E. Unless otherwise required by the recommendations of the Agricultural Soil Suitability Report apply the following additional soil amendments:

   1. Compost: 1 inch minimum depth
   2.

F. Incorporate soil amendments into topsoil of lawn areas to a total depth of 4 inches.

G. Leveling Rolling: Drag with flexible tine harrow (or approved equipment) to remove ridges and fill depressions, as required to meet finish grades. Roll areas (minimum roller weight 10 pounds per square inch) in two opposing directions.

H. Repeat rolling procedures and drag lightly to establish a smooth uniform compacted surface free of rocks and other extraneous matter. Provide compaction to 80 percent relative density or as indicated in Division 31 Section "Earth Moving."

I. Water lightly and allow planting mix to settle. Add additional material at mixture indicated in paragraph above to bring soil level to grades shown on the Drawings with allowance at

pavement edges. Provide compaction to 80 percent relative density or as indicated in Division 31 Section "Earth Moving."

J. Meet lines, grades and elevations shown, after light rolling and natural settlement. Fine grade lawn areas to smooth even surface with loose, uniformly fine texture. Rake and drag lawn areas removing ridges and filling depressions to obtain firm finished grades for receipt of lawn planting.

K. Remove stones over 1/2-inch in any dimension and sticks, roots, rubbish and other extraneous matter.

L. Finish Grading: Grade lawn areas to smooth, even surface with a loose uniformly fine texture. Finish grade of soil shall be 1/2 inch below adjacent pavement. Limit preparation to areas which will be planted promptly after preparation.

M. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

N. Prior to commencing seeding operations restore seed beds to their finish grade condition if eroded, hardened or glazed or disturbed in any other manner following completion of finish grading. Restoration of seed bed areas shall be considered incidental to the project Work and performed at no additional cost to the Owner.

3.5 SOIL PREPARATION FOR PLANTING PITS OF TREES

A. This article pertains to tree planting when occurring on an individual basis.

1. Backfill Mix: Prepare backfill mix and place in planting pits as specified in City of Albany Standard Construction Specifications.
2. Grade smooth to elevations shown.

3.6 SOIL PREPARATION UNDER EXISTING TREES

A. Remove vegetation not indicated to remain beneath canopy of existing trees. Take care not to disturb roots of existing trees.

B. Lightly rake areas and add amended topsoil to meet proposed grades.

3.7 FINE GRADING

A. Finish grade after full settlement including mulch, shall be 1 inch below tops of curbs, walks, or existing grades in shrub areas and 3/4 inch lower in lawn areas.

B. Slope all areas to prevent puddling and drain surface water toward catch basins, drains, curbs, or off-site as shown on Drawings.

C. Soil in all areas shall be thoroughly settled, with a smooth surface free of humps and hollows, and shall be firm enough to resist undesirable impressions when stepped upon.

D. Use levels, screens, drags, or any other equipment necessary to establish and verify grades and surfaces.

E. Finish grade lawn, grass and planting areas to smooth, even surface with loose, uniformly fine texture.

F. Roll, rake, and drag lawn areas, remove ridges and fill depressions with amended topsoil to obtain firmness and finish grades as indicated.

G. Notify Owner’s Representative 36 hours in advance to review fine grading of lawn, grass and planting areas. Finish grades shall be prepared to the satisfaction of the Owner's Representative prior to planting.

H. See Appendix D“Plants,” for mulch placement.

3.8 CLEAN-UP

A. Clean up excess materials and debris from project site upon completion of work or sooner if directed by the Owner's Representative.

B. Leave in neat and tidy condition daily.

3.9 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner’s property.

END OF APPENDIX C

APPENDIX D - PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Trees.
2. Shrubs.
3. Ground Cover.
4. Plants.
5. Herbicide.
6. Planting Fertilizers.
7. Erosion Control Matting.
8. Mulches.
9. Root Barriers.
10. Tree Stabilization.
11. Edgings.
12. Planting Accessories.

B. Related Sections:

1. City of Albany Code 7.98.215 “Protecting residual trees” and Standard Construction Specifications, Division 2, Section 210 “Tree Protection” for protecting trees remaining on-site that are affected by site operations.
2. City of Albany Standard Construction Specifications, Division 2, Section 204 “Excavation, Backfill, and Other Site Work” for excavation, filling, rough grading, aggregate, and drainage backfill materials.
3. Appendix C “Soil Preparation” for preparation of planting soils.
4. Special Provisions Section III “Hydroseeding” for lawn planting.
   City of Albany Standard Construction Specifications, Division 2, Section 210 “Street Tree Standards” for tree stock quality, placement, planting procedures, and establishment period requirements.
5. City of Albany Standard Construction Specifications, Division 2, Section 209 “Cleanup and Site Restoration” for restoration of areas affected by temporary construction activities and damage to planting outside of the limit of work.

1.2 REFERENCES

A. Standards: Comply with botanical names, sizes, and conditions provided in:

1. Botanical Names: American Joint Committee on Horticultural Nomenclature, "Standardized Plant Names."
2. Sizes and Conditions: ANSI Z60.1 "American Standards for Nursery Stock", (latest edition).
3. Perennials: "Perennial Plant Association Standards."

4. Native Species: Hitchcock, C.L. and A. Cronquist, "Flora of the Pacific Northwest," 1973.

1.3 QUALITY ASSURANCE

A. Contractor: Provide one person who shall: Be present at all times during execution of work in this section; be familiar with the materials and best methods for installation; direct work performed under this section.

B. Government Inspection: All plants and planting material shall meet or exceed the specifications of Federal, State, and County laws requiring inspection for plant disease and control.

C. Secure plant material and maintain in a climate similar to that of the project site.

D. All plant material to be grown from cuttings or seed. Collected plants are not acceptable.

1.4 SUBMITTALS

A. Within 30 days after Contract award, submit:

1. A list of local/regional suppliers for each plant species to be installed. List to include plant quantities, sizes and root conditions. Certify in writing, confirmed orders for plants by submitting a Bill of Sale for each plant to be installed. Each plant species shall be supplied by a single grower only, unless otherwise approved by Owner's Representative. The Contractor shall warrant all plant material to be true to botanical name and specified size.
    a. Submit a separate list of tree suppliers having ample quantities of each species in their specified sizes, with accompanying photos for review by Landscape Architect. Photos shall meet requirements indicated in Section 1.4 - D 2.
        1) Landscape Architect may elect to tag trees in the field following review of this tree submittal. Contractor shall coordinate tree tagging with Landscape Architect prior to purchase of any trees.

    b. Requests for substitutions of plants not available in size, quantity or type specified must be made within 30 days after Contract award. Submit a written summary of specified plants which cannot be obtained.
2. Plant Material Inspection Certificates for all plant material shipped from out of state.
3. 1/2 cubic foot sample of bark mulch for approval prior to delivery.

B. Provide all Product Data submittals simultaneously in a single package for review.

1. Submit product data for the following:

    a. Mulch.
    b. Anti-desiccant.
    c. Post-emergent herbicide.
    d. Erosion control matting.
    e. Tree stabilization products.

f. Tree wrap.
g. Mycorrhizal inoculum.
h. Root barriers.

C. Submit copy of herbicide applicator's Commercial Applicator's License to Owner's Representative before application of herbicides (includes pesticides). Submit a copy of the application record to the Owner's Representative immediately after each herbicide or pesticide application.

D. Shrub and Tree Samples:

1. Typical samples, three each of all varieties and sizes (#5 and under for shrubs, #15 and under for trees) of all plant materials shall be submitted for inspection & approval at the site a minimum of fifteen (15) days prior to planting operations. Approved samples shall remain on site and shall be maintained by the Contractor as standards of comparison for plant materials to be furnished. Approved samples shall be incorporated into the work.
2. Tree Photographs: For all trees over #15, submit photographs of each specific tree to be purchased (minimum 2 photos per plant showing differing sides), a minimum of sixty (60) days prior to planting.
   a. Format: Digital, high resolution, color jpeg
   b. Scale: Include a yardstick in each photograph to provide scale.
   c. Background: Ensure form and condition of plant is clearly distinguishable from background.
   d. Identification: On the back of each print and/or as an email attachment, provide the following information:
      1) Name of Project & Owner.
      2) Name & address of Grower.
      3) Date photograph was taken

E. Upon completion of the Work, submit:

1. Written notification to Owner's Representative requesting review for Substantial Completion.
2. Written notification to Owner's Representative of Punch List Completion.

F. With application for final payment, submit:

1. Duplicate copies of delivery invoices, labels, or other acceptable proof of quantities of materials used.
2. Copies of delivery invoices, labels, or other proof of quantities of plant materials and fertilizers.

1.5 SITE OBSERVATION

A. Site observations herein specified shall be made by the Owner's Representative. The Contractor shall provide a minimum of three (3) days notice before Observation is required.
   1. Pre-Construction Meeting: Explain Owner Representative's role to Contractor, review construction sequence.

2. Incorporation of soil conditioning and fertilizers into the soil.
3. Application of pre-emergent herbicide.
4. Soil testing after soil preparation for approval to plant.
5. Upon the completion of grading prior to planting.
6. Approval of samples of plant materials delivered to site.
7. When trees and shrubs are spotted in place for planting, but before planting holes are excavated.
8. Plant installation: Check size of planting holes and backfill mix.
9. Verification of finish grades.
10. After planting and all other specified work has been completed.
11. Substantial Completion Inspection and preparation of a Punch List.
12. Maintenance observation after thirty (30) days to coincide with fertilizer application.
13. Final Acceptance Inspection at completion of the Establishment Period.

B. No site observation visits shall occur until all soil submittals have been made and approved. Construction Observation visits shall be made in proper sequence with the installation of work. The Landscape Contractor shall be responsible for reimbursement of time and travel expenses at current billing rates, incurred by the Architect due to out of sequence site visits.

C. Contractor shall be on site during each site observation visit. Contractor shall speak English.

D. No site visits shall occur until all items in previous Observation Reports have been completed or remedied unless the Owner has waived such compliance in writing.

E. Upon completion of planting and ancillary landscape work, the Contractor shall notify the Owner's Representative in accordance with the procedures outlined in the Substantial Completion Section of this specification.

1.6 QUALITY CONTROL

A. Inspection: Plants shall be subject to inspection by the Owner's Representative at the job site upon delivery to the site. Plants not conforming to specifications shall be rejected and removed immediately from the site.

B. The presence of noxious weeds in plant balls or plant containers shall be cause for rejection of any or all plants from that source.

1.7 DELIVERY

A. Deliver packaged materials to site in original unopened containers bearing manufacturer's guarantee chemical analysis, name, trade name, and trademark.

B. Remove unacceptable plant material immediately from project site.

C. Plant Materials:

1. Deliver trees and shrubs after preparations for planting have been completed, and plant immediately.
2. Do not prune prior to delivery unless otherwise approved by Owner's Representative.
3. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or disfigure natural shape.
4. Provide protective covering during delivery.
5. Protect plants during delivery to prevent damage to root ball or desiccation of leaves.
6. Apply anti-desiccant using a pump sprayer to provide adequate film over trunks, branches, stems, twigs and foliage of plants.
7. If deciduous trees or shrubs are moved in full-leaf, spray with anti-desiccant at nursery before moving, and sprayed again 2 weeks after planting.
8. Label one of each tree and shrub species with securely attached waterproof tag bearing botanical name and supplier's name.

1.8 STORAGE

A. Contractors shall schedule and conduct planting operations to minimize storage of plant materials on the project site. The location and conditions of storage shall be reviewed for approval by the Contractor, Owner, and Owner's Representative.

B. Plants that cannot be planted within 24 hours after arrival shall be "heeled-in" in accordance with accepted horticultural practices and the following requirements:

1. Protect root ball of balled and burlapped plants with moist earth, sawdust or other acceptable material.
2. Protect plants at all times from injury, extreme weather conditions, and keep moist.
3. Store plants in shade at all times and protected from wind until planted.
4. Store plants in upright position and allow sufficient ventilation between plants.

C. All plants that are to be stored longer than one month shall be planted in nursery rows and irrigated using a temporary irrigation system, plants shall be maintained at the Contractor's expense.

1.9 HANDLING

1. Do not drop plants. Do not free-fall, drag, roll or abuse the tree or put a strain on the crown (bud area) at any time.

B. Do not pick up container or balled plants by stems, trunk, or foliage. Handle balled & burlapped plants by the ball of earth.

1.10 NOTIFICATIONS

A. Notify Owner's Representative a minimum of 48 hours in advance of plant material delivery so that plants may be inspected upon site delivery. Unapproved materials are to be immediately removed from the job site.

B. Notify Owner's Representative a minimum of one week in advance for request of Substantial Completion and Final Acceptance inspections.

1.11 SITE CONDITIONS

A. Existing Improvements to Remain: Locate underground utilities prior to start of work.

B. Protect existing improvements from damage, soiling or discoloration. Repair or replace damaged, soiled or discolored improvements as directed by Owner's Representative.

C. Planting Conditions: Planting is not permitted during the following conditions, unless otherwise approved:

1. Cold weather: less than 32 degrees Fahrenheit.
2. Hot weather: greater than 90 degrees Fahrenheit.
3. Wet weather: saturated soil or standing water.
4. Windy weather: wind velocity greater than 20 m.p.h.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

A. Provide plant materials as scheduled on Drawings.

B. Quantities indicated are for Contractor's convenience only. Contractor to verify and provide number of plants required to complete work graphically shown on Drawings.

C. Sizes and grade quality are maximums as listed. Larger sizes are not acceptable.

D. Plants shall be full foliaged when in-leaf, showing no signs of prolonged moisture stress or over watering as indicated by wilted, shriveled, or dead leaves.

E. Christmas tree stock shall not be used for conifer, evergreen material.

F. Conform to ANSI Z60.1, with additions and exceptions noted:

1. Groundcover Plants: Well-established root systems, and grown in flats or removable containers.
2. Containerized Plants: Grown in container in which delivered for at least 3 months, but not root-bound.
3. Greenhouse Grown Plants: Acclimated outdoors for 360 days prior to delivery.
4. Bare-root Stock: Well-branched, fibrous root system.
5. Balled and Burlapped Plants and Containerized Trees: All evergreen trees and deciduous trees over 1-1/2 inch caliper to be balled and burlapped with hemp burlap and twine only or grown in container in which delivered for 9 months minimum. Soil balls to be a minimum of 10 inches in diameter per caliper inch of tree.

G. Trees shall meet the following requirements in addition to City of Albany Standard Construction Specifications Division 02, Section 210 “Street Tree Standards”:

1. Trunks:
    a. Straight-trunked not varying from plumb more than 6 inches over 6 feet; No fresh cuts over 1 inch diameter, and not "topped" or sheared.
    b. Trees shall have a single, dominant central leader unless a different form is specified in the plant list or drawings. Leader shall have an intact tip and terminal bud at highest part of tree. Main branches shall be 2/3 or less than diameter of the central leader, measured 1” above the branch union.
    c. No flush cuts, sunscald or branch stubs
    d. No open trunk wounds
    e. Trees with visible suckers or lower shoots or, evidence of suckers and lower shoots removed are not acceptable.
2. Branches:
    a. Well-branched, with no cross branches, vertical branches, large branches directly above another, or co-dominant leaders.
    b. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches.
    c. Main branches shall be radially and vertically distributed along the central leader and not clustered together. They shall form a balanced crown appropriate for the cultivar/species.
    d. Shoot growth (length and diameter) throughout the crown shall be appropriate for the age and size of the species or cultivar.
3. Canopy and Leaves:
    a. Tree canopy shall be full with healthy foliage evenly distributed around the tree.
    b. Tree leaves free of spotting, blotching, chlorosis and die back inconsistent with seasonal change.
4. Roots:
    a. Root collar (flare) within 2” above soil surface for B&B trees.
    b. Root collar within 1” of soil mass for containerized trees.
    c. Structural roots (roots over 1/10 diameter of trunk) shall radiate in all directions and reach the side of the rootball. No circling, kinked, or bottom-matted structural roots.
    d. At time of delivery and inspection, rootball shall be moist throughout.
5. Grafted Trees: Base grafted or budded only.
6. Trees in formal arrangements and rows:
    a. Provide trees matched in height and spread with less than 1’ of variation.
    b. Trees shall have less than 6” in variation in clear branching height.
    c. Coordinate tagging of trees in the fall to confirm coordinated fall color.
    d. Confirm desired characteristics of formal tree arrangements with Landscape Architect.

2.2 HERBICIDES

A. Post-Emergent Herbicides: EPA registered and approved, of type recommended by manufacturer for selective herbicide application. “Round-Up,” or approved equal.

2.3 PRE-PLANT FERTILIZER

A. (1-10-10) shall be a combination of natural organic and inorganic granular fertilizers, free-flowing, and shall contain the following minimum available percentage by weight of plant food:

Nitrogen	1.0% minimum
Phosphoric Acid	10.0% minimum
Potash	10.0% minimum

2.4 POST-PLANT FERTILIZER

A. (7-9-4) shall be a long-lasting, organic and controlled release plastic-coated, uniform in composition, free-flowing and shall contain the following minimum available percentages by weight of plant food.

Nitrogen	7.0% minimum
Phosphoric Acid	9.0% minimum
Potash	4.0% minimum

2.5 MULCH

A. Provide standard, commercially produced, medium-course, dark brown, bark mulch. Bark shall be ground Fir or Hemlock bark of uniform color, free from weeds, seed, sawdust, and splinters and shall not contain resin, tannin, or other compounds detrimental to plant life. All material shall pass a 1 inch mesh screen.

2.6 ANTI-DESSICANT

A. Emulsion type, film-forming agent designed to permit plant transpiration but retard excessive loss of moisture from plants. "Wilt-Pruf" or equal.

2.7 PLANTING SOIL MIXES

A. Refer to Division 32 Section “Soil Preparation.”

2.8 EROSION CONTROL MATTING

A. Erosion Control Blanket shall be 100 percent coir twines with no seams. Matting shall be sisal jute mesh of uniform open weave, single jute yard. The blanket shall be Ludlow ‘Soil Saver’; Belton Industries; ‘Geojute’Geocoir/DeKoWe 700 or equal with the following minimum average roll properties:

1. Thickness 0.35 inches (ASTM D1777).
2. Average Tensile Strength 1450 lbs/ft (ASTM D4595).
3. Weight 14.7 oz/sy (ASTM D3776).
4. Open Area 60percent (measured).
5. Warp 78 per width, minimum. Weft 42 per linear yard, minimum.

6. Roll Width 6.5 and 9.8 feet (measured).
7. Roll Length 165 feet minimum (measured).
8. Color natural earth tone .

B. Wooden Stakes: Untreated Douglas fir 3/4 x 1/2 x 18 inch wood stakes.

C. Staples: Manufacturer's recommended steel wire staples, 6 inches long, 11 gage galvanized steel.

2.9 TREE STAKING AND GUYING

A. Deciduous Tree Tie: Black plastic chain-type, minimum 1 inch wide by 1/8 inch thick.

B. Evergreen Tree Guy Wire: 12 gauge galvanized wire with 1/2 inch rubber hose collar, black color, to protect tree trunk.

C. Stakes: 2 inch x 2 inch x 8 feet Douglas fir for staking of deciduous trees; and 2 inch x 2 inch x 36 inch Douglas fir for guying of coniferous trees. Stain brown with water-based commercial wood stain prior to installation.

D. Provide miscellaneous hardware, wire, and accessories as shown on the Drawings.

E. PVC Flags: 1/2 inch or 3/4 inch diameter x 36 inches long PVC pipe.

2.10 TREE WRAP

A. Corrugated or crepe paper, designed specifically to resist insect infestation and sun scald.

2.11 MYCORRHIZAL INNOCULUM

A. Available Products:

1. 'MycoApply All Purpose Granular' granular mycorrhizal inoculum. Available from: Mycorrhizal Applications, Inc., Grants Pass, OR (541) 476-3985.
2. 'PHC Plant Saver' blend of ecto and endomycorrhizal fungal spores, beneficial rhizospere bacteria, 4-7-4 fertilizer, organic amendments, and micronutrients. Available from Plant Health Care, Inc. (800) 421-9051.
3. Or equal.

2.12 ROOT BARRIERS

A. Refer to City Standard Specification

2.13 EDGINGS

A. Shovel Cut: As shown on Drawings.

2.14 DRAINAGE ROCK BACKFILL

A. 1-1/2 to 1/2 inches round washed river rock; no fines for non-percolating soil.

2.15 FILTER FABRIC

A. Non-woven filter fabric to cover drain rock: Mirafi 140N as available from TenCate, (360) 699-1426; Propex 451 as available from A.C.F. West Inc., (503) 771-5115; or equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify finish grades are properly achieved and soil preparation has been completed in accordance with the specifications; start of Work denotes acceptance by the Contractor and Contractor assumes responsibility for final results.

3.2 SOIL PREPARATION

A. As specified in Division 32 Section "Soil Preparation".

3.3 HERBICIDE APPLICATION

A. Spray pre-emergent herbicide as required to eradicate and prevent emergence of noxious weed growth.
   1. Apply a mixture of pre-emergent and post-emergent herbicides over all areas of weed or grass growth within landscaped area to eradicate weed growth. Apply in single application at manufacturer's maximum recommended rate, as follows:
      a. Apply after soil preparation has been completed and approved by Owner's Representative.
      b. Do not till pre-emergent herbicide into soil.
      c. Observe manufacturer's recommended period prior to working and planting in treated areas.

3.4 LAYOUT

A. Mark locations of lines between the planting areas and the lawn areas on the finish with paint, chalk or equal material for approval by the Owner's Representative. The method of marking shall be approved by the Owner's Representative.

B. Mark locations of trees and shrubs for approval by the Owner's Representative prior to digging. The method of marking shall be approved by the Owner's Representative. After approval of layout, field place trees and shrubs in locations shown on Drawings. Owner's Representative may request rotation or slight movement of tree to give a better appearance with respect to adjacent plants and structures. Placement must meet approval of Owner's Representative prior to excavating planting pits.

3.5 EXCAVATION FOR TREES AND SHRUBS

A. Excavate planting holes, with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation.

B. For trees and shrubs, make excavations at least 2 times wider than root spread; equal to the rootball height directly beneath the rootball; and 1-1/2 times deeper than rootball height around the perimeter of the planting pit, as indicated in the Drawings.

C. If non-percolating soils are encountered, fill excavations for trees and shrubs with water and allow to percolate out before planting. If plant holes do not drain: Auger drill holes 36 inches deep by 8 inches wide and fill with drainage backfill. Cover top with filter fabric. Notify Owner's Representative to observe prior to planting.

D. If conditions detrimental to plant growth are encountered, such as rubble fill, or obstructions, notify Owner's Representative and resolve before planting.

E. Scarify bottom and sides of hole with shovel to eliminate "glazed" surfaces.

F. Set plants on native soil where possible.

3.6 PLACING TREES AND SHRUBS

A. Set top of root ball 1 inch higher than finish grade. If hole for trees is too deep, fill hole with native soil only where applicable or prepared soil to correct levels.

B. Set plants plumb and faced for best appearance.

C. Remove wire baskets, burlap or fasteners from rootball completely if rootball will not be damaged. If damage is suspected, notify Owner's Representative for concurrence and remove tops and sides of baskets minimum. Use bolt cutters on wire if necessary to remove wire baskets. Bending back not acceptable. Remove all burlap and twine from planting pit.

D. Remove metal cans or plastic containers completely from rootball.

E. Neatly cut off broken, girdling, or frayed roots and any root growth growing in a circular manner conforming to its container.

3.7 BACKFILLING TREES AND SHRUBS

A. Before mixing, clean topsoil of extraneous materials and other materials harmful or toxic to plant growth.

B. Prepare planting backfill soil mix prior to backfilling. Stockpile on site.

C. Planting backfill soil mix shall be as follows: [1/4] compost material, [1/4] amended topsoil and [1/2] soil excavated from planting pit.
   1. For the following group of plant materials, include peat moss as part of the backfill mix: Azalea spp., Camellia spp., Kalmia spp., Pieris spp., Rhododendron spp.

2. The modified backfill mixture schedule for these plants shall be of the following ratio:
    a. [1/4] compost material, [1/4] topsoil, [1/4] peat moss and [1/4] soil excavated from planting pit.

D. Add 3 ounces mycorrhizal inoculum per caliper-inch to backfill around trees. Add 3 tablespoons mycorrhizal inoculum per gallon planting size. Add 1 teaspoon mycorrhizal inoculum per ground cover plant.

3.8 PLANTING TREES AND SHRUBS

A. Set roots or rootball on layer of compacted planting soil backfill mix or native suitable topsoil from planting pit, plumb and in center of pit or trench with top of rootball at 1 inch above elevation of adjacent finished grade.

B. Place additional planting soil backfill mix around base and sides of ball and eliminate voids and air pockets. When backfill is approximately 2/3 complete, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill. Cut burlap from top of rootball and roll back to sides of planting hole; form watering basin; stake and guy immediately after planting.

C. Complete backfilling per City of Albany Standard Construction Specifications, firming to surface grade.

D. Form watering basin from site topsoil as shown on Drawings.

E. Thoroughly hand water each plant and entire bed immediately after planting. Adjust rootball and soil as required if settlement of soil occurs.

F. Remove plant tags and ribbons.

G. After planting, apply fertilizer at the following rates:
    0-1 foot tall shrub = 0.4 oz.
    1-2 foot tall shrub = 0.8 oz.
    2-4 foot tall shrub or tree = 1.75 oz.
    4-8 foot tall shrub or tree = 4 oz.
    8+ feet = 4 oz. plus proportional amount per foot.

3.9 PLANTING GROUNDCOVER

A. Space plants as shown or scheduled on Drawings. Dig holes 3 times the width and 1-1/2 times the depth of the rootball. Plant with planting soil backfill mix. Work soil around roots to eliminate air pockets. Water thoroughly after planting.

B. After planting, apply fertilizer at the rate of 50 pounds per 1,000 square-feet, or apply 1 slow-release fertilizer tablet per plant during backfill.

3.10 ROOT CONTROL BARRIERS AT NEW PLANTINGS

A. Provide linear and surround root barrier applications at trees within 5 feet of paving, curbs, walls, utility ducts or other appurtenances.
   1. For linear applications provide sufficient lengths of panels to equal mature width of tree canopy plus 2 feet, 10 feet minimum length. Provide on both sides of the tree trunk adjacent to curb and paving per manufacturer's recommendations.

3.11 LINEAR ROOT CONTROL BARRIERS AT EXISTING TREES

A. Provide at locations shown on the Drawings and as approved by the Owner's Representative. Excavate 24 inches deep trench along edge of proposed pavement. Install trench and barrier prior to pouring concrete or laying of pavers. Re-compact pavement subgrades and bases encountered during installation of root barriers. Cut any existing roots squarely according to standard horticultural practices and root barrier manufacturer's recommendations.

B. Install panels vertically, with ribs on tree side of barrier, to be flush against proposed paving, maximum 2 inches below top of paving, and 1/2 above finish grade. If panels cannot be installed immediately against paving formwork, backfill paving side of panel with 1-inch minus crushed rock to keep panel vertical and stabilized.

C. Provide minimum 10-foot length of connected panels, centered on tree trunk or existing root, as directed by Owner's Representative. Backfill tree side of barrier with planting backfill soil mix. (See "Planting Trees and Shrubs" article above.)

3.12 TRUNK WRAPPING

A. Deciduous trees over 1-1/2 inch caliper when within five feet of pavement shall be wrapped promptly after planting to prevent sun scald, wrapping as approved by American Association of Nurserymen. Wrap spirally from ground line to the height of the first branch. Wrap in neat and snug manner and secure with tape similarly colored to tree wrap at bottom, top and in the middle. Wrap before staking or guying.

3.13 STAKING

A. Deciduous Trees 1-inch caliper and larger: Provide 2 stakes per tree 180 degrees from each other in the direction of prevailing winds. Drive plumb outside of rootball as shown on Drawings. Place tree ties around tree trunk, approximately 4 feet from ground level, one from each side.

B. Coniferous Trees 4 feet tall and larger: Provide 3 guys evenly spaced around trunk of tree. Set guys at a 60 degree angle to the trunk at 2/3 the height of the tree. Drive 2 by 2 inch wood stakes perpendicular to angle of cable. Secure guys taunt at trees passing each guy wire through a collar and setting the collar at the tree trunk where contact is made. Secure a warning flag on each cable as shown on Drawings.

3.14 MULCH

A. Place mulch by hand, blown-in mulch is not acceptable unless approved by the Owner's Representative. Place mulch **3** inches deep in all planting beds. Rake smooth. Mulch shall be pulled away from crowns of shrubs, perennials and groundcover plants. Mulch shall be flush with adjacent curbs and paving. Taper mulch thickness from full **3**-inches depth to **2**-inch depth over a 12-inch horizontal run at paving edges so mulch will be flush with adjacent curbs and paving.

B. Tree Plantings in Lawns:

1. Deciduous Trees: Cut away and remove lawn to establish a 4-foot radius circle from center of tree. Cut clean edge and fill with mulch.
2. Coniferous Trees: Cut away and remove lawn to establish a circular ring 2 feet beyond the outside dimension of drip line of tree. Ring to be centered on tree minimum 4-foot radius. Cut clean edge and fill with mulch.
3. For trees in pavement cut outs, provide minimum 3 inches depth of mulch.

C. Ground Cover Plantings:

1. After fertilizing, mulch areas between groundcover plants; place minimum 3-inch depth of specified mulch.

3.15 PRUNING

A. Prune plant material if necessary and as directed by Owner's Representative to balance root and top growth. Prune, thin, and shape trees and shrubs in accordance with standard horticultural practices.

B. Prune all dead and broken limbs.

C. Prune without distorting basic form of the plant and only to the extent necessary for each plant except where directed by Owner's Representative. Do not prune plants into boxes or balls.

3.16 CLEAN-UP AND PROTECTION

A. During landscape work, keep pavements clean and work area in an orderly condition.

B. Sweep and wash paved surfaces to remove soil and soil stains.

C. Clean all mud and debris from catch basins, which is caused by Work of this Section.

D. Remove plant containers, trimmings, clippings, and all extraneous debris unearthed or resulting from any operations specified herein, from Project Site and dispose in a lawful manner.

E. Protect landscape work and materials from damage.

F. Maintain protection during installation and Establishment Period.

G. Treat, repair or replace damaged Work as directed by Owner's Representative, at no additional cost to the Owner.

3.17 SUBSTANTIAL COMPLETION

A. Notify the Owner's Representative in writing of the completion of planting and ancillary landscape work.

B. Within 10 days of notification, the Owner's Representative will inspect the work and prepare a Notice of Substantial Completion with a Punch List identifying items which require completion or correction.

C. Notice of Substantial Completion constitutes the commencement of the Establishment Period and the Warranty of all plants for a period of Two Years

D. The Contractor is responsible for maintaining all plants prior to receiving Notice of Substantial Completion.

3.18 MAINTENANCE

A. After receiving notice of Substantial Completion, maintain all plant material in a vigorous condition 2 years according to the requirements outlined in City of Albany Standard Construction Specifications Division 02 Section 210.08.00 "Establishment Responsibilities" and through any extensions of the Establishment Period due to failure to supply written documentation of Punch List completion. Maintenance shall continue until Final Acceptance is granted.

B. If plants are not installed before the dormant period, (November 15th to March 1st), maintenance shall recommence after the dormant period for 90 daysfollowing their installation or until Final Acceptance, whichever is later.
   1. Inspect plants at least once a week and perform maintenance promptly.
   2. Maintain trees, shrubs and ground covers by watering, pruning, spraying, cultivating, and weeding as required for healthy growth.
   3. Water when soil moisture is below optimum level for best plant growth.
   4. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required.
   5. Eradicate all weeds, grass, and other undesired vegetation growth from planting areas. Remove dead weeds and dispose of legally off-site. Remove all perennial weeds completely, including all underground parts.
   6. Restore all soil settlement to original grade.

C. Immediately remove and replace plant material which is dead, not surviving or in poor condition during the Warranty Period at no cost to the Owner.

D. Plants used for replacement shall be the same variety as originally specified. Replacement plant size shall match the physical size of the adjacent, healthy plants of the same species at the time of replacement. Replacement plants shall be furnished, planted and fertilized as originally specified.

E. Should a dispute arise concerning plant vitality or viability, the Contractor shall provide at his expense, a timely written diagnosis of plant health by a Certified Arborist. The Arborist's report shall indicate reason for lack of vigor, potential remedies, if any, and estimated time required to regain vigor and specified size. Contractor shall repair at no additional cost to the Owner, all damage to vegetation, site improvements and property caused by replacement of plant materials during the Establishment Period.

F. Store maintenance materials and equipment where directed by Owner's Representative.

G. Keep pavements clean and work areas in an orderly condition.

H. Fertilizing and Liming: Perform as recommended in the soil fertility analysis reports and as necessary to maintain cover crop in a healthy growing condition.
   1. Fertilize trees, shrubs and ground cover once at the end of the Establishment Period. Work the fertilizer thoroughly into the top 2 inches of soil.
   2. In March, within the first growing season, fertilize all planting areas with 1 application of each of the maintenance fertilizers, at the rate of 7 pounds per 1,000 square feet of soil surface.

I. Water plant material as needed for healthy plant growth and establishment during the Establishment Period.

3.19 FINAL ACCEPTANCE

A. Final inspection of all planting will be made by the Owner, Owner's Representative and the Contractor.

B. Prior to executing a final inspection, the Contractor must furnish the Owner's Representative with written documentation identifying how each Punch List item has been corrected. If such written documentation is not provided to the Owner's Representative, all requirements of the Establishment Period shall remain in force indefinitely until the written documentation is provided. Any extension of the Establishment Period will be considered incidental to the Work, and performed by the Contractor at no additional cost to the Owner.

C. Before Final Acceptance is granted, the following must be completed by the Contractor and receive approval from the Owner's Representative:

   1. Written documentation identifying how each item on the Punch List has been corrected.

   2. Replacement planting and correction of all items identified on the Punch List prior to expiration of the specified Establishment Period.

D. The project site must meet all conditions stipulated within the "Maintenance" and "Clean Up and Protection" sections of the specifications.

E. If Final Acceptance is not granted at the end of the specified Establishment Period, the Contractor shall continue maintaining plantings until Final Acceptance is granted, at no additional cost to the Owner.

F. Necessary Observations Beyond Final Acceptance:

1. If any of the items identified on the Notice of Substantial Completion and Punch List have not been fully corrected or repaired to the complete satisfaction of the Owner's Representative, the Contractor must schedule a field observation to substantiate claim of correction. The Contractor shall bear financial responsibility to reimburse the Owner for all time and travel costs incurred by the Owner's Representative to confirm Punch List compliance.

END OF APPENDIX D

Right of Entry Application - 1.5.2021

Genesee & Wyoming Railroad Services, Inc.

Real Estate Department, 13901 Sutton Park Dr., S, Suite 270, Jacksonville, FL 32224

Contractors Access/Occupancy on Railroad Property

☐ **Check box if Contractor unknown at this time** *(this form will need to be completed with contractor information and submitted prior to any work once bid process is complete)*

Incomplete or Inaccurate Information will delay application request

Section 1 - Applicant Data

Complete Legal Name of Applicant to appear on License Agreement: _____

Applicant Mailing Address: _____

_____

Applicant Overnight Address: _____

_____

Type of Entity: ☐ Corporation ☐ Partnership ☐ Sole Proprietor ☐ Individual ☐ Municipality ☐ Developer ☐ Other

If other please explain: _____

State of Incorporation or Partnership: _____

Contact during Application Process:

Name: _____

Contact Telephone _____ Email Address: _____

Section 2 - Location Data

Railroad Name: _____ Estimated Start Date _____

Specify the amount of time access is required: _____ Reason for extension of time beyond 60 days _____

Nearest City: _____ County: _____ State: _____

REQUIRED: Latitude/Longitude (Convert to Decimal Format) (ex 12.3456789/-64.101112): _____

Address of proposed worksite: _____

_____

Railroad Subdivision - if known _____ **US DOT/AAR Crossing Number - if available** _____

Section 3 - Existing Agreement Data

Is there an Existing Agreement at this Location which will be affected by this Request?

☐ Yes ☐ No If YES, List Agreement Number(s): _____

Will facility be exclusively used by Applicant? ☐ Yes ☐ No

If YES, List Name of Lessee: _____

Describe the complete scope of work on or around Railroad property (REQUIRED):

_____

_____

_____

_____

Section 4 - Department of Transportation (D.O.T.)

Is this installation associated with a Department of Transportation project? ☐ Yes ☐ No

If Yes, complete the following:

D.O.T. Contract Number: _____ **D.O.T. Project Number:** _____ **D.O.T. Project Name:** _____

D.O.T. Contact Information:

Name: _____

Address: _____

City: _____ **State:** _____ **Zip Code:** _____

Phone Number _____ **Email Address** _____

Some important items to note when completing the application:

Checklist prior to submittal

☐ Latitude & longitudinal information converted to digital decimal format with an aerial map of location

☐ Payment for fees included - check payable to specific railroad

☐ If paying fees by credit card a completed signed credit card release is included - only Visa, MasterCard or Discover can be accepted - US Roads only

☐ Applications can be emailed with a copy of the check in order to start the approval process. Only the check for the doc prep fees needs to be mailed or overnighted when the complete application packet is emailed. Include a copy of the application to make sure the payment is matched to the correct project.

☐ ***When returning the signed agreement and proof of insurance for final review and execution please allow 2-3 weeks prior to the start of work. Once all required fees are paid and documentation in place the agreement must go through an approval process before it can be finalized.***

Section 5 - Insurance Requirements - US Roads

Insurance Requirements prior to any construction project - Both the Utility Owner and the Contractor completing installation are required to provide proof of current Commercial General Liability Insurance. Prior to construction the Contractor is required to provide current proof of Railroad Protective Liability Insurance.

General Liability insurance must meet the minimum requirements of $2M per occurrence and $6M aggregate per the terms of the written contract.
Automobile Insurance must meet the minimum requirements of $1M bodily injury and property damage per occurrence.
The General Liability certificate is required to show proof of **CG2417 or its equivalent**. *(Contractual Liability Railroads)*
Evidence of **Workers Compensation** must be provided on certificate and meet the minimum requirements of $1M.
Certificate Holder naming *(specified Railroad)* **Specified Railroad names can be found at www.gwrr.com**

General Liability, Automobile Liability and Umbrella/Excess Liability provides additional insured status to the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

Where applicable and permitted by law, all policies include a blanket automatic waiver of subrogation endorsement that provides this feature in favor of the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

Prior to Construction or any access within 50' of Railroad a current **Certificate of Railroad Protective Liability insurance (RPL)** which shows the ***specific Railroad*** as named Insured. If the Contractor does not carry a policy of Railroad Protective Liability insurance, this coverage can be secured through the railroad. An application and current Fee structure for this coverage is available upon request.

Insurance Requirements for potentially hazardous pipelines such as natural gas, oil, petroleum, etc. to be amended as shown below

General Liability Insurance which names the ***specific Railroad*** as additional insured and must meet the limits of $**5M per occurrence and $10M aggregate**. Such policy shall be endorsed to provide Waiver of Subrogation in favor of the certificate holder per written contract.

Pollution Legal Liability Insurance with minimum limits of **Five Million Dollars ($5,000,000)** per occurrence naming the ***certificate holder*** as additional insured per written contract. Such policy shall be endorsed to provide Waiver of Subrogation in favor of the certificate holder per written contract.

Section 6 - Insurance requirements - Canadian Roads

Insurance Requirements prior to any construction project - Both the Utility Owner and the Contractor completing installation are required to provide proof of current Commercial General Liability Insurance.

General Liability insurance must meet the minimum requirements of $2M per occurrence and $2M aggregate per the terms of the written contract.
Automobile Insurance must meet the minimum requirements of $1M bodily injury and property damage per occurrence.
Where applicable, the General Liability certificate is required to show proof of **CG2417 or its equivalent.** (Contractual Liability Railroads)
Evidence of **Workers Compensation** must be provided on certificate and meet the minimum requirements of $1M.
Certificate Holder naming *(specified Railroad)* **Specified Railroad names can be found at www.gwrr.com**

General Liability, Automobile Liability and Umbrella/Excess Liability provides additional insured status to the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

Where applicable and permitted by law, all policies include a blanket automatic waiver of subrogation endorsement that provides this feature in favor of the certificate holder and any other party(ies) specified in or required by written contract between the named insured and the certificate holder.

IMPORTANT

Prior to application submittal, Questions can be answered and additional contact information obtained by visiting the website at www.gwrr.com - select the specific railroad and click on the link for Real Estate.

Plans for proposed installations shall be submitted to and approved by the Railroad, on behalf of itself, its subsidiaries, and affiliates, and designated engineer before work can begin! Applications submitted not meeting current specifications as outlined in the General Specifications for Sub-grade and Above grade Utility Crossings of Railway's Right-of-Way will be returned and may incur additional engineering review fees. For your convenience a copy of these specifications can be found on the website at www.gwrr.com.

Materials and installations are to be in strict accordance with specifications of National Electrical Safety Code, AREMA, current edition, and requirements of the Railroad.

Upon application approval, applicant agrees to reimburse Railroad for any cost incurred by Railroad incident to the installation, maintenance and/or supervision necessitated by the installation. Applicant further agrees to assume all liability for accidents or injuries that arise as a result of this installation.

This section must be completed in full, signed and dated prior to submittal to the Real Estate Department for processing. Unsigned applications, incomplete or inaccurate Information will delay application request and may incur additional fees.

Date: _____ **Signature:** _____

Phone Number _____ **Printed Name** _____

Fax Number: _____ **Title:** _____

Please make check payable to the specific Railroad where proposed work is to occur. A list of Genesee & Wyoming, Inc. subsidiary railroads can be found at: www.gwrr.com . W-9 information available upon request.

Mail the application for proposed project, along with the applicable non-refundable fee(s) in U.S. Funds (Canadian Applicants please pay all fee in Canadian Funds plus HST) to:

Genesee & Wyoming Railroad Services, Inc.
Attn: Real Estate Department
13901 Sutton Park Dr. S., Suite 270
Jacksonville, FL 32224

In order for the application to be complete ALL required details pertinent to the proposed installation must be completed in full and submitted along with the following fees:

	# of Copies	Amount Due	Description
☐	1	$1,750	Engineer review fee, plans/drawings, no larger than 11 x 17. Larger drawings may incur additional engineering fees.
☐	1	$1,750	Completed Contractor's Access/Occupancy Application and Fee required with ALL application submittals. If the contractor is unknown at time of submittal just check the box under the heading on the form.
		$3,500	**Full amount due with submittal for new utility installations -** *Unless prior arrangements are made, applications received without payment will not be processed until receipt of payment. This could extend the time frame for the processing of your request.*

Standard Application processing takes approximately 6-8 weeks. PLEASE READ IN FULL - "Expedited processing" is available and will reduce the processing time to between 1-2 weeks at an additional cost of $2,500. *PLEASE READ BEFORE SUBMITTING EXPEDITE FEE:* For *all expedited requests* the application and plans submitted must meet engineering specifications and be approved in order for the applicable agreement(s) to be forwarded to the applicant for signature within 2 weeks *from receipt of all required information and full payment of required fees*. It is important to note that an incomplete application and plans submitted that do not meeting engineering specifications will cause a delay in the processing of expedited request and the two week guarantee no longer applies if revisions are required to be made by the applicant in order for them to meet engineering specs for engineering to approve the request.

The expedited processing of an application does not apply to the final review and execution phase of the agreement process. Once a signed agreement has been received and ALL required fees and insurance has been submitted the agreement(s) is(are) forwarded for final review by a VP of Real Estate, Legal and the signatory for the Railroad. This final review and execution process can take up to 2 weeks from receipt of all required documentation and fees. This part of the agreement process cannot be expedited.

At this time we are unable to expedite requests for the installation of new private grade crossings, industrial track agreements, and track leases. The process for these requests varies somewhat from the review and approval process for new utilities and takes a little longer to secure all required approvals.

Entering or working on the railroad right of way or any other railroad property without the permission of the railroad is trespassing and illegal. Violators risk the possibility of serious, even fatal injury and will be prosecuted.

GEOTECHNICS

GEOTECHNICAL ENGINEERING REPORT
ALBANY WATERFRONT REDEVELOPMENT
ALBANY, OREGON

PREPARED FOR

WALKER MACY &

THE CITY OF ALBANY

GEOTECHNICS PROJECT NO. 19-008-1

DECEMBER 22, 2020

TABLE OF CONTENTS

GEOTECHNICAL ENGINEERING REPORT
ALBANY WATERFRONT REDEVELOPMENT
ALBANY, OREGON

INTRODUCTION AND PROJECT DESCRIPTION

Geotechnics LLC is pleased to submit this geotechnical report to support design and construction of the Albany Waterfront Redevelopment project. The project extends from Monteith Park on the west and extends eastward along the Dave Clark Trail for approximately ¾-mile and also eastward along Water Avenue for a distance of 14 blocks, from Washington Street to Main Street. The project location is indicated on Figure 1. The project owner is the City of Albany and the design effort is being led by Walker Macy.

Geotechnically, the project consists of two primary elements:

Park Improvements will include relocation of concrete walkways, a new boardwalk pathway traversing a wetland, structural improvements to the stage, and very minor site grading, generally cuts and fills of less than 3 feet in thickness. Figure 2a shows the Monteith Park area. To the east of the park, along the Dave Clark Trail, improvements will generally not require geotechnical support and these include repurposing of two piers, improvements to an existing boardwalk, and pathway access improvements. However, this report does include a general discussion of conditions along the existing trail, including slope stability discussions for reference in case rebuilding of the trail is planned for the future.

Roadway improvements consist of repaving the 14-block alignment of Water Avenue shown on Figure 2b. Related streetscape improvements include curbs, pull-ins, railroad crossings, and possibly concrete unit pavers for a portion of the alignment. The roadway is currently asphalt-paved and new paving will be predominantly asphalt, but with concrete considered possible for pull-ins. The team will also consider grind & inlay options for possible re-use of a portion of the existing pavement sections.

The following report provides our geological and geotechnical assessment of the site as well as our geotechnical engineering recommendations. Our work was completed in general accordance with our subconsultant agreement with Walker Macy dated December 4, 2019.

SCOPE OF SERVICES

The purpose of our services is to evaluate soil and groundwater conditions as a basis for developing geotechnical design and construction recommendations. We completed the following specific services:

- Reviewed existing available subsurface soil and groundwater information, geologic maps, hazard maps, aerial photographs, and other information pertinent to the site.
- Performed a geologic reconnaissance to observe existing surficial slope, soil, ground, and surface water conditions at the site. Performed a trail reconnaissance.
- Explored subsurface soil and groundwater conditions at the site by drilling twelve borings: eleven machine-borings and one hand-auger boring.
- Obtained samples at representative intervals from the borings, observed groundwater conditions, performed Standard Penetration Testing, and maintained detailed logs. Performed laboratory tests on selected soil samples.
- Performed an infiltration test to assess the possibility of on-site stormwater infiltration.

- Performed pavement corings and Dynamic Cone Penetrometer (DCP) tests.
- Performed geotechnical evaluations and analyses and prepared the design recommendations presented in this geotechnical report.

This study was preceded by two previous geotechnical documents: 1) a review of background documents including geotechnical reports, geologic maps, well logs, etc. (Geotechnics, 2020a), and 2) a pavement design memorandum presenting our roadway pavement recommendations (Geotechnics, 2020b). Document 1) is summarized herein and 2) is duplicated within this report.

SITE DESCRIPTION

As described above, the project includes 14 blocks of streetscape improvements along Water Avenue and various improvements along the adjacent Willamette River waterfront. Water Avenue is at approximately Elev. 205 to 208-ft, extending east-west across the project corridor as shown on Figure 1. The waterfront park and riverbanks slope downwards to the river, with an approximate water level of Elev. 170-ft. Slope inclination is variable, including flatter park space as well as steeper banks. The steepest banks are inclined approximately 1H:1V (45 deg.) and these are generally below Elev. 195-ft.

The proposed boardwalk will cross a low-area wetland and the borders of this wetland are shown on Figure 2a. Ground elevation at the low point of this proposed crossing will be approximately 178 ft. Much of Monteith Park is within the mapped floodplain, which corresponds to approximately Elev. 200 ft according to the project survey. Surveyors have also recorded the 1996 flood level as marked on the stage structure, as Elev. 197 ft.

A pavement survey along the 14-block segment of Water Avenue was completed and our observations are presented separately below in the *Pavements* section.

BACKGROUND DATA

GEOLOGY AND SOILS

Our prior study (Geotechnics, 2020a) included a review and summary of geologic maps, regional geology, soils maps, hazard maps, and existing geotechnical data. Generally, this review showed that expected near-surface native soils are alluvial flood deposits and alluvial terrace deposits. Fill soils were also anticipated to some extent.

HAZARDS

For a preliminary assessment of geologic hazards, we primarily relied on the document, "*Geologic Hazards, Earthquake and Landslide Hazard Maps, and Future Earthquake Damage Estimates for Six Counties…..*" (Burns et al., 2008). Maps within Appendix D of that document are intended to provide general estimates of the degree of hazard to be expected from ground motion amplification, liquefaction, and landslide susceptibility. These maps indicate the site likely falls within the following hazard levels:

- Ground Motion Amplification - High
- Liquefaction Susceptibility - Moderate
- Landslide Susceptibility - Moderate

The online Hazvu (DOGAMI, 2020) presents maps showing relative hazard levels for the site:

- Cascadia Earthquake - Very Strong Shaking
- Earthquake - Very Strong Shaking
- Landslide - Areas of Moderate and High
- Flooding - Yes, flood hazard zone in north portion of Monteith Park including the stage.

Liquefaction: Liquefaction is a phenomenon caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles, resulting in the sudden loss of shear strength in the soil. Granular soils, which rely on interparticle friction for strength, are susceptible to liquefaction until the excess pore pressures can dissipate. In general, loose, saturated sand soils with low silt and clay contents are the most susceptible to liquefaction. Silty soils with low plasticity are moderately susceptible to liquefaction under relatively higher levels of ground shaking. The silt soils encountered at this site have moderate plasticity and are relatively stiff. These soils are very unlikely to liquefy and are generally above the groundwater table. The granular soils along the roadway alignment are predominantly dense to very dense, thus these soils are also unlikely to liquefy. In the north portion of the park, some potentially liquefiable gravels were encountered (see boring B-10 below), loose to medium dense gravels with minimal silt content. Our borings did not extend to great depth in this area, thus the hazard is undefined. But the project contains no high value structures in that area that would warrant designing against liquefaction, so the hazard can remain undefined.

Ground Rupture: We reviewed the USGS online Fault and Fold database (USGS, 2020) which includes all active and potentially active known faults. This mapping shows no known faults passing through the site, with the closest being the Owl Creek Fault, approximately 5 miles to the southwest. Based on the distance to the mapped fault, we consider the potential for ground rupture at this site to be remote.

Slope Instability: The relatively steep riverbank slopes have the potential for shallow slope instability along much of the Dave Clark Trail. This hazard is discussed in more detail below.

ENCOUNTERED SUBSURFACE CONDITIONS

We completed field explorations on October 12th and 13th, 2020 consisting of eleven machine-borings to depths ranging from 10 to 16½ feet below ground surface (bgs). The borings were completed by Dan Fischer Excavating of Forest Grove, Oregon using a trailer-mounted drill rig advancing 4-inch diameter solid-stem augers. Approximate boring locations are shown on Figures 2a and 2b, and boring logs are included in Appendix A. Standard Penetration Tests (SPT) were completed in general conformance with ASTM Test Method D1586, "*Standard Method for Penetration Test and Split-Barrel Sampling of Soils*." In addition to the machine borings, we completed one hand auger boring in the proposed boardwalk area.

Samples were collected from the borings and returned to our soils laboratory for further examination and testing. Testing included Moisture Content (44 tests in accordance with ASTM D2216), Fines Content (3 tests, ASTM D1140), and Grain Size Distribution (1 test, ASTM D6913). Laboratory test results are presented in Appendix A on the boring logs (Figures A1 - A12) and on Figure A16.

Generally in agreement with the published geologic maps and other documents reviewed (Geotechnics, 2020a), native near-surface soils at the site consist of alluvial deposits. The roadway alignment exhibited some fill soils towards the west end while the park area was dominated by fill soils. Soils in the wetland at the location of the proposed boardwalk consisted of recent alluvium. Others have

documented the deeper siltstone bedrock underlying the area, but our borings were too shallow to encounter this layer. Encountered soil and groundwater conditions are described separately for the three areas below.

ROADWAY

Fill: Fill soils were encountered in borings B-6, B-7, and B-11 as well as some probable trench-backfill material in boring B-5. The four eastern borings, B-1 through B-4, did not encounter fill soils. Fill soil depths in the three western borings were 5, 9½, and 2½ ft bgs for B-6, B-7, and B-11 respectively. Fill was highly variable from elastic silt to clayey gravel. Metal debris was encountered in boring B-6. SPT blow counts ranged from 11 to 31 blows per foot (bpf). The trench backfill in boring B-5 was looser, from 8 to 13 bpf.

Alluvium: These reworked alluvial deposits transition from fine deposits (generally silt) to coarse deposits (sands and gravels) at depths greater than 7 feet bgs.

> Fine Alluvium: Near surface soils beneath pavement and fill consist of fine alluvium, generally low to moderate plasticity silt. The soil was generally stiff, with SPT blow counts from 8 to 20 bpf with an average of 12.6 bpf. Moisture contents varied from 25 to 37 percent with an average of 30.7 percent. These soils possess low to moderate shear strength, moderate compressibility, and low permeability.
>
> Coarse Alluvium: In seven of the eight borings, sand and gravel alluvium was encountered beneath the fine alluvium and/or fill. The depth of this contact varied from 7 to 10¼ ft bgs with an average of 9.0 ft bgs. These soils are generally dense to very dense gravel with minor silt and sand.

Groundwater: Groundwater was not encountered although some of the deeper soils were described as very moist. We found that groundwater is deeper than 11 ft bgs along this road alignment, at the time of our explorations. This is consistent with our data review (Geotechnics, 2020a) which found that groundwater in this area only approaches 10 ft bgs during the wettest months.

PARK

Fill: Borings B-8 and B-9 encountered fill to total depth (greater than 14 ft bgs) while boring B-10 transitioned from fill to alluvium at a depth of 10½ ft. Fill was quite variable with gravelly silt predominating in B-8 and B-10, while B-9 was mostly silty gravel. Consistency and density was also variable, with SPT blow counts ranging from 2 to 33 bpf, with an average of 12 bpf. Moisture contents varied from 10 to 36 percent with an average of 19.8 percent.

Coarse Alluvium: The northernmost machine-boring, B-10, encountered coarse-grained alluvial soils below 10½ ft bgs and extending to the final boring depth of 16½ ft. The material was gravel with silt and sand, generally medium dense.

Groundwater: Groundwater was not encountered in the southernmost boring, B-8, with a total drilled depth of 14 ft bgs. So, this upper-park area may be appropriate for the siting of shallow stormwater infiltration facilities. The northern two borings did encounter rapid groundwater seepage from granular soils, at depths of 11½ and 12 ft for B-9 and B-10 respectively. This corresponds to groundwater elevations of 176’ and 171½’ respectively. In the B-10 boring, this elevation is very similar to the level of the Willamette River surface (Elev. 171’ at the time of the project survey).

BOARDWALK

Alluvium: Boardwalk area soils are considerably different, consisting of recent alluvium. Above 7-ft depth in boring HA-1, soils were very loose silty sand. One fines content test in this material resulted in 25% fines (materials finer than US No. 200 sieve). Below 7-ft, soils transition to very soft silt, becoming organic silt below 8.4 ft.

We had to terminate our boring at 9¼-ft bgs in these very soft soils. To determine their extent and thickness, we returned to the site in December and performed an adjacent *Wildcat Cone* test, a type of DCP using a larger hammer and threaded 1-meter rods, appropriate for greater depths than the pavement DCP testing described below. The log for this DCP-HA1 is included as Figure A13, with a total depth of 15¾-ft. Additionally, the converted N-values (blows per foot, bpf) from the Wildcat Cone are shown graphically on the HA-1 boring log, Figure A12.

From the DCP data, we can see that the very soft layer ends at about 10 ft bgs. The underlying soils between 10 and 13 ft are not dense, but much stiffer/denser than those above, and will have some foundation bearing capacity (see *Boardwalk Foundations* section, below).

Groundwater: Groundwater was encountered in HA-1 at a depth of 6.9 ft bgs. This is approximately Elev. 171½ ft, nearly coincident with the river surface level.

INFILTRATION

We completed one infiltration test at the approximate location shown on Figure 2a. Test I-1 was completed adjacent to boring B-8, approximately 3 feet away. The test was conducted using the falling head percolation test procedure. The test involves embedding a 6-inch plastic pipe 6 inches into the soil at the test depth, pre-soaking the soil, then measuring the drop in water head over a period of two hours. Three test iterations were performed and the average was selected as the unfactored infiltration rate. For continuous data collection, we utilized a submerged data logger and checked this with periodic manual readings.

Infiltration test results are summarized in the table below. Plots of the transducer readouts are provided as Figure D1. At the test location, we extended an adjacent boring (B-8) deeper than test level in order to assess soil and groundwater conditions within the primary infiltration zone. The B-8 boring log is included as Figure A8.

Infiltration Test	Location	Depth	USCS Material Type	Percent Fines	Field Measured Infiltration Rate (in/hr) [1]
I-1	North of Sr. Center parking	2'6"	Sandy SILT with Gravel (ML)	59.5	0.41

1. Appropriate factors should be applied to the field measured infiltration rate based on the design methodology used and the specific system utilized.

PAVEMENT EVALUATION AND SUBGRADE TESTING

DCP TESTING

To supplement the visual observations, lab testing, and SPT testing and further evaluate subgrade soils for pavement design, we performed Dynamic Cone Penetrometer (DCP) testing. After coring through existing pavement and removing existing base course rock, a cone was driven into the soil using a 575-mm drop of an 8-kg hammer. The penetration versus blow count (mm/blow) was recorded as the DCP value. Standard correlations provided by ODOT Pavement Services (ODOT, 2019b) provide resilient modulus (M_R) and California Bearing Ratio (CBR) values for use in pavement design. The apparatus and testing procedures are in accordance with ASTM D6951.

We performed DCP tests in the three locations shown on Figure 2b. The table below summarizes the results of the tests. Complete DCP logs are included as Figures A14 and A15.

DCP Test	Top Test Depth (inches)	Distance Driven (inches)	Material Tested	Average DCP (mm/blow)	[1]Average M_R (psi)	[2]Corrected Average M_R (psi)	[3]Correlated CBR (%)
DCP-B1	29	10	Silt (ML)	13.4	18,083	6,329	4.2
DCP-B4	23	14	Silt (ML)	24.2	14,224	4,978	3.3
DCP-B6	33	10	Elastic Silt (MH)	25.4	13,884	4,859	3.2
DCP-B11	10	30	Sandy Silt to Silt (ML)	23.4	15,100	5,285	3.5

1. M_r value based on ODOT recommended correlation: $M_r = 49{,}022.76*(DCP)^{-0.39}$, rounded to nearest 100 psi.
2. Corrected M_r value based on ODOT recommended correction factor of 0.35 for fine-grained subgrade soil, rounded to nearest 100 psi.
3. California Bearing Ratio Correlation: $CBR = M_R/1{,}500$.
4. All values based on upper, weaker soils above 43-inch depth and as shown on Figures A9 and A10.

PAVEMENT CORING

All eight of our borings included pavement corings to determine pavement and base rock thickness. Findings are included in the attached boring logs and summarized here. We did not encounter any geotextiles within or below the base aggregate (base rock). The quality of the base rock was variable, as described in the boring logs.

Boring	Station	AC Thickness (inches)	Base Rock Thickness (inches)
B1	52+17	4.5	23
B2	45+46	5.0	25
B3	39+03	3.0	24
B4	32+04	2.5	22.5
B5	26+21	5.0	24+
B6	20+57	5.0	26
B7	14+47	6.0	18
B11	08+64	2.0	8
Average	---	4.1	21.3

PAVEMENT CONDITION

We performed a pavement condition assessment using the methods presented in the *Pavement Data Collection Manual* (ODOT, 2019a). We referenced our field survey to the project stationing provided by KPFF, shown on Figure 2b. We summarized our findings in five project segments defined by significant changes in pavement condition. The pavement evaluation is supplemented with photographs of pavement distress, presented as Figures B1 through B7.

Our results are summarized in the table below.

	Distress Level L = Low M = Moderate H = High					
Station	Fatigue Cracking	Longitudinal Cracking	Transverse Cracking	Potholes	Raveling	**Overall**
6+80 to 9+70	H	H	M	M	H	**H**
9+70 to 16+00	L	M	M	L	L-M	**L-M**
16+00 to 27+00	L-M	M	L-M	L	L-M	**L-M**
27+00 to 41+50	L-M	L-M	L	L	M	**L-M**
41+50 to 53+00	L-M	M	M	L	L	**L-M**

SUMMARY OF PAVEMENT CORING AND SURFACE CONDITIONS

Pavement condition is a function of pavement profile, past traffic, subgrade soils, drainage conditions, and age. It is not surprising that the poorest pavement condition coincides with the thinnest pavement (see boring B-11). Subgrade soils are generally low quality, requiring a relatively thick pavement section for a moderate traffic level. We are unaware of the pavement age and it is probably highly variable along the alignment. In general however, pavement distress appears excessive for its apparent age, and this suggests under-design. It is likely that the design did not properly account for traffic volumes along this alignment.

In considering a grind-inlay option, we consider condition and thickness of current paving materials. The first zone in the above table disqualifies for grind-inlay based on pavement condition and section thickness. The next three zones disqualify based on inadequate thickness of high-quality, angular base rock. East of Sta. 41+50 could be considered for a grind-inlay option, provided enough of the distressed AC is removed and desired grades allow for the design thickness required (see *Pavements* section).

CONCLUSIONS AND RECOMMENDATIONS SUMMARY

Based on our explorations, testing, and analyses, it is our opinion that the site is suitable for the proposed redevelopment provided the recommendations in this report are incorporated in design and construction. We offer the following summary of findings and conclusions. The following report sections present our recommendations in greater detail.

- The recommended asphalt pavement section is 7 inches AC over 12 inches of aggregate base. We recommend a geotextile separator, placed below the aggregate base. Grind/inlay may be used for an eastern segment of the Water Avenue alignment. Concrete pavers can be used on the west end. For paved pathways, a lighter pavement section will be appropriate, and concrete surfacing can be used provided our subgrade support recommendations are followed.
- In our opinion, the site is marginal for on-site infiltration of stormwater within fill soils in the upper park. Our measured infiltration rate of 0.4 in/hr may not be sufficient, depending on the size of the facility. If used in design of on-site infiltration facilities, note that the presented value is unfactored and appropriate safety factors will be required. A minimum safety factor of 2 is necessary, but additional safety factors may be applicable depending on the facility design method, the potential for long-term siltation, and other factors.
- Because the silty soils are moisture sensitive, we recommend scheduling the work for dry-season construction.
- The wetland-boardwalk area is underlain by very loose and very soft soils. We recommend deep support of boardwalk foundations, preferably with helical piles.
- For any future new or replacement segments of the Dave Clark Trail, we recommend further setback from the steep riverbank, in accordance with the recommendations following.

RECOMMENDATIONS

PAVEMENTS

Water Avenue

We understand all roadway pavements will be asphalt with the possible exception of the western three blocks (Sta. 6+80 to 17+00), which is being considered for pavers.

Jurisdictional Guidelines. The City of Albany requirements for minimum sections and pavement design are detailed in their document, *Division D - Street and Alley Engineering Standards* (City of Albany, 2019). They provide a minimum section, which for Collector streets is 7" AC over 12" CRB (crushed rock base). The document additionally requires a geotextile separator below the CRB. The document notes that pavement design calculations are required, but only used to check whether the required section (7"/12") is sufficient (only to see whether additional thickness is necessary, with reductions not allowed). The Albany Standard also requires, "Design of the A.C. pavement structural section shall follow the latest edition of Asphalt Pavement Asssociation of Oregon (APAO) *Asphalt Pavement Design Guide*."

Design. We have prepared flexible pavement design recommendations in accordance with the APAO document (APAO, 2003). We also performed calculations for ESALs utilizing methods presented in *AASHTO Guide for Design of Pavement Structures* (AASHTO, 1993).

Our recommendations are based on a 20-year performance period with 90 percent reliability. Inputs for design include our pavement condition survey, pavement corings to determine current pavement section, borings to assess subgrade soils, and subgrade DCP testing. The shallow-soil conditions along the 14-block-long alignment are relatively consistent, and hence we provide a single AC pavement section for the entire project.

Subgrade Soil: Soil borings indicate that pavement subgrade soil consists generally of medium stiff to stiff silt along the entire alignment. DCP testing indicates the resilient modulus is about 4,800 to 6,300 psi which corresponds to a California Bearing Ratio (CBR) of 3.2 to 4.2 percent. We have used a resilient modulus of 5,000 psi which corresponds to 'fair' soil as defined in the APAO Guide. The design of the recommended pavement section is based on the assumption that construction will be completed during an extended period of dry weather.

Traffic: The City has confirmed that site-specific traffic counts are unavailable for this roadway but that it should be classified as a "Collector". We estimated traffic loading using guidance in the *Asphalt Pavement Design Guide* (APAO, 2003). Table 3.1 of this reference provides six traffic classes from 'Very Light' (Level I) to 'Heavy' (Level VI). The Collector classification points to Level V which is 'high-moderate' traffic. The table lists the 20-year Equivalent Axle Loads (EAL) as varying from 250,000 to 500,000. We selected the higher value (500,000 EAL) as our design input for the AASHTO methodology. This conservatism accounts for the possibility of higher truck percentages than assumed in the table, appropriate for the high proportion of bus traffic this roadway might experience.

As a reality check on this design-life EAL of 500,000, we calculated EAL's using the AASHTO method (AASHTO, 1993). For a collector roadway, we have assumed current traffic of 4,000 vehicles per day and a truck percentage of 4%. To project traffic over the design period, we have assumed an annual traffic growth rate of 3.0 percent. Our breakdown of truck traffic for the 160 daily trucks uses typical percentages as follows: 2-axle (118), 3-axle (7), 4-axle (6), 5-axle (14), and bus (15). With these data and assumptions, we calculated an equivalent of roughly 487,000 Equivalent Single Axle Loads (ESALs) over a 20-year period, very similar to our design value of 500,000 selected from the APAO Guide.

Design Calculations: Using the AASHTO method, we make the following additional assumptions:

- Performance period: 20 years
- Reliability: 90%
- Standard Deviation: 0.45
- Initial to Terminal Serviceability: 4.2 to 2.5
- Layer coefficients of 0.06 for angular, high-quality aggregate and 0.42 for asphalt.

Our resulting required structural number is 3.62. Using a 12-inch thickness of base aggregate as recommended in the APAO Guide, 7 inches of asphalt will be required. We recommend an asphalt concrete (AC) pavement section that consists of **7 inches of AC over 12 inches of aggregate base**. This corresponds exactly with the minimum requirements of the City of Albany. Our calculations have confirmed the appropriateness of their pavement section and determined that additional thickness should not be necessary.

Geotextile: We concur with the City's recommendation for use of a geotextile separator. This product is intended only for separation from the silty subgrade soils and does not contribute to the structural

capacity of the pavement section. Therefore, the material can be a relatively lightweight non-woven geotextile such as Mirafi 140N. The material should conform to ODOT Std Specification 2320.2 – *Type 1 Nonwoven Drainage Geotextile* (ODOT, 2021). Rolls should be placed with minimum 6-inch overlap.

Grind/Inlay: The existing pavement east of Sta. 41+50 is appropriate for modification by grinding and inlaying. Assuming a **2-inch grind** with 2.5 inches existing AC remaining, 4.5 inches of new AC would be required to obtain the 7" AC thickness. The resulting increase in elevation would be 2.5 inches. If grades can be raised in this area, the method could provide significant cost savings. We have again used the AASHTO method to confirm the need for 7" of asphalt, using a layer coefficient of 0.35 for existing AC and assuming 15-inch thick existing aggregate base. We do not recommend an overlay without grinding because in our opinion, the distressed upper-layer of pavement should be removed.

Parking lots and Pull-Ins: For parking pull-ins and parking lots, we assume traffic will be lower-volume with a lower truck percentage. Concrete (PCC) pavements may also be allowed for pull-ins. We have prepared AC and PCC pavement recommendations based on 150,000 ESALs with a required structural number of 2.77. We recommend a concrete section of **5 inches of PCC over 4 inches of aggregate base** or an asphalt section of **5.5 inches AC over 8 inches of aggregate base.** The concrete design was prepared in accordance with *Guide for Design and Construction of Concrete Parking Lots* (ACI, 2008).

The AC pavement should conform to City of Albany requirements which are ½-inch dense graded HMAC (hot-mix asphalt) for upper 2 inches and ¾-inch HMAC for base courses (City of Albany, 2019). Asphalt should be compacted to 91 percent of Rice density. Our recommendations for base-course aggregate is provided below under *Fill and Backfill Materials*. Aggregate base should extend a minimum of 6 inches beyond the edge of the AC. We do not recommend planning on the re-use of existing base rock as part of the structural design section. However, in areas where the excavation for new pavement subgrade does not remove all existing rock, the rock may remain. Although this is mostly described as low-quality aggregate (see boring logs), the strength/deflection behavior is still superior to existing subgrade silt soils, so it can remain as subgrade soil.

The PCC used to construct the recommended rigid pavement section should have a minimum 28-day flexural strength of not less than 600 psi as determined by ASTM C 78. Typically, concrete with a compressive strength of at least 4,000 psi will achieve the above recommended flexural strength.

Concrete Pathways

Pavements for site pathways and sidewalks will consist of Portland Cement Concrete (PCC). Aggregate base material for PCC pathways should conform to the recommendations below in the report section, *Fill and Backfill Materials*.

We assume pathways will be subject to traffic primarily from pedestrians but may also occasional be subject to loading from maintenance trucks.

For design, we utilized the American Concrete Institute manual 330R-08, *Guide for Design and Construction of Concrete Parking Lots* (ACI, 2008) in conjunction with results from exploratory borings and our experience. The recommended pavement section for the anticipated light traffic is **4 inches of PCC over 8 inches of aggregate base**. An appropriate alternative flexible pavement section for pathways is 3 inches of AC over 12 inches of aggregate base.

The recommendation is for unreinforced concrete, sometimes referred to as jointed-plain-concrete pavement (JPCP). The PCC used to construct the recommended rigid pavement section should have a minimum 28-day flexural strength of not less than 600 psi as determined by ASTM C 78. Typically, concrete with a compressive strength of at least 4,000 psi will achieve the above recommended flexural strength. For control of shrinkage cracks, spacing of contraction joints should be a maximum of 10 feet.

SLOPE & TRAIL

We performed a visual reconnaissance of the Dave Clark Trail which parallels the riverfront slope, in some areas coming within a few feet of the slope crest. We evaluated the current condition of the trail surface and adjacent slope. The reconnaissance extended from approximately Washington Street to Main Street.

Appendix C contains 16 photographs illustrating conditions of the trail and surroundings, presented from west to east. Distress features observed related to slope movement include concrete cracking parallel to the slope, concrete slab segments tilting towards the slope, and undermining of exposed concrete-edge at the slope face. We additionally observed numerous features on the slopes suggesting past slope movement, generally slope creep (slow, shallow movement as opposed to deeper landsliding). These include tilting and curved tree trunks, tilting and distressed structures such as abandoned posts and foundations, and offset drain pipe connections. The eastern half of the 14-block segment is generally in much better condition than the western half. The eastern portions are newer and there are several segments that provide structural support to the trail (piles and retaining walls).

In general, the trail is located closer than optimal from the crest of a potentially unstable slope. In addition to the visual evidence of past movement, the slope height (20 to 30 ft) and inclination (average of approx. 1.5H:1V), as well as the likely soil conditions (undocumented fill or unconsolidated native alluvium) are indications of potential instability.

We understand the trail will remain as-is, without any realignment planned at this time. The trail is functional and the risk of significant and abrupt landsliding is relatively low. However, if any significant trail segments will be replaced, we would recommend locating these a minimum distance of 10 feet from the slope crest to the nearest edge of concrete. This setback will minimize future trail surface distress caused by slope movements. Wherever setbacks are unachievable, retaining walls or boardwalk-segments should be considered. Design of such structures should be overseen by a geotechnical engineer.

BOARDWALK

The proposed boardwalk will span across an area of very loose and very soft soils (see discussion in report section *Encountered Subsurface Conditions*). These soils are highly compressible. In order to limit settlement, provide some lateral restraint, and prevent scour loss during floodwater flow, we recommend against the use of shallow foundations. Helical piles will be an appropriate and cost-effective alternative deep-foundation option for the boardwalk. We recommend helical piles bearing in the soils between 10 and 15 feet below grade, applicable to the entire length of boardwalk shown on Figure 2a, approximately 65-ft in length.

Axial Load

Design loading is unknown at this time. To cover a range of conditions, we have calculated required helix configurations of round-shaft piles for three design loads (single-pile allowable loads) that might be appropriate for this project. As shown in the following table, lead-sections with a single-helix are appropriate for the lighter loads. For axial loads over 4 kips, double-helix configurations should be considered.

Helical Anchor Design Recommendations			
Allowable Load (kips)	Helix Configuration	Required Torque (ft-lb), 2-⅞" diam.	Required Torque (ft-lb), 3" diam.
2	8"	450	500
3	10"	670	750
5	8"/10"	1,120	1,250

In the field, capacity is verified by torque measurements with equipment provided by the contractor. The table above provides the required minimum torque for each of the selected piles, based on a factor of safety of 2.0 applied to the calculated capacity.

These recommendations assume minimum shaft outside-diameter is 2-⅞ or 3 inches. Square shafts should not be used. If a diameter greater than 3 inches is selected, we should be consulted for modification of the above torque and load capacity values. Wall thickness of the circular section should be 0.25-inch minimum.

To achieve bearing in the denser deposits and to establish depth of fixity for lateral constraint, we have established a recommended minimum pile depth of 10 feet. Even if required torque is achieved above this depth, the installation should be continued to the required minimum depth.

Based on results of the field exploration program, our estimated helical pile depth to achieve required torque is 13 ft. This estimate is solely for cost estimating purposes and the contractor should be prepared to add additional shaft extensions as necessary.

Lateral Load

We have recommended circular shaft helical piles which will provide greater stiffness and lateral resistance than equivalent-size square-shaft piles. We have reviewed a paper by Howard Perko (2003) which presents the findings of lateral load tests performed on 3-inch diameter helical piles in a variety of soil types. Perko shows that even for very loose sands and soft clays, such piles can be loaded laterally to over 1,000 lb with less than 0.5 inch deflection. We have confirmed this in the past with lateral loading analyses (LPile) on several projects. In our opinion, lateral loads will be adequately resisted by the circular-shaft helical piles with acceptable levels of deflection. However, if it is determined that additional lateral resistance is required, battered helical piles could be installed.

OTHER STRUCTURES

Possible small structures include signage, playground equipment, and seating walls. These relatively low ground pressure structures can be placed on a minimum 6-inch layer of compacted crushed rock (see Aggregate Base below) over the prepared subgrade as described herein.

The stage structure might be modified and this work may include additional foundation support. Subgrade soils in this area are expected to be fill soils consisting generally of medium dense silty gravel. Foundation support elements for the stage can consist of shallow continuous or isolated concrete footings. Due to the fill, we recommend overexcavation of foundation excavations by 12 inches and replacement with compacted crushed rock. Structure foundations can be proportioned using a maximum allowable bearing pressure of 2,500 psf. Such foundations are expected to experience settlements of less than ¾-inch.

Lateral loads on footings can be resisted by passive earth pressure on the sides of footings and by friction on the bearing surface. We recommend that passive earth pressures be calculated using an equivalent unit weight of 280 pounds per cubic foot (pcf) for foundations confined by medium stiff or better native soils or compacted imported granular fill. We recommend using a friction coefficient of 0.35 for foundations placed directly on site soils. The passive earth pressure and friction components may be combined provided that the passive component does not exceed two-thirds of the total.

Foundations for light poles should consist of reinforced concrete piers. These are typically 24 inches in diameter and 4 to 6 feet in depth, depending on the pole height. Standard foundation details, provided by the manufacturer will likely provide adequate support at this site. Geotechnics should review the preliminary plans to verify adequate lateral and vertical support.

EARTHWORKS

Site and Subgrade Preparation

Existing site vegetation including roots should be removed from all work areas. Stripped material should be transported off site for disposal or placed in stable, non-settlement-sensitive areas. Grubbing should include removal of all trees, brush and their trunks within structure and pavement areas. Roots up to 1 inch in diameter should also be grubbed from such areas. Low or disturbed areas from grubbing should be backfilled and compacted with structural fill as described later in this report.

After stripping and grubbing, the existing subgrade of pavements, walkways, or areas to receive structural fill soil should be proofrolled with a loaded dump truck or heavy drum roller to identify remaining soft, loose or unsuitable areas. The proofrolling should be observed by a member of our staff, who should evaluate the suitability of the subgrade and identify any areas of yielding that are indicative of soft or loose soil. If soft or loose zones are identified during proofrolling, these areas should be excavated to the extent indicated by the geotechnical engineer and replaced with compacted structural fill. For roadway pavements, if work is performed during wet subgrade conditions and/or widespread excessive deflection is noted during proofrolling, we may recommend placement of a higher-strength woven geotextile or geogrid on the soil subgrade.

Foundation Subgrade

We recommend that Geotechnics observe the base of prepared foundation excavations before placing any concrete forms, reinforcing steel, and/or replacement crushed rock. Foundation bearing surfaces should not be exposed to standing water. If water infiltrates and pools in the excavation, the water, along with any disturbed soil should be removed before placing reinforcing steel. We will evaluate whether the bearing surface has been adequately prepared and that the soil conditions are consistent with those observed during our explorations.

Dry Weather Construction

The silty soils at the site can be expected to become disturbed during periods of wet weather or when the moisture content of the material is more than a few percentage points above optimum. This will likely be the case in all but mid-summer through early fall. When wet, the on-site soils are susceptible to disturbance and generally will provide inadequate support for construction equipment.

We recommend earthwork be scheduled for the dry summer months. As noted above, our recommendations for flexible pavement design are contingent on dry-weather construction and the resultant ability to adequately prepare the subgrade soils. If earthwork is scheduled for the wet season or significant precipitation occurs during construction, special techniques may be needed to minimize disturbance to the subgrade from construction traffic. This could include constructing a temporary working pad of 12 to 18 inches of crushed rock over a geotextile fabric. Tracked equipment can be used to reduce loading on the subgrade. Construction access and staging can be planned to reduce traffic over soft subgrade areas.

Utility Trenches

We assume the project will include the placement of utilities in trenches. Lateral support should be provided to prevent loss of ground support. Excavations deeper than 4 feet bgs should be shored or sloped if workers are required to enter. Excavations made to construct footings or other structural elements should be laid back at the surface as necessary to prevent soil from falling into excavations. All excavations should be made in accordance with applicable Occupational Safety and Health Administration (OSHA) and state regulations. Site soils are generally OSHA Type B.

The contractor should be responsible for reviewing the boring logs, selecting and designing the specific shoring methods, monitoring the excavations for safety, and providing shoring required to protect personnel and adjacent structural elements. Shoring deeper than 6 feet should be designed by a registered engineer who should be provided with a copy of this report. Shoring should be designed and constructed to support an equivalent fluid pressure of 40 pcf, plus surcharge loads from construction equipment, construction materials, excavated soils, or vehicular traffic.

The majority of soils encountered should be suitable for support of utility pipes. Pipe bedding materials should be placed on relatively undisturbed soils. Trench bottoms should be free of debris, organics, and standing water. If subgrade soils are very loose or disturbed, the soils should be compacted in place, or removed and replaced with compacted bedding material or larger aggregate.

We recommend a minimum 4-inch thickness of bedding material beneath pipes. Bedding material should be used as pipe zone backfill and placed in layers and compacted around the pipe to obtain complete contact. Bedding material should extend at least 12 inches above the top of the pipe. Pipe bedding material, placement, compaction, and shaping should be in accordance with the manufacturer's specifications.

During the dry season, groundwater is not likely to occur within the depths of expected excavations. During the wet season, however, perched groundwater could rise to within excavation depths. If groundwater is encountered, sump pumps placed in the excavations should be sufficient for dewatering. In addition to groundwater seepage, surface water inflow to the excavations during the wet season could be problematic. In addition to groundwater seepage, surface water inflow to the excavations during the wet season could be problematic. Provisions for temporary surface water control should be included in the project plans and should be installed prior to commencing work (see below).

Surface Drainage

Temporary: Surface runoff can be controlled during construction by careful grading practices. Typically, these include the construction of shallow, upgrade perimeter ditches or low earthen berms and the use of temporary sumps to collect runoff and prevent water from damaging exposed subgrades. Also, measures should be taken to avoid ponding of surface water during construction.

Erosion at the site during construction can be minimized by judicious use of straw bales, silt fences and plastic sheets. The erosion control devices should be in place and remain in place throughout site preparation and construction. Maintaining appropriate erosion control is the responsibility of the contractor and should be carried out in accordance with the project plans and specifications and applicable regulations.

Permanent: A well-designed permanent surface water control plan should be included in the design documents. Adequate surface gradients and drainage systems should be incorporated into the design such that roof drains and parking lot runoff are directed away from structures and into swales, pipes, or other controlled drainage devices that discharge to a suitable outlet.

Fill and Backfill Materials

Fill beneath pathways and other structures should be placed and compacted as structural fill. Any fill placed on or at slopes steeper than 5H:1V should also be constructed as structural fill. Following are recommendations for structural fill. On-site soils, placed during dry weather, may be suitable for use as structural fill provided debris, organics, and oversized particles are removed, as described below. A Geotechnics representative should evaluate on-site and imported fill materials prior to use at the site.

General Structural Fill: Structural fill soils should be free of debris, roots, organic matter, frozen soil, man-made contaminants, particles with greatest dimension exceeding 3 inches, and other deleterious materials. The suitability of soil for use as structural fill will also depend on the gradation and moisture content of the soil. As the amount of fines in the soil matrix increases, the soil becomes increasingly more sensitive to small changes in moisture content and achieving the required degree of compaction becomes more difficult or impossible. If the soil is too wet to achieve satisfactory compaction, moisture conditioning such as disking or tilling will be required. If the material cannot be properly moisture conditioned, we recommend using imported material for structural fill.

Select imported granular material may be used as structural fill. The imported material should consist of pit or quarry run rock, crushed rock or crushed gravel and sand that is fairly well graded between coarse and fine sizes. The material should have less than 5 percent passing the U.S. No. 200 Sieve, but during dry weather the fines content can be increased to a maximum of 20 percent. The material should have a maximum particle size of 3 inches.

Aggregate Base: This rock product should be used under roadway and pathway pavements. Aggregate base should also be used for backfill of overexcavated zones beneath foundations, roadways, and pathways. The material should consist of imported clean, durable, crushed angular rock. Such rock should be well-graded and have a maximum particle size of 1½ inches, and less than 5 percent passing the U.S. No. 200 Sieve. The material should additionally conform to Section 2630.10 of the ODOT Standard Specifications for Construction (ODOT, 2021) for 1½”-minus dense-graded base aggregate.

Trench Backfill: Utility trench backfill for pipe bedding and in the pipe zone should consist of well-graded granular material with a maximum particle size of ¾-inch and less than 8 percent passing the U.S. No. 200 Sieve. The pipe bedding and fill in the pipe zone should meet the pipe manufacturer's recommendations. Above the pipe zone, imported granular fill or aggregate base may be used as described above.

Fill Placement and Compaction

Structural fill material should be placed and compacted in thin lifts to the percentage of Maximum Dry Density (MDD) as listed below. MDD is based on ASTM Test Method D1557 (Modified Proctor).

Mass Fill (imported):	92	Pavement Aggregate Base:	95
Mass Fill (site soils):	92	Trench Backfill:	92
		Nonstructural Trench Backfill:	88

Structural fill should be placed and compacted in lifts in accordance with the following:

- Place all fill and backfill on a prepared subgrade that consists of firm, inorganic native soils or approved fill soils. When placed on sloping ground, the ground should be benched and keyed such that soils are placed on a level surface.
- Place all fill or backfill in uniform horizontal lifts with a thickness appropriate for the material type and compaction equipment. Unless otherwise directed by the geotechnical engineer, maximum thickness of loose lifts shall be 8 inches.
- Place fill at a moisture content within about 3 percent of optimum as determined in accordance with ASTM Test Method D1557. Moisture condition fill soil to achieve a uniform moisture content within the specified range before compacting.
- Do not place fill and backfill until tests and evaluation of the underlying materials have been made and the appropriate approvals have been obtained.
- Grade the surface of the fill at the end of each working shift so that surface water can drain readily.

During structural fill placement and compaction, a sufficient number of in-place density tests should be completed to verify that the specified degree of compaction is being achieved.

DOCUMENT REVIEW AND CONSTRUCTION SUPPORT

Satisfactory foundation and earthwork performance depends to a large degree on quality of construction. Sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the exploration program. Recognition of changed conditions often requires experience; therefore, the project geotechnical engineer or their representative should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. Geotechnics should also review the final plans and specifications to verify that the recommendations presented herein have been interpreted as intended.

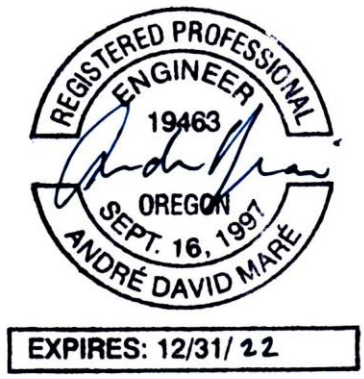
LIMITATIONS

We have prepared this report for the exclusive use of the City of Albany and the Walker Macy design team. Our report is intended to provide our opinion of geotechnical parameters for design and construction of the proposed project based on exploration locations that are believed to be representative of site conditions. However, conditions can vary significantly between exploration locations and our conclusions should not be construed as a warranty or guarantee of subsurface conditions or future site performance. If soil conditions are encountered during construction that differ from those described herein, we should be notified immediately to assess the implications and provide any necessary design supplements or modifications. If the scope of proposed construction, including the structure locations, changes from that described herein, our recommendations should also be reviewed.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty, expressed or implied, should be understood.

We appreciate the opportunity to submit this report. Please contact us if you have any questions or need additional information.

Sincerely,



André D. Maré, P.E., G.E.
Geotechnical Engineer

Document ID: Albany-Geotech.docx

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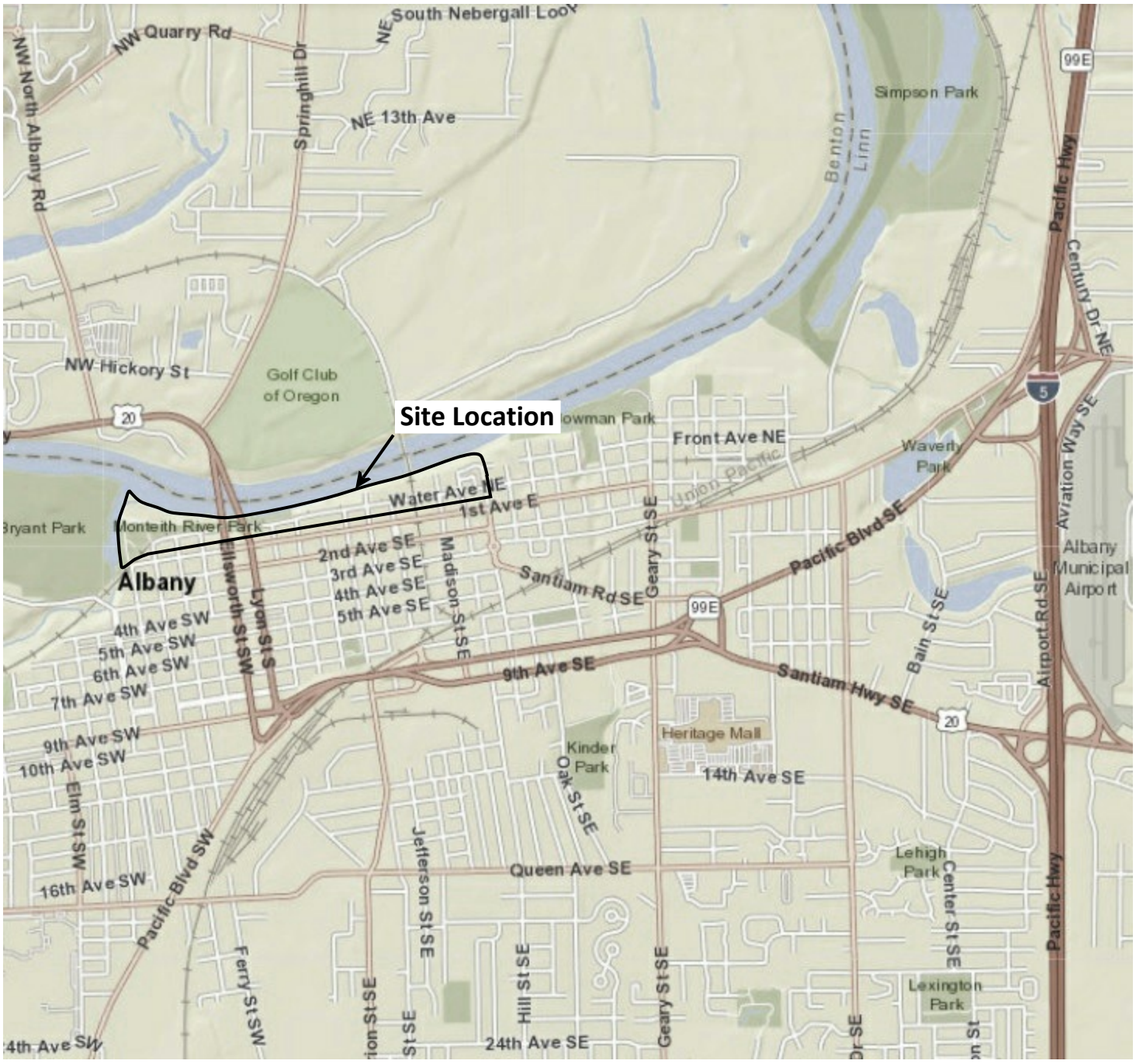


NOT TO SCALE

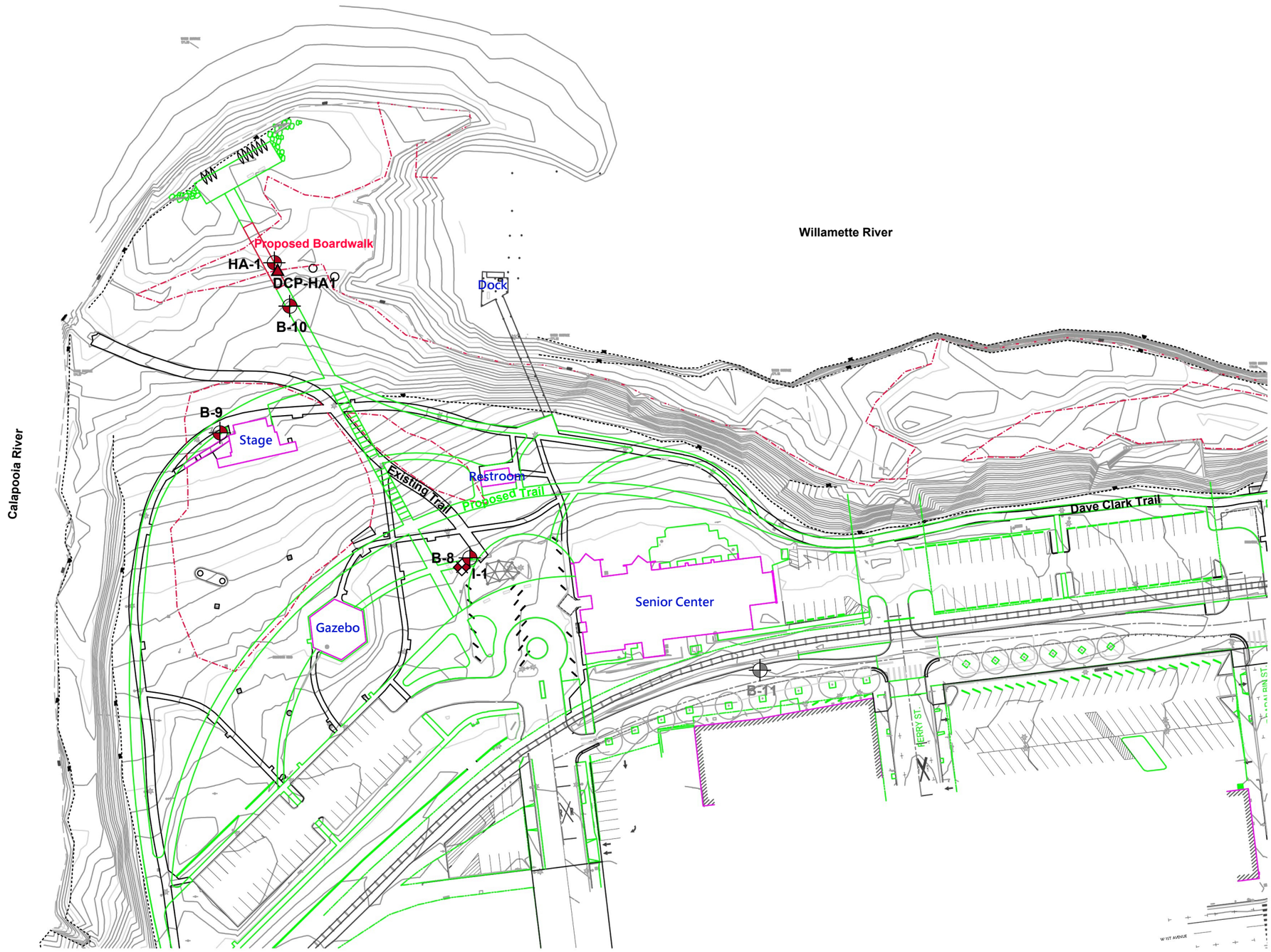
GEOTECHNICS

VICINITY MAP

Albany Waterfront Redevelopment
Albany, Oregon

Project No. 19-008-1

Figure 1



LEGEND

- Boring — B-10
- Infiltration Test — I-1
- Dynamic Cone Penetrometer-Wildcat Cone — DCP-HA1

N

100 0 100

APPROXIMATE SCALE IN FEET

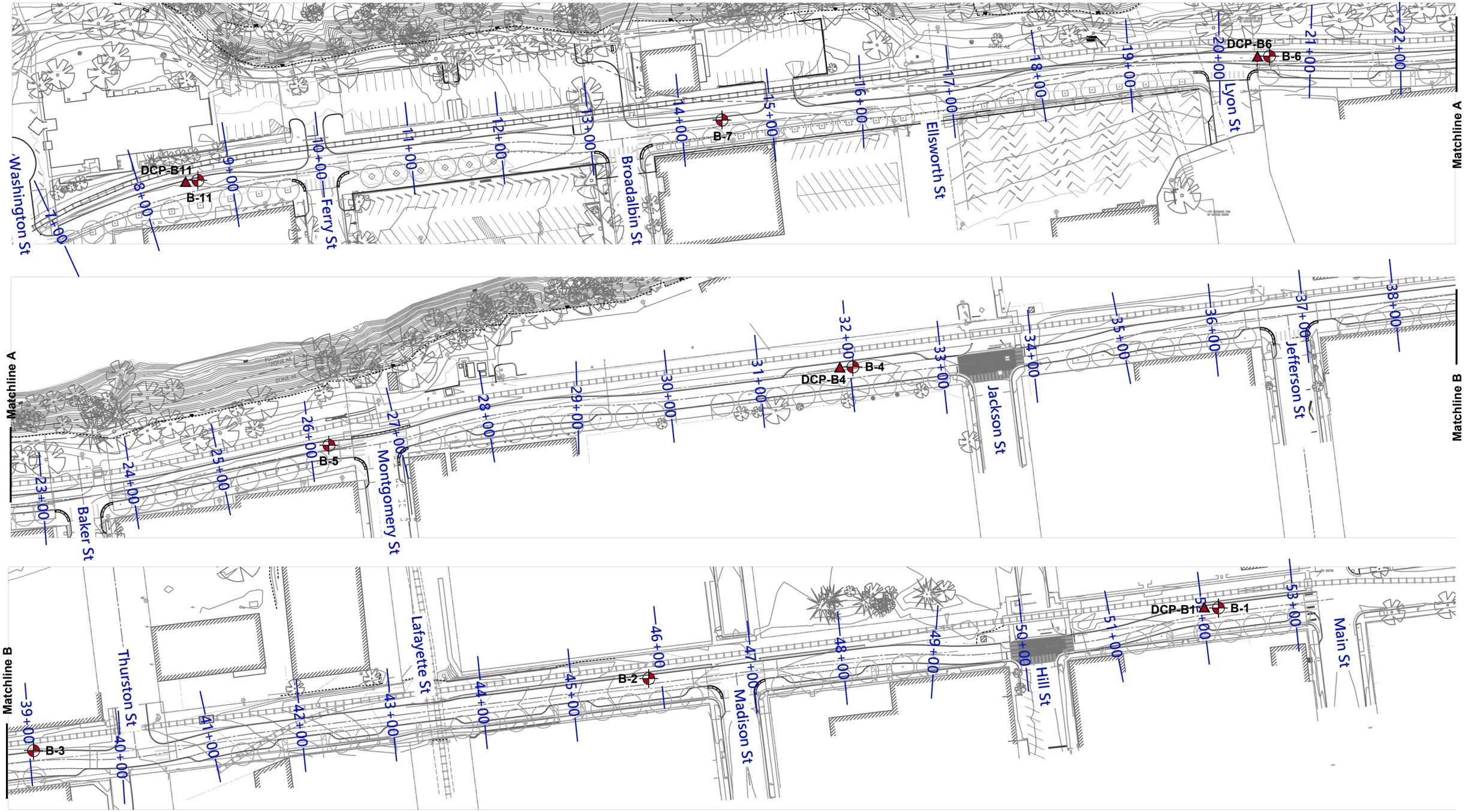
GEOTECHNICS

SITE & EXPLORATION PLAN - PARK

Albany Waterfront Redevelopment
Albany, Oregon

Project No. 19-008-1

Figure 2a



GEOTECHNICS

SITE & EXPLORATION PLAN - PAVEMENTS

Albany Waterfront Redevelopment
Albany, Oregon

Project No. 19-008-1

Figure 2b

Appendix A

FIELD EXPLORATIONS AND LABORATORY TESTING

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density (%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 to 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 to 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 to 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 to 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 to 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS	
Coarse Grained Soils More than 50% Retained on No. 200 Sieve Size	**Gravel and Gravelly Soils** More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravel (little or no fines)	GW	Well-graded GRAVEL
			GP	Poorly-graded GRAVEL
		Gravel with Fines (appreciable amount of fines)	GM	Silty GRAVEL
			GC	Clayey GRAVEL
	Sand and Sandy Soils 50% or More of Coarse Fraction Passing No. 4 Sieve	Clean Sand (little or no fines)	SW	Well-graded SAND
			SP	Poorly-graded SAND
		Sand with Fines (appreciable amount of fines)	SM	Silty SAND
			SC	Clayey SAND
Fine Grained Soils 50% or More Passing No. 200 Sieve Size	**Silt and Clay**	Liquid Limit Less than 50%	ML	SILT
			ML	Sandy SILT
			CL	Lean CLAY
			CL	Sandy CLAY
	Silt and Clay	Liquid Limit 50% or More	MH	Elastic SILT
			CH	Fat CLAY

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to #4 (5 mm)
Coarse Gravel	3 in to ¾ in
Fine Gravel	¾ in to #4 (5 mm)
Sand	#4 (5 mm) to #200 (0.075 mm)
Coarse Sand	#4 (5 mm) to #10 (2 mm)
Medium Sand	#10 (2 mm) to #40 (0.4 mm)
Fine Sand	#40 (0.4 mm) to #200 (0.075 mm)
Silt and Clay	Smaller than #200 (0.075 mm)

ABBREVIATIONS

Laboratory Tests:

AL	Atterberg Limits
PL	Plastic Limit
LL	Liquid Limit
%F	Fines Content
GSD	Grain Size Distribution
DD	Dry Density
MD	Moisture/Density Relationship
-S	Standard Proctor (ASTM D-698)
-M	Modified Proctor (ASTM D-1557)
SG	Specific Gravity
CBR	California Bearing Ratio
RM	Resilient Modulus
K	Permeability
CN	Consolidation
DS	Direct Shear
TX	Triaxial Shear
-UU	Unconsolidated Undrained
-CU	Consolidated Undrained

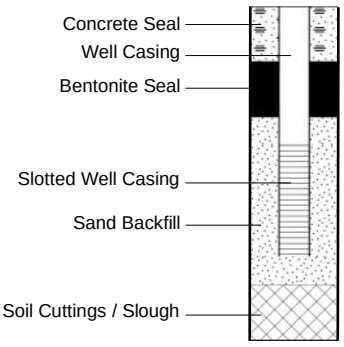
Field Tests:

PP	Pocket Penetrometer
TV	Torvane

Sample Type:

SPT	Standard Penetration Test (2.0" OD)
D&M	Ring Sampler (3.25" OD)
C-MOD	California Modified Sampler (3.0" OD)
SH	Thin-Walled Shelby Tube (3.0" OD)
GRAB	Disturbed Sample collected from auger cuttings or test pit

WELL DETAIL



NOTES

Soil descriptions are based on the general approach presented in ASTM D-2488 (Visual-Manual Procedure). Where laboratory data are available, soil classifications are in accordance with ASTM D-2487.

Solid lines between soil unit descriptions indicate change in interpreted geologic unit. Dashed lines indicate stratigraphic change within the geologic unit.

Blowcount (N) is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted) per ASTM D-1586. See exploration log for hammer weight and drop.

Please also refer to the discussion in the report for a general description of subsurface conditions.

GEOTECHNICS

KEY TO LOG SYMBOLS AND TERMS

Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-1

Surface Elevation:	208.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,528	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,527,317	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					4.5 inches Asphalt over: 23 inches high quality CRB (crushed-rock base).						
		S-1		GP							
					Gray SILT, moist, stiff. Low plasticity.						
		S-2			(FINE ALLUVIUM)		27.4		15		
					@4.5', becomes non-plastic, micaceous.						
5		S-3		ML			30.5		12		
					@7.5', becomes gray mottled reddish brown, low plasticity, no mica.						
		S-4					31.8		15		
					Brown mottled light yellowish brown, gray, and black, Poorly Graded GRAVEL with Silt and Sand, moist, very dense.						
10		S-5		GP-GM	(COARSE ALLUVIUM)		8.9		87+		
					Total Depth = 10.7'. No Groundwater Encountered.						
					Adjacent Dynamic Cone Penetrometer						
15											

GEOTECHNICS

Boring B-1

Albany Waterfront Redevelopment
Albany, Oregon

Sta. 52+17

Figure A1

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-2

Surface Elevation:	205.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,452	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,526,692	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					5 inches Asphalt over: 15 inches high quality CRB (angular, low silt content), over: 10 inches low quality CRB (rounded gravel, silty).						
		S-1		GW							
				GM							
		S-2		ML	Grayish brown mottled reddish brown, SILT, moist, medium stiff to stiff. Moderate plasticity. (FINE ALLUVIUM)		29.9		8		
5		S-3					30.8		14		
		S-4		GP-GM	SILTY CLAY, Dark brown mottled light brown and gray, Poorly Graded GRAVEL with Silt and Sand, moist, very dense. Rounded to subrounded gravel to 1.5" diam. (COARSE ALLUVIUM)		9.0		60		
10		S-5							96		
					Total Depth = 10.0'. No Groundwater Encountered.						
15											

GEOTECHNICS

Boring B-2

Albany Waterfront Redevelopment
Albany, Oregon

Sta. 45+86 Figure A2

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-3

Surface Elevation:	207.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,373	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,526,013	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0				GW	3 inches Asphalt over: 6 inches high quality CRB (angular, low silt content), over: 18 inches low quality CRB (rounded gravel, silty).						
		S-1		GM			11.9		30		
					Brown SILT, moist, stiff. Moderate plasticity. (FINE ALLUVIUM)						
		S-2					30.4		11		
					@4', becomes light brown, low plasticity.						
		S-3					26.8		13		
5				ML							
					@7.5', becomes light brown mottled gray and dark brown.						
		S-4							39		
				GM	Brown mottled reddish brown and black, Silty GRAVEL, moist, dense. Mostly fine rounded gravel to 0.5" diam. (COARSE ALLUVIUM)						
10				SP-ML	Light brown, Poorly Graded SAND (SP) layered with SILT (ML) and minor Poorly Graded GRAVEL (GP), moist, very dense.						
		S-5							80+		
15											

Total Depth = 11.4'.
No Groundwater Encountered.

GEOTECHNICS

Boring B-3

Albany Waterfront Redevelopment
Albany, Oregon

Sta. 39+03

Figure A3

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-4

Surface Elevation:	206.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,277	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,525,323	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0											
		S-1		GW	2.5 inches Asphalt over: 6.5 inches high quality CRB (angular, low silt content), over:						
				GM	16 inches low quality CRB (rounded gravel, silty).						
		S-2			Grayish brown, SILT, moist, stiff. Low to moderate plasticity. (FINE ALLUVIUM)		30.5		12		
		S-3			@3.6', becomes light brownish gray mottled reddish brown, very stiff.		30.0		20		
5		S-4		ML	@5.1', becomes very moist, stiff.		31.1		11		
		S-5			@7.5', becomes light brown mottled gray, moderate plasticity.		25.6		13		
10		S-6		GM-ML	Gray mottled reddish brown SILT (ML) layered with gray Poorly Graded SAND (SP) and Silty GRAVEL (GM), very moist, dense. Sand is fine to medium grained. Gravel in sample tip only. (COARSE ALLUVIUM)				31		
15											

Total Depth = 11.5'.
No Groundwater Encountered.

Adjacent Dynamic Cone Penetrometer

GEOTECHNICS

Boring B-4

Albany Waterfront Redevelopment
Albany, Oregon

Sta. 32+04

Figure A4

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-5

Surface Elevation:	205.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,191	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,524,745	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

- SPT — Standard Penetration Test
- CMOD — California Modified Split-Barrel
- SHELBY — Thin-Walled Tube - 3"
- GRAB — Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					5 inches Asphalt over:						
		S-1			Gray crushed rock. Possibly trench backfill, but no marked utilities in this area.						
					Gray, Well-graded GRAVEL with Silt and Sand, slightly moist, medium dense. Angular 3/4"-minus crushed rock.						
					(FILL)						
		S-2					5.6		12		%F=10.8
5		S-3		GW-GM					13		
		S-4							11		
					@7.5', becomes loose.						
		S-5					4.7		8		
10					Total Depth = 10.0'. No Groundwater Encountered.						
15											

Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-6

Surface Elevation:	202.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,126	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,524,187	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					5 inches Asphalt over: 10 inches moderate quality CRB (rounded, moderate silt content), over: 16 inches low quality CRB (rounded gravel, silty).						
		S-1		GW-GM							
				GM							
		S-2		MH	Dark gray, Elastic SILT, moist, stiff. High plasticity. Minor fine gravel. (FILL) @4.5', organic odor and debris (steel washer).		30.6		13		
5		S-3		ML	Gray mottled reddish brown, SILT, moist, stiff. Moderate plasticity. (FINE ALLUVIUM)				12		
		S-4					28.2		26		
				GP-GM	Grayish brown mottled dark brown, gray, and black, Poorly Graded GRAVEL with Silt and Sand, very moist, very dense. One 2" layer of brown, slightly Silty Sand (SP-SM). (COARSE ALLUVIUM)						
10		S-5					9.0		94		
15					Total Depth = 11.5'. No Groundwater Encountered. Adjacent Dynamic Cone Penetrometer						

Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-7

Surface Elevation:	202.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,058	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,523,584	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE: SPT Standard Penetration Test; CMOD California Modified Split-Barrel; SHELBY Thin-Walled Tube - 3"; GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					6 inches Asphalt over: 18 inches low quality CRB (rounded gravel, silty).						
		S-1		GM							
		S-2		GC	Dark gray, to bluish gray, Clayey GRAVEL, moist, medium dense. Rounded gravel to 2.5" diam. (FILL) @4', organic odor.		10.7		15		%F = 14.4
		S-3									
5		S-4		ML-MH	Gray, SILT to Elastic SILT, moist, stiff. Moderate to high plasticity.		31.2		11		
				ML	Gray mottled reddish brown, SILT, moist, stiff. Moderate plasticity.						
				GP-GM	Brown mottled yellowish brown, gray, and black, Poorly Graded GRAVEL with Silt, moist, medium dense. Rounded gravel to 1" diam.						
		S-5		ML	Grayish brown mottled reddish brown SILT, moist, very stiff. Minor fine gravel and coarse sand.		24.9		31		
10		S-6		GP-GM	Grayish brown mottled yellowish brown, light gray, and dark brown, Poorly Graded GRAVEL with Silt, moist, very dense. Rounded to subrounded gravel to 1" diam. (COARSE ALLUVIUM)		10.6		91		
15					Total Depth = 11.5'. No Groundwater Encountered						

GEOTECHNICS

Boring B-7

Albany Waterfront Redevelopment
Albany, Oregon

Sta. 14+47 Figure A7

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-8

Surface Elevation:	201.5 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	365,095	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,522,740	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					Dark brown mottled tan, Sandy SILT, with gravel, slightly moist, stiff. (FILL)						
		S-1			@2.5', becomes dark brown. Minor wood chips.		15.0				GSD %F=59.5
		S-2					17.3		15		Inf Test @ 2' 6"
5				ML	@5', becomes brown mottled black and tan.						
		S-3					9.8		13		
		S-4			@8.7', becomes light reddish brown mottled dark brown and tan, becomes medium stiff.		17.4		6		
10					Dark brown mottled reddish brown, Silty GRAVEL with Sand, moist, very loose.						
		S-5		GM			13.3		3		
					Refusal on wood.						
15					Total Depth = 14'. No Groundwater Encountered Adjacent Infiltration Test						

GEOTECHNICS

Boring B-8

Albany Waterfront Redevelopment
Albany, Oregon

Figure A8

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-9

Surface Elevation:	187.5 feet	Start Date:	October 13, 2020	Drilling Method:	Solid-stem auger
Northing:	365,211	End Date:	October 13, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,522,511	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					Initial hole refusal @ 3' on concrete. Moved boring 2-ft to north.						
					Grayish brown mottled light gray and dark brown, Silty GRAVEL with Sand, moist, medium dense. Silt content >30%. Angular and rounded gravel with concrete.						
		S-1		GM	(FILL)		22.2		18		
5		S-2			@5', becomes dark grayish brown. Pods of sandy silt. Becomes dense.		24.4		33		
		S-3		GP-GM	Grayish brown, Poorly Graded GRAVEL with Silt and Sand, very moist, medium dense. Gravel to 2" diameter.				19		
10		S-4		SM	Reddish brown mottled gray, Silty SAND, very moist, loose. Fine to medium grained. Some thin layers of silt. At sample tip, organics and wood flakes with organic odor.	▼	35.8		4		
					@11.5', groundwater seepage						
					Dark gray mottled brown, Silty GRAVEL with Sand, wet, medium dense. Organic odor.						
15		S-5		GM			19.3		14		
20					Total Depth = 16.5'. Groundwater Encountered at 11.5 feet.						

GEOTECHNICS

Boring B-9

Albany Waterfront Redevelopment
Albany, Oregon

Figure A9

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-10

Surface Elevation:	183.5 feet	Start Date:	October 13, 2020	Drilling Method:	Solid-stem auger
Northing:	365,328	End Date:	October 13, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,522,572	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test

CMOD California Modified Split-Barrel

SHELBY Thin-Walled Tube - 3"

GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					Brown Sandy SILT, moist, stiff. Non-plastic. Minor fine gravel. (FILL)						
		S-1		ML			22.1		11		
5		S-2			Dark brown, Gravelly SILT with Sand, moist, stiff. Gravel predominantly angular, to 1.5" diameter.		19.8		9		
		S-3		ML	@7.5', becomes dark brown mottled reddish brown, minor wood chips, very moist, very soft.		21.7		2		
10					@10', becomes wet.						
		S-4		GP-GM	Brown mottled gray and tan, Poorly Graded GRAVEL with Silt and Sand, wet, loose to medium dense. Groundwater measured at 11.95' after drilling. (COARSE ALLUVIUM) Driller comment: "gravelly to 15 feet"	▼	15.2		11		
15		S-5			Sample as above. After sampling, attempted drilling to 20', but sandy gravels heaved to 12.5'.				10		
20					Total Depth = 16.5'. Groundwater Encountered at 11.95'						

GEOTECHNICS

Boring B-10

Albany Waterfront Redevelopment
Albany, Oregon

Figure A10

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

Project Number: 19-008-1

LOG OF BORING B-11

Surface Elevation:	206.0 feet	Start Date:	October 12, 2020	Drilling Method:	Solid-stem auger
Northing:	364,991	End Date:	October 12, 2020	Drilling Equipment:	Trailer-mount
Easting:	7,523,008	Logged By:	ADM	Hammer Weight:	140 lb.
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Dan Fischer Excavating, Inc.	Hammer Drop:	30 in.

SAMPLE TYPE

SPT Standard Penetration Test
CMOD California Modified Split-Barrel
SHELBY Thin-Walled Tube - 3"
GRAB Bag or Bucket

Depth in Feet	Sample Type	Sample Number	Graphic Symbol	USCS	MATERIAL DESCRIPTION	Water Level, ATD	Moisture Content, %	Moisture Content (PL %Wc LL; 0 25 50 75 100)	Blows/Foot	Blows/Foot (0 20 40 60 80)	Other Tests
0					2 inches Asphalt over: 8 inches low quality CRB (rounded gravel, silty).						
		S-1		GM							
		S-2		ML	Dark brown mottled black and reddish brown, Sandy SILT, slightly moist, stiff. (FILL)		21.0		13		
		S-3		ML	Brown SILT, moist, stiff. Low to moderate plasticity. (FINE ALLUVIUM)		35.1		12		
5		S-4		ML	Grayish brown mottled reddish brown, Sandy SILT, moist, stiff. Non-plastic. Fine grained sand.		36.8		10		
		S-5		ML	Grayish brown mottled reddish brown, SILT, moist, stiff. Moderate plasticity.		33.5		11		
10		S-6		GM	Brown mottled gray and tan, Silty GRAVEL, very moist, dense. Rounded gravel to 3/4" diam. (COARSE ALLUVIUM)				28		
15					Total Depth = 11.5'. No Groundwater Encountered. Adjacent Dynamic Cone Penetrometer						

GEOTECHNICS

Boring B-11

Albany Waterfront Redevelopment
Albany, Oregon

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Figure A11

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Albany Waterfront Redevelopment
Albany, Oregon

Client: Walker Macy

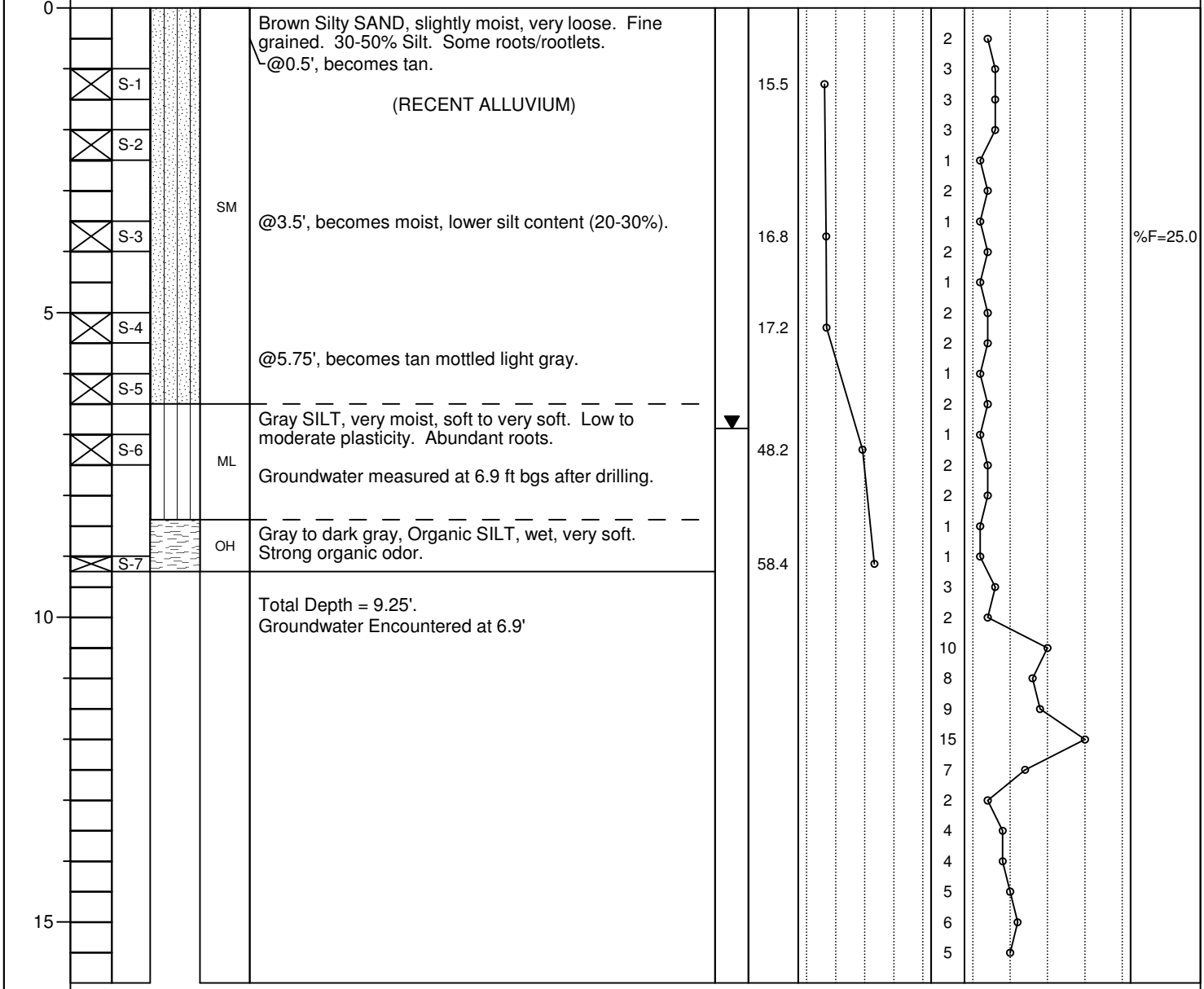
Project Number: 19-008-1

LOG OF BORING HA-1

Surface Elevation:	178.5 feet	Start Date:	October 13, 2020	Drilling Method:	Hand-Auger
Northing:	365,369	End Date:	October 13, 2020	Drilling Equipment:	3" diam HA + Wildcat cone
Easting:	7,522,558	Logged By:	ADM	Hammer Weight:	35#
Coordinate System:	OR State Plane North, NAD 83	Contractor:	Geotechnics	Hammer Drop:	15-inch

SAMPLE TYPE

SPT Standard Penetration Test
CMOD California Modified Split-Barrel
SHELBY Thin-Walled Tube - 3"
GRAB Bag or Bucket



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Boring HA-1

Albany Waterfront Redevelopment
Albany, Oregon

Figure A12

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WILDCAT DYNAMIC CONE LOG

Geotechnics LLC
30110 E Woodard Rd
Troutdale, OR 97060

PROJECT NUMBER: 19-008-1
DATE STARTED: 12-04-2020
DATE COMPLETED: 12-04-2020

HOLE #: DCP-HA1
CREW: ADM
PROJECT: Albany Waterfront
ADDRESS: Montieth Park
LOCATION: Albany, Oregon

SURFACE ELEVATION: 179
WATER ON COMPLETION:
HAMMER WEIGHT: 35 lbs.
CONE AREA: 10 sq. cm

DEPTH	BLOWS PER 10 cm	RESISTANCE Kg/cm²	GRAPH OF CONE RESISTANCE 0 50 100 150	N'	TESTED CONSISTENCY SAND & SILT	CLAY
-	1	4.4	•	1	VERY LOOSE	VERY SOFT
-	2	8.9	••	2	VERY LOOSE	SOFT
- 1 ft	3	13.3	•••	3	VERY LOOSE	SOFT
-	2	8.9	••	2	VERY LOOSE	SOFT
-	3	13.3	•••	3	VERY LOOSE	SOFT
- 2 ft	3	13.3	•••	3	VERY LOOSE	SOFT
-	3	13.3	•••	3	VERY LOOSE	SOFT
-	1	4.4	•	1	VERY LOOSE	VERY SOFT
- 3 ft	2	8.9	••	2	VERY LOOSE	SOFT
- 1 m	1	4.4	•	1	VERY LOOSE	VERY SOFT
-	1	3.9	•	1	VERY LOOSE	VERY SOFT
- 4 ft	2	7.7	••	2	VERY LOOSE	SOFT
-	3	11.6	•••	3	VERY LOOSE	SOFT
-	1	3.9	•	1	VERY LOOSE	VERY SOFT
- 5 ft	2	7.7	••	2	VERY LOOSE	SOFT
-	1	3.9	•	1	VERY LOOSE	VERY SOFT
-	2	7.7	••	2	VERY LOOSE	SOFT
- 6 ft	1	3.9	•	1	VERY LOOSE	VERY SOFT
-	2	7.7	••	2	VERY LOOSE	SOFT
- 2 m	2	7.7	••	2	VERY LOOSE	SOFT
- 7 ft	2	6.8	•	1	VERY LOOSE	VERY SOFT
-	3	10.3	••	2	VERY LOOSE	SOFT
-	3	10.3	••	2	VERY LOOSE	SOFT
- 8 ft	3	10.3	••	2	VERY LOOSE	SOFT
-	4	13.7	•••	3	VERY LOOSE	SOFT
-	2	6.8	•	1	VERY LOOSE	VERY SOFT
- 9 ft	1	3.4		0	VERY LOOSE	VERY SOFT
-	3	10.3	••	2	VERY LOOSE	SOFT
-	4	13.7	•••	3	VERY LOOSE	SOFT
- 3 m 10 ft	3	10.3	••	2	VERY LOOSE	SOFT
-	8	24.5	•••••••	6	LOOSE	MEDIUM STIFF
-	12	36.7	••••••••••	10	LOOSE	STIFF
-	12	36.7	••••••••••	10	LOOSE	STIFF
- 11 ft	10	30.6	••••••••	8	LOOSE	MEDIUM STIFF
-	11	33.7	•••••••••	9	LOOSE	STIFF
-	14	42.8	••••••••••••	12	MEDIUM DENSE	STIFF
- 12 ft	20	61.2	•••••••••••••••••	17	MEDIUM DENSE	VERY STIFF
-	8	24.5	•••••••	6	LOOSE	MEDIUM STIFF
-	3	9.2	••	2	VERY LOOSE	SOFT
- 4 m 13 ft	3	9.2	••	2	VERY LOOSE	SOFT
-	6	16.6	••••	4	VERY LOOSE	SOFT
-	6	16.6	••••	4	VERY LOOSE	SOFT
- 14 ft	6	16.6	••••	4	VERY LOOSE	SOFT
-	7	19.4	•••••	5	LOOSE	MEDIUM STIFF
-	7	19.4	•••••	5	LOOSE	MEDIUM STIFF
- 15 ft	8	22.2	••••••	6	LOOSE	MEDIUM STIFF
-	7	19.4	•••••	5	LOOSE	MEDIUM STIFF
-	7	19.4	•••••	5	LOOSE	MEDIUM STIFF

GEOTECHNICS

DYNAMIC CONE LOG DCP-HA1

Albany Waterfront Redevelopment
Albany, Oregon

DCP-B1:

Soil Description	Bottom Depth Below Paved Surface (in)	Blows	Cumulative Blows	Accumulative Penetration (mm)	Incremental Penetration (mm)	DCP (mm/blow)	Uncorrected M_r (psi)	Corrected M_r (psi)
SILT	31.0	3	3	51	51	16.9	16,263	5,692
	33.0	3	6	102	51	16.9	16,263	5,692
	35.0	5	11	152	51	10.2	19,848	6,947
	37.0	4	15	203	51	12.7	18,193	6,368
	39.0	5	20	254	51	10.2	19,848	6,947
	41.0	6	26	305	51	8.5	21,310	7,459
	43.0	6	32	356	51	8.5	21,310	7,459
	45.0	7	39	406	51	7.3	22,631	7,921
	47.0	7	46	457	51	7.3	22,631	7,921

Asphalt: 4.5"
Base: 23"

Above 39" Average M_r: 18,083 6,329
Corresponding CBR: 4.2

DCP-B4:

Soil Description	Bottom Depth Below Paved Surface (in)	Blows	Cumulative Blows	Accumulative Penetration (mm)	Incremental Penetration (mm)	DCP (mm/blow)	Uncorrected M_r (psi)	Corrected M_r (psi)
SILT	25.0	2	2	51	51	25.4	13,884	4,859
	27.0	2	4	102	51	25.4	13,884	4,859
	29.0	2	6	152	51	25.4	13,884	4,859
	31.0	2	8	203	51	25.4	13,884	4,859
	33.0	2	10	254	51	25.4	13,884	4,859
	35.0	3	13	305	51	16.9	16,263	5,692
	37.0	2	15	356	51	25.4	13,884	4,859
	39.0	5	20	406	51	10.2	19,848	6,947
	41.0	5	25	457	51	10.2	19,848	6,947
	43.0	2	27	508	51	25.4	13,884	4,859
	45.0	5	32	559	51	10.2	19,848	6,947
	47.0	8	40	610	51	6.3	23,841	8,344
	49.0	8	48	660	51	6.3	23,841	8,344

Asphalt: 2.5"
Base: 22.5"

Above 37" Average M_r: 14,224 4,978
Corresponding CBR: 3.3

Testing in accordance with ASTM D6951

GEOTECHNICS

DYNAMIC CONE PENETROMETER LOGS

Albany Waterfront Redevelopment
Albany, Oregon

DCP-B6:

Soil Description	Bottom Depth Below Paved Surface (in)	Blows	Cumulative Blows	Accumulative Penetration (mm)	Incremental Penetration (mm)	DCP (mm/blow)	Uncorrected M_r (psi)	Corrected M_r (psi)
Elastic SILT	35.0	2	2	51	51	25.4	13,884	4,859
	37.0	2	4	102	51	25.4	13,884	4,859
	39.0	2	6	152	51	25.4	13,884	4,859
	41.0	2	8	203	51	25.4	13,884	4,859
	43.0	2	10	254	51	25.4	13,884	4,859
	45.0	3	13	305	51	16.9	16,263	5,692
	47.0	2	15	356	51	25.4	13,884	4,859

Asphalt: 5"
Base: 26"

Above 43" Average M_r: 13,884 4,859
Corresponding CBR: 3.2

DCP-B11:

Soil Description	Bottom Depth Below Paved Surface (in)	Blows	Cumulative Blows	Accumulative Penetration (mm)	Incremental Penetration (mm)	DCP (mm/blow)	Uncorrected M_r (psi)	Corrected M_r (psi)
Sandy SILT	12.0	1	1	51	51	50.8	10,595	3,708
	14.0	1	2	102	51	50.8	10,595	3,708
	16.0	3	5	152	51	16.9	16,263	5,692
	18.0	2	7	203	51	25.4	13,884	4,859
	20.0	2	9	254	51	25.4	13,884	4,859
	22.0	2	11	305	51	25.4	13,884	4,859
	24.0	2	13	356	51	25.4	13,884	4,859
	26.0	3	16	406	51	16.9	16,263	5,692
	28.0	3	19	457	51	16.9	16,263	5,692
SILT	30.0	4	23	508	51	12.7	18,193	6,368
	32.0	3	26	559	51	16.9	16,263	5,692
	34.0	2	28	610	51	25.4	13,884	4,859
	36.0	3	31	660	51	16.9	16,263	5,692
	38.0	4	35	711	51	12.7	18,193	6,368
	40.0	4	39	762	51	12.7	18,193	6,368
	42.0	5	44	813	51	10.2	19,848	6,947
	44.0	6	50	864	51	8.5	21,310	7,459
	46.0	5	55	914	51	10.2	19,848	6,947
Sandy SILT	48.0	6	61	965	51	8.5	21,310	7,459
	50.0	7	68	1016	51	7.3	22,631	7,921

Asphalt: 2"
Base: 8"

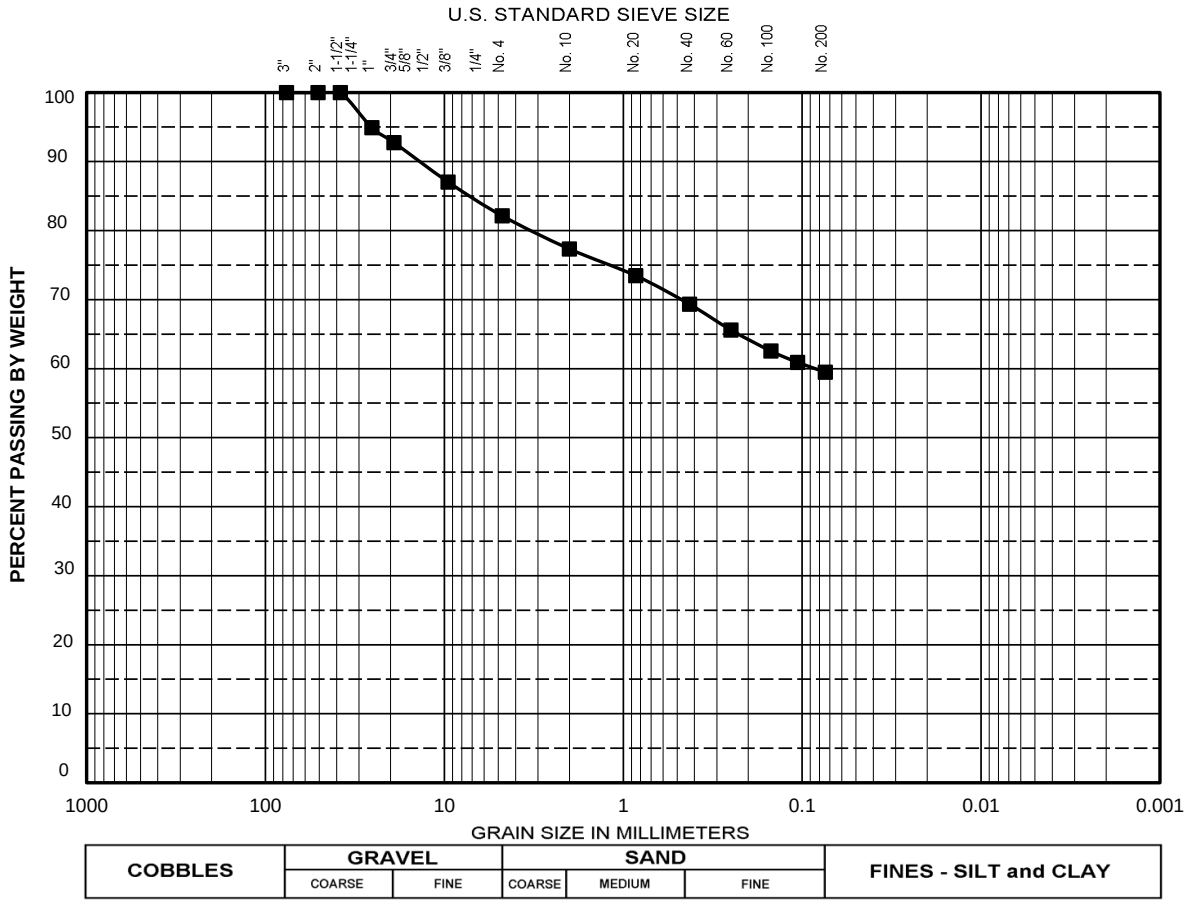
Above 40" Average M_r: 15,100 5,285
Corresponding CBR: 3.5

Testing in accordance with ASTM D6951

GEOTECHNICS

DYNAMIC CONE PENETROMETER LOGS

Albany Waterfront Redevelopment
Albany, Oregon



Symbol	Sample Location	% MC	% Gravel	% Sand	%Fines	Classification
■	B-8 ; @ 2.3 - 2.5ft	15.0	17.9	22.7	59.5	Sandy SILT with Gravel (ML)

Grain Size Distribution determined in accordance with ASTM D-6913

GEOTECHNICS

GRAIN SIZE DISTRIBUTION

Albany Waterfront Redevelopment
Albany, Oregon

Project No. 19-008-1

Figure A16

Appendix B

PHOTOGRAPHS - ROADWAY PAVEMENTS

WASHINGTON ST TO FERRY ST

8+30

9+00

FERRY ST TO BROADALBIN ST

11+70

13+40

BROADALBIN ST TO ELLSWORTH ST

15+00

16+80

ELLSWORTH ST TO LYON ST

18+40

20+00

LYON ST TO BAKER ST

21+00

21+70

BAKER ST TO MONTGOMERY ST

25+10

26+80

MONTGOMERY ST TO RAILROAD ST

28+50

30+30

RAILROAD ST TO JACKSON ST

31+90

33+60

JACKSON ST TO JEFFERSON ST

35+00

36+90

JEFFERSON ST TO THURSTON ST

38+50

40+20

THURSTON ST TO LAFAYETTE ST

41+80

43+50

LAFAYETTE ST TO MADISON ST

45+10

46+80

MADISON ST TO HILL ST

48+50

50+10

HILL ST TO MAIN ST

51+70

53+30

Appendix C

PHOTOGRAPHS - TRAIL

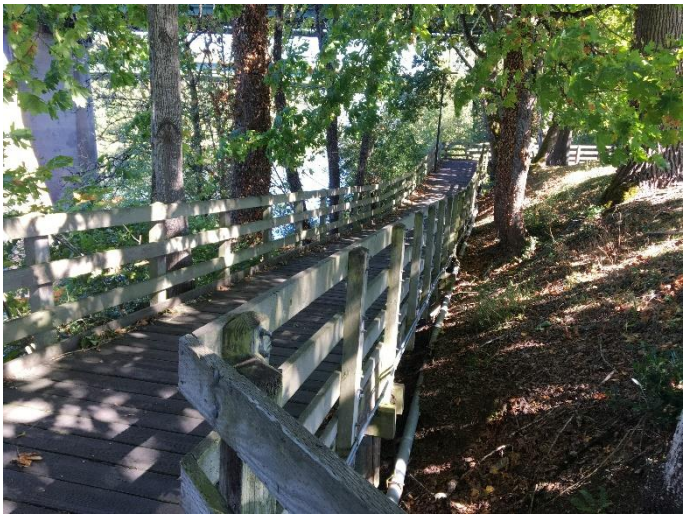
Between Washington & Ferry
cracks to 3/4” width

End of Ferry Street,
drain pipe offset

Between Ferry & Broadalbin,
slab panel tilt towards slope

Between Ferry & Broadalbin,
parallel crack & slab tilt

Between Broadalbin & Ellsworth,
trail undermining, 9” lateral



Between Broadalbin & Ellsworth,
existing boardwalk

Between Ellsworth & Lyon,
slab tilt towards slope

Between Ellsworth & Lyon,
slab panel lateral offset

End of Lyon Street,
overlook undermining, 28” lateral

End of Lyon Street,
overlook undermining, 28” lateral

Between Lyon & Baker,
cracks to 1” width

Between Montgomery & Railroad,
trail transition to pile-support

Between Jackson & Jefferson,
tilting posts, pile-supported trail

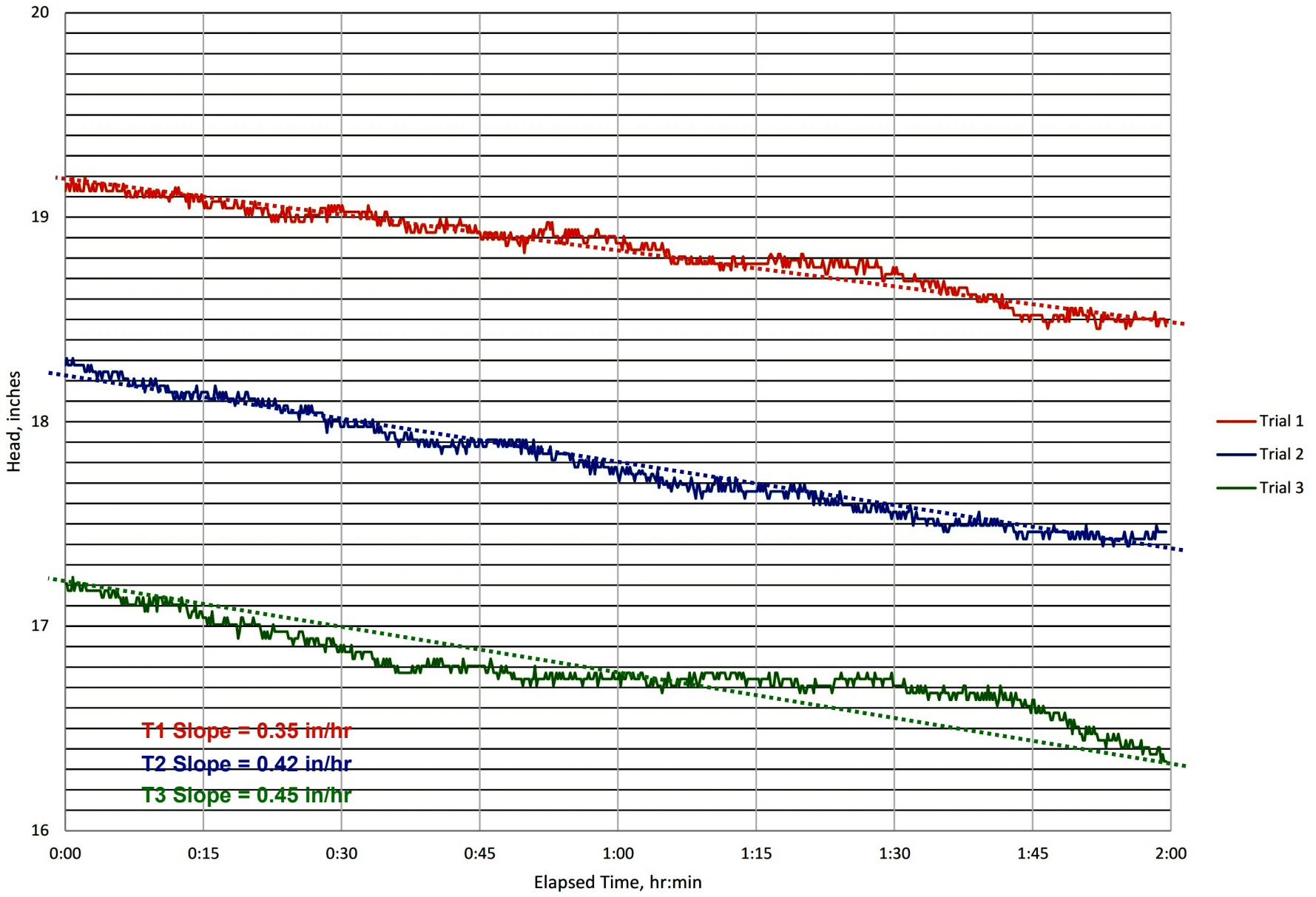
Between Jefferson & Thurston,
good condition

Between Thurston & Lafayette,
good condition

Between Madison & Hill,
modular-block retaining wall, good trail condition

Appendix D

INFILTRATION



Unfactored Rate = 0.41 in/hr

GEOTECHNICS

INFILTRATION I-1 @ 2.5'

Albany Waterfront Redevelopment
Albany, Oregon

Project No. 19-008-1

Figure D1

APPENDIX G – EXTERIOR METAL RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Galvanized steel tube and flat bar handrails.

B. Related Sections include the following:
1. Special Provisions Section III "Concrete Stairs and Handrails" for concrete stairs.

1.2 PERFORMANCE REQUIREMENTS

A. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of handrail and railing materials based on the following:

1. Steel: 72 percent of minimum yield strength.

B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails:

a. Uniform load of 50 pounds per foot applied in any direction.
b. Concentrated load of 200 pounds per foot applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

C. Thermal Movements: Provide railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 degrees Fahrenheit, ambient; 180 degrees Fahrenheit, material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Grout and anchoring cement.
2. Galvanic paint products.

B. Shop Drawings: Show fabrication and installation of railings. Include plans, elevations, sections, component details, infill and attachments to other Work.

1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Verification: For each type of exposed finish required.

1. Sections of each distinctly different linear railing member, including handrails, posts, and balusters.
2. Fittings and brackets.

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Welding certificates.

F. Qualification Data: For testing agency.

G. Product Test Reports: From a qualified testing agency indicating railings comply with ASTM E 985, based on comprehensive testing of current products.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of handrail and railing through one source from a single manufacturer.

B. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."

1.5 STORAGE

A. Store railings in a dry, well-ventilated, weathertight place.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, stairs and other construction contiguous with railings by field measurements for inclusion on Shop Drawings. Before proceeding with fabrication, the fabricator is responsible for confirming additional construction or previously unconfirmed built conditions which may affect the work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

2. Provide allowance for trimming and fitting at site.

1.7 COORDINATION AND SCHEDULING

A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Steel Tube Railings:

a. Pisor Industries, Inc.
b. Sharpe Products.
c. Wagner, R & B, Inc.; a division of the Wagner Companies.
d. Or equal.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, blemishes and other imperfections where exposed to view on finished units..

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

2.3 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513, Type 5 (mandrel drawn).

1. Provide galvanized finish for exterior installations and where indicated.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Plates, Shapes, and Bars: ASTM A 36.

D. Castings: Either gray or malleable iron, unless otherwise indicated.

1. Gray Iron: ASTM A 48, Class 30, unless another class is indicated or required by structural loads.
2. Malleable Iron: ASTM A 47.

E. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20.

D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for exterior applications.

E. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.5 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated on the Drawings. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water.

F. Provide weep holes to drain entrapped water in hollow sections of handrail and railing members that are exposed to exterior or to moisture from condensation or other sources.

G. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

H. Connections: Fabricate railings with welded connections, unless otherwise indicated on the Drawings.

I. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish surfaces smooth and blended leaving no evidence of the welded connection. Welded surfaces shall match the contours of adjoining surfaces with no roughness, undercutting or pin holes present.

J. Form changes in direction as follows:

1. By radius bends of radius indicated on the Drawings.
2. By mitering and welding at elbow bends.

K. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

L. Close exposed ends of railing members with prefabricated end fittings.

M. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated on the Drawings.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in the same piece are not acceptable. Retain paragraph below if exposed fasteners are allowed, especially with color anodic finish.

C. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.7 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize steel and iron railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A for hot-dip galvanized railings.
3. Comply with ASTM A 153/A for hot-dip galvanized hardware.

B. Fill vent and drain holes that will be exposed in the finished Work, unless utilized as weep holes, by plugging with zinc solder and filing off smooth.

C. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required to install railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free from rack.

1. Do not weld, cut, or abrade surfaces of handrail and railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Adjust railings before anchoring to ensure matching alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.

D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.3 ANCHORING POSTS

A. Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.5 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF APPENDIX F