



*A place where businesses and families thrive.*

BID SET  
**SPECIFICATIONS**  
INCLUDING SPECIFICATIONS FOR  
PROJECT NO. 2019-1

**ROGERS PARK  
RESTROOM PROJECT**

2421 17<sup>TH</sup> AVENUE  
FOREST GROVE, OR 97116

**OWNER**

CITY OF FOREST GROVE

**LANDSCAPE ARCHITECTURE**

MIG, INC.

**CIVIL ENGINEERING**

MIG, INC.

**ELECTRICAL ENGINEERING**

R&W ENGINEERING

JANUARY 2019

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INVITATION TO BID  
CITY OF FOREST GROVE  
WASHINGTON COUNTY, OREGON

**Rogers Park Restroom Project**

Sealed bid proposals for the ROGERS PARK RESTROOM PROJECT will be received at the office of the City Recorder of the City of Forest Grove, 1924 Council Street, P.O. Box 326, Forest Grove, OR 97116, **until the bid closing time of 10 AM local time the 28th day of February, 2019. Bids will then be publicly opened and read at 2 PM local time the 28th day of February, 2019.**

The work consists of: Installation of an ADA pre-fabricated restroom facility including concrete flat work, electrical, water and sewer connections and landscaping. The pre-fabricated restroom facility has already been purchased by the City and is under construction.

Plans and specifications may be examined at the office of the Parks and Recreation Office, City of Forest Grove, 2300 Sunset Drive, Forest Grove, OR 97116. A copy of said documents may be obtained at the above location/address or on the City's website at <https://www.forestgrove-or.gov/rfps> or from the Plans Center at Precision Images, 900 SE Sandy Boulevard, Portland, OR 97214 or on their website at <https://vpc.precisionimages.com>.

Each bid proposal must be submitted on the prescribed form and accompanied by a certified check or bid bond payable to the City of Forest Grove, in an amount not less than five percent (5%) of the amount bid. No bids will be received or considered unless the bid proposal is properly completed and signed.

Each successful bidder will be required to furnish a Performance and Payment Bond for faithful performance of the Contract in the full amount of the Contract price.

Attention is called to the following:

- Prevailing Wage Rates for Public Works Contracts in Oregon, effective January 1, 2019.
- Contractor, its subcontractors, if any, and all employers working under the Contract are subject employers under the Oregon Workers' Compensation Law and shall comply with ORS 656.017, which requires them to provide workers' compensation coverage for all their subject workers.
- Contractor and all subcontractors must be registered with the Oregon Construction Contractors Board (in compliance with ORS 701.055) and/or the Landscape Contractors Board (in compliance with ORS 671) **prior to bid opening.**

Construction Contractors Board and/or  
Landscape Contractors Board  
700 Summer Street, NE, Suite #300  
Salem, OR 97310-0151  
(503) 378-4621

Award shall be made only to responsible contractors that possess the potential ability to perform successfully under the terms and conditions of the contract. Consideration shall be given to contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

The City of Forest Grove reserves the right in its sole discretion to reject any and all bid proposals or to accept any bid proposal which appears to serve the best interest of the City.

For more information regarding this project, contact Tom Gamble at 503.992.3237 or Christina Frank at MIG, Inc., at 503.297.1005 extension 214.

Paul Downey, Director of Administrative Services  
City of Forest Grove

Published: February 1, 2019 The Daily Journal of Commerce.

## BID PROPOSAL

TO: Anna D. Ruggles, City Recorder  
City of Forest Grove Administration Building  
1924 Council Street (PO Box 326)  
Forest Grove, Oregon 97116

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

The Bidder further declares that he has carefully examined the Contract Documents; that he has personally inspected the site; that he has satisfied himself as to the quantities involved, including materials and equipment, and conditions of 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 the work and to identify the same quantities with the detailed requirements of the Contract Documents; and that this Bid Proposal is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Bid Proposal.

The Bidder further agrees that he has exercised his own judgement regarding the interpretation of surface and subsurface information and has utilized all data which he believes pertinent from the Engineer, Owner, and other sources in arriving at his conclusions.

The Bidder further agrees that all the applicable provisions of Oregon Law relating to public contracts (ORS Chapter 279) are, by this reference, incorporated in and made a part of this bid proposal.

The Bidder further agrees that if this Bid Proposal is accepted, he shall, if requested by the Engineer, submit a statement of qualifications in a form adopted by the State of Oregon Public Contract Review Board and/or a list of names of subcontractors he intends to utilize in the execution of the contract, within twenty-four (24) hours of the request.

The Bidder further agrees that if this Bid Proposal is accepted, he will, within ten (10) calendar days after notification of acceptance, execute the Contract with the Owner on the form of Contract annexed hereto; and will, at the time of execution of the Contract, deliver to the Owner the Performance Bond and the Labor and Material Payment Bond both required herein; and will, to the extent of his Bid Proposal, furnish all machinery, tools, apparatus, and other means of construction and do the work and furnish all materials necessary to complete the work in the manner, in the time, and according to the methods as specified in the Contract Documents and required by the Engineer thereunder.

The Bidder further agrees to furnish the Owner, before commencing the work under this contract, the certificate of insurance as specified in these documents.

The Bidder further agrees to commence work following the issuance of a "Notice to Proceed" by the Owner and fully complete the project within **150 calendar days**.

Once the Contractor has moved onto the project site, work shall commence and continue, uninterrupted, until fully complete and accepted by the City.

In the event the Bidder is awarded the contract and shall fail to complete the work within the time limit or extended time limit agreed upon, as more particularly set forth in the Contract Documents, the Bidder further agrees to pay liquidated damages, until the work is finished, as specified in these Documents.

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

The amounts shown shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

It is agreed that if the Bidder is awarded the Contract for the work herein proposed and shall fail or refuse to execute the Contract and furnish the specified Performance Bond and the Labor and Material Payment Bond within ten (10) calendar days after receipt of notification of acceptance of this Proposal, then, in that event, the Bid Proposal Guaranty deposited herewith according to the conditions of the Invitation for Bids and General Conditions shall be retained by the Owner as liquidated damages; and it is agreed that the said sum is a fair measure of the amount of damage the Owner will sustain in case the Bidder shall fail or refuse to enter into the Contract for the said work and to furnish the Performance Bond and the Labor and Material Payment Bond as specified in the Contract Documents. Proposal Guaranty in the form of a certified check shall be subject to the same requirements as a bid bond.

If the Bidder is awarded a construction Contract on this Bid Proposal, the Surety who will provide the Performance Bond and the Labor and Material Payment Bond will be \_\_\_\_\_  
whose address is:

\_\_\_\_\_  
(Street) (City) (State)

The name of the Bidder who is submitting this Proposal is \_\_\_\_\_  
doing business at:

\_\_\_\_\_  
(Street) (City) (State)

which is the address to which all communications concerned with this Proposal and with the Contract shall be sent.

The names of the principal officers of the corporation submitting this Proposal, or of the partnership, or of all persons interested in this Bid Proposal as principals are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(If Corporation)

In Witness whereof the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

Name of Corporation

By \_\_\_\_\_

Title \_\_\_\_\_

Attest \_\_\_\_\_

(If Sole Proprietor or Partnership)

In Witness hereto the undersigned has set his (its) hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Signature of Bidder \_\_\_\_\_

Title \_\_\_\_\_

Oregon Construction Contractors Board Registration No. \_\_\_\_\_  
and/or

Oregon Landscape Contractors Board Registration No. \_\_\_\_\_

**BID BOND**

LET THE FOLLOWING BE KNOWN, 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 and firmly bound unto the \_\_\_\_\_, hereinafter called the Obligee in the penal sum of \_\_\_\_\_ Dollars. (\$ \_\_\_\_\_), for the payment of which, well and truly to be made, 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 herein is herewith submitting his or its Bid Proposal for \_\_\_\_\_ said Bid Proposal, by reference thereto, being hereby made a part hereof.

NOW, THEREFORE, if the said Bid Proposal submitted by the said Principal be accepted, and the Contract be awarded to said Principal, and if the said Principal shall execute the proposed Contract and shall furnish the Performance Bond and Payment Bond as required by the Bidding and Contract Documents within the time fixed by said Documents, then this obligation shall be void, otherwise to remain in full force and effect.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

Countersigned:

By: \_\_\_\_\_  
Attorney-In-Fact

Resident Agent

# **FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM**

**Project Name:** Rogers Park Restroom Project

**Bid No.:** \_\_\_\_\_

**Bid Closing:** **Date:** February 28, 2019 **Time:** 10:00 AM

**Disclosure Deadline:** **Date:** February 28, 2019 **Time:** 12:00 Noon

This form must be submitted within two (2) working hours of the advertised bid closing date and time; no later than the **DISCLOSURE DEADLINE** stated above.

**CHECK THIS BOX IF YOU WILL NOT BE USING ANY FIRST-TIER SUBCONTRACTORS.**

List below the Name, Address, Dollar Value, Construction Contractor Board (CCB) number if required, Contact Name and Telephone Number of each subcontractor that will be furnishing labor or materials that are required to be disclosed. Enter "NONE" if there are no subcontractors that need to be disclosed. *(If needed, attach additional sheets).*

**Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Contact:** \_\_\_\_\_ **Phone No.:** \_\_\_\_\_  
**Dollar Value:** \_\_\_\_\_ **CCB No.:** \_\_\_\_\_

**Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Contact :** \_\_\_\_\_ **Phone No.:** \_\_\_\_\_  
**Dollar Value:** \_\_\_\_\_ **CCB No.:** \_\_\_\_\_

**Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Contact :** \_\_\_\_\_ **Phone No.:** \_\_\_\_\_  
**Dollar Value:** \_\_\_\_\_ **CCB No.:** \_\_\_\_\_

The above listed first-tier subcontractor(s) are providing labor and/or materials with a Dollar Value equal to or greater than:

- a) 5% of the total Contract Price, but at least \$15,000 (including all alternates). IF the Dollar Value is less than \$15,000 do not list the subcontractor above; or
- b) \$350,000 regardless of the percentage of the total Contract Price.

**FAILURE TO SUBMIT THIS FORM BY THE DISCLOSURE DEADLINE WILL RESULT IN A BID SUBMITTED BECOMING NON-RESPONSIVE, AND SUCH BIDS SHALL NOT BE CONSIDERED FOR AWARD!**

Bids which are submitted by Bid Closing, but for which the separate disclosure submittal has not been made by the specified deadline, are not Responsive and shall not be considered for Contract award.

**Form Submitted by Bidder Name:** \_\_\_\_\_

**Contact Name:** \_\_\_\_\_ **Phone No.:** \_\_\_\_\_

**Deliver Form to Agency:** \_\_\_\_\_

**Person Designated to Receive Form:** \_\_\_\_\_

**Agency's Address:** \_\_\_\_\_ **Phone No.:** \_\_\_\_\_

**UNLESS OTHERWISE STATED IN THE ORIGINAL SOLICITATION, THIS DOCUMENT SHALL NOT BE FAXED. IT IS THE RESPONSIBILITY OF BIDDERS TO SEPARATELY SUBMIT THIS DISCLOSURE FORM AND ANY ADDITIONAL SHEETS, WITH THE BID NUMBER AND PROJECT NAME CLEARLY MARKED, AT THE LOCATION INDICATED BY THE SPECIFIED DISCLOSURE DEADLINE. SEE INSTRUCTIONS TO BIDDERS.**

**ACKNOWLEDGEMENT OF ADDENDA**

***Rogers Park Restroom Project  
Bid Date: February 28, 2019***

*Addenda No.:* \_\_\_\_\_ *Date Received:* \_\_\_\_\_

*Company:* \_\_\_\_\_

*By:* \_\_\_\_\_

*Title:* \_\_\_\_\_

*Date:* \_\_\_\_\_

## CONTRACT FOR CONSTRUCTION

THIS CONTRACT, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2019, by and between CITY OF FOREST GROVE, hereinafter called the "Owner", and \_\_\_\_\_, of \_\_\_\_\_, hereinafter called the "Contractor".

WITNESSETH:

Said Contractor, in consideration of the sum to be paid him by the said Owner and of the covenants and agreements herein contained, hereby agrees at his own proper cost and expense to do all the work and furnish all the materials, tools, labor, and all appliances, machinery and appurtenances for the construction of:

### ***Rogers Park Restroom Project***

to the extent of the Bid Proposal made by the Contractor on the \_\_\_\_\_ day of \_\_\_\_\_, 2019, all in full compliance with the Contract Documents referred to herein.

The signed copy of the Bid Proposal made by the Contractor on the \_\_\_\_\_ day of \_\_\_\_\_, 2019, the fully executed Performance Bond and Payment Bond, the General Conditions and the Specifications, entitled **Rogers Park Restroom Project**, dated \_\_\_\_\_, are hereby referred to and by reference made a part of this Contract (as fully and completely as if the same were fully set forth herein) and are mutually cooperative therewith.

In consideration of the faithful performance of the work herein embraced, as set forth in these Contract Documents, and in accordance with the direction of the Landscape Architect and to his satisfaction to the extent provided in the Contract Documents, the Owner agrees to pay to the Contractor the amount bid as adjusted in accordance with the Bid Proposal as determined by the Contract Documents, or as otherwise herein provided, and based on the said Proposal made by the Contractor, and to make such payments in the manner and at the times provided in the Contract Documents.

The Contractor agrees to meet with the Landscape Architect for a pre-construction conference within seven (7) calendar days after the execution of this Contract to review and submit the Contractor's schedule of expected events, as specified in the General Conditions.

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

The Contractor agrees to indemnify and save harmless the Owner from any and all defects appearing to develop in the workmanship or materials performed or furnished under this Contract for a period of

one (1) year after the date of the written notice from the Landscape Architect recommending final acceptance of the entire project by the Owner.

In the event that the Contractor shall fail to complete the work within the time limit or the extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid as specified in the General Conditions.

The Contractor agrees that in the event there is any dispute between the parties arising out of this agreement, it shall be determined in Washington County, Oregon, and the prevailing party will be entitled to all costs whether or not arbitration, or suit or action is instituted, including without limitation, reasonable attorney's fees during arbitration, at trial, on appeal, and in connection with enforcement of any judgement.

IN WITNESS WHEREOF, we, the parties hereto, each herewith subscribe the same this \_\_\_\_ day of \_\_\_\_\_, A.D., 2019.

CONTRACTOR:

By: \_\_\_\_\_

Title: \_\_\_\_\_

OWNER: CITY OF FOREST GROVE

By: \_\_\_\_\_  
Jesse VanderZanden, City Manager

PERFORMANCE BOND

LET THE FOLLOWING BE KNOWN:

That \_\_\_\_\_ as Principal, and \_\_\_\_\_, duly authorized to transact Surety Business, in the State of Oregon, as Surety are held and firmly bound unto the City of Forest Grove, Oregon, hereinafter called the Obligee, in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS BOND IS AS FOLLOWS:**

WHEREAS, The said Principal herein has made and entered into a certain Contract, a copy of which is attached hereto, with the City of Forest Grove, Oregon, which Contract, together with the applicable Plans, Specifications, and Bid Proposal, is by this reference made a part hereof, and is hereinafter referred to as the Contract.

This Performance Bond shall guarantee the improvement against defects in materials or workmanship for a period of one (1) year from the date of written acceptance by the City of Forest Grove.

NOW, THEREFORE, If the Principal herein shall faithfully and truly observe and comply with the terms of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by him undertaken to be performed under said Contract, upon the terms set forth therein and within the time prescribed therein, and shall indemnify and save harmless the City of Forest Grove, its officers, employees and agents, against any direct or indirect 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 by the said Principal or his subcontractors and to all persons supplying to the prosecution of the work, or any part thereof, provided for in said Contract, and shall pay all contributions or amounts due the State Industrial Accident Fund and incurred in the performance of said Contract, and pay all sums of money withheld from the employees of said Principal and payable to the Department of Revenue, pursuant to ORS 315.757 or 316.575, and shall promptly as due, make payment to any persons, co-partnership, association, or corporation furnishing medical, surgical, and hospital care or attention incident to sickness or injury to the employees of such Principal; and shall pay all other just debts, dues and demands incurred in the performance of the said Contract and shall pay the City of Forest Grove such damages as may accrue to the City under said Contract and shall in all respects perform said Contract according to law, then this obligation is to be void, otherwise to remain in full force and effect.

This bond is given and received under the authority of Chapter 279C, Oregon Revised Statutes, the provisions of which are hereby incorporated into this bond and made a part hereof. Nonpayment of the bond premium will not invalidate this bond, nor shall the City of Forest Grove be obligated for its payment.

IN WITNESS WHEREOF, the seal and signature of the said Principal is hereto affixed, and the corporate seal and name of the said Surety is hereto affixed and attested by its duly authorized attorney-in-fact and agent at: \_\_\_\_\_

\_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_  
Principal

Witness of Attest:

By: \_\_\_\_\_  
Attorney-In-Fact

Surety

Countersigned:

By:  
Resident Agent

**LABOR AND MATERIAL PAYMENT BOND**

LET THE FOLLOWING BE KNOWN:

That \_\_\_\_\_

As Principal, and \_\_\_\_\_  
duly authorized to transact Surety Business, in the State of Oregon, as Surety are held and firmly bound unto the City of Forest Grove, Oregon, hereinafter called the Obligee, in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS BOND IS AS FOLLOWS:**

WHEREAS, The said Principal herein has made and entered into a certain Contract, a copy of which is attached hereto, with the City of Forest Grove, Oregon, which Contract, together with the applicable Plans, Specifications, and Schedule of Contract prices, is by this reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, If the Principal herein shall make payment promptly, as due to all subcontractors, equipment, supplies, labor or materials for the prosecution of the work, or any part thereof, provided for in said contract, and shall pay all contribution of amounts due its workers compensation carrier and the State Unemployment Compensation Trust Fund from such Contractor or subcontractors incurred in the performance of said contract, and pay all sums of money withheld from the Contractor's employees and payable to the Revenue Department; and shall pay all other just debts, dues and demands incurred in the performance of the said contract and shall pay the City of Forest Grove, such damages as may accrue to the City under said contract, then this obligation is to be void, otherwise to remain in full force and effect.

This bond is given and received under the authority of Chapter 279C, Oregon Revised Statutes, the provisions of which are hereby incorporated into this bond and made a part hereof. Nonpayment of the bond premium will not invalidate this bond, nor shall the City of Forest grove be obligated for its payment.

IN WITNESS WHEREOF, the seal and signature of the said Principal is hereto affixed and the corporate seal and name of the said Surety is hereto affixed and attested by its duly authorized attorney-in-fact and agent at: \_\_\_\_\_

\_\_\_\_\_

this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_  
Principal

Witness of Attest:

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-In-Fact  
Surety

Countersigned:

By:  
Resident Agent

A. DEFINITIONS AND ABBREVIATIONS

Unless otherwise defined in the contract documents, the following definitions and abbreviations shall apply wherever used.

The words directed, required, permitted, ordered, requested, instructed, designated, considered necessary, prescribed, approved, acceptable, satisfactory, or words of like import, refer to actions, expressions and prerogative of the Engineer.

Command type sentences are used throughout the contract documents. In all cases the command expressed or implied is directed to the Contractor.

1. DEFINITIONS

Acts of God

An act of God is to be construed to mean an earthquake, flood, cloudburst, tornado, hurricane or other phenomenon of nature of catastrophic proportions or intensity.

Advertisement

The public announcement inviting bids for work to be performed or materials to be furnished.

Approved Equal

A product, component or process whose use in or on a particular project is specific as a standard for comparison purposes only. The "equal" product, component or process shall be the same or better than that named in function, performance, reliability, quality and general configuration. Determination of equality in reference to the project design requirements will be made by the Engineer.

Attorney

The attorney representing the owner.

Bid Bond

The bond required to be submitted with each proposal as a proposal guarantee.

Bidder

Any individual, firm, co-partnership or corporation submitting a proposal in response to the advertisement calling for bids on the work contemplated.

Calendar Day

Any day shown on the calendar beginning and ending at midnight.

## GENERAL CONDITIONS

### Change Order

A written order, approved by the owner, and issued by the Engineer to the Contractor, covering changes in either the plans, specification, or quantities within the scope of the contract.

### Contract

A part of the contract documents which stipulates conditions on which the work is agreed to be performed, executed by the owner and the Contractor.

### Contract Cost

The aggregate amount of price promised to be paid by the owner to the Contractor upon fulfillment of the contract.

### Contract Documents

The written agreement covering the performance of the work, the advertisement calling for bids, the proposal, plans, all specifications, addenda, permits, contract, contract bonds, change orders in the course of the work, and any approved revisions made during the performance of the work to any of the above listed documents.

### Contract Item

A specific unit of work for which a price or basis of payment is provided in the contract.

### Contracting Agency

The legal entity for which the work is being performed.

### Contractor

Any individual, firm, co-partnership, corporation or any combination thereof who has entered into the contract with the owner. In the case of work being done under permit issued by the owner, the permittee shall be construed to be the Contractor.

### Easement

The right to use a defined area of property for a specific purpose or purposes as set forth in a document which has been made a part of the contract documents.

### Engineer

The Engineer who represents the owner either directly or through his authorized representatives and designated by the contracting agency to supervise the work during its execution.

## GENERAL CONDITIONS

### Extra Work

An item of work not provided for in the contract as awarded but determined by the Engineer as essential to the proper completion of the contract within its intended scope.

### Highway

The whole area within the boundaries of a public right-of-way which is reserved for and secured for public use in constructing and maintaining a roadway and its appurtenances.

### Inspector

The authorized representative of the Engineer entrusted with making detailed inspections of the work or materials.

### Legal Holiday

The following, subject to subsequent change by law, are legal holidays: Sunday, New Years Day, President's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Martin Luther King Jr. Day, Thanksgiving, Christmas, and those days declared as holidays by authorized public proclamation. When a legal holiday, other than Sunday, falls on a Sunday, the immediately following Monday is a legal holiday.

### Loose Riprap

Specified classes of graded rock placed on prepared slope, geotextile, or filter blanket as specified.

### Lump Sum

A method of payment providing for one all inclusive cost for the work or for a particular portion of the work.

### Notice

A written communication delivered to the authorized individual, member of the firm or officer of the corporation for which it is intended. If delivered or sent by mail, it shall be addressed to the last known business address of the individual, firm or corporation. In the case of a contract with two (2) or more persons, firms or corporations, notice to one shall be deemed notice to all.

### Notice to Proceed

A written notice to the Contractor from the Engineer or owner, designating the date the contract term is begun and the date for final completion of the contract.

## GENERAL CONDITIONS

### OSHD Standard Specifications

The latest edition of the specification document published by the State of Oregon entitled "Standard Specifications for Highway Construction", Oregon State Highway Division; available from the Oregon State Highway Division, Salem, Oregon.

### Owner

The legal entity or contracting agency for which the work is being performed.

### Performance Bond

The form of security approved by the owner, furnished by the Contractor and his surety, guaranteeing the complete and faithful performance of all the obligations and conditions placed upon the Contractor by the contract.

### Plans

The official plans, profiles, cross sections, elevations, details and other working, supplementary and detail drawings, or reproductions thereof, signed by the Engineer, which show the location, character, dimension and details of the work to be performed. Plans may either be bound in the same book as the balance of the contract documents or bound in separate sets, and are a part of the contract documents, regardless of the method of binding.

### Proposal

The offer of the bidder to perform work at the prices quoted, submitted on the owner's official proposal form, properly signed and guaranteed.

### Proposal Guaranty

The security furnished with a proposal to assure that the bidder will enter into the contract if the proposal is accepted.

### Provide

When related to an item of work, provide shall be understood to mean furnish and install the work complete in place.

### Reference Specifications

Bulletins, standards, rules, methods of analysis or test, codes and specifications of other agencies, engineering societies, or industrial associations referred to in the contract documents. All such references specified herein refer to the latest edition thereof, including any amendments thereto which are in effect and published at the time of advertising for bids or of issuing the permit for the project.

## GENERAL CONDITIONS

### Right of Way

A general term denoting land, property, or interest therein, acquired for or devoted to public use.

### Road

Every road or roadway, thoroughfare, and place including bridges, viaducts and other structures used or intended for use of vehicles.

### Shown

As used herein, the work shown, or as shown, shall be understood to refer to work shown on the plans in the contract documents.

### Special Specifications (Special Provisions)

Requirements peculiar to the project and changes and modifications of the standard specifications. Special specifications are used interchangeably with special provisions.

### Specified

As used herein the work specified, or as specified, means as required by the contract documents.

### Standard Plans or Drawings

Details of structures, devices, or instructions adopted by the owner as a standard and referred to in the contract documents by title or number.

### Standard Specifications

The terms, directions, provisions and requirements set forth in this document, together with all subsequent addenda and supplements thereto identified as such.

### Station

A distance of 100 feet measured horizontally along a surveyed centerline.

### Street

Any road, highway, parkway, freeway, avenue, alley, walk, or way, including sidewalks, parking strips and all other structures including utilities above and below the surface, land and improvements within the public right of way between property lines.

### Subcontractor

An individual, partnership, firm, corporation, or any acceptable combination thereof,

## GENERAL CONDITIONS

or joint venture to whom the Contractor, with the written consent of the owner, sublets part of the contract.

### Surety

The corporate body which is bound with and for the Contractor, for the acceptable performance of the contract, and for his payment of all obligations arising out of the contract. Where applying to the "Proposal Guaranty", it refers to the corporate body which engages to be responsible for the bidder's execution of a satisfactory contract when and if his bid is accepted by the commission.

### Ton

The short ton of 2,000 pounds avoirdupois.

### Unit Price

A contract item of work providing for payment based on a specified unit of measurement; e.g. linear foot or cubic yard.

### Utility

Tracks, overhead or underground wires, pipelines, conduits, ducts, or structures, owned, operated, or maintained in or across a public right-of-way or easement.

### Work

That which is proposed to be constructed or performed under the contract or permit, including the furnishing of all material, labor, tools, machinery and appurtenances necessary to complete the contract.

### Working Day

Any and every calendar day excluding Sundays and legal holidays.

### Working Drawings

Stress sheets, shop drawings, erection plans, falsework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

2. ABBREVIATIONS

AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AGC	American General Contractors of America
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APWA	American Public Work Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
DEQ	Department of Environmental Quality
DFPA	Division for Product Approval of American Plywood Assoc.
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
ITE	Institute of Traffic Engineers
JIC	Joint Industry Conferences of Hydraulic Manufacturers
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NLMA	National Lumber Manufacturer's Association
ORS	Oregon Revised Statutes
OSHA	Occupational Safety and Health Administration
OSHD	Oregon State Highway Division
PCA	Portland Cement Association
UBC	Uniform Building Code
UL	Underwriter's Laboratories, Inc.
WWPA	Western Wood Products Association

## GENERAL CONDITIONS

### B. PROPOSAL REQUIREMENTS

#### 1. PREQUALIFICATION OF BIDDERS

Attention of bidders is called to the requirements of Oregon Revised Statutes, Chapter 279, relating to prequalification of bidders on public contracts. All bidders shall prequalify in accordance with the enacted requirements of the owner.

#### 2. FORM OF PROPOSAL

Bidders shall enclose the proposal, bid bond, or certified check or cashier's check in a sealed envelope, labeled and addressed as required in the Invitation for Bids, and file as required therein.

All proposals shall be clearly and distinctly typed or written. Changes may be made provided the change is initialed.

All proposals shall be on the form furnished by the owner, and in addition to the necessary unit price items and total prices in the column of totals to make a complete bid, all applicable blanks giving general information must be filled in and the bid signed by the Contractor or a duly authorized agent. Any statement accompanying and tending to qualify a bid may cause rejection of such bid, unless such statement is required or permitted.

Unless otherwise specified, bidders shall bid on all bid items included in the proposal and the lower bidder shall be determined in accordance with subsection C-1.

#### 3. WITHDRAWAL, MODIFICATION OR ALTERATION OF PROPOSAL

A proposal may be withdrawn upon written request of the bidder prior to the scheduled closing time for filing bids. Negligence on the part of the bidder in preparing his proposal confers no right to withdraw his proposal after the scheduled closing time for filing bids.

Change in a delivered proposal will be permitted only if a request for making such modification is made in writing, signed by the bidder, and the specific modification is stated and received prior to the scheduled closing time for filing bids.

#### 4. LATE PROPOSALS

Proposals received after scheduled closing time for filing bids will not be opened or considered by the owner unless such bid, if sent through the mails, shows a legible postmark or post office cancellation proving the time of mailing was at least 48 hours prior to the scheduled closing time for filing bids, and such proposal is received before the award has been made.

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### 5. PROPOSAL GUARANTY

All proposals must be accompanied by a proposal guarantee in the form of a certified check payable to the order of the Owner, or a bidder's bond for the single bid submitted, in an amount not less than five (5) percent of the total amount of the proposal submitted. Such proposal guarantee may be forfeited as liquidated damages in case the bidder shall fail or neglect to furnish a performance bond and insurance, as required, or to execute the contract within ten days after receiving said contract from the owner for execution.

### 6. EXAMINATION OF PLANS, STANDARD PLANS OR DRAWINGS, SPECIFICATIONS AND SITE OF WORK

Bidders shall determine for themselves all the conditions and circumstances affecting the project or the cost of the proposed work by personal examination of the site, the Contract Documents, and by such other means as they may choose. It is understood and agreed that information regarding underground or other conditions or obstruction indicated in the Contract Documents has been obtained by the owner from data at hand. There is no expressed or implied agreement that such conditions are fully or correctly shown, and the bidder must take into consideration the possibility that conditions affecting the cost or quantity of work may differ from those indicated.

### 7. INTERPRETATION OF CONTRACT DOCUMENTS

If it should appear to a bidder that the work to be done or matters relative thereto are not sufficiently described or explained in the Contract Documents or that the Contract Documents are not definite and clear, the bidder may make written inquiry regarding same to the Engineer at least five (5) days before the scheduled closing time for filing bids. Then, if in the judgement of the Engineer, additional information or interpretation is necessary, such information will be supplied in the form of an addendum which will be delivered to all individuals, firms and corporations who have taken out Contract Documents. Such addendum shall have the same binding effect as though contained in the main body of the Contract Documents. ORAL INSTRUCTIONS OR INFORMATION CONCERNING THE CONTRACT DOCUMENTS, OR THE PROJECT GIVEN OUT BY OFFICERS, EMPLOYEES OR AGENTS OF THE OWNER TO PROSPECTIVE BIDDERS SHALL NOT BIND THE OWNER.

### 8. ADDENDA TO CONTRACT DOCUMENTS

Any addendum or addenda issued by the Engineer which may include changes, corrections, additions, interpretations or information, and issued before the scheduled closing time for filing bids, shall be binding upon the bidder. The Owner shall send copies of such addenda to all contractors who have obtained copies of the Contract Documents for the purpose of bidding thereon, but failure of the Contractor to receive or obtain such addenda shall not excuse him from compliance therewith, if he is awarded the Contract.

## GENERAL CONDITIONS

### 9. FAMILIARITY WITH LAWS AND ORDINANCES

The bidder is assumed to be familiar with all Federal, State and local laws, ordinances, and regulations which in any manner affect those engaged or employed in the work or the materials or equipment used in the proposed construction, or which in any way affect the conduct of the work, and no plea of misunderstanding will be considered on account of ignorance thereof. If the bidder, or Contractor shall discover any provision in the Contract Documents which is contrary to or inconsistent with any law, ordinance, or regulation, he shall forthwith report it to the owner in writing.

### 10. AMOUNT OF WORK TO BE DONE

The Owner reserves the right to increase or decrease the amount of any class or portion of the work. No such change in the work shall be considered as a waiver of any condition of the contract nor shall such change invalidate any of the provisions thereof.

The estimate of quantities of work to be done under unit price bids is approximate and is given only as a basis of calculation for comparison of bids and award of the contract. The Owner does not by implication agree that the actual amount of work will correspond precisely to the amount as shown or estimated.

The scheduled quantities of work to be done and materials to be furnished may each be increased, decreased, or omitted. Payment will be made at unit prices under the contract only for the work performed or materials furnished.

### 11. BID PRICES TO COVER ENTIRE WORK

Bidders must include in their bid prices the entire cost of each item of work set forth in the proposal, and it is understood and agreed that there is included in each lump sum or unit price bid the entire cost of materials and labor incidental or necessary to the completion of that portion of the work covered, unless such incidental work is expressly included in other lump sum or unit price bids in the proposal.

### 12. REJECTION OF PROPOSALS

The owner reserves the right to reject all bids and waive irregularities.

### 13. DISQUALIFICATION OF BIDDERS

Bidders may disqualify for reasons as outlined under the provisions of  
OAR 137-030-0110

## GENERAL CONDITIONS

### 14. MATERIAL GUARANTY

The successful bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work together with samples. These samples may be subjected to the tests required elsewhere in these specifications to determine their quality and fitness for the work.

### 15. PREFERENCE FOR OREGON GOODS AND SERVICES

The bidder shall give preference to goods or services that have been manufactured or produced in Oregon if price, fitness, availability and quality are otherwise equal.

These provisions do not apply to contracts on projects financed wholly or in part by federal funds.

### 16. CONSIDERATION OF BIDS, AWARDS AND CONTRACT

After the proposals have been opened and read, they will be compared on the basis of total amounts. The right is reserved to reject any or all proposals, to waive technicalities and, with the consent of the bidder, to correct patent errors; if in the judgement of the City the best interest of the City will be served or promoted thereby. The results of the comparisons and considerations will be made available to the public within a reasonable time after opening of the proposals.

Award of contracts, return of proposal guaranties, execution of the contract and other provisions concerning the contract are set forth in Section C. Bidders shall familiarize themselves with Section C before submitting their proposals.

C. AWARD AND EXECUTION OF CONTRACT

1. AWARD OF CONTRACT

The award will be made by the owner to the bidder submitting the lowest acceptable bid. In determining the lowest acceptable bid, the owner may take into account, among other factors: the prices bid, the realistic balance of prices in the proposals for various parts of units of the work, and the experience and ability of the bidder to perform the work.

While price extensions are required as a matter of convenience, in the event of error in extensions the unit prices bid shall govern. In the event of discrepancy between the written and numerical amounts, the written prices will govern.

Determination of the lowest responsible bidder and award may be subject to review and determination by the owner's attorney as to legal sufficiency of any bid submitted.

The award of contract, if it be awarded, shall be made within thirty (30) calendar days after the date of opening of bids.

2. EXECUTION OF CONTRACT

Within ten (10) days after the date the bidder receives notification of award of contract as evidenced by receipt from the owner of properly prepared contract documents, the bidder to whom award is made shall execute and return the contract in the required number of copies and shall execute and furnish the performance bond bound herewith and other required bonds and insurance satisfactory to the owner.

3. FAILURE TO EXECUTE CONTRACT

Failure on the part of the bidder to whom the contract is awarded to execute the contract and to deliver the contract and required performance bond as described herein, shall be just cause for cancellation of the award, withdrawal of the contract and forfeiture of the proposal guaranty. The forfeited proposal guaranty shall become the property of the owner. Award may then be made to the next lowest acceptable bidder, or the work may be re-advertised, or it may be constructed under contract or otherwise, as the owner may decide.

4. RETURN OF PROPOSAL GUARANTY

Upon the execution of the contract and bond by the successful bidder, his proposal guaranty shall be returned to him. The bidder who has a contract awarded to him and who fails promptly and properly to execute the contract or bond shall forfeit the proposal guaranty that accompanied his bid. The proposal guaranty shall be taken and considered as liquidated damages and not as a penalty for failure of the bidder to execute the contract and bond. The proposal guaranty of unsuccessful bidders will be returned after the bids have been opened and the contract has been awarded and shall not be retained after the contract has been duly signed. The owner reserves the right to retain the bid security of the three (3) lowest bidders until the awarded contract has been signed and returned.

5. ASSIGNMENTS

Neither the contract nor any interest therein shall be transferred to any other party or parties without the prior written consent of the owner. In case of such attempted transfer without permission, the owner may refuse to carry out the contract either with the transfer or the transferee, but all rights of action for any breach of the contract by said Contractor are reserved to the owner. No officer of said owner nor any person employed in its service, is or shall be permitted any share or part of the contract or is or shall be entitled to any benefit which may arise therefrom.

6. PERFORMANCE AND PAYMENT BOND

The successful Bidder shall execute and furnish with the owner, at the time of execution of the contract, the Performance and Payment Bond bound herewith. The surety company furnishing this bond shall have a sound financial standing and a record of service satisfactory to the owner and shall be authorized to do business in the State of Oregon.

The Attorney in Fact (Resident Agent) who executes this Bond in behalf of the Surety company, must attach a copy of his power-of-attorney as evidence of his authority. A notary shall acknowledge the power as of the date of the execution of the surety bond which it covers.

7. OWNER'S IMMUNITY FROM LIABILITY

The Contractor shall save, keep and hold harmless, the owner, the Engineer and his consultants, and all employees, officers and agents thereof from all damages, costs or expenses in law or equity that may at any time arise or be set up because of damages to property or of personal injury received either by reason of or in the course performing said work which may be occasioned by any negligent act or omission to act which amounts to negligence upon the part of the Contractor or any of said Contractor's employees, or any subcontractor performing any of the work.

The owner shall not be liable or responsible for any accident, loss or damage happening to the work referred to in the contract prior to completion and acceptance thereof.

8. PROOF OF CARRIAGE OF INSURANCE

Work shall not commence until all insurance required in the contract has been obtained nor until such insurance has been approved by the owner, nor shall any subcontractor commence work until he also has first obtained insurance applicable to such work. The Contractor shall maintain insurance throughout the life of the contract which will hold the owner harmless and shall indemnify the owner for any and all losses to third persons or to the owner arising out of the operations, including any contingent liability arising therefrom.

9. CERTIFICATES OF COMPLIANCE

Prior to the acceptance of the work, the Contractor shall complete a certificate form obtained from the Engineer which substantially states the following: "I(We) hereby certify that all

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work has been performed and materials supplied in accordance with the Contract Documents for the above work, and that: (1) Not less than the prevailing rates of wages has been paid to laborers, workers and mechanics employed on this work; (2) There have been no unauthorized substitutions of subcontractors; nor have any subcontracts been entered into without the names of the subcontractors having been submitted to the Engineer prior to the start of such subcontracted work; (3) No subcontract was assigned or transferred or performed by any subcontractor other than the original subcontractor, without prior notice having been submitted to the Engineer together with the names of all subcontractors; (4) All claims for material and labor and other service performed in connection with these specifications have been paid; (5) All monies due the State Industrial Accident Fund, the State Unemployment Compensation Trust Fund (ORS 279.510), the State Tax Commission (ORS 315.575, 316.575 or 316.711 and 316.714), hospital associations and/or others, (ORS 279.320), have been paid."

D. SCOPE OF WORK

1. INTENT OF CONTRACT

The intent of the contract is to provide for the construction and completion of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the plans, specifications and terms of the contract.

The Contractor shall perform all work in accordance with the lines, grades, typical cross sections, dimensions and other data shown on the plans or as modified by written orders of the Engineer, and all other work determined by the Engineer as necessary to proper prosecution and completion of the project.

2. PLANS AND SPECIFICATIONS

The plans, specifications and other contract documents will govern the work. The contract documents are intended to be complementary and cooperative and to describe and provide for a complete project. Anything in the specifications and not on the plans, or on the plans and not in the specifications, shall be as though shown or mentioned in both. Reference specifications and standard plans are a part of the contract documents.

While it is believed that much of the information pertaining to conditions which may affect the cost of the proposed work will be shown on the plans or indicated in the specifications, the owner does not warrant the completeness or accuracy of such information. It is the Contractor's responsibility to ascertain the existence of any conditions affecting the cost of the work which would have been disclosed by reasonable examination of the site.

The Contractor shall, upon discovering any error or omission in the plans or specifications, immediately call it to the attention of the Engineer.

3. PRECEDENCE OF CONTRACT DOCUMENTS

If there is a conflict between contract documents, the document highest in precedence shall control. The precedence shall be:

First: Permits from other agencies as may be required by law. Second: Special provisions. Third: Plans. Fourth: Standard plans. Fifth: Standard specifications. Sixth: Reference specifications.

Change orders, supplemental agreements and approved revisions to plans and specifications will take precedence over documents listed above. Detailed plans shall have precedence over general plans.

4. SHOP DRAWINGS

When shop drawings or other drawings are required by the Engineer, they shall be prepared in accordance with current modern engineering practice and at the Contractor's expense. Drawings shall be of a size and scale to show clearly all necessary details and shall be transmitted

## GENERAL CONDITIONS

by letter to the Engineer for approval or correction before commencing the work.

Materials shall not be furnished or fabricated nor any work done for which drawings are required, before approval of the drawings.

Approval of drawings by the Engineer shall not relieve the Contractor from the responsibility for errors or omissions in the drawings or from deviations from the contract documents unless such deviations were specifically called to the attention of the Engineer in the letter of transmittal submitted with the drawings. The Contractor shall be responsible for the correctness of the drawings, for shop fits and field connections, and for the results obtained by use of such drawings.

### 5. CHANGES IN WORK

#### a. Changes Requested by the Contractor

Changes in specified methods of construction may be made at the Contractor's request when approved in writing by the Engineer.

Changes in the plans and specifications, requested in writing by the Contractor, which do not materially affect the work, and which are not detrimental to the work or to the interests of the owner, may be granted by the Engineer. Payment to be made per section J of these conditions.

#### b. Changes Initiated by the Owner

The owner may change the plans, specifications, character of the work, or quantity of work, provided the total arithmetic dollar value of all such changes, both additive and deductive, does not exceed 25% of the contract price. Should it become necessary to exceed this limitation, the change shall be by written supplemental agreement between the Contractor and owner.

Change orders shall be in writing and state the dollar value of the change or establish method of payment, any adjustments in contract time and, when negotiated prices are involved, shall provide for the Contractor's signature indicating acceptance.

Payment for all work to be made per section J of these conditions.

### 6. CHANGED CONDITIONS

The Contractor shall notify the Engineer in writing of the following work site conditions, hereinafter called changed conditions, promptly upon their discovery and before they are disturbed:

(a) Subsurface or latent physical conditions differing materially from those represented in the contract; and

(b) Unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character being performed.

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The Engineer will promptly investigate conditions of which notified, or any conditions discovered by the Engineer which appear to be changed conditions. If it is determined that the conditions are changed conditions and that they will materially increase or decrease the costs of any portion of the work, a change order will be issued by the Engineer adjusting the compensation for such portion of the work. If the Engineer determines that conditions of which notified by the Contractor do not justify an adjustment in compensation, the Contractor will be so advised in writing. Should the Contractor disagree with such determination, a notice of potential claim may be submitted to the Engineer.

### 7. DISPUTED WORK

If unable to reach agreement under any of the foregoing procedures, the owner may direct the Contractor to proceed with the work. Payment shall be as later determined by arbitration under Section J-12.

Although not to be construed as proceeding under extra work provisions, the Contractor shall keep and furnish records of all disputed work.

### 8. RECORDS

The Contractor shall maintain records in such a manner as to provide a clear distinction between the direct cost of extra work paid for on the force account basis and the costs of other operations performed in connection with the contract.

The Contractor shall furnish to the Engineer daily reports in duplicate of the extra work to be paid for on a force account basis. The reports shall itemize the materials used and shall set forth the direct cost of labor and the charges for equipment rental whether furnished by the Contractor, or subcontractor. The reports shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked together with the size, type and identification number of equipment and hours of equipment operation.

Material charges shall be submitted by vendors' invoices. Such invoices shall be submitted with the reports; or, if not available, they shall be submitted with subsequent reports. In the event said vendors' invoices are not submitted within 15 days after acceptance of the work, the contracting agency reserves the right to establish the cost of such materials at the lowest current price at which said materials are available in the appropriate quantities delivered to the location of the work.

All reports shall be signed by the Contractor or an authorized representative.

The Engineer will compare records with the reports furnished by the Contractor, make any necessary adjustments and then compile the costs of extra work paid for on a force account basis on forms furnished by the contracting agency. When these extra work reports are agreed upon and signed by both parties, they shall become the basis of payment for the work performed.

9. EXTRA WORK

a. General

New or unforeseen work will be classed as "extra work" when the Engineer determines that it is not covered by contract unit prices or stipulated unit prices and the character of such work is substantially different from that on which the Contractor bid. The Contractor shall not undertake any extra work unless authorized in writing by the owner or Engineer.

b. Payment

Payment for extra work will be established by agreement between the Contractor and the owner. If no agreement can be reached, payment will be made on the following basis:

The Contractor shall maintain records sufficient to distinguish the direct cost of extra work from the cost of other operations.

The Contractor shall furnish daily reports of extra work. The reports shall itemize all costs for labor, materials, and equipment rental. The reports shall include for workers hours worked, rates of pay, names and classifications; and for equipment, shall include size, type, identification number and hours of operation. All records and reports shall be made immediately available to the Engineer upon request.

All reports shall be signed by the Contractor or an authorized representative.

The Engineer's records will be compared with the Contractor's reports, and the necessary adjustments and compilation of the costs of extra work will be made. When extra work reports are agreed upon and signed by both parties, they shall become the basis of payment.

i. Labor

Labor costs shall be based on the prevailing wage scale for each craft or type of worker. Employer payments for payroll taxes and insurance, health and welfare, pension, vacation and other direct labor costs shall be included.

ii. Materials

The cost of materials incorporated in the work will be the cost to the purchaser, whether Contractor, subcontractor or other sources, from the supplier thereof, except as follows: (a) if materials are procured by the purchaser by any method which is not a direct purchase from a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid the actual supplier as determined by the Engineer. No markup except for actual costs incurred in the handling of such materials will be permitted. (b) If the materials are obtained from a supplier or source owned wholly or in part by the purchaser, payment therefor will not exceed the price paid by the purchaser for similar materials furnished from said source on contract items or the current price of such materials delivered to the job site, whichever price is lower. (c) The owner reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs and profit on such furnished materials.

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### iii. Equipment Rental

The Contractor will be paid for the use of equipment on the basis of, but not exceeding the prevailing hourly rental rates established by the Oregon State Highway Division and recognized by the Associated General Contractors for the area where such equipment is required to be operated.

On any equipment for which no rental rate has been established by the Oregon State Highway Division, or where the required operation of the equipment is less than four hours or in excess of one-week, rental rates shall be proposed by the Contractor and agreed upon in writing by the Engineer prior to the start of force account work.

Equipment that is in operational condition and is standing by with the Engineer's approval for participation in force account work, will be paid for at 50 percent of the agreed upon rental rate.

Rental time will not be allowed while equipment is inoperative due to breakdowns for periods in excess of 30 minutes. Rental time shall be computed in 1/2-hour increments. In computing rental time of equipment in actual operation, less than 30 minutes will be considered 1/2 hour.

The rental rates paid, as above provided, shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repair and maintenance of any kind, depreciation, storage, insurance and all incidentals.

All equipment shall, in the opinion of the Engineer, be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools having a replacement value of \$50.00 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.

The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work and return it to the original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than such extra work.

The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays and legal holidays unless the extra work is performed on such days, and shall terminate at the end of the day on which the Engineer directs the Contractor to discontinue the use of such equipment. The maximum rental time to be paid per day will not exceed eight hours unless the equipment is in operation for a longer time.

E. CONTROL OF WORK

1. AUTHORITY OF THE ENGINEER

Subject to such authority as is delegated by the owner, the Engineer will decide all questions which may arise as to the quantity, quality and acceptability of materials furnished and work performed, the rate of progress of the work; change orders and time extensions; interpretation of the plans and specifications; the measurement of all quantities; the acceptable fulfillment of the contract on the part of the Contractor. The Engineer's estimates and decisions in these matters shall be final, binding and conclusive upon all parties to the contract.

It is further understood that all work to be done under the contract will not be considered completed until it has passed final inspection by the Engineer and is accepted by the owner. It is further understood that the authority of the Engineer is such that the Contractor shall at all times carry out and fulfill the instructions and directions of the Engineer insofar as they concern the work to be done under the contract.

Upon failure on the part of the Contractor to comply with any order made under the provisions of this subsection, the Engineer shall have the authority to cause unacceptable work to be remedied or removed and replaced, and unauthorized work to be removed, and to deduct the costs thereof from any monies due or to become due the Contractor.

The Engineer has the authority to suspend the work for cause as set forth in section H, particularly subsection H-5.

Approval by the Engineer signifies favorable opinion and qualified consent; it does not carry with it certification, nor assurance of completeness nor assurance of quality nor assurance of accuracy concerning details, dimensions and quantities. Such approval will not relieve the Contractor from responsibility for errors, for improper fabrication, for nonconformance to requirements or for deficiencies within his control.

2. AUTHORITY AND DUTIES OF INSPECTORS

The Engineer may appoint assistants to inspect all materials used and all work done. Such inspection may extend to any or all parts of the work and to the preparation or manufacture of the materials to be used. The inspectors will not be authorized to revoke, alter, enlarge or relax the provisions of these specifications. An inspector is placed on the work to set the necessary lines and grades and to keep the Engineer informed as to the progress of the work and the manner in which it is being done; also to call the attention of the Contractor to any infringements upon plans or specifications, but failure of the inspector or the Engineer to call the attention of the Contractor to faulty work or infringements upon the plans or specifications shall not constitute acceptance of said work.

An inspector will not be authorized to approve or accept any portion of the work or to issue instructions contrary to the plans and specifications. The inspector will have authority to reject defective material and to suspend any work that is being improperly done, subject to the

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final decision of the Engineer. The inspector will exercise such additional authority as may, from time to time, be especially delegated to him by the Engineer.

### 3. DISPUTED WORK

If the Contractor considers any work demanded of him to be outside the scope of the contract or considers any ruling of the Engineer to be unfair, upon such work being demanded or such ruling being made, the Contractor shall proceed without delay to perform the work or to conform to the ruling. The Contractor shall within ten days after date of receipt of the instructions or ruling, file a written protest with the Engineer, stating clearly and in detail the basis of objection, and include an itemized statement of any extra costs which may have resulted. Except for such protests or objections as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions or decisions of the Engineer will be final and conclusive.

### 4. RESPONSIBILITY OF THE CONTRACTOR

The Contractor shall do all the work and furnish all labor, materials, equipment, tools and machines necessary for the performance and completion of the project in accordance with the contract documents within the specified time.

Material and construction details of plants, forms, shoring, falsework and other structures built by the Contractor but not a part of the permanent project shall meet the approval of the Engineer, but such approval shall not relieve the Contractor from responsibility for their safety and sufficiency.

The Contractor shall be responsible for all expense involved in making any required changes in the plans or specifications to accommodate a substitution approved by the Engineer for the convenience of the Contractor or to circumvent an unforeseen difficulty in obtaining a specified article.

The Contractor shall assume all responsibility for the work. As between him and the owner, the Contractor shall bear all losses and damages directly or indirectly resulting to him, to the owner or to others on account of the character of performance of the work, unforeseen difficulties, accidents or any other cause whatsoever. The Contractor shall assume the defense of indemnity and save harmless the owner, its officers and employees from all claims, liability, loss, damage and injury of every kind, nature and description, directly or indirectly resulting from the Contractor's activities in the performance of the Contract, the ownership, maintenance or use of motor vehicles in connection therewith, or the acts, omissions, operations, or conduct of the Contractor or any subcontractor under the contract, or in any way arising out of the contract, irrespective of whether act, omission or conduct of the Contractor or subcontractor is merely a condition rather than a cause of the claim, liability, loss, damage or injury.

### 5. NOTIFICATIONS RELATIVE TO CONTRACTOR'S ACTIVITIES

The Contractor shall obtain prior approval from the Engineer for the closing or

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partial closing of any road, street, alley or other public thoroughfare. The Contractor shall give advance notice of such closure to all agencies providing emergency services including, but not limited to, the sheriff, police, fire and ambulance services.

The Contractor shall notify all utilities before commencing work including, but not limited to, gas, communications, power and water.

Utilities may not be located as shown or marked as the location may have been established from records and not from on-site inspection. The Contractor shall notify utilities at least two working days prior to commencing work of the date on which work will commence, in order to give the utilities a reasonable opportunity to establish the location of utilities by on-site examination prior to commencing the work. The Contractor shall adhere to the above notification requirements during the progress of the work where the work is such that location of utilities is necessary as the work progresses.

The Contractor shall notify all agencies affected by the operations so as to properly coordinate and expedite the work in such a manner as to cause the least amount of conflict and interference between such operations and those of other agencies.

Notification shall include, but not be limited to, the time of commencement and completion of work, names of streets or location of alleys to be closed, schedule of operations and routes of detours where possible.

Damages or claims resulting from improper or insufficient notification of the affected agencies shall be the responsibility of the Contractor.

### 6. UTILITIES AND EXISTING IMPROVEMENTS

Any information shown as to the location of existing water courses, drains, sewer lines or utility lines which cross or are adjacent to the project, has been compiled from the best available sources, but is not guaranteed to be accurate.

The Contractor shall provide for the flow of sewers, drains or water courses interrupted during the progress of the work and shall restore such drains or water courses as approved by the Engineer. The Contractor shall make excavations and borings ahead of work as necessary, to determine the exact location of interfering utilities or underground structures.

Ordinarily, utility companies responsible for facilities located within the right-of-way will be required to complete any installation, relocation, repair, or replacement prior to the commencement of work by the Contractor. However, when this is not feasible or practicable or the need for such work was not foreseen, such utility owners or the owner shall have the right to enter upon the right-of-way and upon any structure therein for the purpose of making new installations, changes or repairs. The Contractor shall conduct operations so as to provide the time needed for such work to be accomplished during the progress of the improvement.

The Contractor shall be responsible for all costs for the repair of damage to the contract work or to any utility, previously known or disclosed during the work, as may be caused by operations. The Contractor shall maintain in place utilities now shown on the drawing to be relocated or altered by others and shall maintain utilities which are relocated by others in their

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relocated positions in order to avoid interference with structures which cross the project work. All costs for such work shall be included in the prices bid for the various items of work.

### 7. SURVEY SERVICE

The Contractor shall give notice to the Engineer not less than two working days in advance of when survey services will be required in connection with the laying out of any portion of the work.

The owner will furnish and set construction stakes establishing lines and grades as determined necessary by the Engineer for all work under the contract, including lines and grades for street excavation and fill, finished subgrade, finished base material, curbs and gutters, walks, structures and utilities, and will furnish the Contractor all the necessary information relative to the lines and grades.

The owner will furnish appropriate offset lines and grades for all projects involving trenching operations. The Engineer will not transfer the offset lines or grades into the ditch, to batter boards, or any other point within the work which is provided by the Contractor.

### 8. PROTECTION OF SURVEY MARKERS

#### a. Permanent Survey Markers

The Contractor shall notify the Engineer not less than seven days prior to starting work in order that the Engineer may take necessary measures to insure the preservation of survey monuments, stakes and bench marks. The Contractor shall not disturb permanent survey monuments, stakes, or bench marks without the consent of the Engineer, and shall notify the Engineer and bear the expense of replacing any that may be disturbed without permission. Replacement shall be done by a registered land surveyor at no expense to the owner.

When a change is made in the finished elevation of the pavement of any roadway in which a permanent survey monument is located, the monument cover shall be adjusted to the new grade.

#### b. Lines and Grade

The Contractor shall preserve construction survey stakes and marks for the duration of their usefulness during construction. If any construction survey stakes are lost or disturbed, and in the judgement of the Engineer need to be replaced, such replacement shall be by the Engineer at no expense to the owner. The cost of replacement shall be charged against, and shall be deducted from, the payment for the work.

#### c. Lot Stakes

Unless otherwise directed by the Engineer or shown in the plans, the Contractor shall preserve existing survey stakes that mark property lines and corners. Any stakes that become lost or disturbed by his operations shall be replaced by a registered land surveyor at no expense to the owner.

9. OTHER SURVEYORS

Surveying by private land surveyors on permit projects or any other work under the control of the owner shall conform in all respects to the quality and practice required of the owner's surveyors as set forth in subsection E-7.

10. PROTECTION OF PROPERTY

The Contractor shall protect all public and private property insofar as it may be endangered by operations and take every reasonable precaution to avoid damage to such property.

The Contractor shall restore and bear the cost of any public or private improvement, facility or structure within the right-of-way which is damaged or injured directly or indirectly by or on account of any act, omission or neglect in the execution of the work and which is not designated for removal and is visibly evident or correctly shown on the plans. The Contractor shall restore to a condition substantially equivalent to that existing before such damage or injury occurred, by repairing, rebuilding or otherwise affecting restoration thereof, or if this is not feasible, make a suitable settlement with the owner of the damaged property, all at no expense to the owner.

The Contractor shall give reasonable notice to occupants of buildings on property adjacent to the work to permit the occupants to remove vehicles, trailers and other possessions as well as salvage or relocate plants, trees, fences, sprinkler systems or other improvements in the right-of-way which are designated for removal or which might be destroyed or damaged by work operations.

The Contractor shall protect all designated trees and planted areas within the right-of-way easements and shall exercise care and conduct operations so as to minimize damages to other planted areas.

The Contractor shall review with the Engineer the location, limits and methods to be used prior to clearing work. Clearing and grubbing shall be performed in strict compliance with all local, state and federal laws and requirements pertaining to clearing and burning, and particularly in conformity with the provisions of ORS 477 and all subsequent amendments which require, among other things, filing with the state forester a general description of the right-of-way to be cleared before the start of clearing operations and shall perform the clearing work in conformity with the terms of the permit issued by the state forester.

11. TEMPORARY TRAFFIC CONTROL

The contractor shall provide and be responsible at all times for such flagmen, signs and other devices not otherwise specified to be furnished by the owner. The Contractor shall erect and maintain all barricades, guards, standard construction signs, warning signs and detour signs, as are necessary to warn and protect the public at all times from injury or damage as a result of the work operations on highways, roads or streets affected by such operations.

Upon failure to immediately provide the necessary flagmen or to provide, erect, maintain and remove barricades, lights and standard signs when so ordered, the Engineer shall be at liberty, without further notice to the Contractor or the Contractor's surety, to do so and deduct all of

the costs thereof from any payments due or coming due the Contractor.

Refer to TEMPORARY PROTECTION AND DIRECTIONAL MEASURES FOR TRAFFIC for additional requirements in Section II of Standard Specifications.

12. PROTECTION OF WORK

Until acceptance of the project, the Contractor shall at all times protect from damage all public property and private property which may be affected by the work and preserve all materials, supplies, equipment of any description, and all work already performed, from the nature of the work, the action of the elements, and damage by any person or persons or from any other cause whatsoever.

13. MAINTENANCE OF WORK AFTER ACCEPTANCE

Upon the request of the Contractor and with the approval of the Engineer, or upon the order of the Engineer, the Contractor will be relieved of the duty of maintaining and protecting certain portions of the work which are approved to be placed in service and which have been completed in accordance with the contract documents.

In addition, such action by the Engineer will relieve the Contractor of responsibility for injury or damage to said completed portions of the work resulting from use by public traffic or from the action of the elements or from any other cause, excepting injury or damage resulting from the Contractor's own operations or negligence. The Contractor will not be required to again clean up such portions of the improvement prior to field acceptance, excepting for such items of work as result from the Contractor's operations. However, nothing in this section shall be construed as relieving the Contractor from full responsibility for making good work or materials found to be defective.

14. USE OF LIGHT, POWER AND WATER

The Contractor shall furnish temporary light, power and water complete with connecting piping, wiring, lamps and similar equipment necessary for the work as approved. The Contractor shall install, maintain and remove temporary lines upon completion of work. The Contractor shall obtain all permits and bear all costs in connection with temporary services and facilities at no expense to the owner.

15. SUBSURFACE DATA

All information obtained by the Engineer regarding subsurface information and groundwater elevations will be available for inspection at the office of the Engineer upon request. Known utilities and structures expected to be adjacent to or encountered in the work are shown on the plans. Such information is offered as supplementary information only. Neither the Engineer nor the owner assumes any responsibility for the completeness or interpretation of such supplementary information.

Logs of test holes, test pits, soils reports, groundwater levels and other

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supplementary subsurface information are offered as the best available information of underlying materials and conditions at the locations actually tested. The owner will not be liable for any loss sustained by the Contractor as a result of any variance between conditions contained in or interpretations of test reports and the actual conditions encountered during progress of the work.

The Contractor shall examine the site and available records, as set forth in subsection B-6. The submission of a proposal shall be conclusive evidence that the bidder has investigated and is satisfied as to the subsurface conditions to be encountered, as to the character, quality and quantities of work to be performed and materials to be furnished and as to the requirements of the contract documents.

The Contractor shall contact all utility companies as to underground utilities in the area of work as set forth in Section E-5. Relocation of underground utilities which lie within the construction area or trench width necessary to complete the work shall be the responsibility of the owner. Damage to existing utilities shall be the responsibility of the Contractor.

### 16. VERBAL AGREEMENTS

No verbal agreement or conversation with any officer, agent or employee of the owner, either before or after execution of the contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the contract. Any such verbal agreement or conversation shall be considered as unofficial information and in no way binding upon the owner.

### 17. DUST CONTROL

During all phases of the construction work, and when directed, the Contractor shall take precautions to abate dust nuisance by cleaning up, sweeping, sprinkling with water, or other means as necessary to accomplish the suppression of dust.

### 18. REMOVAL OF DEFECTIVE OR UNAUTHORIZED WORK

All work which does not conform to the requirements of the contract shall be considered as unacceptable.

The Contractor shall remove all unacceptable and defective work. The Contractor shall perform replacement by work and materials which conform to the contract documents, or remedy otherwise in an approved manner. The provision shall have full effect regardless of the fact that the unacceptable work may have been done or if the defective materials were used with the full knowledge of the inspector. The fact that the inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of such work.

The Contractor shall do no work without lines and grades having been given by the Engineer. Work done contrary to or regardless of the instructions of the Engineer, work done beyond the lines shown or as directed, except as herein provided, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the

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contract. Work so done may be ordered removed or replaced at no expense to the owner.

In the event any defect in work is of a minor nature and the Engineer determines that it is not of such consequence as to result in a dangerous or undesirable condition, the owner shall have the right to retain such work and make such deductions in the payment therefore as determined reasonable and in the public interest. Such determination by the owner shall be final.

### 19. CLEANUP

From time to time as the work progresses and immediately after completion of the work, the Contractor shall clean up and remove all refuse and unused materials of any kind resulting from the work. Upon failure to do so within twenty-four hours after directed, the work may be done by the owner and the cost thereof be deducted from any payment due the Contractor.

After all other work embraced in the contract is completed and before final acceptance of the contract, the entire right-of-way and easement area including the roadbed, planting, sidewalk, shoulders, driveways, alley and side street approaches, slopes, ditches, utility trenches, and construction areas shall be neatly finished to the lines, grades and cross sections shown and as specified.

As a condition precedent to final acceptance of the project, the Contractor shall remove all equipment and temporary structures, and all rubbish, waste and generally clean up the right-of-way and premises to conform substantially to conditions as they existed before the commencement of work.

### 20. FINAL INSPECTION

At such time as all construction work on the project is complete and all extra work bills, forms and documents required under the contract are submitted, the Contractor shall so notify the Engineer in writing. The Engineer will make an inspection of the project and project records within fifteen days of receiving said notice. If, at such inspection, all construction provided for and ordered under the contract is found completed and satisfactory and all certificates, bills, forms and documents have been properly submitted, such inspection shall constitute the final inspection.

If any work in whole or in part is found unsatisfactory, or it is found that all certificates, bills, forms and documents have not been properly submitted, the Engineer will give the Contractor the necessary instructions as to replacement of material and performance or reperformance of construction work necessary and prerequisite to satisfactory final completion of construction work and will give the Contractor the necessary instructions for submission of bills, forms and documents, and the Contractor forthwith shall comply with and execute such instructions. At such time as such instructions are complied with and executed, the Contractor shall so notify the Engineer in writing. The Engineer will make another inspection within fifteen days after such notice and this inspection shall constitute the final inspection, if all requirements of the instructions have been met to the satisfaction of the Engineer. If the instructions are not completed to the satisfaction of the Engineer, additional instructions will be issued by the Engineer and the process will be repeated until the Engineer is satisfied all requirements are complied with. The

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inspection, when the Engineer is satisfied all requirements have been met, will be considered the final inspection.

F. CONTROL OF MATERIALS

1. PREFERENCE FOR USE OF OREGON PRODUCTS

Preference may be given to articles or materials produced or manufactured in Oregon. These provisions do not apply to contracts on projects financed wholly or in part by federal funds.

2. QUALITY OF MATERIALS

The Contractor shall use only new materials, parts, products and equipment in the work which conform to the specified requirements. The Contractor shall determine the kind of work, amount of work and other factors that may be necessary or involved in furnishing the specified products and materials. Materials and products which, after approval, have become unsuitable or unacceptable for use, regardless of cause, will be rejected by the Engineer and shall not be used.

3. SAMPLING AND TESTING

Tests of materials will be made by the Owner in accordance with the methods described or designated in the applicable specifications, and at any time during the production, fabrication, preparation and use of the materials.

The Owner reserves the right to require samples and to test products for compliance with pertinent requirements irrespective of prior certification of the products by the manufacturer thereof as set forth in Section F-4.

When tests of materials are necessary, as determined by the Engineer, such tests will be made by, and at the expense of, the Owner unless otherwise specified. The Contractor shall afford such facilities as required for collecting and forwarding samples where practical and withhold from use the materials represented by the samples until tests have been made and the materials found equal to the requirements of the specifications or to approved samples. In all cases, the Contractor shall furnish and make available the required samples without charge. Samples shall be made available in ample time to permit testing of the materials prior to use, and no claim will be allowed for any delay caused by awaiting test results. To facilitate and make safe the sampling of materials at plants, the Contractor shall provide safety measures and devices to protect those who take the samples.

In the absence of any reference specification, it shall be understood that such materials shall meet the specifications and requirements of the American Society for Testing and Materials (ASTM). When there is no pertinent coverage under ASTM, the material concerned shall meet specifications and requirements of applicable commercial standards of the Commodity Standards Division of the U.S. Department of Commerce. Lacking such coverage, the materials

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shall meet requirements established by reputable industry for a high-quality product of the kind involved.

All testing shall be performed by or handled through the testing laboratory of the Owner or as directed by the Engineer.

In the event the Owner requests tests and materials fail, the Contractor shall bear all costs for all subsequent testing necessary to meet the specified requirements.

### 4. CERTIFICATION

For commercial products inclusive of industry standardized products, in lieu of normal sampling and testing procedures by the Contractor and the Owner, the Engineer may accept from the Contractor the manufacturer's certification with respect to the product involved, under the conditions set forth as follows:

a. The certification shall state that the named product conforms to the Owner's requirements and the representative samples thereof have been sampled and tested as specified.

b. The certification shall either be accompanied with a certified copy of the test results or certify that such test results are on file with the manufacturer and will be furnished to the Engineer upon request.

c. The certification shall give the name and address of the manufacturer and the testing agency and the date of tests; and shall set forth the means of identification which will permit field determination of the product delivered to the project as being the product covered by the certification.

d. The certification shall be in duplicate with one copy to be sent with the shipment of the covered product to the Engineer, and with one copy sent to the Owner.

e. The Owner will not be responsible for any costs of certification or for any costs of the sampling and testing of products in connection therewith.

### 5. INSPECTION REQUIREMENTS

The Contractor shall allow access by the Engineer's representatives to all parts of the work and to the plants of producers and fabricators at all times and will furnish them with every reasonable facility for ascertaining whether or not the work is in accordance with the requirements and intent of the Contract Documents. The Contractor shall furnish such samples as are customarily

required for testing purposes at no expense to the Owner.

6. INSPECTION BY OTHERS

Inspection of the work by persons other than representatives of the Owner will not constitute inspection by the Owner, except as set forth in section F-4.

7. STORAGE AND PROTECTION OF MATERIALS

Materials shall be stored so as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. Approved portions of the right-of-way may be used for storage purposes and for the placing of the Contractor's plant and equipment, but any additional space required therefor shall be provided by the Contractor at his expense. The Contractor shall not use private property for storage purposes without written permission of the property owner or lessee. When requested, the Contractor shall furnish copies of such written permission to the Engineer.

8. TRADE NAMES, APPROVED EQUALS OR SUBSTITUTIONS

In order to establish a basis of quality, certain processes, types or machinery and equipment, or kinds of materials may be specified either by description or process or by designating a manufacturer by name and referring to that brand or product designation, or by specifying a kind of material. It is not the intent of the specifications to exclude other processes, equipment or materials of equal value, utility or merit.

Whenever a process is designated, or a manufacturer's name, brand or item designation is given, or whenever a process or material covered by patent is designated or described, it shall be understood that the words "or approved equal" follow such name, designation or description, whether in fact they do so or not.

If it is desirable to furnish items of equipment by manufacturers other than those specified, as a substitute after the Contract is executed, the Contractor shall secure approval prior to placing a purchase order or furnishing the same.

If the proposal includes a list of equipment, materials, or articles for which the Contractor must name the manufacturer at the time of submission of the bid, no substitutions therefore will be permitted after a proposal has been accepted without the express consent of the Owner.

9. OWNER FURNISHED MATERIALS

Any material furnished by the Owner will be delivered or made available to the Contractor at the locations specified or shown. The cost of handling and placing such materials after they are delivered to the Contractor will be considered as included in the contract price for the item in connection with which they are used. The Contractor will be held responsible for all material delivered to the Contractor by the Owner and deductions will be made from any monies due to make good any shortages, deficiencies, and damages which may occur after such delivery, and for any demurrage charges.

G. LEGAL RELATIONS AND RESPONSIBILITIES

1. PERFORMANCE AND PAYMENT BOND

The Contractor shall provide and maintain performance and payment bond as set forth in subsection C-6.

2. LAWS AND REGULATIONS

The Contractor shall keep fully informed of all federal, state and local laws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affects the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders and decrees. The Contractor shall protect and indemnify the owner and his representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by the Contractor, his subcontractors, suppliers of materials or services, or others engaged by the Contractor of the employees of any of them.

The Contractor's attention is directed to the statutes of the State of Oregon for public works contracts. Section 279 of the Oregon Revised Statutes, as amended or superseded, including the latest additions and revisions, are incorporated by reference as a part of the contract documents.

In conformance with the requirements of ORS 279.318, the owner shall make specific reference to federal, state and local agencies that have enacted ordinances or regulations dealing with the prevention of environmental pollution and the preservation of natural resources that affect the performance of the contract. If the successful bidder is delayed or must undertake additional work by reason of existing regulations or ordinances of agencies not cited in the public contract or due to the enactment of new or the amendment of existing statutes, ordinances or regulations relating to the prevention of environmental pollution and the preservation of natural resources occurring after the submission of the successful bid, the awarding agency shall grant a time extension and issue a change order setting for the additional work that must be undertaken. The change order shall not invalidate the contract and there shall be, in addition to a reasonable extension of contract time, a reasonable adjustment in the contract price to compensate the successful bidder for all costs and expenses incurred, including overhead and profits, as a result of such delay or additional work.

Federal and state agencies normally having a responsibility relating to the environment include, but are not limited to, the following:

U.S. Environmental Protection Agency  
U.S. Corps of Engineer  
U.S. Coast Guard  
Oregon Department of Environmental Quality  
Oregon Division of State Lands  
Oregon Department of Mining and Mineral Industries

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### 3. ASSIGNMENT OF CONTRACT AND SUBLETTING

No contract or any portion thereof may be assigned or sublet without consent of the owner except that money due the Contractor may be assigned as specified below.

The Contractor may assign money due or to become due him under the contract and such assignment will be recognized by the owner, if given written notice thereof, to the extent permitted by law, but any assignment of money shall be subject to all proper setoffs and withholdings in favor of the owner and to all deductions provided for in the contract, and particularly all money withheld, whether assigned or not, shall be subject to being used by the owner for completion of the work in the event the Contractor should be in default therein.

### 4. SUBCONTRACTORS

No part of the work shall be transferred or subcontracted without prior written consent of the owner, or approval at the time of award, and no such consent or approval shall release the Contractor from any obligation to the owner or to persons employed by the subcontractors, or to those supplying materials to the subcontractors. In all cases, subcontractors will be considered by the owner as an employee and liable to be replaced for incompetency, neglect of duty or misconduct.

### 5. NO WAIVER OF LEGAL RIGHTS

The owner shall not be precluded or stopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work or payment therefore, from showing the true amount and character of the work performed and materials furnished by the Contractor, or from showing that any such measurement, estimate, or certificate is untrue or incorrectly made, or that the work or materials do not conform in fact to the contract. The owner shall not be precluded or stopped, notwithstanding any such measurement, estimate or certificate, or payment in accordance therewith, from recovering from the Contractor and the Contractor's sureties such damages as may be sustained by reason of failure to comply with the terms of the contract, or from enforcing compliance with the contract. Neither the acceptance by the owner, nor any payment for all or any part of the project, shall operate as a waiver of any portion of the contract or of any power herein reserved, or any right to damages herein provided. A waiver of any breach of the contract shall not be held to be a waiver of any other subsequent breach.

### 6. OTHER CONTRACTS

The owner shall have the right to let other contracts be coordinated with this contract. The Contractor shall cooperate with and afford such other Contractors reasonable opportunity for introduction and storage of materials and for execution of their work. Any matter of dispute shall be decided by the Engineer, and that decision shall be binding. If any part of the work depends for its proper execution upon the work of any such other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects that affect the subsequent work. Failure to do so shall constitute an acceptance of such other Contractor's work as fit and proper for the

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reception and attachment of the Contractor's own work and equipment.

7. INSURANCE

The Contractor shall provide and maintain insurance as set forth in subsection C-8.

a. Public Liability and Property Damage Insurance

The Contractor shall maintain such public liability and property damage insurance as will protect the Contractor and the owner from any and all claims for damage or personal injury including death, which may arise from operations under this contract or in connection therewith, including all operations of subcontractors.

Such insurance shall provide coverage for not less than the following:

For Personal Injury:	\$1,000,000	Each Person
	\$2,000,000	Each Occurrence
For Property Damage:	\$1,000,000	Each Claimant
	\$2,000,000	Each Occurrence

In lieu of the foregoing, a single limit public liability policy for personal injury and property damage will be accepted in the sum of \$2,000,000.

Such insurance shall be without prejudice to coverage otherwise existing, and shall name as additional insured the owner and all other governmental bodies with jurisdiction in the area involved in this project, their officers and employees, and shall further provide that this policy shall not be terminated or be cancelled prior to the completion of this contract without 30 days written notice by certified mail to the auditor, which notice shall be subject to the approval of the attorney, said notice to commence to run from the date notice is actually received at the office of the auditor.

Notwithstanding the naming of additional insured, the said policy shall protect each insured in the same manner as though a separate policy had been issued to each; but nothing herein shall operate to increase the insurer's liability as set forth elsewhere in the policy beyond the amount or amounts for which the insurer would have been liable if only one person or interest had been named as insured.

A certificate evidencing such insurance together with the proper endorsement shall be filed with the auditor and shall be subject to the approval of the attorney as to the adequacy of protection.

b. Workers' Compensation Insurance

The Contractor shall provide worker's compensation insurance coverage for all persons employed on the work to be done under the contract and assure that all workers will receive the compensation for compensable injuries provided in ORS 656.001 to 656.794 either by:

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1. Contributing to the Industrial Accident Fund as a contributing employer; or
2. Qualifying as a direct responsibility employer under ORS 656.405 and 656.409.

In the event that the Contractor or any of the subcontractors shall elect to fulfill this responsibility by qualifying as a direct responsibility employer under ORS 656.405 and 656.409, satisfactory proof of such fact shall be required. In the event that the certification as a direct responsibility employer is withdrawn, as provided in ORS 656.417, the Contractor or any subcontractor shall thereafter on the effective date of the withdrawal of certification, become a contributing employer.

### 8. ROYALTIES AND PATENTS

The Contractor shall hold harmless and be liable for all suits brought against the owner by reason of infringement of patent rights on any material, machine or appliance that may be used on the work or incorporated into the finished job, except where specifically exempted by the special provision. Unit prices names in the proposal shall include payment of royalties, if any.

### 9. PERMITS, LICENSES AND TAXES

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the work except that the owner will obtain and pay for the following:

- a. All permits required by the Coast Guard for crossing navigable streams.
- b. All permits required by the Corps of Engineers for encroachments on navigable streams where such encroachments are called for by the plans for the project.
- c. All permits required by the Division of State Lands for removal of materials from or depositing materials in waterways where such work is specifically required by the Division of State Lands for operations in any owner-controlled source of materials listed in the special provisions.
- d. All permits required by the State Department of Geology and Mineral Industries for operations in any owner-controlled source of materials or any disposal area listed in the special provisions.
- e. All permits required from local agencies for construction of buildings where such work is required by the plans for the project.

The Contractor's attention is directed to ORS 274.530 relating to "lease of stream beds" by Division of State Lands.

The Contractor shall comply fully with ORS 477.685 which reads, in part, as

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follows:

"(1) Before clearing any right of way for any highway or railroad, or any power, commercial telegraph or telephone line, or for any transmission utility right of way on any forest land, whether upon his land or that of another, where clearing would constitute a fire hazard, every person shall file with the forester a general description of the right of way to be cleared. The forester shall issue a written permit for such clearing. The permit shall set forth the precautionary conditions and manner under which the clearing shall be done.

(2) Subsection (1) of this section does not apply to railroad spurs or temporary roads not exceeding one-half mile in length, or to forest land for which an operation permit is in effect.

(3) A person engaged in clearing any right of way on forest land shall not place on adjoining land or property any forest material or debris resulting from such clearing without the permission of the owner of the adjoining land."

### 10. WAGE RATES

The Contractor and all subcontractors shall pay employees no less than current Prevailing Wage Rates, (PWR), including fringe benefits, as determined by the Commission of Bureau of Labor and Industries, and as prescribed under the provisions of ORS 279.348 through 279.363. The Contractor and subcontractors must post the PWR which is contained in the contract specifications. Copies of the rates may be obtained from the Bureau of Labor and Industries. The rates must be posted on the job site in a conspicuous place which is accessible to employees and must remain posted for the duration of the job.

The Contractor shall submit a complete weekly payroll for the week immediately preceding the submission as follows:

(a) For projects of less than 90 days (2 times), once before the first payment is made and once before the final payment is made.

(b) For projects exceeding 90 days, once before the first payment is made; at 90-day intervals thereafter; and once before the final payment is made.

Payroll and Certified Statement forms are available at any office of the Bureau of Labor and Industries. The forms must be submitted to the City and to the Wage and Hour Division of Bureau of Labor and Industries. The payroll and certified statements must be kept by the Contractor for three (3) years.

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### 11. EMPLOYER'S CONTRACT FOR MEDICAL CARE OF EMPLOYEES

The Contractor shall make payment promptly, as due, to any person, co-partnership, association or corporation furnishing medical, surgical and hospital care, or other needed care and attention, incident to sickness or injury, to employees, of all sums which have been agreed to be paid for such services and all monies and sums which: (1) may or shall be deducted from the wages of employees for such services pursuant to the terms of Oregon Revised Statutes Chapter 655, and any contract entered into pursuant thereto; or, (2) are collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such services.

### 12. PAYMENT OF OBLIGATIONS

The Contractor shall make promptly as due, to all persons supplying labor or materials for the prosecution of work under the contract. The Contractor shall not permit any lien or claim to be filed or prosecuted against the owner on account of any labor or material furnished. Contractor shall pay to the State Tax Commission all sums withheld from employees pursuant to Oregon Revised Statutes Chapters 315 or 316.

Failure to make prompt payment of any claim when due, for labor or services supplied for the prosecution of work under the contract, including labor or material supplied to subcontractors, may necessitate owner paying such claim to the person furnishing the labor or services and charging the amount of payment against funds due or to become due to the Contractor by reason of his contract. Such payment shall not relieve the Contractor or his surety from obligations with respect to any unpaid claims.

### 13. PROTECTION OF OTHER GOVERNMENTAL AUTHORITIES

Whenever work under the contract affects or may affect public property owned by or under the jurisdiction of any governmental authority, agency or district, including a governmental subdivision other than the owner's, the Contractor shall indemnify and save harmless such governmental authority, its officers, agents and employees from any loss, damage or claim of loss or damage to such property or the use thereof, arising from work under the contract. The Contractor shall supply any bond or insurance and make any special guarantee deposit required by such governmental authority, before beginning any portion of the work which affects or may affect the property of such governmental authority or the use thereof.

### 14. PUBLIC SAFETY AND CONVENIENCE

The Contractor shall conduct the project with proper regard for the safety and convenience of the public. When the project involves use of public ways, Contractor shall provide flagmen when directed and install and maintain means of free access to all fire hydrants, service stations, warehouses, stores, houses, garages and other property.

Private residential driveways shall be closed only with approval of the Engineer or specific permission of the property owner. The Contractor shall not interfere with normal operation

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of public transit vehicles unless otherwise authorized. The Contractor shall not obstruct or interfere with travel over any public street or sidewalk without approval. Where detours are necessary, they shall be maintained with good surface and shall be clearly marked. The Contractor shall provide open trenches and excavations with adequate barricades of an approved type which can be seen from a reasonable distance. At night, the Contractor shall mark all open work and obstructions by lights. The Contractor shall install and maintain all necessary signs, lights, flares, barricades, railings, runways, stairs, bridges and facilities. The Contractor shall observe all safety instructions received from the Engineer or governmental authorities but following of such instructions shall not relieve the Contractor from the responsibility or liability for accidents to workers or damage or injury to person or property.

Emergency traffic such as police, fire and disaster units shall be provided reasonable access to the work area at all times.

The Contractor shall be liable for any damages which may result from failure to provide such reasonable access or failure to notify the appropriate authority.

### 15. PERSONAL SAFETY

The Contractor shall be responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal work hours. Safety provisions shall conform to the applicable federal, state, county and local law, ordinances and codes. Where any of these are in conflict, the more stringent requirement shall be followed.

The Contractor shall maintain at the office or other well-known place at the job site, all articles necessary for giving first aid to the injured and establish the procedure for the immediate removal to a hospital or a doctor's care of employees and other persons who may be injured on the job site.

The duty of the Engineer to conduct construction reviews of the Contractor's performance is not intended to include a review of the adequacy of the Contractor's safety measures in, on or near the construction site.

All accidents causing death or serious injuries or damages shall be reported immediately by telephone or messenger to both the Engineer and the owner. In addition, the Contractor shall promptly report in writing to the Engineer all accidents whatsoever arising out of or in connection with, the performance of the work, whether on or adjacent to the site, giving full details and statements of witnesses.

If any claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim.

### 16. LABOR

Upon notification in writing from the Engineer, the Contractor shall remove immediately from the job for its duration any laborer, worker, mechanic, foreperson, superintendent

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or other person employed who is found to be incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fails or refuses to perform work properly and acceptably.

Attention is directed to provisions of owner's code regarding Equal Opportunity Program and certification thereunder, and to Chapter 659, Oregon Revised Statutes relative to unlawful employment practices and discrimination by employers against any employee or applicant for employment because of race, religion, color, sex or national origin. Particular reference is made to ORS 659.030 which states that it is an unlawful employment practice for an employer, because of race, religion, color, sex or national origin of any individual to refuse to hire or employ or to bar or discharge from employment such individual or to discriminate against such individual in compensation or in terms, conditions or privileges of employment.

In the event of the Contractor's noncompliance with the non-discrimination clauses of a contract so funded, or with any such rules, regulations or orders, the contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order number 11246, and such other sanctions may be imposed and remedies invoked as provided in Executive Order number 11246, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

### 17. WORKING CONDITIONS

The Contractor agrees, pursuant to ORS Chapter 279, that no person shall be employed for more than 8 hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely requires it, and in such cases the worker shall be paid at least time and a half for all overtime in excess of eight hours a day and for work performed on Saturday and on any legal holiday specified in ORS Chapter 187, except Veteran's Day. However, when specifically agreed to under a written labor-management negotiated labor agreement, a worker may be paid at least time and a half pay for work performed on Veteran's Day or any legal holiday specified in ORS Chapter 187. Overtime provisions may be waived within a collective bargaining agreement in accordance with ORS 279.342. This paragraph does not apply to labor performed in the manufacture or fabrication of any material ordered by the Contractor or manufactured or fabricated in any plant or place other than the place where the main contract is to be performed.

### 18. USE OF EXPLOSIVES

Any blasting or use of explosives requires the approval of the Engineer and is subject to all the provisions, laws, orders and regulations of any other governmental authority in whose jurisdiction such work may be done.

### 19. RAILROAD CROSSINGS OR RIGHT-OF-WAY

Whenever the project or work thereunder involves the crossing of any railroad line or the encroachment of any railroad right-of-way, the Contractor shall submit a program of

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proposed operations within the railroad rights-of-way area which shall be approved by the appropriate railroad officials and the Engineer before the work is started within such area. The Contractor shall pay for services of flagmen and/or watchmen furnished by the railroad company and provide drive piling, set cribbing, build bridges or tunnels, install enclosing pipe and do all other work required by the railroad company or necessary for the safety or maintenance of railroad traffic. The Contractor shall furnish any bond or insurance required of the owner by the railroad company as a result of such intended operations and indemnify the owner for any and all expenses incurred by the owner and assume any and all liability or claims thereof imposed on the owner as a result of operations in the railroad right-of-way area. The Contractor shall bear all costs resulting from interferences, obstructions or liabilities set forth in this specification, whether or not herein specifically mentioned.

### 20. RIGHT-OF-WAY AND EASEMENTS

The Contractor shall confine construction activities within property lines, limits of easements and limits of construction permits as shown or specified in the contract documents, unless arrangements are made with owner(s) of adjacent private property. Prior to the use of any private property outside these specified boundaries, the Contractor shall file with the Engineer a written permission of the property owner(s), and upon terminating such usage, file with the Engineer a release from all damages, signed by the property owner(s).

The Contractor shall not unreasonably encumber the specified work areas with materials and equipment and shall obtain and bear the cost of permits for special occupancy and the use of the specified work areas from the proper agencies. The Contractor shall comply with the Engineer's directions regarding signs, advertisements, fires and smoking.

### 21. WASTE SITES

Excavated materials not suitable or not required for backfill or embankment shall be deposited on one or both of the following waste sites: (1) predesignated waste sites contained in the contract documents, and (2) waste sites provided by the Contractor. All costs for disposing of this excess material shall be incidental to other items of work contained in the proposal.

The Contractor shall operate either type of waste site in such a manner as to meet all safety and health requirements of state and local agencies. Sites, operations or the result of such operations which create a nuisance problem, or which result in damage to public or private properties will not be permitted.

The owner will provide permits for dumping at waste sites designated in the contract documents. The Contractor will be responsible for obtaining the necessary permits for dumping at waste sites provided by the Contractor.

### 22. VERMIN CONTROL

At the time of occupancy by the owner, any structure or structures entirely constructed under the contract shall be free of rodents, insects, vermin or pests. The Contractor

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shall arrange and pay for extermination work as may be necessary as part of the contract work within the contract time. Work shall be performed by a licensed agency in accordance with the requirements of governing authorities. The Contractor shall assume responsibility for any injury to persons or property resulting from extermination work and for the elimination of any offensive odors resulting from extermination operations.

### 23. WARRANTY AND MAINTENANCE

The Contractor shall make all necessary repairs and replacements to remedy, in a manner satisfactory to the Engineer and at no cost to the owner, any and all defects, breaks, or failures of the work occurring within one (1) year following the date of acceptance of the work due to: faulty or inadequate materials or workmanship, and for damage or disturbances to other improvements under, within, or adjacent to the work, whether or not caused by settling, washing or slipping when such damage or disturbance is caused, in whole or in part, from activities of the Contractor in performing the duties and obligations under this contract. When such defects or damage occur, within the time period described hereinbefore, in any part of the surface or subsurface work done under the contract, or in any adjacent surface or subsurface improvements not included in the work under the contract, the Contractor shall repair the same and the one year maintenance period required shall, with relation to such required repair, be extended one year from the date of completion of such repair.

H. PROSECUTION AND PROGRESS OF WORK

1. CONTRACTOR'S CONSTRUCTION SCHEDULE

Prior to beginning any work, the Contractor shall submit a written schedule to the Engineer showing the proposed order of work and indicating the time required for completion of the major items of work. This working schedule shall take into account the passage or handling of traffic with the least practicable interference therewith and the orderly, timely and efficient prosecution of the work.

In the event that the work performed does not correspond to the schedule, the Contractor shall submit a revised schedule when requested by the Engineer. The schedule will be used as an indication of the sequence of the major construction operations and as a check on the progress of the work but does not become a part of the contract documents.

2. PRECONSTRUCTION CONFERENCE

A preconstruction conference will be scheduled by the Contractor prior to the commencement of any work. The meeting is to include, but not necessarily be limited to, representatives of the following groups: owner or Engineer, Contractor and subcontractor, and affected utility companies.

The purpose of the conference will be to discuss the construction schedule and items of the work which require special coordination.

3. NOTICE TO PROCEED

Written notice to proceed will be given after the contract has been executed and the performance bond and all required insurances have been filed with and approved by the owner.

The Contractor shall notify the owner of the time and location that work will begin at least 48 hours prior to beginning work.

4. CONTRACT TIME

The contract time, unless otherwise specified, will begin with the tenth calendar day (excluding legal holidays) following the date upon which the contract and performance bond forms are mailed to the Contractor for execution.

The contract time shall be in terms of either calendar days or work days and shall be in calendar days unless otherwise specified.

Work days shall be defined as every day except Sundays and legal holidays observed by the State of Oregon subject to the exclusions hereinafter described.

Calendar days shall be defined as every day of every year subject to the exclusions hereinafter described.

Exclusions to the definitions of calendar days and work days will be those days to the nearest one half day when the Contractor is prevented from performing work under the contract for one or another of the causes or reasons: (1) Acts of God as such are defined in subsection A-1;

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(2) Epidemics, quarantine restrictions, strikes, labor disputes, freight embargoes and acts of the public enemy; (3) Periods when the work is temporarily suspended upon written order of the Engineer.

### 5. SUSPENSION OF WORK

The owner may, for good and sufficient reason, temporarily suspend the Contractor's operations on the project or upon any part of it. In the event of such suspension, the owner shall, except in emergency, give the Contractor three (3) days notice and the work shall be resumed within five (5) days after notice has been given by the owner to the Contractor to do so. The owner shall allow the Contractor an extension of time for completion corresponding to the total period of the temporary suspension and shall reimburse the Contractor for necessary rental of unused equipment, services of watchmen, and other unavoidable expenses accruing by reason of the suspension without fault of Contractor. The Contractor shall not be entitled to damages, intangible or overhead costs, or anticipated profits arising from such temporary suspension.

Pursuant to Sections E-1 and E-2, the Engineer shall have authority to suspend the work wholly or in part for cause. The Engineer will have the authority to suspend the work wholly or in part due to: failure of the Contractor to correct conditions unsafe for the workers, the general public or the owner's employees; for failure to carry out the provisions of the contract; for failure to carry out orders; for such periods as the Engineer may deem necessary due to conditions considered unsuitable for the performance of the work or for any reason deemed to be in the public interest.

Pursuant to subsection H-6, if the Contractor voluntarily suspends operations because of seasonal conditions or other unsuitable conditions, an order to suspend the work may not be required or issued. However, in all cases of suspension of construction operations, the work shall not again be resumed until permitted by order of the Engineer.

At the commencement of and during any suspension of the work, the Contractor shall be responsible for the care of the work performed and take every precaution to prevent any damage or deterioration of the work including temporary protection devices to warn, safeguard, protect, guide and inform traffic, during suspension the same as though its performance had been continuous and without interferences.

If the suspension of the work is due to failure on the part of the Contractor to correct conditions unsafe for workers or the general public, or to carry out orders given, or to perform any provisions of the contract, then and in such event, be solely responsible for making suitable provisions for necessary traffic and bear the cost of maintaining the work under the contract during the period of suspension. If the Contractor at any time fails to provide for traffic and to maintain the work, the Engineer may immediately proceed to maintain such work and the entire cost of this maintenance will be deducted from monies due or to become due the Contractor on the contract.

The Contractor's voluntary or involuntary suspension or slowdown, with or without the approval of the Engineer, and suspension of the work ordered by the Engineer will not be grounds for claims by the Contractor for damages, idle equipment or labor, or extra compensations. No allowance or compensation will be made on account of such suspensions or work except as

provided hereinbefore and as provided in subsection H-4 and H-6.

The Contractor shall be responsible for damage to the work that may occur during suspensions of work the same as though the damage had occurred while the work was in progress.

6. DELAYS AND EXTENSIONS

The owner may grant extensions of time to the extent it finds reasonable and justified when the delay is due solely to causes beyond the control of the Contractor and subcontractors and without any fault or negligence or participation by them.

Causes which will be given consideration for an extension of contract time include, but are not limited to, the following:

- a. Errors, changes or omissions in the plans, or errors or changes in the specifications.
- b. Failure of the owner, its representatives and its other Contractors to act promptly in carrying out obligations and duties.
- c. Failure of the owner to submit the contract and bond to the Contractor for execution.
- d. Performance of Extra Work as described in subsection D-9.
- e. Court orders enjoining the prosecution of the project or an act of the owner not authorized by the contract or permitted by law.

The owner will not consider an extension of contract time based on shortage or inadequacy of labor and equipment, negligence or fault of the Contractor, and other deficiencies or lacks which are within the province of the Contractor's control or responsibility. Nor will the owner consider an extension of contract time due to seasonal weather or seasonal inclement weather.

If, in the judgement of the Engineer, insufficient force is being employed, or inadequate equipment and methods are used, or if progress is for any reason unduly delayed, the Engineer may instruct the Contractor in writing to increase the force or equipment, or adopt improved methods to expedite the work, and the Contractor shall heed and follow such instructions, but conformity to the Engineer's instructions shall not relieve the Contractor of any responsibilities under this contract.

An extension of contract time will be considered only if the Contractor has given written notice to the owner of the cause of delay, and makes claim for such extension prior to

the contract completion date. The decision by the owner of the term of any extension or detail thereof shall be final.

If work under a contract pursuant to subsection (1) of ORS 279.326, and is not the result of a labor dispute but the contract is not terminated, the Contractor is entitled to a reasonable extension of the contract time and reasonable compensation for all costs resulting from the suspension plus a reasonable allowance for overhead with respect to such costs.

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7. LIQUIDATED DAMAGES

Time shall be considered the essence of the contract. If the Contractor fails to complete the project or to deliver the supplies or perform the services within the time specified in the contract or any extension thereof by the owner, the actual damage to the owner for the delay will be substantial but will be difficult or impractical to determine.

It is therefore agreed that the Contractor will pay to the owner, not as a penalty but as liquidated damages, the per diem amount set forth in the herein given Schedule of Liquidated Damages or modification thereof as given in the special provisions for each and every such day, as pertinent, elapsed in excess of the contract time or the final adjusted contract time applicable to the work required under the contract.

SCHEDULE OF LIQUIDATED DAMAGES

Original Amount of Contract		Per Diem Amount of Liquidated Damages	
For More Than, Up To, and Including		Calendar Day*	Workday
\$ 0	\$ 25,000	\$ 30	\$ 42
25,000	50,000	50	70
50,000	100,000	75	105
100,000	500,000	100	140
500,000	1,000,000	150	210
1,000,000	2,000,000	200	280
2,000,000	-----	300	420

\*Calendar day amounts are applicable when the contract time is expressed on the calendar day, or fixed date basis.

Permitting the Contractor to continue and finish the work or any part thereof after the contract time or adjusted contract time, as pertinent, has expired shall in no way operate as a waiver on the part of the owner or any of its rights under the contract.

Payment of liquidated damages shall not release the Contractor from obligations in respect to the fulfillment of the entire contract, nor shall the payment of such liquidated damages constitute a waiver of the owner's right to collect any additional damages which may be sustained by failure of the Contractor to carry out the terms of the contract, it being the interest of the parties that said liquidated damages be full and complete payment only for failure of the Contractor to complete the work on time.

8. CONTRACTOR'S REPRESENTATIVE

The Contractor shall designate in writing before starting work an authorized representative, who shall have complete authority to represent and to act for the Contractor in his absence from the work site, in all directions given to him by the Engineer. The Contractor or the authorized representative shall give efficient supervision to the work, using the best skill and personal attention to the prosecution of the work, and shall be present on the site continually during its progress.

If called for in the contract documents, the Contractor shall maintain an office on or adjacent to the site of the project. The Contractor shall keep a complete copy of the plans and specifications on or near the site at all times. If the Contractor and the authorized representative are not present on any part of the work where it may be necessary to give instructions, directions may be given by the Engineer to the superintendent or foreperson who may have charge of that particular part of the project, and such order shall be received and followed. Such directions shall not be deemed to change the status of Contractor or subcontractor, nor to make the owner an employer, nor to give the owner direct responsibility for the methods and manner of the work. Such directions of major importance will be confirmed in writing. Any direction will be so confirmed in each case on written request from the Contractor.

Incompetent, careless or negligent employees or agents shall be forthwith discharged by the Contractor upon written request of the Engineer, and failure to comply with such request shall be sufficient grounds for termination of the contract.

9. CONTRACTOR'S EQUIPMENT

The Contractor shall at all times employ sufficient and suitable equipment for prosecuting the work to full completion in the manner and time required by the terms of the contract.

On force account work the equipment and tools used shall be adequate in all respects for efficient performance of the force account work under the direction of the Engineer. The Engineer shall have the authority to refuse the use of equipment and tools on force account work which, in the Engineer's judgement are unsuitable for the work.

Should the Contractor fail to furnish suitable and sufficient equipment for the proper prosecution of the work, the Engineer may suspend the work by written notice until such orders are complied with and such deficiencies are corrected as provided in subsection H-5.

10. CONFLICTS, ERRORS AND OMISSIONS

The Contractor shall check and compare all plans prior to construction and notify the Engineer of any discrepancies or omissions in order to permit correction by the Engineer. Coordination of plans and specifications is intended. The Contractor shall furnish labor and materials required for the work if indicated on one and not the other as fully as if mentioned or indicated on both; and should any work or materials be reasonably required or intended for carrying the project to completion which are inadvertently omitted on the plans or specifications, the

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Contractor shall furnish the same as fully as if particularly delineated or described.

It is understood to be the intent of the plans and specifications to show and describe a complete project within the limits shown. Dimensions shown on the plans shall be used rather than scaled measurements. Whenever it may appear that the plans are not sufficiently detailed or explicit, the Engineer may furnish additional detail drawings or written instructions and the Contractor shall perform the work to such additional details or instructions. In case of conflict between the requirements set forth in the contract documents, the provisions for order of precedence in subsection D-3 shall apply.

### 11. OWNER'S RIGHT TO DO WORK

If the Contractor should neglect to prosecute the project properly or fail or refuse to perform any of the terms or conditions of the contract, the owner may, without prejudice to any other remedy, supply or correct any deficiency or defect. Such action by the owner shall be taken only after three days notice by the Engineer to the Contractor and his surety, unless in the judgement of the Engineer an emergency or danger to the work or to the public exists, in which event action of the owner as set forth above may be taken without any notice whatsoever. The cost of such action by the owner shall be deducted from the payment then or thereafter due the Contractor. The Contractor shall pay to the owner any excess of cost over such a payment due.

### 12. USE OF IMPROVEMENT DURING CONSTRUCTION

The owner shall have the right to take possession of and use any completed or partially completed portions of the work. Such use shall not be considered as final acceptance of any portion of the work. If such prior use increases the cost of, or delays the work, the Contractor shall be entitled to such extra compensation or extension of time, or both, as the Engineer may determine.

### 13. TERMINATION OF CONTRACT

All terms and conditions of the contract are considered material, and failure by the Contractor to comply with any of said terms or conditions shall, at the owner's option, be deemed a breach of the contract. Upon such failure, the owner shall have the right, whether an alternative right is provided or not, to declare the contract terminated. The issuance by the owner or by the Engineer of an order stating that the contract is terminated, and service of a copy of said order upon the Contractor and the Contractor's surety shall be deemed a complete termination of the contract. Upon the contract being so terminated, the owner may retain all sums due under the contract and both the Contractor and his sureties shall be liable under the bond for all losses, expenses and damages caused to the owner by reason of failure to complete the contract and the surety shall be required, at the owner's option, to complete the project. Notwithstanding such termination, the Contractor and the Contractor's sureties shall remain liable under the terms of the contract for work performed prior to such termination.

In conformance with the requirements of ORS 279C.660, the owner and the

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Contractor may agree to terminate the contract:

a. If work under the contract is suspended by an order of the owner for any reason considered to be in the public interest other than by a labor dispute or by reason of any third-party judicial proceeding relating to the work other than a suit or action filed in regards to a labor dispute; and

b. If the circumstances or conditions are such that it is impracticable to extend the contract time pursuant to ORS 279C.665.

In the event of termination of a public contract pursuant to ORS 279C.660, provision shall be made for the payment of compensation to the Contractor. In addition to a reasonable amount of compensation for preparatory work and for all costs and expenses arising out of termination, the amount to be paid to the Contractor:

a. Shall be determined on the basis of the contract price in the case of any fully completed separate item or portion of the work for which there is a separate or unit contract price; and

b. May, with respect to any other work be a percent of the contract price equal to the percentage of the work completed.

### 14. DEFAULT BY CONTRACTOR

If the Contractor fails to begin work as required by the contract, or be adjudged bankrupt, or make a general assignment for the benefit of his creditors, or a receiver is appointed on account of insolvency, or if at any time when work has been resumed after a Suspension of Work (pursuant to subsection H-5) the Contractor refuses, neglects or fails to correct the deficiency(s) or reason(s) for the suspension, or if the Contractor abandons the work, the Engineer may give written notice of default to the Contractor and the Contractor's surety, and shall discontinue or not begin the work, and any or all payments due or that may become due the Contractor may be withheld by the owner until the completion by the owner, surety, or another person of all work included in the contract, and until expiration of any maintenance and/or warranty period.

After service on the Contractor of such order to desist from work or part thereof, or notice of termination as set forth in subsection H-13, the owner may take possession of the project or such designated part thereof, and may use all or any part of the Contractor's plant, tools, equipment, materials or other property on the project, none of which shall be removed by the Contractor as long as they may be required for the work, and the owner may, by contract or otherwise, provide supervision of workers, materials, appliances and equipment necessary for the completion of, and may complete the project or such designated part thereof. The expense so incurred for completion of the project or part thereof, together with all damages, liquidated or

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otherwise sustained or to be sustained by the owner shall be deducted from the fund or appropriation set aside for the purpose of the contract and shall be charged to the Contractor as if paid. In case the amount of such expenses and damages exceeds the sum which would have been payable under the contract if completed entirely by the Contractor, the amount of such excess shall be paid to the owner by the Contractor and both the Contractor and the Contractor's sureties shall be liable to the owner therefore; in case the amount of such expenses and damages shall be less than the sum which would have been payable under the contract if completed entirely by the Contractor, he shall be entitled only to payment in accordance with contract terms for the work the Contractor actually performed, subject, however, to all terms of said contract.

The Contractor shall complete all work unless an order to desist as provided above has been received and shall cooperate with and in no way hinder or interfere with forces employed by the owner or others.

Upon completion of the project by others, the Contractor shall be entitled to the return of all material which has not been used in the work or which has not been paid for, and for all plant, tools, equipment and other property, provided, however, that no claim will be allowed because of usual and ordinary depreciation, loss, wear and tear.

None of the foregoing provisions, or the provisions in subsection H-13 shall be construed to require the owner to complete the work, nor to waive or in any way limit or modify the provisions of the contract relating to the fixed and liquidated damages suffered by the owner on account of the failure of the Contractor to complete the project within the time prescribed.

### 15. COMPLETION AND ACCEPTANCE

After completion of all items of work specified in the contract, and completion of the final inspection as set forth in subsection E-20, the Engineer will recommend to the owner that the work be accepted, and payment be made as provided for in subsection J-10.

It is mutually agreed between the parties to the contract that a certificate of completion of the project, submitted by the Engineer or other officer of the owner and approved by the governing body of the owner, shall constitute final acceptance of the work and materials included in the contract on the date of such approval. It is provided further that such approval shall not constitute an acceptance of any authorized work, that no payment made under the contract except the final payment shall be evidence of the performance of the contract, either

wholly or in part, and that no payment shall constitute an acceptance of unauthorized or defective work or improper material.

The acceptance of the contract work shall not prevent the owner from making claim against the Contractor for any defective work if same is discovered within the guaranty period.

All work shall be and is guaranteed by the Contractor for a period as specified after the date of final acceptance of all the work by the owner.

If, within said guaranty period, repairs or changes are required in connection with guaranteed work, which, in the opinion of the Engineer, is rendered necessary as the result of the

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use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the contract, the Contractor shall, promptly upon receipt of notice from the owner, and without expense to the owner,

a. place in satisfactory condition in every particular all of such guaranteed work, correct all defects therein; and

b. make good all damage to the building or site, or equipment or contents thereof, which in the opinion of the Engineer, is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the contract; and

c. make good any work or material, or the equipment and contents of building, structure or site disturbed in fulfilling any such guarantee.

If the Contractor, after notice, fails within ten (10) days to proceed to comply with the terms of this guaranty, the owner may have the defects corrected, and the Contractor and his surety shall be liable for all expense incurred, provided, however, that in case of an emergency where, in the option of the Engineer, delay would cause serious loss or damage, repairs may be made without notice being given to the Contractor and the Contractor shall pay the cost thereof.

J. MEASUREMENT AND PAYMENT

1. MEASUREMENT OF QUANTITIES

Payments shall be based on measurements of the completed work in accordance with United States Standard Measures. The units of measurement for payment shall be as shown or specified. In calculating quantities, all lengths and areas will be based on horizontal and vertical measurements unless otherwise specified.

Basis is defined as the particular standard unit of measurement which will be applied to a particular item of work as shown.

Each basis of measurement herein set forth is generally applicable and will be in effect.

Linear measurement of pay lengths will be by the linear foot, measured along the line and grade of the item involved as actually placed and accepted.

Volume of earthwork, particularly excavation and embankment, will be computed by the average end area method or by other methods of equivalent accuracy.

Volumes of materials measured in the vehicles by which they are transported, termed Vehicle Measurement, will require computing of the volume of the vehicle to the nearest 0.1 cubic yard for its approved capacity, and identification of the vehicle and its capacity. Pay quantities will be determined by vehicle measurement at the point of delivery with no allowance for settlement of material during transit. Loads shall be level and uniform. Measurement will not be made for material in excess of the approved capacity of the vehicle and deductions will be made for loads below the approved capacity.

Volumes of concrete and masonry in structures will be measured according to neat lines as shown on the plans or as altered on order of the Engineer.

When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighted and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

When payment for materials other than bituminous cements is on a weight basis and unless otherwise set forth in the specification under which the material is to be furnished, the pay quantities will be determined by weighing the material on weigh scales provided by the Contractor as set forth hereinafter.

Such weighing is to be of material in the hauling vehicle as loaded for delivery of the material to the place of its incorporation in the work. The determination of tare weights and the weight of loaded vehicles will be to the nearest ten pounds. Tare weights will be determined by weighing empty vehicles at intervals of such frequency as the Engineer deems necessary to insure accuracy of pay load weights.

Portland cement will be measured by the pound, hundredweight, ton, sack, bag or barrel. The term Barrel of cement will mean 376 pounds, avoirdupois. The terms Sack and Bag of cement will each mean 94 pounds, avoirdupois.

The quantities of asphalt cements, liquid asphalt materials and other bituminous

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cements normally shipped in tank cars or tank trucks, when they are to be paid for by the gallon (U.S. Standard) or by the ton, will be determined from volume computations of the materials when at a temperature of 60 degrees F., with standard recognized correction factors applied when the materials are measured at any temperature other than 60 degrees F. Net certified scale weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When bituminous materials are shipped by truck or transport, net certified weights or volume, subject to correction for loss of foaming, may be used for computing quantities.

Weights of materials and of metallic coatings will be determined on the basis as set forth in the specification under which their use is required.

The term Lump Sum when used as the basis of payment will mean complete payment for the work described to be done, complete and accepted without further measurement, as such work is covered under the applicable lump sum pay item.

The term All Required when used as the item of payment will mean that measurement for the item of work is to be on an All Required basis and that the corresponding payment is to be at a lump sum bid price. It is understood that the lump sum payment will be in effect without further measurement unless changes are ordered in writing by the Engineer.

When the contract specifies for materials which are to be measured by weighing on scales, the Contractor shall provide the scales at no expense to the owner and shall transport the materials so they can be weighed on the scales provided.

The scales shall be of a size, capacity, kind and type suitable for the weighing to be done and shall be properly and adequately installed. Before use of scales is commenced, and as frequently thereafter as the Engineer may deem necessary to insure accuracy, the Contractor shall, at the Contractor's expense, have the scales certified by the Oregon Department of Weights and Measures.

The Contractor shall be responsible for maintaining the scales in an accurate condition at all times.

The Contractor shall furnish scales and so locate the scales so that the amount of hauling involved in the delivering of the materials is no greater than if no weighing were required. If hauling of materials is to be paid for as a separate pay item, the pay distance shall include only the distance via the most direct practicable route from the place of loading to the place of deposit and no allowance will be made for any extra hauling required to reach the scales.

## 2. SCOPE OF PAYMENT

The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, labor, tools and equipment necessary to the completed work and for performing all work contemplated and embraced under the contract; also for loss or damage arising from the nature of the work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the owner, and for all risks of every description connected with the prosecution of the work; also for all expenses incurred in consequence of the suspension or discontinuance of the work as herein

## GENERAL CONDITIONS

specified; and for completing the work according to the plans and specifications.

Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

The unit contract prices for the various bid items of the contract shall be full compensation for all labor, materials, supplies, equipment, tools and all things of whatsoever nature required for the complete incorporation of the item into the work the same as though the item were to read "In Place", unless the plans and special provisions shall provide otherwise.

### 3. COMPENSATION FOR ALTERATION OF CONTRACT

When the character of the work or the unit costs thereof are materially changed, pursuant to subsection D-6, compensation for such work will be made on such basis as may have been agreed to in advance of the performance of the work. When no such basis has been previously agreed upon, then an allowance may be made, either for or against the Contractor, in such amount as the Engineer may determine to be fair and equitable.

### 4. ELIMINATED ITEMS

The Engineer shall have the right to eliminate, omit or cancel (herein collectively termed elimination) the portions of the contract relating to the construction of any item or part of any item therein by payment to the Contractor of a fair and equitable amount covering all items of actual cost incurred directly in connection with the eliminated work and prior to the date of elimination of the work by order of the Engineer. Where practicable, the work completed before elimination shall be paid for at unit prices, otherwise the Contractor will be allowed a profit percentage on the materials used and construction work actually performed at rates as provided in subsection J-6 for force account work, but no allowance will be made for anticipated profits. Acceptable materials ordered by the Contractor, delivered on the work or properly stored at sites approved by the Engineer prior to the date of elimination of the work by order of the Engineer, will be purchased from the Contractor by the owner at actual cost, and thereupon shall become the property of the owner.

### 5. PAYMENT FOR EXTRA WORK

Upon written order by the Engineer, the Contractor shall carry out such work at prices agreed upon between the Contractor and the owner, but in no event exceeding the unit prices established in the contract. When such order pertains to work of a class or classes for which no unit prices are so established, then the agreed adjustment shall be based either on unit prices decided on fair and equitable grounds or shall be a lump sum similarly decided, as the owner may determine, or such work may be done on a force account basis. In no case shall the Contractor make any claim for extra work unless ordered as such.

### 6. PAYMENT FOR FORCE ACCOUNT WORK

When extra work is ordered to be done on a force account basis, such work will be paid for on the basis of cost plus certain percentage allowances.

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The items of cost for which payment will be made and to which payment will be restricted, together with the percentage allowance applicable to the respective items, are as follows:

<u>Items of Cost for Which Payments Will be Made</u>	<u>Percentage Allowance Additional to Actual Cost</u>
Labor, including time of foreperson, while engaged directly upon force account work.	20
Industrial accident insurance, unemployment compensation contributions and social security for old age and assistance contributions incurred or required under statutory law and these standard specifications.	15
The amount paid to, or in behalf of, workers by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work.	15
Materials and supplies actually used in the force account work.	15
Rental on each piece of equipment having a value in excess of one hundred dollars, provided the rental rate does not exceed the current rates established by the Associated General Contractors, Oregon Chapter.	15

The payment to be made for labor used in the work will be computed at the rates actually paid by the Contractor or subcontractor, plus the allowance set forth above, unless these rates are in excess of the current local rates, in which event the payment shall be computed at the current local rate, plus allowances. The time allowed shall be the number of hours worked directly on force account operations.

Payment for purchased materials and supplies used on force account work will be computed at the prices billed to the Contractor or subcontractor by the supplier, less all discounts plus the allowance set forth hereinbefore. It shall be presumed that the Contractor or subcontractor has taken advantage of all possible discounts on bills for materials and supplies, and such discounts shall be subtracted from the total amounts of bills regardless of any failure of the Contractor to take

## GENERAL CONDITIONS

advantage of same.

Freight and express on material and supplies will be considered to be a part of the cost of the materials and supplies and will be paid for as materials and supplies.

Materials and supplies produced by the Contractor or a subcontractor will be paid for at prices to be agreed upon between the Contractor and the Engineer.

Rental on equipment used will be computed at the rates actually paid by the Contractor or subcontractor plus the allowance unless these rates are in excess of the current local rates, or unless the equipment is owned by the Contractor or subcontractor. In either of which events payments shall be computed at rates to be agreed upon between the Contractor and the Engineer prior to beginning work, which rates shall in no case be greater than the current local rates.

When a piece of equipment and the operators thereof are hired, rented, or furnished as a unit, the additional percentage to be allowed shall be 5 percent, and the Contractor shall not be entitled to 15 percent on the time of the operators of such equipment. Neither shall the Contractor be entitled to payment for contributions made under the terms of the Workmen's Compensation Act, the Unemployment Compensation Act, or the Social Security Act to cover the time of operators of equipment hired, rented or furnished on this basis.

For equipment rented on a day or hour basis, rental will be allowed for only those days or hours during which the equipment is in actual use. For equipment rented on a monthly basis, straight time rental will be allowed from the day the equipment is first used on the particular piece of force account work until and including the last day on which it is used on that particular work, excluding, however, the time during which the equipment is used on other work during the period, and further excluding the time that the equipment is idle for a continuous period of more than six days.

The rentals allowed for equipment will in all cases be understood to cover all fuel, supplies, repairs, and renewals, and no further allowances will be made for those items unless specific agreement to that effect is made in writing before the work is commenced. Individual pieces of equipment having a value of one hundred dollars or less will be considered to be tools or small equipment, and no rental shall be allowed on such.

The percentage allowances made to the Contractor in accordance with the terms outlined above will be understood to be reimbursement and compensation for all superintendence, use of tools and small equipment, overhead expense, bond cost, insurance premiums, profits, indirect costs and losses of all kinds, and all other items or cost not specifically designated herein as items for which payment is to be made, whether the service, costs and other items involved are furnished or incurred by the Contractor or by the subcontractor. No other reimbursement, compensation or payment shall be made for any such services, costs or other items.

Should any percentage allowance or other corresponding allowance be made by the Contractor to a subcontractor in connection with force account work, such allowance shall be at the sole expense of the Contractor and the Contractor shall not be reimbursed or otherwise compensated for the same by the owner.

All claims for extra work done in any month shall be filed in writing by the Contractor with the Engineer before the fifth of the following month, and such claims shall show

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the names and number of each worker employed thereon, the date and the number of hours so employed, the character of work, and the wages paid or to be paid; also the claim shall show the materials delivered for the extra work, the quantity and character of such materials, from whom purchased, and the net amount paid, or to be paid therefore.

### 7. PROGRESS PAYMENTS

At a regular period each month the Engineer will make an estimate of the amount of work completed and of the value of such completed work. The sum will hereinafter be collectively referred to in this subsection as the "value of completed work". With this estimate as a base, a partial payment will be made to the Contractor, which partial payment shall be equal to the value of completed work, less such amounts as may have been previously paid, less such other amounts as may be deductible or as may be owing and due to the owner for any cause, and less an amount to be retained in protection of the owner's interests.

The amount to be retained in protection of the owner's interest is not to include the full amounts earned under force account work performed during the period covered by the respective partial payments.

The amount to be retained from any given partial payment will be such that when added to the sum of amounts previously retained will bring the total of amounts retained equal to five percent of the value of completed work, unless otherwise specified.

Such amount of retainage shall be withheld and retained by owner until it is included in and paid to Contractor as part of the final payment of the contract amount.

If the Contractor fails to complete the project within the specified contract time, or any extension thereof, no additional progress payments will be made until the project is completed.

The making of progress payments shall, under no circumstances, be construed as an acceptance of any of the work or materials under the contract.

Payments for all work under the contract will be made at the price or prices bid therefore, and the prices shall include full compensation for all incidental work.

No progress payment will be made until Contractor has filed wage certification as described in subsection G-10.

Progress payments will be prepared on or about the 25th of each month and are payable to the Contractor within 30 days after receipt of invoice from the Contractor.

### 8. DEFERMENT OF PAYMENTS

No payment will be made until all orders made by the Engineer to the Contractor in accordance with the specifications are complied with, nor until all claims or liens filed or prosecuted against the owner, its officers or employees contrary to the provisions of the contract are satisfied.

In the event a complaint or charge of unlawful employment practices pursuant to the provisions of ORS Chapter 659 is filed against the Contractor with the Commission of Labor, and the Commissioner of Labor issues a cease and desist order as defined in ORS 659.010, no further payments will be made on the contract until such time as all of the provisions of the cease and desist order have been complied with by the Contractor.

9. FINAL ESTIMATE AND PAYMENT

The Contractor shall notify the Engineer when work is considered complete and the Engineer shall, within fifteen (15) days after receiving the notice, either accept the work or notify the Contractor of work yet to be performed on the contract. If accepted, the Engineer shall so notify the Contractor and will make a final estimate and recommend acceptance of the work as of a certain date. Upon approval and acceptance by the owner, the Contractor will be paid a total payment equal to the amount due under the contract including all retainage.

Prior to final payment, the Contractor shall deliver to the owner a receipt for all amounts paid or payable to the Contractor and a release and waiver of all claims against the owner arising from or connected with the contract and shall furnish satisfactory evidence that all amounts due for labor, materials, and all other obligations have been fully and finally settled or are fully covered by insurance.

10. ACCEPTANCE OF FINAL PAYMENT

The acceptance by the Contractor of the final payment shall release the owner and the Engineer as agent of the owner from all claims and all liability to the Contractor for all things done or furnished in connection with the work, and every act of the owner and others relating to or arising out of the work. No payment, however, final or otherwise, shall operate to release the Contractor or the Contractor's sureties from obligations under the contract and the performance, payment and other bonds and warranties, as herein provided.

11. FINAL GUARANTY

All work shall be and is guaranteed by the Contractor for a specified period from and after the date of final acceptance of all the work by the owner.

If, within said guaranty period, repairs or changes are required in connection with guaranteed work, which, in the opinion of the Engineer is rendered necessary as the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the contract, the Contractor shall promptly upon receipt of notice from the owner, and without expense to the owner:

(a) place in satisfactory condition in every particular all of such guaranteed work, correct all defects therein;

(b) make good all damage to the building or site, or equipment or contents thereof, which in the opinion of the Engineer, is the result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the contract; and

(c) make good any work or material, or the equipment and contents of building, structure or site disturbed in fulfilling any such guarantee.

If the Contractor, after notice, fails within ten days to proceed to comply with the terms of this guaranty, the owner may have the defects corrected, and the Contractor and the Contractor's surety shall be liable for all expense incurred, provided, however, that in case of an

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emergency where, in the opinion of the Engineer, delay would cause serious loss or damage, repairs may be made without notice being given to the Contractor and the Contractor shall pay the cost thereof.

### 12. ARBITRATION

Contractor and Customer will submit all complaints, disputes and/or controversies that may arise out of or in connection with this Contract, and which might be pleaded or urged in a counterclaim or set off to a suit or action to enforce payment, to binding arbitration under the laws of the State of Oregon, and in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association in effect at the time. Notwithstanding any rule to the contrary, either party will have the option to initiate arbitration according to the American Arbitration Association rules and subject to its administration, or to demand and compel arbitration according to the procedures set out at Oregon Revised Statutes, Chapter 36. The decision of the arbitrator(s) will be final and binding upon both parties.

## SECTION 015639 – TEMPORARY TREE AND PLANT PROTECTION

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes
  - 1. General protection of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
  - 2. Installation and maintenance of Silt Fence during construction.

## 1.3 DEFINITIONS

- A. Caliper: Diameter of a trunk measured by a diameter tape at 6 inches above the ground for trees up to, and including, 4-inch size; and 12 inches above the ground for trees larger than 4-inch size.
- B. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction. The boundary of the tree protection zone shall be the tree's canopy dripline or the area as indicated on Drawings, whichever is larger.
- C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of the following:
  - 1. Organic Mulch: One-half (1/2) pound of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
  - 2. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
- C. Qualification Data: For qualified tree service firm.
- D. Certification: Certify that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

- E. Maintenance Recommendations: For care and protection of trees affected by construction during and after completing the Work.
- F. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
  - 1. Use sufficiently detailed photographs or videotape.
  - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- G. Warranty: Sample of special warranty.

#### 1.5 QUALITY ASSURANCE

- A. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work like that required for this Project.
- B. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
    - a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
    - b. Enforcing requirements for protection zones.
    - c. Field quality control.

#### 1.6 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Foot traffic.
  - 4. Erection of sheds or structures.
  - 5. Impoundment of water.
  - 6. Excavation or other digging unless otherwise indicated.
  - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

#### 1.7 WARRANTY

- A. Special Warranty: Contractor agrees to repair or replace existing and new plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:
  - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by the County, or incidents that are beyond Contractor's control.
  - b. Structural failures including plantings falling or blowing over.
2. Warranty Periods from Date of Project Completion:
  - a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
  - b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
3. Include the following remedial actions as a minimum:
  - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
  - b. Replace plants ` are more than 25 percent dead or in an unhealthy condition at end of warranty period or are damaged during construction.
  - c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
  - d. Provide warranty for period equal to original warranty period, for replaced plant material.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

1. Topsoil:
  - a. Native Topsoil shall be on-site existing topsoil after all rocks over two inches and all foreign debris have been removed. Native topsoil shall be free of any substance harmful to plant growth and shall have organic material and soil characteristics capable of sustaining healthy plant life. Heavy clay soil shall not be considered for use as topsoil.
  - b. Import Topsoil: If the stockpile of existing topsoil is not adequate to meet the requirement to place minimum of 6 inches of topsoil in all planting areas import topsoil shall be used to meet the requirement. Imported topsoil shall be sandy loam, or a mixture of sandy loam and aged compost, screened and friable and with structure adequate to give good tilth and aeration. It shall be free of stones 1 inch or larger in any dimension; free of roots, plants, sod, clods, clay lumps, pockets of coarse sand and any extraneous materials harmful to plant growth; free of obnoxious weeds and invasive plants; or other pests, pest eggs, or undesirable organisms and disease-causing plant pathogens. Continuous, air-filled pore space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.
  - c. All imported topsoil shall have an agricultural suitability test, dated within thirty (30) days of delivery and indicating compliance with these specifications, by a qualified soils laboratory prior to delivery to the job site. Results shall be sent to the Landscape Architect.
2. Organic Mulch: Organic Mulch material shall be locally produced arbor chip mulch from tree and shrub trimming, 100% recycled material, with no color additive. Mulch shall not contain significant amounts of trimmings from pine or cedar unless well-aged. The mulch shall not contain trimmings from eucalyptus trees, or any noxious weeds, plants with thorns or spines, or invasive plants. The largest allowable pieces not larger than 3" in any direction. Bark mulch or shredded redwood bark mulch ("Gorilla hair") shall not be used.

- B. Tree Protection-Zone and Silt Fencing: Fencing fixed in position and meeting the following requirements. Previously used materials may be used when approved by Engineer.
  - 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.
    - a. Height: 6 feet.
    - b. Color: High-visibility orange, nonfading.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. For the record, prepare written report listing conditions detrimental to tree and plant protection.

#### 3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Tie a 1-inch blue-vinyl tape around each tree trunk at 54 inches above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated.
  - 1. Apply 6-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.

#### 3.3 TREE AND PLANT PROTECTION ZONES AND SILT FENCING

- A. Protection Zone and Silt Fencing: Install fencing along edges of tree protection zones and at the project boundaries as shown in the Drawings before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or close to street intersections, drives, or other vehicular circulation.

1. Fencing for tree protection zones may be combined when trees are close to each other with the approval of the Engineer.
- B. Maintain protection zones free of weeds and trash.
- C. Repair or replace trees, shrubs, and other vegetation indicated to remain that are damaged by construction operations, in a manner approved by Owner's Representative.
- D. Maintain protection-zone and silt fencing in good condition as acceptable to Owner's Representative and remove when construction operations are complete and equipment has been removed from the site.
  1. Do not remove protection-zone fencing and silt fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
  2. Temporary access is permitted subject to preapproval in writing by Owner's Representative if a root buffer effective against soil compaction is constructed. Maintain root buffer so long as access is permitted.

### 3.4 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Division 31 Section "Earth Moving."
- B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.
- C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

### 3.5 ROOT PRUNING

- A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:
  1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
  2. Cut Ends: Do not paint cut root ends.
  3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
  4. Cover exposed roots with burlap and water regularly.
- B. Root Pruning at Edge of Protection Zone: Prune roots 12 inches outside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.

- C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

### 3.6 REGRADING

- A. Minor Grade Lowering within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees unless otherwise indicated.
  - 1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- B. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

### 3.7 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain that are damaged by construction operations, in a manner approved by Owner's Representative.
  - 1. Submit details of proposed root cutting and tree and shrub repairs.
  - 2. Have qualified personnel perform the root cutting, branch pruning, and damage repair of trees and shrubs.
  - 3. Perform repairs within 24 hours.
  - 4. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Engineer.
- B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition before the end of the warranty period or are damaged during construction operations that Owner's Representative determines are incapable of restoring to normal growth pattern.
  - 1. Provide new trees of same size and species as those being replaced for each tree that measures 4 inches or smaller in caliper size.
  - 2. Provide two new tree(s) of 4-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.
  - 3. Replacement trees should be predominantly native species as defined in Paragraph 1.3.B of these Specifications and as approved by the Owner's Representative that are not highly susceptible to disease.
  - 4. Plant and maintain new trees per the industry standard of care and direction by the Owner's Representative.

### 3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off the City's property.

END OF SECTION 015639

## SECTION 129300 - SITE FURNISHINGS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Bicycle Racks
  - 2. Trash Receptacles
  - 3. Prefabricated Restroom (ordered by City)

## 1.2 SUBMITTALS

- A. All submittals shall be in accordance with the General and Special Conditions.
- B. Product Data: For each type of product indicated.
- C. Samples: For each exposed finish – color, texture and finish either from standards or custom as indicated for each product listed below.
- D. Material Certificates: For site furnishings, signed by manufacturers.
- E. Maintenance Data: Provide for each product
- F. Shop Drawings: Show fabrication and installation details for custom fabricated elements.
- G. Provide model and/or detail drawings for all fabricated elements.

## 1.3 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of slabs, walls, and other construction contiguous with site furnishings by field measurements before fabrication and indicate measurements on Shop Drawings.
  - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating elements without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
  - 2. Provide allowance for minor adjustment and fitting at site.

## 1.4 COORDINATION

- A. Coordinate installation of anchorages for site furnishings and utility lines where required. 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. Prefabricated Restroom: Coordinate with City regarding delivery and site access for craning in of building by manufacturer. Provide subbase and staking of building location in time for installation.

## 1.5 REFERENCES

- A. ASTM A 36 - Carbon Structural Steel.
- B. ASTM A 53 – Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASTM A 269 – Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- D. ASTM A 312 - Seamless and Welded Austenitic Stainless Steel Pipes
- E. ASTM A 500 Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- F. Aluminum Association (AA): Aluminum Finishes.
- G. American Society for Testing and Materials (ASTM):
  - 1. ASTM B 241 - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube.
  - 2. ASTM B 597 - Standard Practice for Heat Treatment of Aluminum Alloys.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Anova, Inc.  
211 North Lindbergh Blvd, Suite 200  
St. Louis, Missouri 63141-7809  
(800) 231-1327  
Website: [www.anovafurnishings.com](http://www.anovafurnishings.com)
- B. Tournesol Siteworks  
1540 Leader International Drive  
Port Orchard, WA 98367-6437  
1-800-323-1798  
Website: [www.fairweathersf.com](http://www.fairweathersf.com)
- C. CXT International  
3808 North Sullivan Road Bldg #7  
Spokane, WA 99216  
1-509-994-9900  
Website: [www.cxtinc.com](http://www.cxtinc.com)

## 2.2 FABRICATION GENERAL

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- E. Factory Assembly: Assemble components in the factory to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.
- F. Powder coated metal surfaces: Prepare, treat, and coat ferrous metal to comply with resin manufacturer's written instructions and as follows"
  - 1. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils (0.04 mm).

## 2.3 BIKE RACKS

- A. **Anova Circle, CircleBRS2IG, or approved equal**, stainless steel bike rack, or approved equal with 2 bike capacity and 20- year warranty. The bike rack is 32.25" tall, 35.88" wide and made from 2.38" O.D. Schedule 10, 316L stainless steel pipe support sections. Finish 316/316L stainless steel is highly resistant to salt corrosion, rusting, pitting, and cracking. It remains clean and rust-free without paint or alternative finish.
- B. Inground mount.

## 2.4 TRASH RECEPTACLES

- A. **Model TR-4, or approved equal**, 30-gallon stainless steel trash receptacle with Optional Hinged Dome Top. The TR-4 trash receptacle shall be fabricated with 1/4" x 2" mild steel vertical slats welded to 1/4" x 2" hoops. All steel shall conform to ASTM A36 hot rolled steel and shall be wheelabrated prior to fabrication. All removable and hinged tops come with a vinyl coated galvanized security cable. Spun dome is fastened to 3/16" mild steel top and attached with SS continuous hinge. Liner shall be 30-gallon black polyethylene. Dome top shall be 16 gauge spun steel powder coated to match the receptacle.
- B. Surface mount.

- C. All welds between flat straps shall be smooth, continuous fillet welds ground smooth where necessary, to remove any burs or sharp edges.
- D. After fabrication all steel shall be cleaned and treated with a five-stage iron phosphate process prior to the coating application. The protective coating shall be either polyester or polyester TGIC powder applied by the dry electrostatic method. The resultant coating shall be minimum of 4 mils thick on all surfaces. Corrosion resistant undercoat required.
- E. Desired options: Mineral Bronze powder coated color, Hinged Dome Top with 14" diameter opening, Base Leveling Feet, and Lock Assembly.

## 2.5 PREFABRICATED RESTROOM

- A. **Customized Ozark 1, or approved equal**, prefabricated single user accessible flush toilet restroom building with customized adult changing table and separate storage room.
- B. City to order and purchase prefabricated restroom; contractor to coordinate schedule and delivery with City. Contractor to provide and prepare subbase; stake building location; coordinate with manufacturer and City regarding site access, delivery, and craning of building into location; provide connections to water, electrical and sewer utilities; and install per manufacturer's specifications.
- C. Contractor to test and confirm utility connections and functionality.

## 2.6 INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Post Setting: Set cast-in support posts in concrete footing plumb or at correct angle and aligned and at correct height and spacing.

END OF SECTION 129300

## SECTION 260000 - ELECTRICAL GENERAL REQUIREMENTS

## PART 1 GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Electrical systems required for this work include labor, materials, equipment, and services necessary to complete installation of electrical work as shown on Drawings, specified herein or required for a complete operable facility and not specifically described in other Sections of the Specifications. Among the items required are:
  - a. Service and distribution equipment shown on Drawings.
  - b. Feeder to Restroom Structure.
  - c. Termination of feeder to Restroom structure at branch circuit panel provided and installed by others in the Restroom structure package.
  - d. Provision of grounding electrode system for electrical service at Restroom structure.
  - e. Installation of spare conduit for future park electrical loads, from Restroom structure branch circuit panel below grade to a point north of the Restroom structure, clear of the surrounding impervious surface.

## B. Related Divisions

1. Division 33, Utilities.

## 1.2 DEFINITIONS

## A. Following is a list of abbreviations generally used in Divisions 26, 27, 28, and 33:

- |     |      |   |
|-----|------|---|
| 1.  | AHJ  | Authority Having Jurisdiction.                    |
| 2.  | ADA  | Americans With Disabilities Act.                  |
| 3.  | ANSI | American National Standards Institute.            |
| 4.  | APWA | American Public Works Association.                |
| 5.  | ASTM | American Society for Testing and Materials.       |
| 6.  | FCC  | Federal Communications Commission.                |
| 7.  | HVAC | Heating-Ventilating and Air Conditioning.         |
| 8.  | IBC  | International Building Code.                      |
| 9.  | IEEE | Institute of Electrical and Electronic Engineers. |
| 10. | IEC  | International Electrotechnical Commission.        |
| 11. | NEMA | National Electrical Manufacturer's Association    |
| 12. | NEC  | National Electric Code.                           |
| 13. | OSHA | Occupational Safety and Health Administration.    |
| 14. | UL   | Underwriters' Laboratories, Inc.                  |

## B. Provide: To furnish and install, complete and ready for the intended use.

## C. Furnish: Supply and deliver to the project site, ready for unpacking, assembly and installation.

- D. Install: Includes unloading, unpacking, assembling, erecting, installation, applying, finishing, protecting, cleaning and similar operations at the project site as required to complete items of work furnished by others.

### 1.3 ADDITIONAL REQUIREMENTS TO DIVISION 01

- A. Operation and Maintenance Documentation: Provide copies of certificates of code authority acceptance, test data, product data, guarantees, warranties, and the like.
- B. Shop Drawings: When requested by individual Sections provide shop drawings, which include physical characteristics, electrical characteristics, wiring diagrams, and the like. Refer to individual Specification Sections for additional requirements for the shop drawings.
- C. Closeout Documentation: Submit electrical code authority certification of inspection.
- D. Record Drawings:
  - 1. Show changes and deviations from the Drawings. Include written Addendum and change order items.
  - 2. Show exact route of feeder and service lateral conduits.
  - 3. Show exact location of metered pedestal.
  - 4. Make changes to Drawings in a neat, clean, and legible manner.

### 1.4 QUALITY ASSURANCE

- A. Conform to requirements of the NEC, latest adopted version with amendments by local AHJs.
- B. Conform to latest adopted version of Forest Grove Light and Power, Electric Service Handbook.
- C. Obtain and pay for electrical permits, plan review, and inspections.
- D. Furnish products listed by UL or other testing firm acceptable to AHJ.
- E. Conform to requirements of the serving electric utility.

### 1.5 SEQUENCING AND SCHEDULING

- A. For the proper execution of the work cooperate with other crafts and contracts as needed.
- B. To avoid installation conflicts, thoroughly examine the complete set of Contract Documents. Resolve conflicts with Landscape Architect prior to installation.
- C. Prior to installation of feeders to equipment requiring electrical connections, examine the manufacturer's shop drawings, wiring diagrams, product data, and installation instructions. Verify that the electrical characteristics detailed in the Contract Documents are consistent with the electrical characteristics of the actual equipment being installed. When inconsistencies occur request clarification from Landscape Architect.

## PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Provide like items from one manufacturer; such as, conduit and conductors and the like.

## 2.2 MATERIALS

- A. Provide new electrical materials of the type and quality detailed, listed by UL, bearing their label wherever standards have been established. Indicated brand names and catalog numbers are used to establish standards of performance and quality. The description of materials listed herein governs in the event that catalog numbers do not correspond to materials described herein.
- B. Provide material and equipment that is acceptable to AHJ as suitable for the use indicated.
- C. Include special features, finishes, accessories, and other requirements as described in the Contract Documents regardless of the item's listed catalog number.
- D. Provide incidentals not specifically mentioned herein or noted on Drawings, but needed to complete the system or systems, in a safe and satisfactory working condition.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Construction Documents:
  - 1. Drawings are diagrammatic with symbols representing electrical equipment, and wiring.
  - 2. Electrical symbols indicating wiring and equipment shown in the Contract Documents are included in the Contract unless specifically noted otherwise.
  - 3. Examine the entire set of Drawings to avoid conflicts with other systems. Determine exact route and installation of electrical wiring and equipment with conditions of construction.
- B. Clarification:
  - 1. The Drawings govern in matters of quantity, the Specification in matters of quality. In event of conflict on Drawings or in the Specifications, the greater quantity and the higher quality apply.
  - 2. Should the Electrical Documents indicate a condition conflicting with the governing codes and regulations, refrain from installing that portion of the work until clarified by Architect.

### 3.2 INSTALLATION

- A. Install electrical equipment complete as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer prior to rough-in of the electrical equipment, examine the instructions thoroughly. When requirements of the installation instructions conflict with the Contract Documents, request clarification from Landscape Architect prior to proceeding with the installation.
- B. Earthwork:

1. Refer to Division 31, Earthwork.
2. Perform excavation and backfill for the installation of electrical work.

### 3.3 FIELD QUALITY CONTROL

#### A. Tests:

1. Conduct tests of equipment and systems to demonstrate compliance with requirements specified in Divisions 26, and 33. Refer to individual Specification Sections for required tests. Document tests and include in Closeout Documents.
2. During site evaluations, by Landscape Architect or Engineer, provide an electrician with tools to remove and replace trims, covers, devices, and the like, so that a proper evaluation of the installation can be performed.

### 3.4 CLEANING

- A. Remove dirt and debris caused by the execution of the electrical work.
- B. Leave the entire electrical system installed under this Contract in clean, dust-free and proper working order.
- C. Vacuum clean interiors of electrical equipment enclosures.

END OF SECTION 260000

## SECTION 260519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Wires and cables.
- B. Connectors.
- C. Lugs.

## 1.2 SYSTEM DESCRIPTION

- A. Provide wires, cables, connectors, lugs, and the like for a complete and operational electrical system.

## 1.3 SUBMITTALS

- A. Provide product data for the following equipment:
  - 1. Wires.
  - 2. Cables.
  - 3. Connectors.
  - 4. Lugs.
- B. Provide the insulation cable testing report in the project closeout documentation, see Project Closeout Requirements in Division 01.

## 1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of the NEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other testing firm acceptable to AHJ.

## PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Wires and Cables: Carol, General Cable, Okonite, Rome, Southwire, or approved.
- B. Connectors: Stranded conductors by Anderson, Burndy, IlSCO, Thomas & Betts, or approved.
- C. Splices

1. Feeder Splices: Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.

## 2.2 WIRES AND CABLES

- A. Copper, 600 volt rated throughout. Conductors 14AWG to 10AWG, solid or stranded. Conductors 8AWG and larger, stranded.
- B. Phase color to be consistent at all feeder terminations; A-B-C, top to bottom, left to right, front to back.
- C. Color Code Conductors as Follows:

PHASE	240 VOLT SINGLE PHASE
A	Black
C	Blue
Neutral	White
Ground	Green

- D. Conductors 3AWG and larger, minimum insulation rating of 75C.
- E. Insulation types THWN, THHN or XHHW.

## 2.3 CONNECTORS

- A. Lugs: Indent/compression type for use with stranded feeder conductors and grounding electrode conductor.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Wires and Cables
  1. Conductor Installation
    - a. Install conductors in raceways having adequate, code size cross-sectional area for conductors indicated.
    - b. Install conductors with care to avoid damage to insulation.
    - c. Do not apply greater tension on conductors than recommended by manufacturer during installation.
    - d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation
  2. Conductor Size and Quantity:
    - a. Install no conductors smaller than 12AWG unless otherwise shown.
    - b. Provide all required conductors for a fully operable system.
  3. Conductors in Cabinets

- a. Cable and tree all wires in panels and cabinets for power and control. Use plastic ties in panels and cabinets.
  - b. Tie and bundle feeder conductors in wireways of panelboards.
  - c. Hold conductors away from sharp metal edges.
4. Connectors: Retighten mechanical type lugs and connectors for conductors to equipment prior to Substantial Completion.

### 3.2 FIELD QUALITY CONTROL

#### A. Tests

1. Test conductor insulation on feeders of 100 amp and greater for conformity with 1000 volt megohmmeter. Use Insulated Cable Engineers Association testing procedures. Minimum insulation resistance acceptable is 1 megohm for systems 600 volts and below. In the condition that the insulation resistance is less than 1 megohm notify Landscape Architect.
2. Test Report: Prepare a typed report indicating the testing instrument, the feeder tested, amperage rating of the feeder, insulation type, voltage, the approximate length of the feeder, conduit type, and the measured resistance of the megohmmeter test. Submit report with operating and maintenance manual.

END OF SECTION 260519

## SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Grounding materials.
- B. Electric service grounding electrode.
- C. Feeder and branch circuit grounding.
- D. Raceway and enclosure grounding.
- E. Equipment grounding.
- F. Related Sections:
  - 1. Section 26 0519, Low-Voltage Electrical Power Conductors and Cables.
  - 2. Section 26 0533, Raceway and Boxes for Electrical Systems.

## 1.2 SYSTEM DESCRIPTION

- A. Provide grounding and bonding of electrical service, feeders and equipment.
- B. Performance Requirements: Supplement the grounded neutral of the secondary distribution system with an equipment grounding system to properly safeguard the equipment and personnel. Install equipment grounding such that all metallic structures, enclosures, raceways, cabinets and other conductive items in close proximity with electrical circuits operate continuously at ground potential and provide a low impedance path for possible ground fault currents.

## 1.3 SUBMITTALS

- A. Provide Shop drawings and product data for the grounding material.
- B. Provide the following test reports for information:
- C. Grounding system resistance test.

## 1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of the NEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other testing firm acceptable to AHJ.

## 1.5 SEQUENCING AND SCHEDULING

- A. Service Pedestal and Building Grounding Electrode: Coordinate placement of ground rods and grounding electrode conductor. Coordinate bonding of service pedestal enclosure and Restroom structure panel.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Ground Rods: Copperclad steel, 5/8-inch diameter, 10-feet long, tapered point, chamfered top. Manufacturers: Weaver, Thomas & Betts, Talley, or approved.
- B. Grounding Connectors: Hydraulic compression tool applied connectors or exothermic welding process connectors or powder actuated compression tool applied connectors. Mechanical connectors are not acceptable. Manufacturers: Burndy Hyground Compression System, Erico/Cadweld, Amp Ampact Grounding System or approved.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Ground Rod Electrode:
  - 1. Install as indicated in drawings.
  - 2. Arrange conductor to provide maximum exposure to earth. Do not fold conductor.
  - 3. Bond grounding electrode conductor to driven ground rods.
  - 4. Install ground electrode conductor extension in rigid PVC conduit for physical protection.
- B. Raceways
  - 1. Ground all metallic raceway systems. Bond to ground terminal with code size jumper except where code size or larger grounding conductor is included with circuit, use grounding bushing with lay-in lug.
  - 2. Connect all metal raceways, which terminate within an enclosure but without mechanical connection to the enclosure, by grounding bushings and ground wire to the grounding bus.
  - 3. Install equipment grounding conductor, code size minimum unless noted on Drawings, in all nonmetallic and metallic raceway systems.
- C. Feeder Conduits:
  - 1. Install continuous insulated equipment copper ground conductors within the feeder conduits, as indicated on Drawings.
- D. Boxes, Cabinets, Enclosures and Panelboards:
  - 1. Bond grounding conductors to enclosure with specified conductors and lugs. Install lugs only on thoroughly cleaned contact surfaces.

2. Bond all sections of service equipment enclosure to service ground bus.

END OF SECTION 260526

## SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Raceways.
  - 2. Conduit fittings.

## 1.2 SYSTEM DESCRIPTION

## A. RACEWAYS

- 1. Provide raceways, wires, cables, connectors and the like for a complete and operational electrical system.
- 2. Electrical Connections: Connect equipment, whether furnished by Owner or other Divisions of the Contract, electrically complete.
- 3. Supporting Devices: Safety factor of 4 required for every fastening device or support for electrical equipment installed. Support to withstand four times weight of equipment it supports. Bracing to comply with Seismic Zone 3 requirements.

## 1.3 SUBMITTALS

- A. Provide Shop Drawings and Product Data for the Following Equipment:
  - 1. Raceways.
  - 2. Conduit fittings.

## 1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of the NEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other testing firm acceptable to AHJ.

## 1.5 SEQUENCING AND SCHEDULING

- A. Raceway System is Defined as Consisting of: Conduit, tubing or duct and fittings including but not limited to connectors, couplings, offsets, elbows, bushings, and other components and accessories. Complete electrical raceway installation before starting the installation of conductors.
- B. Finished Surfaces: Prevent cutting in connection with finished work. Make repairs in a manner approved by Landscape Architect.

## PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Raceways: Allied Steel, Certainteed, Jones & Laughlin, Carlon, Kraloy, or approved.
- B. Conduit Fittings: O-Z Gedney, Thomas & Betts, Crouse & Hinds, or approved.

## 2.2 CONDUITS

- A. Galvanized Rigid Steel Conduit (GRC)
- B. GRC, hot-dip galvanized after thread cutting.
- C. GRC, manufacture in conformance with Federal Specification WWC-581 and ANSI C80.1.
- D. GRC, uniform finish coat with chromate for added protection.
- E. PVC, Class 40 heavy wall rigid. Factory formed bends and elbows, minimum 24-in radius.
- F. PVC rated for use with 90C conductors.
- G. PVC, manufacture in conformance with Federal Specification WC1094A and NEMA TC-2.

## 2.3 CONDUIT FITTINGS

- A. Bushings
  - 1. Insulated Type for Threaded Rigid or Raceway Connectors without Factory Installed Plastic Throat Conductor Protection: Thomas & Betts 1222 Series or O-Z Gedney B Series.
  - 2. Insulated Grounding Type for Threaded Rigid and Conduit Connectors: O-Z Gedney BLG Series.
- B. Steel coupling bodies, with zinc electroplate or hot-dip galvanizing.
- C. Connector locknuts are steel, with threading meeting ASTM tolerances. Locknuts are zinc electroplated or hot-dip galvanized.

## PART 3 EXECUTION

## 3.1 PREPARATION

- A. Coordinate location of anchor bolts for electrical equipment prior to pouring concrete.

## 3.2 INSTALLATION

- A. Conduit Joints: Assemble conduits continuous and secure to panels and equipment with fittings to maintain continuity. Provide watertight joints where embedded in concrete, below grade or in damp locations. Seal PVC conduit joints with solvent cement. All rigid conduit connections to

be threaded, clean and tight (metal to metal). Threadless connections are not permitted for GRC and IMC.

- B. Install continuous conduit for electrical service lateral and Restroom structure feeder.
- C. Below Grade Conduit: Place a minimum 6-inch cover of sand or clean earth fill around the conduit on a leveled trench bottom. Lay conduit on a smooth level trench bottom, so that contact is made for its entire length. Remove water from trench before electrical conduit is installed.
- D. Conduit Terminations: Provide conduits shown on Drawings which terminate without box, panel, cabinet or conduit fitting with not less than five full threads. Bushings and metal washer type sealer between bushing and conduit end.
- E. Conduit Size: Size as indicated on Drawings. Where size is not indicated, provide conduit in minimum code permitted size for THW conductors of quantity shown. Minimum trade size 1/2-inch.
- F. Conduit Use Locations
  - 1. Underground: PVC.
  - 2. Subject to Mechanical Damage: GRC.
  - 3. Dry, Protected: GRC, IMC, EMT.
  - 4. Sharp Bends and Elbows: PVC, GRC, use factory elbows, minimum 24-inch radius.
- G. Install pull wire or nylon cord in empty raceways provided for future use. Secure wire or cord at each end.
- H. Feeders: Do not combine or change feeder runs.

END OF SECTION 260533

## SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Equipment identification labels.
  - 2. Underground utility markers.

## 1.2 SYSTEM DESCRIPTION

- A. Coordinate names, abbreviations and other designations with equipment specified in this or other Divisions of the Specification or identified on Drawings.
- B. Fasten labels to equipment in a secure and permanent manner.
- C. Mark underground utilities in conformance with APWA.

## 1.3 REGULATORY REQUIREMENTS

- A. Conform to requirements of the NEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other testing firm acceptable to AHJ.

## PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Engraved Labels: Lamicoid, or approved.
- B. Underground Utilities Ribbon: Allen Systems, Inc., or approved.

## 2.2 ENGRAVED LABELS

- A. Melamine plastic laminate, white with black core, 1/16-inch thick.
- B. Letter and number font: Engravers standard letter style, minimum 3/16-inch high letters, all capitals.
- C. Drill or punch labels for mechanical fastening except where adhesive mounting is necessary because of substrate. Use self-tapping stainless steel screws.
- D. Dymo tape labels are not acceptable.

### 2.3 CIRCUIT BREAKER IDENTIFICATION

- A. Provide permanent identification label, at metered Pedestal, to identify feeder circuit breaker for Restroom Structure.

### 2.4 UNDERGROUND UTILITIES MARKERS

- A. Inert polyethylene plastic ribbon, 6-inch wide, 4 mil thick.
- B. Color code as recommended by APWA. Safety Red for electric power distribution.
- C. Imprint system text label over entire length of ribbon in permanent black letters. Select system description from manufacturer's standard legends, which most accurately identifies the installed sub-grade system.

## PART 3 EXECUTION

### 3.1 GRAPHICS

- A. Coordinate names, abbreviations and designations used on Drawings with equipment labels.

### 3.2 UNDERGROUND UTILITIES MARKERS

- A. Install continuous tape, 8-inches minimum below finish grade, for each exterior underground raceway.
- B. Where multiple small lines are buried in a common trench and do not exceed an overall width of 16-inches, install a single marker. Over 16-inch width of lines, install multiple tapes not over 10-inches apart (edge to edge) over the entire group of lines.

### 3.3 EQUIPMENT/SYSTEM IDENTIFICATION

- A. Install an engraved label on each major unit of electrical equipment, including but not limited to the following items:
  - 1. Service disconnect and distribution circuit breaker, identify connected load.

### 3.4 APPLICATION

- A. Install engraved labels on the inside of pedestal equipment enclosure, visible when door is opened.
- B. Install signs at locations detailed or, where not otherwise indicated, at location for best convenience of viewing without interference with operation and maintenance of equipment.
- C. Where signs are to be applied to surfaces, which require finish, install identification after completion of painting.

END OF SECTION 260553

## SECTION 31 10 00 - SITE CLEARING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Clearing and grubbing.
  - 2. Stripping and stockpiling topsoil.
- B. Related Sections:
  - 1. Division 01 Section Temporary Tree and Plant Protection

## 1.2 SUBMITTALS

- A. Product Data for each type of product indicated.

## 1.3 MATERIAL OWNERSHIP

- A. Except for the removed driveway material and the stripped topsoil to be used for the viewing mounds, and any other materials indicated to remain on Owner's property, all cleared materials shall become Contractor's property and shall be removed from Project site and disposed of properly.

## 1.4 PROJECT CONDITIONS

- A. Traffic: minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and City of Gresham.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or City of Gresham.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises as directed by the Owner's Representative.
- C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and tree and vegetation-protection measures are in place.
- E. The following practices are prohibited within tree protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Foot traffic.

4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

## 1.5 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter, sand, silt, and clay particles; 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 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 20 00 "Earth Moving."
  1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain.
- C. Protect existing site improvements to remain from damage during construction.
  1. Restore damaged improvements to their original condition, as acceptable to Owner.

### 3.2 UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
  1. Arrange with utility companies to shut off indicated utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  1. Notify Owner not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner's written permission.

C. Excavate for and remove underground utilities indicated to be removed.

### 3.3 CLEARING AND GRUBBING

A. Remove obstructions, shrubs, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

1. Do not remove trees, shrubs, and other vegetation indicated to remain.

2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.

3. Completely remove stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.

4. Use only hand methods for grubbing within protection zones.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

### 3.4 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

### 3.5 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, and curbs at existing full-depth joints unless indicated otherwise. Neatly saw-cut length of existing pavement to remain with vertical faces prior to removing existing pavement.

### 3.6 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove unusable surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 31 10 00

## SECTION 31 20 00 - EARTH MOVING

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Preparing subgrades
2. Excavating and backfilling for buildings and structures.
3. Drainage course for pervious concrete slabs-on-grade.
4. Base course for concrete walks, pavements, and slabs-on-grade.
5. Base course for gravel road.
6. Drain Rock for play area and valve box base.
7. Excavating and backfilling for utility trenches.
8. Drainage fill for infiltration facilities.

## 1.2 REFERENCES

- A. Clean Water Services Design and Construction Standards R&O 17-05, Current Edition for Storm and Sanitary infrastructure.
- B. Clean Water Services Erosion Prevention and Sediment Control Manual, December 2008, for all Construction Erosion Control activities.
- C. City of Forest Grove Construction Standards, Current Edition, for all activities not governed by Clean Water Services.
- D. Washington County Road Design and Construction Standards, Current Edition, for all activities not governed by Clean Water Services or City of Forest Grove design standards.
- E. Oregon Department of Transportation, Oregon Standards Specifications for Construction, 2018, as referenced.

## 1.3 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.
- B. Base Course: Course placed between the subgrade and concrete paving to the depth identified in the plans and/or specifications.
- C. Bedding Course: Course placed in the trench around (both above and below) the utility pipe to the depth identified in the plans and/or specifications
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Owner's Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner's Representative. Unauthorized excavation, as well as remedial work directed by Owner's Representative, shall be without additional compensation.

- F. Fill: Soil materials used to raise existing grades.
- G. Structures: Buildings, foundations, slabs, curbs, or other man-made stationary features constructed above or below the ground surface.
- H. Subgrade: Surface or elevation remaining after completing excavation, or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

#### 1.4 PROJECT CONDITIONS

- A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.
- B. Site Information: Research public utility records and verify existing utility locations prior to ordering any material. Notify the Owner's Representative immediately if any discrepancies are found in the project survey.

### PART 2 - PRODUCTS

#### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Base Course: Washington County Road Design and Construction Standards 1-inch minus.
- D. Bedding Course:
  1. For Stormwater Conveyance Systems: Use Oregon Standard Specifications for Construction  $\frac{3}{4}$ -0 inch base aggregate.
  2. For Water Service Distribution: Use Oregon Standard Specifications for Commercially Available No 10-0 Sand.
- E. Backfill and Fill:
  1. Satisfactory soil materials

2. Stormwater Initial trench backfill: Use Oregon Standard Specifications for Construction  $\frac{3}{4}$ -0 inch base aggregate.
3. Water Initial trench backfill: Use Oregon Standard Specifications for Construction Class C Sand.

## 2.2 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored to comply with local practice or requirements of authorities having jurisdiction or as follows:
  1. Red: electric.
  2. Yellow: Gas, oil, steam, and dangerous materials.
  3. Orange: telephone and other communications.
  4. Blue: Water systems.
  5. Green: Sewer systems.
- B. Tracer Wire: 12 AWG minimum solid copper insulated High Molecular Weight Polyethylene (HMW PE) tracer wire or approved equal. The tracer wire insulation shall be green for sewer pipe and blue for waterlines and be a minimum of 45 mil. thick. Joints or splices shall be waterproof. The wire shall be rated for 30 Volt.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations. Provide protective insulating materials as necessary.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Erosion and Sediment Control" during earth moving operations.
- D. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- E. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- F. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

### 3.2 EXPLOSIVES

1. Explosives: Do not use explosives.

### 3.3 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions without prior approval by the Owner's Representative.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

### 3.4 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

### 3.5 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### 3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
  1. Clearance: 6 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade and bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
  1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material, 4 inches deeper elsewhere, to allow for bedding course. Hand excavate for bell of pipes.
  2. Excavate utility structures to provide 6 inches clearance (enlarge as needed) to allow for compaction of backfill material.

### 3.7 SUBGRADE INSPECTION

- A. Proof-roll subgrade with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Soft pockets and areas of excess yielding that have been identified shall be scarified and moistened or aerated, or removed and replaced with suitable soil materials to the depth required. Re-compact and retest until specified compaction is obtained.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner's Representative, without additional compensation.

### 3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
- B. Store stockpiles of organic soil mix in a manner that prevents them from becoming wet from rain, stormwater runoff, or other sources of water, or contaminated by fine soil or other undesirable materials. All stockpiles of mixed soil material shall be protected and covered.

### 3.9 BACKFILLS AND FILLS

- A. Backfill: Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
  - 2. Surveying locations of underground utilities for record documents.
  - 3. Inspecting and testing underground utilities.
  - 4. Removing concrete formwork.
  - 5. Removing trash and debris.
  - 6. Removing temporary shoring and bracing, and sheeting.
  - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

### 3.10 UTILITY TRENCH BEDDING

- A. Place bedding on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

### 3.11 UTILITY TRENCH BACKFILL

- A. Place and compact initial trench backfill material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- B. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- C. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
- D. Install tracer wire in a continuous fashion above the utility in such a manner as to be able to properly trace utility lines without loss or deterioration of signal or without the transmitted signal migrating off the tracer wire. Bring tracer wire to the surface at every box, vault, drainage structure, or manhole.

### 3.12 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  1. Under grass and planted areas, use satisfactory soil material.
  2. Under walks and pavements, use satisfactory soil material.
  3. Under steps and ramps, use engineered fill.
  4. Under building slabs, use engineered fill.
  5. Under footings and foundations, use engineered fill.
  6. Under and around utility structures, use engineered fill.

### 3.13 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

### 3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight.
  1. Under building structures, scarify and recompact per CXT Manufacturer recommendations.

2. Under vehicularly loaded pavements, scarify and recompact top 12 inches of existing subgrade and to 95 percent and Base Course to 100 percent.
3. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
4. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
5. For utility trenches, compact each layer of initial and final backfill soil material at 95 percent.

### 3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Rough Grading: Except in ADA conditions as noted on plans, slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  1. Turf or Unpaved Areas: Plus or minus 1 inch.
  2. Walks: Plus or minus 1/2 inch.
  3. Pavements: Plus or minus 1/2 inch.

### 3.16 BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place base course under pavements and walks as follows:
  1. Shape base course to required crown elevations and cross-slope grades.
  2. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
  3. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to COG Standard Specifications.

### 3.17 FIELD QUALITY CONTROL

- A. Testing Agency: The Contractor shall engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. Agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
  1. Paved and building slab areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
  3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.
- D. With the approval of the Engineer, proof-roll testing of subgrade and/or aggregate base may be substituted for other compaction testing.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

### 3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- D. Weather permitting and as approved, stormwater infiltration facility plants shall be installed as soon as possible after placing and grading the growing media in order to minimize erosion and further compaction.

### 3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 31 20 00

## SECTION 31 25 00 - TEMPORARY EROSION AND SEDIMENT CONTROL

## PART 1 GENERAL

## 1.1 SUMMARY:

- A. This section includes the following:
1. Prevention of erosion due to construction activities.
  2. Prevention of sedimentation of storm and sanitary sewers due to construction activities.

## 1.2 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of Clean Water Services(CWS) in accordance with the Erosion Prevention and Sediment Control Planning and Design Manual (CWS ECS Manual).
- B. Develop an Erosion Prevention and Sedimentation Control Plan (ECSP). The ECSP should include consideration of the following:
1. Timing – schedule work to minimize overall impacts
  2. Stage work – identify & process critical areas first
  3. Minimize disturbance – create buffers & reduce mass grading
  4. Pre-construction – during preliminary design & prior to on site grading activities
  5. Pictures/Video – documentation throughout the life of the project
- See Chapter 3: Erosion Control Planning of the CWS ESC Manual for additional information.
- C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
- D. Revisions to ECSP: Keep copies of all ECSP revisions on site. For any revisions to the ECSP, the Contractor shall:
- Submit ECSP revisions by email to the City when revisions to the ECSP are minimal and identify in the email the particular changes. Submit only portions of the ECSP that have changed.
  - Submit the revisions by redlining the copy of the original ECSP or drawings. Submit only drawings that have changes.
  - When the ECSP requires extensive revisions, submit the entire revised ECSP to the City.
- E. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.

1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.

G. Inspections:

1. Inspections must be conducted by a person who:
  - a. Is knowledgeable in the principle and practice of erosion and sediment controls, and
  - b. Possesses the skills to assess conditions at the construction site that could impact stormwater quality, and
  - c. Is knowledgeable in the correct installation of the erosion and sediment controls, and
  - d. Is able to assess the effectiveness of sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity.
  
2. Visual monitoring requirement: all areas of the site disturbed by construction activity must be inspected to ensure that BMPs are in working order. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking as well as areas used for storage of materials that are exposed to precipitation for evidence of spillage or other potential to contaminate stormwater runoff. In addition, inspect all discharge points identified in the ECSP for evidence of or the potential for the discharge of pollutants, and to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to surface waters. Where discharge points are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable.

3. All ECSP controls and practices must be inspected according to the following schedule:

Site Condition	Minimum Frequency
1. Active Period	Daily when stormwater runoff, including runoff from snowmelt, is occurring. At least once every two weeks, regardless of whether stormwater runoff is occurring.
2. Prior to the site becoming inactive or in anticipation of site inaccessibility	Once to ensure that erosion and sediment control measures are in working order. Any necessary maintenance and repair must be made prior to leaving the site.
3. Inactive periods greater than 14 consecutive calendar days	Once every 2 weeks.
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location

4. Recordkeeping Requirements: Document all visual inspections in an onsite logbook. If there are no findings, simply record the inspection date, and inspector's name. In addition, record any findings, including:

- a. At the designated discharge location(s):
    - 1) Where to make observations:
      - a) At the discharge location if the discharge is to a conveyance system leading to surface waters;
      - b) From the discharge point to 50 feet downstream if the discharge is to surface waters; and
      - c) At any location where more than 1/2 of the width of the receiving surface water is affected.
    - 2) How to make observations:
      - a) For turbidity and color, describe any apparent color and the clarity of the discharge, and any apparent difference in comparison with surface waters.
      - b) Describe any sheen or floating material, or record that it is absent. If present, it could indicate concern about a possible spill or leakage from vehicles or materials storage.
  - b. If a site is inaccessible due to inclement weather, record the inspections noted at a relevant discharge point or downstream location, if practical.
  - c. Locations of BMPs that need to be maintained, inspections of all BMPs, including erosion and sediment controls, chemical and waste controls, locations where vehicles enter and exit the site, status of areas that employ temporary or final stabilization control, soil stockpile area, and non-stormwater pollution (e.g. paints, oils, fuels, adhesives) controls.
  - d. Locations of BMPs that failed to operate as designed or proved inadequate for a particular location;
  - e. Locations where additional BMPs are needed that did not exist at the time of inspection; and
  - f. Corrective action required and implementation dates.
  - g. All inspection records and monitoring results must be kept on site and maintained by the permit registrant. The records shall list the construction site name as it appears on the registrant's permit and the file or site number. These records must be made available to DEQ, Agent, or local municipality upon request. These records must be delivered or made available to DEQ within 3 working days of request. These inspection records and monitoring results must be maintained for at least 3 years after project completion. In addition, a copy of the ECSP and revisions must be retained on site and made available on request to the DEQ, Agent, or the local municipality. During inactive periods of greater than 7 consecutive calendar days, the ECSP must be retained by the permit registrant but does not need to be at the construction site.
  - h. If the BMPs approved in an EPSC plan are not effective or sufficient as determined by the inspector, the permittee shall submit a revised plan within three working days of written notification by the City. Upon approval of the revised plan, the permittee shall immediately implement the BMPs included in the revised plan.
- H. Erosion On-Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

1. Control movement of sediment and soil from temporary stockpiles of soil.
  2. Prevent development of ruts due to equipment and vehicular traffic.
  3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- I. Erosion Off-Site: Prevent erosion of soil and deposition of sediment on other properties due to construction activities for this project.
1. Prevent windblown soil from leaving the project site.
  2. Prevent tracking of mud onto public roads outside site.
  3. Prevent mud and sediment from flowing onto sidewalks and pavements.
  4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- J. Sedimentation Off-Site: Prevent sedimentation of storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- K. Open Water: Prevent standing water that could become stagnant.
- L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

### 1.3 SUBMITTALS

- A. Product Data: For materials indicated in ECSP and additional materials included in ECSP revisions.
- B. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; with the following properties:
1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D 4751.
  2. Permittivity:  $0.05 \text{ sec}^{-1}$ , minimum, when tested in accordance with ASTM D 4491.
  3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D 4355 after 500 hours exposure.
  4. Tensile Strength: 100 lb-f, minimum, in cross-machine direction; 124 lb-f, minimum, in machine direction; when tested in accordance with ASTM D 4632.
  5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D 4632.
  6. Tear Strength: 55 lb-f, minimum, when tested in accordance with ASTM D 4533.
  7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- B. Silt Fence Posts: One of the following, minimum 4 feet long:

1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot.
  2. Softwood, 4 by 4 inches in cross-section.
  3. Hardwood, 2 by 2 inches in cross-section.
- C. Inlet protection: as shown on plans.
- D. Straw wattles: as shown on plans
- E. Construction Entrance: Per the Clean Water Services Erosion and Prevention Manual and as shown on plans.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

#### 3.2 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

#### 3.3 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface of clean pit run rock.
1. Width: As required; twenty (20) feet, minimum.
  2. Length: fifty (50) feet, minimum.
  3. Provide at each construction entrance from public right-of-way.
  4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Silt Fences.
1. Provide Silt fences:
    - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
  2. Space sediment barriers with the following maximum slope length upslope from barrier:
    - a. Slope of Less Than 2 Percent: 100 feet.
    - b. Slope Between 2 and 5 Percent: 75 feet.
    - c. Slope Between 5 and 10 Percent: 50 feet.
    - d. Slope Between 10 and 20 Percent: 25 feet.
    - e. Slope Over 20 Percent: 15 feet.
- D. Inlet Protection Filter Sack: Protect each inlet using the following measures:

1. Woven fabric bag insert set beneath inlet grate.
  2. Bio-filtration bags blocking entire inlet face area.
- E. Soil Stockpiles: Protect using one of the following measures:
1. Cover with polyethylene film, secured by placing soil or sand bags on outer edges.
  2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves; or, 6 inches of straw or hay;
    - a. as approved by Owner's Representative.
- F. Temporary Seeding: Use where temporary vegetated cover is required.
- G. Straw Wattles: Use to prevent sediment laden water and erosive flows on unstabilized slopes.

### 3.4 INSTALLATION

- A. Construction Entrance and Tire Wash:
1. Excavate minimum of 6 inches.
  2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
  3. Place and compact at least 6 inches of 1.5 to 3.5 inch diameter stone.
  4. Provide tire wash basin/sump per CWS.
- B. Silt Fences:
1. Store and handle fabric in accordance with ASTM D 4873.
  2. Use nominal 36 inch high barriers with minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
  3. Install with top of fabric at nominal height and embedment as specified.
  4. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
  5. Fasten fabric to wood posts using one of the following:
    - a. Integral pockets.
    - b. Four 3/4 inch diameter, 1 inch long, 14 gage nails.
    - c. Five 17-gage staples with 3/4 inch wide crown and 1/2 inch legs.
  6. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
  7. Wherever runoff will flow around end of barrier, provide temporary splash pad or other outlet protection.
- C. Inlet Protection Filter Sack:
1. Install per manufacturer's recommendations.
- D. Straw Wattles:
1. Install per manufacturer's recommendations and per the approved ECSP.

## 3.5 MAINTENANCE

- A. Inspect preventive measures routinely (daily), within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
  - 1. Promptly replace fabric that deteriorates unless need for fence has passed.
  - 2. Remove silt deposits that exceed one-third of the height of the fence.
  - 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Inlet Protection Filter Sacks
  - 1. Promptly replace sacks that are damaged or deteriorated unless the need has passed.
  - 2. Remove silt deposits that exceed the containment area of the sack.
- E. Clean out temporary sediment control structures weekly and relocate soil on site.
- F. Place sediment in appropriate locations on site; do not remove from site.
- G. Concrete Wash-out Container: Properly call container provider to pick up pan when full and replace with empty pan or properly dispose of concrete waste material. Concrete waste to be recycled by container provider.

## 3.6 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Owners Representative.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION 31 25 00

## SECTION 321313 – CONCRETE PAVING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Walkways
  - 2. Concrete Pads
- B. Related Sections include the following:
  - 1. Division 01 Section "Submittal Procedures."

## 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
  - 1. Samples: For each exposed product and for each color and texture specified.
    - a. A 6" by 6" sample shall be provided for approval by the Owner's Representative prior to mock-up of concrete work.
    - b. The Contractor shall notify the Owner's Representative 72 hours in advance of concrete sample installation. Field adjustments shall be made as directed by the Owner's Representative.
    - c. All approved samples shall be kept at the jobsite for comparison with finished work.
    - d. Contractor shall meet or exceed the quality of the approved finish in all subsequent work.
    - e. Contractor shall remove the samples at completion of the work.
    - f. Do not deliver product to job site until submittal has been approved.
- B. Other Action Submittals:
  - 1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
  - 1. Installer must demonstrate their previous experience in completing paving similar in type, scope and scale to the elements described in the drawings and herein.

2. Installer must demonstrate that they have successfully completed at least five (5) other installations for public use.
- B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- C. ACI Publications: Comply with ACI 301 (ACI 301M) unless otherwise indicated.
- D. Mockups: Build mockups of concrete paving not less than 2 feet by 2 feet for each color and pattern to demonstrate typical joints; surface color, pattern, and texture; curing; and standard of workmanship.

## PART 2 - PRODUCTS

### 2.1 STEEL REINFORCEMENT

- A. Recycled Content: Provide steel reinforcement with an average recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- D. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- E. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.
- F. Deformed-Steel Wire: ASTM A 496/A 496M.
- G. Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars; zinc coated galvanized after fabrication according to ASTM A 767/A 767M, Class I coating. Cut bars true to length with ends square and free of burrs.
- H. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified.

### 2.2 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
  1. Portland Cement: ASTM C 150, gray Portland cement Type II. Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class C or Class F.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

2. Blended Hydraulic Cement: ASTM C 595, Type IS, Portland blast-furnace slagtype IP, Portland-pozzolan cement.
- B. Normal-Weight Aggregates: ASTM C 33, uniformly graded. Provide aggregates from a single source.
- C. Water: Potable and complying with ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

### 2.3 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, manufactured for colored concrete.
  1. For integrally colored concrete, curing compound shall be pigmented type approved by coloring admixture manufacturer.
  2. For concrete indicated to be sealed, curing compound shall be compatible with sealer.
  3. Provide W-1000 Clear Cure & Seal manufactured by Davis Colors, or approved equal.

### 2.4 RELATED MATERIALS

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.
- B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

### 2.5 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301 (ACI 301M), with the following properties:
  1. Compressive Strength (28 Days): 3500 psi (24.1 MPa)
  2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45

3. Slump Limit: 4 inches (100 mm) plus or minus 1 inch (25 mm).
4. Air Content: 5 percent plus or minus 1.5 percent.

- B. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
- C. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions.

## 2.6 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.

## PART 3 - EXECUTION

### 3.1 EXAMINATION AND PREPARATION

- A. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
- B. Remove loose material from compacted subbase surface immediately before placing concrete.

### 3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

### 3.4 JOINTS

- A. General: Form through joints and transverse contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
- B. Through Joints: Standard locations for through joints for sidewalks are to separate concrete driveways, curb ramps and their landings from sidewalks; around the vertical barrel of fire hydrants, around utility poles and large diameter underground utility cover castings when located in the sidewalk area; longitudinally between concrete walks, curbs and solid masonry or concrete walls where they abut; to match as nearly as possible the through joints in the adjacent

pavement and curb when sidewalk abuts curb; and perpendicular to the building faces at all building corners. Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints. Must be 3/8-inch thick premolded joint filler. Joint filler width must be cut to a width equal to the full depth of the concrete sidewalk plus 1/2-inch. When installed, the premolded joint filler must be placed with top edge 1/8-inch below the finished surface of the concrete in a plane perpendicular to the surface and with the bottom edge embedded in the subgrade. All joint must be in straight alignment, except where placed in curved locations as required by the drawings.

- C. Transverse Contraction Joints: Must be constructed with 3/8-inch premolded joint filler 2-inches in depth and set at intervals of 15 feet or less. Where obstacles or shortened sidewalk lengths or non-regular shaped sidewalks are encountered, at no time must joint spacing exceed 15 feet.
- D. Construction Joints: For sidewalks, conform to the applicable requirements for through joints. Construction joints formed by placing a header board transversely across the subgrade must be made at the end of each day's paving or when placing of concrete is discontinued for more than 45 minutes. The header board must be located to conform to the spacing for the joints and must be left in place until the placing is resumed. The header must have a strip of premolded joint filler imbedded against the hardened concrete when paving is resumed.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

### 3.5 CONCRETE PLACEMENT

- A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.
- B. Comply with ACI 301 requirements for measuring, mixing, transporting, placing, and consolidating concrete.
- C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- D. Screed paving surface with a straightedge and strike off.
- E. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

### 3.6 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

## 3.7 CONCRETE FINISHES

## A. Fine-Textured Broom Finish:

1. First provide a floated finish.
2. When the concrete has set sufficiently to begin the process, the surface shall be worked with a steel trowel to produce a dense, smooth, even finish, that is relatively free of defects but that may still show some trowel marks.
3. Draw a soft-bristle broom across trowel-finished concrete surface across width of concrete transverse to direction of pedestrian travel, to provide a uniform, fine-line texture. At time of brooming, the troweled surface shall have hardened sufficiently to retain the scoring or ridges.
4. Finish surface shall be clean with uniform and reasonably straight lines.

## 3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing moisture-retaining-cover curing curing compound or a combination of these.

## 3.9 PAVING TOLERANCES

## A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch (19 mm).
2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
3. Surface: Gap below 10-foot- (3-m-) long, unlevelled straightedge not to exceed 1/2 inch (13 mm).
4. Joint Spacing: 3 inches (75 mm).
5. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
6. Joint Width: Plus 1/8 inch (3 mm), no minus.

## 3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

- B. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

## SECTION 33 10 00 – WATER

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Materials and installation of utility pipes for the domestic water service.

## 1.2 REFERENCES

- A. City of Forest Grove Standard Plans and Design Guidelines, Current Edition.
- B. Washington County Road Design and Construction Standards, Current Edition.
- C. Oregon Department of Transportation, Oregon Standards Specifications for Construction, 2018, as referenced.

## 1.3 DEFINITIONS

- A. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

## PART 2 - PRODUCTS

## 2.1 PIPE AND FITTINGS

- A. Pipe smaller than four inches in diameter shall be copper tubing Type K, ASTM B88, annealed. The tubing shall be coupled using flare-type compression fittings, conforming to the requirements of AWWA C800, minimum 150-psi working pressure.
- B. Pipe shall be marked with the National Sanitation Foundation (NSF) seal and in accordance with ASTM and AWWA marking requirements, which include, but are not limited to, the manufacturer's name and class of pipe. Pipe shall bear no evidence of interior or exterior extrusion marks. Pipe walls shall be uniform, smooth, and glossy

## 2.2 SOIL MATERIALS

- A. See Earthmoving Section 31 20 00.

## 2.3 DETECTABLE WARNING TAPE

- A. See Earthmoving Section 31 20 00.

## PART 3 - EXECUTION

## 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation and trenching operations
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

## 3.2 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations. See Earthmoving.

## 3.3 UTILITY TRENCH BEDDING

- A. Place bedding on subgrades free of mud, frost, snow, or ice.
- B. Verify trenches are ready to receive work, and are excavated to the dimensions and elevations indicated on the Contract Documents.
- C. Beginning installation means acceptance of existing conditions.

## 3.4 WATER SERVICE INSTALLATION

- A. Provide a minimum of 20-inches of cover.
- B. Install conductive warning tape for the entire length of the water service. See Earthmoving.
- C. Connect to building water system, refer to mechanical and plumbing specifications.

## 3.5 UTILITY TRENCH BACKFILL

- A. See Earthmoving Section 31 20 00.

3.6 TESTING AND ACCEPTANCE

- A. Coordinate testing with the City of Forest Grove.
- B. Testing shall occur in the following order;
  - 1. Perform initial flush of service line.
  - 2. Pressure test.
  - 3. Perform disinfection
  - 4. Flush after disinfection
  - 5. Bacteria test.

3.7 CLEANING

- A. Leave premises clean and free of residue of the work of this Section.

END OF SECTION 33 10 00

## SECTION 33 30 00 – SANITARY SEWER

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Materials and installation of utility pipes for the conveyance of sanitary flows.

## 1.2 REFERENCES

- A. Clean Water Services Design and Construction Standards R&O 17-05, Current Edition for Storm and Sanitary infrastructure.
- B. Washington County Road Design and Construction Standards, Current Edition for all activities not governed by Clean Water Services or City of Forest Grove design standards.
- C. Oregon Department of Transportation, Oregon Standards Specifications for Construction, 2018, as referenced.

## 1.3 DEFINITIONS

- A. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

## PART 2 - PRODUCTS

## 2.1 PIPE AND FITTINGS

- A. Sanitary sewer pipe shall have flexible gasketed joints. Joints on all fittings shall be the same as the joints used on the pipe. Caps or plugs shall be furnished with each fitting, outlet or stub as required with the same type gasket and/or joint in pipe.
- B. Sanitary Sewer Pipe shall be Polyvinyl Chloride Pipe-PVC Type:
  1. ASTM 3034 SDR 35 or SDR 26
- C. Gaskets shall conform to the requirements of ASTM 477 and ASTM 3212.
- D. Fittings:
  1. Tee fittings shall be provided in the sewer main for side sewers. All fittings shall be of sufficient strength to withstand all handling and load stresses encountered. All fittings shall be of the same materials as the pipe. Fittings shall be free from cracks and shall adhere tightly to each joining surface. All fittings shall be capped or plugged and gasketed with the same gasket material as the pipe joint, fitted with an approved mechanical stopper, or have an integrally cast knockout plug. The plug shall be able to withstand all test pressures without leaking.

2. PVC pipe fittings shall conform to the applicable portions of the specifications ASTM 3034, and shall be the same as the pipe joints.
3. Line Tap Fittings shall be:
  - a. Indexed PVC Tee Saddle – Manufactured in accordance with ASTM D-3034 with minimum cell classification of 12454B-C or 12356-C as defined in ASTM D-1784. Elastomeric seals meeting ASTM F-477 specifications, and are located at both the lead and skirt ends of the saddle. Stainless steel bands meeting series 300 and are a full 9/16-inch wide. This saddle is allowed on PVC pipe. See CWS Standard Detail 540.
  - b. Inserta Tee shall meet the same standard as the Indexed PVC Tee Saddle. This saddle is allowed only on thick wall pipe material e.g., concrete, ductile iron, ribbed type plastic. See Standard Detail 530.
  
- E. Grout shall be Sika 212, Euco N-S, Five Star or approved equal nonmetallic cementitious commercial grout exhibiting zero shrinkage per ASTM C-827 and CRD-C-621. Grout shall not be amended with cement or sand and shall not be reconditioned with water after initial mixing.

## 2.2 SOIL MATERIALS

- A. See Earthmoving Section 31 20 00.

## 2.3 DETECTABLE WARNING TAPE

- A. See Earthmoving Section 31 20 00.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation and trenching operations
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

### 3.2 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations. See Earthmoving.

### 3.3 UTILITY TRENCH BEDDING

- A. Place bedding on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

### 3.4 PIPE PLACEMENT

- A. Pipe laying shall proceed upgrade with spigot ends pointing in the direction of flow. After each section of pipe has been lowered into the prepared trench, the Contractor shall clean the end of the pipe to be joined, the inside of the joint, and the rubber ring (if required) immediately before joining the pipe and make assembly of the joint in accordance with the recommendations of the manufacturer of the pipe and joint. The Contractor shall provide all special tools and appliances required for the joint assembly. After the joint has been made, the pipe shall be checked for alignment and grade.
- B. When cutting or machining pipe is necessary, the Contractor shall use only tools and methods recommended by the pipe manufacturer and approved by the City.
- C. When joining different types of pipes, the Contractor shall use approved rigid fittings.
- D. The Contractor shall install pipe zone material uniformly on both sides of the pipe up to the spring-line of the pipe. Material shall be compacted to ensure proper support within the haunching area.

### 3.5 LINE TAPS

- A. Line taps shall be core drilled unless approved otherwise by the City. Core drilled holds shall be done using a cylinder style hole saw for plastic pipe material or a diamond core bit for concrete and ductile iron pipes.
- B. Prior to installation of the tee, the area around the cored hole shall be clean and free of rough edges.
- C. While installing the tee, no rock, dirt or debris shall be allowed to enter the sewer mainline.
- D. The Contractor shall install  $\frac{3}{4}$ -inch minus gravel in the pipe zone around the line tape, from 4-inches below the pipe or to the undisturbed ground and to 6-inches above the pipe.
- E. Magnetic tape shall be installed within 18-inches of the top of the side sewer for the full length of the service.
- F. The sewer main shall be a minimum of two sizes (nominal inside diameter) larger than the line tap.
- G. A minimum wall thickness of 0.35 inches shall be required when installing an Inserta-tee.

## 3.6 UTILITY TRENCH BACKFILL

- A. See Earthmoving Section 31 20 00.

## 3.7 TESTING AND ACCEPTANCE

## A. General

## 1. Sequence of Testing

- a. Testing shall occur in the following order. At the City's discretion, failure of any of the tests may require that all testing be completed again.
- 1) Compaction
  - 2) Placement of base rock or bedding
  - 3) Mandrel
  - 4) Air test
  - 5) Video

2. Test Type: All gravity sanitary pipelines shall pass the required air tests, pass the required compaction test in accordance with CWS Design Standards Chapter 7, Section 7.02.3(b)(6), be video inspected, and be free of visible leaks. All flexible pipes shall pass a deflection test.

3. The Contractor shall furnish all necessary testing equipment and perform the tests in a manner satisfactory to the City. Any arrangement of testing equipment, which will provide observable and accurate measurements of air leakage under the specified conditions, will be permitted. Gauges for air testing shall be calibrated with a standardized test gauge.

- B. Line Cleaning: Prior to the internal pressure testing for sanitary systems and inspections of sanitary and storm systems by the City, the Contractor shall ball and flush and clean all parts of the system. The Contractor shall remove all accumulated construction debris, rocks, gravel, sand, silt and other foreign material from the system at or near the closest downstream manhole. If necessary, the Contractor shall use mechanical rodding or bucketing equipment. Upon City inspection of the system, any foreign matter still present shall be flushed and cleaned from the system as required.

## C. Air Testing, Pipe Line

## 1. General

- a. After construction of the system, including service connections, required backfilling, compaction testing, placement of base rock for streets, and other required testing, the Contractor shall conduct a low-pressure air test. The Contractor shall provide all equipment and personnel for the test. The method, equipment, and personnel shall be subject to the approval of the District and City. The District or City may, at any time, require a calibration check of the instrument used. The pressure gauge used shall have minimum divisions of 0.10 psi and have an accuracy of 0.0625-psi (one-ounce per square inch). All air used shall pass through a single control panel.

## 2. Safety Precautions

- a. All plugs used to close the sewer for the air test must be capable of resisting the internal pressures and must be securely braced, if necessary. All air testing equipment must be placed above ground and no one shall be permitted to enter a

manhole or trench where a plugged line is under pressure. All pressure must be released before the plugs are removed. The testing equipment used must include a pressure relief device designed to relieve pressure in the test line at 10 psi or less and must allow continuous monitoring of the test pressures in order to avoid excessive pressure. The Contractor shall use care to avoid the flooding of the air inlet by infiltrated ground water. The Contractor shall inject the air at the upper plug if possible. Only qualified personnel shall be permitted to conduct the test

3. Method: All air testing shall be by the Time Pressure Drop Method. The test procedures are described as follows:
  - a. Clean the lines to be tested and remove all debris.
  - b. The Contractor has the option of wetting the lines prior to testing.
  - c. Plug all open ends with suitable test plugs; brace each plug securely.
  - d. Check the average height of ground water over the line. The test pressures required below (Section 8.05.4(c)(8)) shall be increased 0.433 psi for each foot of average water depth over the line.
  - e. Add air slowly to the section of system being tested until the internal air pressure is raised to the test pressure specified below (Section 8.05.4(c)(8)).
  - f. After the internal test pressure is reached, at least two minutes shall be allowed for the air temperature to stabilize, adding only the amount of air required to maintain pressure.
  - g. After the temperature stabilization period, disconnect the air supply.
  - h. Acceptance shall be based upon meeting or exceeding the requirements specified below.
    - 1) The minimum time duration permitted for the prescribed low-pressure exfiltration pressure drop from a starting pressure of 4.0 psi between two consecutive manholes should not be less than that shown in Tables 8-4 or 8-5. The tables list test duration values for pressure drops of 1.0 psi and 0.5 psi in excess of ground water pressure above the top of the sewer pipe, respectively. Values given accommodate both an allowable average loss per unit of surface area and an allowable maximum total leakage rate.
    - 2) Record the diameter (in), length (ft), end manhole number, time, pressure drop, and groundwater level of the test on an inspection form. The recording form shall become a permanent record of the project.
4. Deflection Test for Flexible Pipe
  - a. Sewers constructed of flexible pipe materials shall be deflection-tested. The test shall be conducted by pulling an approved mandrel through the completed pipeline. The diameter of the mandrel shall be 95 percent of the nominal pipe diameter unless otherwise specified by the District. The mandrel shall be a rigid, nonadjustable, odd-numbering-leg (9 legs minimum) mandrel having an effective length of not less than its nominal diameter. Testing shall be conducted after placement of base rock for streets and after the line has been completely balled and flushed out with water, compaction tests have been completed and accepted.

- b. The Contractor will be required to locate and repair any sections failing to pass the deflection test and to retest the section.
5. Video Inspection of Gravity Systems
- a. All sewers shall be video inspected and recorded in accordance with the order prescribed in Section 8.05.1 prior to the District or City acceptance of the systems. All pipes shall be thoroughly flushed immediately prior to the video inspection. A 1- inch target ball shall be placed in front of the camera. If the system is video inspected by a private firm or entity other than the District or City, a copy of the video recording and a written TV Inspection Report on a form approved by District, shall be supplied to the District or City. The video recording shall be recorded in color and on an electronic format as approved by the District. All problems discovered during video inspection shall be noted on the video recording and the written report.
6. Video Inspection for Warranty Acceptance
- a. The sewer lines shall be video inspected during the one-year warranty period to determine any defects in the system that are to be corrected by the developer or Contractor.

END OF SECTION 33 30 00

## SECTION 337173 - ELECTRICAL UTILITY SERVICES

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Section Includes: Metering equipment.
- B. Related Sections:
  - 1. Section 26 0533, Raceway and Boxes for Electrical Systems.
- C. Fees:
  - 1. Pay all fees levied by serving electric utility to provide service to this project.
  - 2. Obtain fees from serving electric utility prior to submitting a bid.

## 1.2 SYSTEM DESCRIPTION

- A. Utility Company Requirements: Comply in every respect with requirements of serving electric utility pertaining to equipment installed by Division 26 and required working clearance.
  - 1. Reference Forest Grove Light & Power, Electric Service Handbook, current enforced edition.
- B. Service Lateral Raceways: Provide service lateral raceways terminated at current transformer section of service entrance equipment.
- C. Provide equipment as required by serving electric utility.

## 1.3 SUBMITTALS

- A. Provide shop drawings and product data for the metered pedestal metering, distribution and control equipment.

## 1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of the NEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other testing firm acceptable to AHJ.
- C. Conform to requirement of the serving electric utility.

## PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Metered Pedestal: Cooper B-Line, Tesco Controls, Inc., or approved.
- B. Meter Base: Square D No. UTH4213T, or approved.

## 2.2 METERING EQUIPMENT

- A. Meter Base: Pedestal mounted meter socket enclosure, with manual circuit-closing block.
- B. Provide fault withstand rating greater than the serving electric utility determined available fault current.

## 2.3 SERVICE AND DISTRIBUTION EQUIPMENT

- A. Supply voltage, 120/240v-1 phase, 3 wire.
- B. Service rated main disconnect, circuit breaker, 100A-2P.
- C. Short circuit rating, 10kAIC minimum. Confirm available fault current at line terminals of Metered Pedestal, with Forest Grove Light & Power, prior to ordering.
- D. Distribution circuit breakers, not required. Refer to Service and Distribution Diagram, drawing E2.0.
- E. Finish color, Light Gray (ANSI 49).

## PART 3 EXECUTION

## 3.1 INSTALLATION

- A. Meter Bases: Integrated into metered pedestal.
- B. Verify utility requirements prior to bidding and provide all associated work required by local utility including but not limited to:
  - 1. Service underground conduit, pull cord, excavation and backfill.
  - 2. Service metering equipment.
- C. Concrete Equipment Pad:
  - 1. Refer to detail on drawings for plan dimensions, depth and reinforcing re-bar layout.
  - 2. Refer to manufacturer's site preparation and installation instructions.
  - 3. Coordinate installation of service lateral and Restroom structure feeder conduits.

END OF SECTION 337173