TECHNICAL SPECIFICATIONS

DRAFT FINAL 100 PERCENT DESIGN SUBMITTAL
HOLLY STREET LANDFILL CLEANUP/
WHATCOM CREEK ESTUARY RESTORATION
PROJECT

Prepared for

City of Bellingham

Office of Neighborhoods and Community Development

In Cooperation with:

U.S. Environmental Protection Agency,

Brownfields Assessment Program

and

Washington State Department of Ecology,

Toxics Cleanup Program

Prepared by

Anchor Environmental, L.L.C.

1423 Third Avenue, Suite #300

Seattle, Washington 98101

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SECTION 08100: LARGE WOODY DEBRIS INSTALLATION

BID FORM / SCHEDULE OF UNIT PRICES

No.	Item Description	Approx. Quantity	Unit of Measurement	Unit Price	Bid Amount
1	Mobilization/Demobilization (includes Temporary Facilities)	1	Lump sum	$	$
2.	Clearing, Grubbing, and Demolition	1	Lump sum	$	$
3.	Excavation and Grading	9,000	cubic yard	$	$
4.	Import and Place Silty Sand Cap Material	3,300	ton	$	$
5.	Import and Place Well-Graded Gravel	560	ton	$	$
6.	Import and Place Surficial Gravel	780	ton	$	$
7.	Import and Place Spalls	2,100	ton	$	$
8.	Import and Place Riprap	30	ton	$	$
9.	Import and Place Type A Topsoil	600	ton	$	$
10.	Import and Place Type B Topsoil	500	ton	$	$
11.	Disposal of Excavated Material	12,500	ton	$	$
12.	Plantings	1	Lump Sum	$	$
13.	Installation of Driftwood	1	Lump Sum	$	$
14.	Installation of Anchored Large Woody Debris and Large Woody Debris Barrier	1	Lump Sum	$	$
15.	Boardwalk and Viewpoints Installation (includes Cast-in-Place Concrete)	1	Lump Sum	$	$
16.	Irrigation System	1	Lump Sum	$	$
17.	Environmental Protection and Monitoring	1	Lump Sum	$	$
18.	Surveying	1	Lump Sum	$	$

BIDDERS CHECKLIST

___ Review Plans and Specifications and visit site
___ Attend Pre-Bid Meeting
___ Include Unit price for each Bid Item
___ Extensions done correctly for each Bid Item
___ Total contract price, include taxes where applicable
___ Fill in amount of bid deposit (bond)
___ Check that bid deposit is at least 5% of total bid.
___ Date Proposal
___ Print name and address of Bidder
___ Proposal signed by authorized agent
___ Proposal Signature notarized by Notary Public
___ Acknowledge Addendum(a) (if any)
___ Non-Collusion Affidavit signed and notarized
___ Check appropriate box on List of Subcontractors
___ List Subcontractors
___ List of Subcontractors form is signed by authorized agent
___ Attach bid bond or bid bond deposit
___ Minority and Women's Business Enterprises form
___ Statement of No Bid form
___ Submit bids by required date and time

CITY OF BELLINGHAM
NOTICE TO BIDDERS

INVITATION NUMBER
Must appear on the sealed bid envelope

Sealed proposals for the construction of the Holly Street Landfill / Whatcom Creek Restoration Project, will be received by the City of Bellingham, 2221 Pacific Street, Bellingham, Washington, 98226 at the Purchasing Office until _____, at _____, and thereafter will be publicly opened and read.

The improvement consists of: The excavation and disposal of approximately 9,000 cy of earth and refuse; import and placement of about 8,000 tons of various capping materials; construction of a boardwalk; landscape features; and related elements. The proposed project is located in the City of Bellingham, Whatcom County, Washington, in the Whatcom Creek estuary in Bellingham's Old Town district, Township 38 North, Range 3 East, Section 30. This Project will transform the current Whatcom Creek Estuary setting that includes chemical contamination issues, limited habitat complexity, and steep banks into a restored estuary with improved fish habitats and public access. This transformation will occur through the completion of three project elements:
1) Landfill Cleanup and Source Control, 2) Shoreline Habitat Restoration, and 3) Integrated Public Access Boardwalk and Viewpoints.

Price Range: $1,000,000 – 1,500,000.

Plans, specifications, special provisions, basis to be used in comparing bids, proposal and contract can be seen at the Purchasing Office, 2221 Pacific Street, Bellingham, Washington, phone (360) 676-6870. Copies can be obtained upon receipt of _____ dollars for each set of plans and specifications. This amount is not refundable.

A Pre-bid meeting will be held on _____ at _____. Prospective bidders are urged to attend.

All proposals must be on regular blank forms and must be accompanied by a certified check, cashier's check, cash, money order, or bid bond payable to the Finance Director in an amount equal to or exceeding five percent (5%) of the total bid. No other form of bid security is acceptable. A one hundred percent (100%) contract surety bond will be required.

The right is reserved to postpone making the award for a reasonable length of time, to reject any and all bids, or to waive irregularities not affecting substantial rights.

Published: _____

TERMS AND CONDITIONS

The General Conditions of this bid are the Standard Specifications for Road, Bridge and Municipal Construction, 2004 Edition, issued by the State of Washington and the APWA, modified as follows:

1) Whenever the terms "Washington State Transportation Commission", "State Department of Transportation", or variations of it are used in the Standard Specifications, they shall be construed to mean "City of Bellingham" or "Owner".

2) Where references are made to the "State Treasurer", the term shall be construed to mean the City's "Finance Director".

3) Where the term "Secretary of Transportation" or "District Administrator" are used, the terms shall be construed to mean the duly authorized representative of the City.

4) Bid documents include the Advertisement to Bid; Terms and Conditions; the Proposal form; and the proposed contract documents including any Addenda issued prior to receipt of bids.

5) Addenda are written or graphic instructions issued prior to the receipt of bids in accordance with Article 6 of the Terms and Conditions, which modify or interpret the bidding documents, including Drawings and Specifications, by additions, deletions, clarification, or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.

6) Bidders are requested to review this invitation carefully, without delay, for defects and questionable or objectionable matter. Questions, objections, or comments should be made in writing and received by the issuing office no later than five working days prior to bid opening, so that any necessary amendments may be published and distributed to bidders to prevent the opening of a defective bid. Bidders' protests based upon any omission, or errors, or the content of the Invitation to Bid will be disallowed if not made known prior to the bid opening. Any interpretation or correction will be issued, with Owner's approval as an Addendum. Only a written interpretation or correction by Addendum shall be binding. No Bidder shall rely upon any interpretation or correction given by any other method. Any

changes to the original bid specifications will be made in writing, in the form of a bid addendum, issued by the Purchasing Office.

Protest Procedure:

Any protest must be made in writing, signed by the protestor or the protestor's authorized agent, and filed with the City's Purchasing Superintendent, 2221 Pacific Street, Bellingham, WA 98229, with a copy to the City Attorney, 210 Lottie Street, Bellingham, WA 98225. The protest shall contain all of the following information:

- The protestor's name, address, and phone/facsimile number
- The bid/rfp number and bid/rfp project name
- A detailed description of the specific factual and legal ground(s) for the protest, including all exhibits referenced by the protestor
- The specific relief requested

Protests based upon the specifications or other terms contained in the bid/rfp documents shall be submitted not later than ten calendar days prior to the scheduled bid/rfp opening. All other protests shall be submitted no later than five calendar days after the protestor knows or should have known of the facts or circumstances upon which the protest is based. However, in no event will a protest be considered if all bids/rfps are rejected or after the bid/rfp is awarded, unless otherwise required by law.

Failure to comply with these procedures shall render a protest untimely or inadequate and, consequently, may result in the City rejecting the protest solely on this basis.

7) Each Bidder represents that his bid is based upon the material and equipment described in the bidding documents.

8) During the bidding period, no substitutions will be considered unless written request has been submitted to the City for approval at least five working days prior to the date for receipt of bids. Each such request shall include a complete description of the proposed substitute; the name of the material or equipment for which it is to be substituted; drawings, cuts, performance, and test data; and any other data or information necessary for complete evaluation.

9) If the Owner approves any proposed substitution, such approval will be set forth in an Addendum.

10) All Contractors' labor and materials bonds shall be approved as to form and as to sufficiency of sureties by the City Attorney.

11) The City reserves the right to reject any and all bids, to waive minor deviations from the specifications, or to waive any informality in bids received, whenever such rejection or waiver is in the best interest of the City. Among other things, a bid may be rejected when:
    a) the bidder is in arrears on taxes or other claims due the City
    b) the bidder is not in a position to perform the contract
    c) the bid is not signed
    d) the bidder fails to furnish bid bonds or surety deposits, plans, specifications, samples, etc., when such were specifically called for in the Invitation to Bid
    e) the bidder has failed to use the proposal form attached
    f) the bidder makes a material change in the specifications, terms or conditions of the Invitation to Bid
    g) the bid contains a material alteration or erasure which is not initialed by the signer of the bid
    h) any other reason determined to be in the best interest of the City

12) After the award of the Contract, but at least five days prior to commencing the work, the City may require the Contractor to submit the following information:
    a) A satisfactory statement of costs for each major item of work included in the bid which will be used as the basis for payment applications.
    b) A designation of the amount and type of work to be performed by the Contractor's own forces.
    c) A list of names of the subcontractors or other persons or organizations proposed for such portions of the work and an estimated employment profile of such subcontractor's forces. Subcontractors, employees, and other persons and organizations proposed by the Contractor and accepted by the Owner must be used on the work for which they were proposed and accepted and shall not be changed without the City's written approval.

13) Please return these plans and specifications in good order as soon as possible from the bid opening date to the address specified in the Bid Advertisement Form.

14) Unless otherwise stated in the bid specifications, questions concerning the bid process should be addressed to the following: City of Bellingham, Purchasing Division, 2221 Pacific Street, Bellingham Washington, 98229 (360) 676-6870.

15) It is the vendor's responsibility to deliver the document to the proper address by the assigned time. The City accepts no responsibility for misdirected or lost documents prior to the City actually receiving the bid documents.

16) The successful bidder will be required to obtain a Bellingham City Business Registration Certificate and pay business and occupation taxes. For additional information, check with the Finance Department, (360) 676-6900.

17) The vendor shall hold and save the City, its officers, agents, and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any or all suits or damages of any character whatsoever resulting from injuries or damages sustained by any person or persons or property by virtue of performance of this contract, unless such suits or damages arise from negligence on the part of the City or its employees in the performance of their assigned duties. The City shall not be liable for any costs incurred by the bidder in bid preparation.

18) In case of default by the vendor, for whatever reasons, the City of Bellingham may procure the material or services from other sources and hold the bidder responsible for any excess cost occasioned thereby.

19) In the event of damage to City property in the performance of a contract, the primary vendor will be held responsible and reimburse the City to the extent of damage.

20) Prevailing wage rates can be obtained from our WEBSITE at http://www.cob.org/bid or the Washington State Department of Labor and Industries WEBSITE at http://www.lni.wa.gov/prevailingwage. Bidders may request hard copies of the current prevailing wage rates from the City of Bellingham Purchasing Office.

21) Attached is a sample of a Public Works Contract. The successful bidder will be required to enter into such an agreement with the City.

22) The Contractor is responsible for all costs to secure parking meter hoods and the parking space costs. Contact the City of Bellingham Parking Services at (360) 676-6706 for additional information.

23) The plan holder's list is the way in which the City will notify bidders of changes in the bid specifications. All changes to bid specifications will be issued by the Purchasing Office. It is the plan holder's responsibility to check the web site or call the Purchasing Office to verify they have received all addenda.

PROPOSAL

To the Bellingham City Council:

The undersigned bidder declares that he has carefully examined the Plans, Specifications, and Special Provisions for the construction of the **The Holly Street Landfill / Whatcom Creek Restoration Project** project, that he has made an examination of the site of the proposed work, and has made such investigations as are necessary to determine the conditions to be encountered, and that if this proposal is accepted, he will contract with the City of Bellingham, Washington, in the form of contract hereto annexed, will to the extent of his bid provide the necessary machinery, tools, apparatus, and other means of construction, will furnish all materials and labor as specified in the manner herein specified and according to the requirements of the Engineer.

The bidder agrees that he will complete all work as required between July 15, 2004 and _____, 2005. The bidder further agrees that he will pay liquidated damages as fixed in the contract for delay in completion.

No Washington State Sales Tax will be paid by the City of Bellingham on Street related items of work. The Contractor is liable for Use Tax payable to the State for materials used on the job. Sales Tax will be paid by the City on Water and Sewer related items of work.

Accompanying this Proposal is cash, certified check or bid bond for the sum of _____ Dollars ($_____) payable to the City Finance Director, this being the amount not less than five percent (5%) of the total bid based upon the above price according to the conditions of the Notice to Bidders and Special Provisions. If this bid shall be accepted by the City of Bellingham, and the undersigned shall fail to execute a satisfactory contract and bond, as stated in contract attached, then the City may, at its option, determine that the undersigned has abandoned the contract and thereupon this contract shall be null and void, and the security accompanying this proposal shall be forfeited to the City of Bellingham. Otherwise, the security accompanying this proposal shall be returned to the undersigned.

Dated this _____day of _____, 2004.

Submitted by:

Name of Bidder: _____

Address of Bidder: _____

Phone: _____ Fax: _____

Signature of Authorized Agent: _____

Print Name: _____

Contractor UBI Number: _____

STATE OF WASHINGTON }

COUNTY OF }

I CERTIFY that I know or have satisfactory evidence that _____, signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the _____ of _____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

_____
DATED

(Seal or Stamp) _____
SIGNATURE OF NOTARY PUBLIC

_____
PRINTED NAME

Notary Public
_____
TITLE

_____
MY APPOINTMENT EXPIRES

ADDENDUM ACKNOWLEDGEMENT

Addendum No.	Date	Signature
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____

NON-COLLUSION AFFIDAVIT

STATE OF WASHINGTON

COUNTY OF

_____, being first duly sworn, on his oath says that the bid herewith submitted is a genuine and not a sham or collusive bid, or made in the interest or on behalf of any person not therein named; and he further says that the said bidder has not directly or indirectly induced or solicited any bidder on the above work or supplies to put in a sham bid, or any other person or corporation to refrain from bidding; and that said bidder has not in any manner sought by collusion to secure to himself an advantage over any other bidder or bidders.

_____

Name: _____

Title: _____

STATE OF WASHINGTON

COUNTY OF

I CERTIFY that I know or have satisfactory evidence that _____ signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

_____
DATED

(Seal or Stamp)

_____
SIGNATURE OF NOTARY PUBLIC

_____
PRINTED NAME

Notary Public
TITLE

_____
MY APPOINTMENT EXPIRES

LIST OF SUBCONTRACTORS

Project Name: The Holly Street Landfill / Whatcom Creek Restoration Project

The prime contract bidder shall submit a list of subcontractors for work required by the Contract Documents in the following circumstances. Failure to comply with the requirements contained herein may render the bidder's bid non-responsive and, therefore, void.

- When the total bid amount is more than $100,000 AND a subcontractor's work will exceed ten percent (10%) of the total bid amount. Only list each individual subcontractor that has more than ten percent (10%) of the work.
- On projects expected to be at $1 million or more, the prime contract bidder must submit with their proposal a list of subcontractors that will contract directly with the prime contract bidder for heating, ventilation, air conditioning, plumbing and/or electrical work. The prime contract bidder shall not list more than one subcontractor for each category of work identified unless subcontractors vary with alternates, in which case the prime contract bidder must indicate which subcontractor will be used for which alternate. Failure to submit the subcontractors list as part of the proposal (including naming the work the bidder will do) or naming two or more subcontractors to perform the same work shall render the bidder's proposal non-responsive and, therefore, void. (RCW 39.30.060)

☐ The following list of subcontractors is provided because the total bid amount is more than $100,000 AND each listed subcontractor's work is more than ten percent (10%) of the total bid amount.

☐ The following list of subcontractors is provided because the project is expected to be $1,000,000 or more. (RCW 39.30.060)

☐ A list of subcontractors is not provided because the requirements listed in this section do not apply to this bid.

Subcontractor	Work to be Performed

The undersigned certifies that the above information is true and correct.

By: _____

_____
(Print Name)

Date: _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That we _____

_____, as Principal, and _____

_____, as Surety, are held and firmly bound unto the CITY OF BELLINGHAM as Obligee, in the penal sum of _____ Dollars, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

The condition of the obligation is such that if the Obligee shall make any award to the Principal of _____

_____

according to the terms of the proposal or bid made by the Principal therefor, and the Principal shall duly make and enter into a contract with the Obligee in accordance with the terms of said proposal or bid and award and shall give bond for the faithful performance thereof, with Surety or Sureties approved by the Obligee; or if the Principal shall, in case of failure so to do, pay and forfeit to the Obligee the penal amount of the deposit specified in the call for bid, then this obligation shall be null and void; otherwise it shall be and remain in full force and effect and the surety shall forthwith pay and forfeit to the Obligee, as penalty and liquidated damages, the amount of this bond.

SIGNED, SEALED and **DATED** this _____ day of _____, 2004.

_____
Principal

_____
Surety

_____, 2004

BID BOND DEPOSIT

Attached is a deposit in the form of a certified check, cashier's check, or cash in the amount of $_____, which is not less than five percent (5%) of the total bid.

The condition of this obligation is that if the City of Bellingham (hereafter called the City) shall make an award to the Principal for

The Holly Street Landfill / Whatcom Creek Restoration Project
(title of Project)

according to bid or proposal made by the Principal, and the Principal enters into a contract with the City in accordance therewith and provides the City with a bond for the faithful performance thereof, with Surety or Sureties approved by the City, the attached Bid Bond Deposit shall be returned to the Principal. Alternatively, if the Principal, after submitting a bid for the above named project, is awarded the Contract and fails to provide a performance bond acceptable to the City, Principal shall forfeit to the City the penal amount of the Bid Deposit.

SIGNED, SEALED and **DATED** this _____ day of _____, 2004.

_____
Principal (Signature)

_____
Company Name

_____
Address

_____
City/State

MINORITY AND WOMEN'S BUSINESS ENTERPRISES INFORMATION

The City of Bellingham is required to ensure all MWBE businesses are given the opportunity to participate in the City bid process and to report information on bids awarded to MWBE's.

Completion of this form is voluntary.

To be classified as a MWBE you must be certified through the **Washington State Office of Minority and Women's Business Enterprises**.

Bid Number: _____ Bid Name: _____

Vendor Name: _____

City, State, Zip: _____

Washington State Business License Number: _____

Signature: _____

CITY OF BELLINGHAM, WASHINGTON
STATEMENT OF NO BID

Receipt of this completed form will assist us in soliciting for future bids/proposals. If your company is not submitting a bid/proposal, please complete and submit this form prior to the closing date and time as shown on the bid document.

Mail form to: **City of Bellingham**
Attn: Purchasing Office
2221 Pacific Street
Bellingham, WA 98229

Bid Title: _____

Bid Number: _____

We, the undersigned, have declined to submit a bid/proposal in response to the above Bid for the following reasons:

- ☐ We do not offer this product or service.
- ☐ Specifications too "tight" i.e. geared toward one brand or supplier.
- ☐ Specifications are not sufficiently defined (explain below).
- ☐ Unable to meet specifications.
- ☐ Insufficient time to respond to bid.
- ☐ Schedule would not permit us to perform.
- ☐ Unable to meet bond requirements.
- ☐ Unable to meet insurance requirements.
- ☐ Quantity too large.
- ☐ Quantity too small.
- ☐ Agreements with distributors/dealers do not permit us to sell directly.
- ☐ Cannot submit a response because of marketing and/or franchising policies of the manufacturing company.
- ☐ Do not wish to bid under the terms and conditions of the bid/proposal. (Explain below)
- ☐ Remove us from City's bidder list for this product/service.
- ☐ Other reason (explain below)

_____

_____

COMPANY NAME: _____

SIGNATURE: _____

NAME: _____

TITLE: _____ DATE: _____

TELEPHONE: _____

CITY OF BELLINGHAM, WASHINGTON
PUBLIC WORKS CONSTRUCTION CONTRACT

The CITY OF BELLINGHAM, a first-class municipal corporation of the State of Washington, located at 210 Lottie Street, Bellingham, Washington, 98225 (hereinafter the "City"), and _____ (hereinafter the "Contractor"), in consideration of the mutual covenants contained herein, do hereby agree as follows:

I. Work to be Performed: The Contractor, in consideration of the covenants, agreements and payments to be made by the City, hereby agrees to furnish all labor, tools, materials, equipment, and supplies required for and to execute, construct and finish, in full compliance with the plans and specifications, **The Holly Street Landfill / Whatcom Creek Restoration Project.**

II. Components: This contract consists of the following component parts, all incorporated herein as if fully set forth:

1. The Notice to Bidders and the Contractor's Proposal
2. The General Special Provisions and Special Provisions
3. The Standard Specifications for Road, Bridge, and Municipal Construction, 2004 Edition
4. The Plans
5. Any addenda issued prior to bid opening.

III. Time for Performance: It is agreed that the work covered by this contract shall be completed in all particulars by the time set forth in the proposal.

IV. Liquidated Damages: It is agreed that the City will suffer damage and be put to additional expense in the event that the Contractor shall not have the specified portions of the work completed in all its parts within the time specified, and as it may be difficult to accurately compute the amount of such damage, the Contractor hereby expressly covenants and agrees to pay the City the sum set out in Section 1-08.9 of the Standard Specifications as liquidated damages for each and every day (Sundays and legal holidays excepted) of delay in completion of the work beyond the date fixed. It is agreed that such amount shall be deducted from progress or final payments to the Contractor.

V. Monthly Payments: Progress estimates may be made representing value of the work done prior to the end of each month subject to a deduction of lawful retainage to be withheld until completion of the work. A final estimate shall be prepared upon completion of the work, satisfaction of test requirements and fulfillment of this contract. All taxes, including applicable State Sales Taxes, are deemed included in the Contractor's invoices.

VI. Insurance and Bond: Contractor agrees to provide Certificates of Insurance, and a Contract Bond in the form made a part of the contract documents. The City and its officials and employees shall be named as additional insureds on all liability insurance policies.

VII. Responsible Officers:

A. The City's project officer for this project, referred to as the "Project Engineer" in the General Conditions, is Sheila Hardy.

B. The Contractor's responsible officer/job superintendent is _____

EXECUTED, this the _____ day of _____, 2004, for the Contractor, _____:

_____

EXECUTED, this the _____ day of _____, 2004, for the **CITY OF BELLINGHAM**:

Departmental Approval:

_____ _____

Mayor *Department Head*

Attest: **Approved as to Form:**

_____ _____

Finance Director *Office of the City Attorney*

STATE OF WASHINGTON

COUNTY OF

I CERTIFY that I know or have satisfactory evidence that _____, signed this instrument, on oath stated that he/she/they was/were authorized to execute the instrument and acknowledged it as the _____ of _____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

_____
DATED

(Seal or Stamp) _____
SIGNATURE OF NOTARY PUBLIC

_____
PRINTED NAME

_____
TITLE

_____
MY APPOINTMENT EXPIRES

CONTRACT BOND
to the
CITY OF BELLINGHAM

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned _____

_____

_____

as principal, and _____, a corporation organized and existing under the laws of the State of _____, as a surety corporation, and qualified under the laws of the State of Washington to become surety upon bonds of contractors with municipal corporations, as surety, are jointly and severally held and firmly bound to the CITY OF BELLINGHAM in the penal sum of $_____ for the payment of which sum on demand we bind ourselves and our successors, heirs, administrators or personal representatives, as the case may be.

This obligation is entered into in pursuance of the statutes of the State of Washington, and the Ordinances of the CITY OF BELLINGHAM.

DATED at _____, Washington, this _____ day of _____, 2004.

Nevertheless, the conditions of the above obligation are such that:

WHEREAS, under and pursuant to Bid Award of the Bellingham City Council, the Mayor of said City has let or is about to let to the said bounded Principal, a certain contract, for the said **The Holly Street Landfill / Whatcom Creek Restoration Project** (which contract is referred to herein and is made a part hereof as though attached hereto), and

NOW, THEREFORE, if the said Principal shall faithfully perform all of the provisions of said contract in the manner and within the time therein set forth, or within such extension of time as may be granted under said contract (notice of which extension being hereby waived by the Surety), and shall pay all laborers, mechanics, subcontractors and material men, and all persons who shall supply said principal or subcontractors with provisions and supplies for the carrying on of said work, and shall hold said City harmless from any loss or damage

occasioned to any person or property by reason of any carelessness or negligence of the said principal, or any subcontractor in the performance of said work, and shall indemnify and hold the City harmless from any direct or indirect damage or expense by reason or failure of performance as specified in said contract or from defects appearing or developing in the material or workmanship provided or performed under said contract, then and in that event this obligation shall be void; but otherwise it shall be and remain in full force and effect.

For the Surety: _____

_____
Principal

_____
Name

_____
Title

_____
Title

_____
Address

_____
Mayor

Attest:

Approved as to Form:

_____
Finance Director

_____
Office of the City Attorney

ASSIGNMENT OF FUNDS IN LIEU OF BOND

TO THE

CITY OF BELLINGHAM

THIS ASSIGNMENT is for ensuring completion and guarantee of the Assignor's construction of the **The Holly Street Landfill / Whatcom Creek Restoration Project** for the City.

The undersigned, _____, acting for _____, a _____ corporation (hereinafter the "Principal"), does hereby assign to the CITY OF BELLINGHAM all right, title and interest in funds in the amount of $_____, deposited in account number _____, at the _____ Bank, _____ (hereinafter the "Surety"), in the name of _____.

This obligation is entered into in pursuance to the statutes of the State of Washington, and the ordinances of the CITY OF BELLINGHAM.

Nevertheless, the conditions of the above obligation are such that:

WHEREAS, the Mayor of said City has let or is about to let to the said bounded Principal, a certain contract, for the said **The Holly Street Landfill / Whatcom Creek Restoration Project** (which contract is referred to herein and is made a part hereof as though attached hereto), and

WHEREAS, the said principal has accepted, or is about to accept, the said contract, and undertake to perform the work therein provided for in the manner and within the time set forth;

NOW THEREFORE, if the said Principal shall faithfully perform all of the provisions of said contract in the manner and within the time therein set forth, or within such extension of time as may be granted under said contract, and shall pay all laborers, mechanics, subcontractors and material men, and all persons who shall supply said principal or subcontractors with provisions and supplies for the carrying on of said work, and shall hold said City harmless from any loss or damage occasioned to any person or property by reason of any carelessness or negligence on the said principal, or any subcontractor in the performance of said work, and shall indemnify and hold the City harmless from any direct or indirect damage or expense by reason of failure

of performance as specified in said contract or from defects appearing or developing in the material or workmanship provided or performed under said contract within a period of one year after its acceptance thereof by the City, then and in that event this obligation shall be void; but otherwise it shall be and remain in full force and effect.

EXECUTED, this _____ day of _____, 2004, for the Assignor, _____ _____:

_____

ACCEPTANCE

The undersigned warrants that he/she is authorized to execute this Assignment of Funds for the Bank; that the account named has the required funds in it; that the Bank accepts this Assignment and all the terms contained in it; and the funds will be held until either drawn down by the City in accordance with this assignment, or a release, in writing, is received from the City.

ACCEPTED, this _____ day of _____, 2004, for the _____ _____ Bank:

_____

APPROVED, this _____ day of _____, 2004, for the **CITY OF BELLINGHAM**:

_____
Mayor

Attest:

_____
Finance Director

Approved as to Form:

_____
Office of the City Attorney

RETAINAGE INVESTMENT OPTION

Contractor:_____ Project Name: The Holly Street Landfill / Whatcom Creek Restoration Project

Date:_____ Project Number: _____

Pursuant to RCW 60.28.010, as amended, you may exercise an option as to how retainage under this contract will be invested. Please complete and sign this form indicating your preference. If you fail to do so, the City will deposit the funds in a Guarantee Deposit account, and you will miss the benefit of any interest earned. Select one of the following options:

☐ 1. **Savings Account:** Money will be placed in an interest-bearing account. The interest will be paid to you directly, rather than kept on deposit. Please state the name of your bank. _____

☐ 2. **Escrow/Investments:** The City will deliver retainage checks to a selected bank, pursuant to an escrow agreement. The bank will then invest the funds in securities or bonds selected by you, and interest will be paid to you as it accrues.

Preferred bank:_____

Securities/bonds:_____

☐ 3. **Guarantee Deposit:** Retainage will be deposited in a manner selected by the City. No interest is payable to the Contractor.

Retainage is normally released 45 days after final acceptance of the work, or following receipt of Labor and Industries/Department of Revenue clearance, whichever date is the later. Retainage on landscaping work may be retained longer, due to its seasonal nature.

State law allows for limited early release of retainage in certain circumstances.

_____

Contractor's Signature

_____

Title

ESCROW AGREEMENT

TO BANK:_____ ESCROW NO.:_____

BANK'S ADDRESS: _____

_____

AGENCY: CITY OF BELLINGHAM
210 Lottie Street, Bellingham, Washington, 98225

CONTRACT NO.:_____

PROJECT TITLE: The Holly Street Landfill / Whatcom Creek Restoration Project

The estimated completion date of contract is:_____

The undersigned, _____, herein referred to as the CONTRACTOR, has directed the CITY OF BELLINGHAM, Washington, hereinafter referred to as the AGENCY, to deliver to you its warrants which shall be payable to you and the CONTRACTOR jointly. Such warrants are to be held and disposed of by you in accordance with the following instructions and upon the terms and conditions hereinafter set forth.

INSTRUCTIONS

1. Warrants or checks made payable to you and the CONTRACTOR jointly upon delivery to you shall be endorsed by you and forwarded for collection. The moneys will then be used by you to purchase, as directed by the CONTRACTOR, bonds or other securities chosen by the CONTRACTOR and approved by the AGENCY. Attached is a list of such bonds, or other securities approved by the AGENCY. Other bonds or securities, except stocks may be selected by the CONTRACTOR, subject to express written approval of the AGENCY. Purchase of such bonds or other securities shall be in a form which shall allow you alone to reconvert such bonds or other securities into money if you are required to do so by the AGENCY as provided in Paragraph 4 of this Escrow Agreement.

2. When and as interest on the securities held by you pursuant to this agreement accrues and is paid, you shall collect such interest and forward it to the CONTRACTOR at its address designated below unless otherwise directed by the CONTRACTOR.

3. You are not authorized to deliver to the CONTRACTOR all or any part of the securities held by you pursuant to this agreement (or any moneys derived from the sale of such securities, or the negotiation of the AGENCY'S warrants) except in accordance with written instructions from the AGENCY. Compliance with such instructions shall relieve you of any further liability related thereto.

4. In the event the AGENCY orders you to do so in writing, you shall, within thirty-five (35) days of receipt of such order, reconvert into money the securities held by you pursuant to this agreement and return such money together with any other moneys held by you hereunder, to the AGENCY.

5. The CONTRACTOR agrees to pay you as compensation for your services hereunder as follows:

   Payment of all fees shall be the sole responsibility of the CONTRACTOR and shall not be deducted from any property placed with you pursuant to this agreement until and unless the AGENCY directs the release to the CONTRACTOR of the securities and moneys held hereunder whereupon you shall be granted a first lien upon such property released and shall be entitled to reimburse yourself from such property for the entire amount of your fees as provided for herein above. In the event that you are made a party to any litigation with respect to the property held by you hereunder, or in the event that the conditions of this escrow are not promptly fulfilled or that you are required to render any service not provided for in these instructions, or that there is any assignment of the interests of this escrow or any modification hereof, you shall be entitled to reasonable compensation for such extraordinary services from the CONTRACTOR and reimbursement from the CONTRACTOR for all costs and expenses, including attorney fees occasioned by such default, delay, controversy or litigation.

6. This agreement shall not be binding until executed by the CONTRACTOR and the AGENCY and accepted by you.

7. This instrument contains the entire agreement between you, the CONTRACTOR and the AGENCY with respect to this escrow and you are not a party to nor bound by any instrument or agreement other than this; you shall not be required to take notice of any default or any other matter nor be bound by nor required to give notice or demand, nor required to take any action whatever except as herein expressly provided; you shall not be liable for any loss or damage not caused by your own negligence or willful misconduct.

The foregoing provisions shall be binding upon the assigns, successors, personal representatives and heir of the parties hereto.

_____	CITY OF BELLINGHAM
Contractor	*Agency*
By: _____	By: _____
	Finance Director
_____	
Title	
Address: _____	Date: _____
_____	
_____	
_____	
Date: _____	

The above escrow agreement and instructions received and accepted this _____

day of _____, 2004.

Bank Name

_____

Authorized Officer

_____

SECURITIES AUTHORIZED BY AGENCY

1. Bills, certificates, notes or bonds of the United States;
2. Other obligations of the United States or its agencies;
3. Obligations of any corporation wholly-owned by the government of the United States;
4. Indebtedness of the Federal Nation Mortgage Association; and
5. Time deposits in commercial banks.

SAVINGS ACCOUNT AGREEMENT

TO BANK:_____ SAVINGS ACCOUNT NO.:_____

BANK'S ADDRESS: _____

_____

AGENCY: CITY OF BELLINGHAM
210 Lottie Street, Bellingham, Washington, 98225

CONTRACT NO.:_____

PROJECT TITLE: The Holly Street Landfill / Whatcom Creek Restoration Project

The estimated completion date of contract is:_____

The undersigned, _____, herein referred to as the CONTRACTOR, has directed the CITY OF BELLINGHAM, Washington, hereinafter referred to as the AGENCY, to deliver to you its warrants which shall be payable to you and the CONTRACTOR jointly. Such warrants are to be held and disposed of by you in accordance with the following instructions and upon the terms and conditions hereinafter set forth.

INSTRUCTIONS

1. Warrants or checks made payable to you and the CONTRACTOR jointly upon delivery to you shall be endorsed by you and forwarded for collection. The moneys will then be placed by you in an interest-bearing savings account.

2. When and as interest on the savings account accrues and is paid, you shall collect such interest and forward it to the CONTRACTOR at its address designated below unless otherwise directed by the CONTRACTOR.

3. You are not authorized to deliver to the CONTRACTOR all or any part of the principal held by you pursuant to this agreement, except in accordance with written instructions from the AGENCY. Compliance with such instructions shall relieve you of any further liability related thereto.

4. The CONTRACTOR agrees to pay you as compensation for your services hereunder as follows:

   Payment of all fees shall be the sole responsibility of the CONTRACTOR and shall not be deducted from any moneys placed with you pursuant to this agreement until and unless the AGENCY directs the release to the CONTRACTOR, whereupon you shall be granted a first lien upon such moneys released and shall be entitled to reimburse yourself from such moneys for the entire amount of your fees as provided for herein above. In the event that you are made a party to any litigation with respect to the moneys held by you hereunder, or in the event that the conditions of this agreement are not promptly fulfilled, or that you are required to render any service not provided for in these instructions, or that there is any assignment of the interests of this agreement, or any modification hereof, you shall be entitled to reasonable compensation for such extraordinary services for the CONTRACTOR and

reimbursement from the CONTRACTOR for all costs and expenses, including attorney fees occasioned by such default, delay, controversy or litigation.

5. This agreement shall not be binding until executed by the CONTRACTOR and the AGENCY and accepted by you.

6. This instrument contains the entire agreement between you, the CONTRACTOR and the AGENCY. You are not a party to nor bound by any instrument or agreement other than this. You shall not be required to take notice of any default or any other matter nor be bound by nor required to give notice or demand, nor required to take any action whatever except as herein expressly provided. You shall not be liable for any loss or damage not caused by your own negligence or willful misconduct.

7. The foregoing provisions shall be binding upon the assigns, successors, personal representatives and heir of the parties hereto.

_____	CITY OF BELLINGHAM
Contractor	*Agency*
By: _____	By: _____
	Finance Director
_____	
Title	
Address: _____	Date: _____
_____	
_____	
_____	
Date: _____	

The above savings account agreement and instructions received and accepted this ____ day of _____, 2004.

Bank Name

_____

Authorized Officer

_____

GENERAL PROVISIONS

G-10 Specifications

The "Standard Specifications" referred to herein shall mean 2004 Standard Specifications for Road, Bridge, and Municipal Construction, and the Division One APWA Supplement. The "Standard Plans" referred to herein shall mean the Standard Plans for Road and Bridge Construction as published by the Washington State Department of Transportation. The Special Provisions herein contained shall supersede any provisions of the Standard Plans and Standard Specifications in conflict herewith.

G-15 Definitions and Terms

A. Whenever the terms "Washington State Transportation Commission", "State Department of Transportation", or variation of same are used in the Standard Specifications; they shall be construed to mean "City of Bellingham" or "Owner".

B. Where references are made to the "State Treasurer", the term shall be construed to mean the City's "Finance Director".

C. Where the term "Secretary of Transportation" or "District Administrator" are used, the terms shall be construed to mean "City Engineer".

G-20 Prequalification of Bidders

Bidders shall be qualified by experience, financing, equipment, organization, and performance to do the work called for in the contract documents. The Owner reserves the right to take whatever action it deems necessary to ascertain the ability of the bidder to perform the work satisfactorily. This action will not include a prequalification procedure, but may include a pre-award survey of the bidder's qualifications. Any reference in the Standard Specifications requiring prequalification is hereby deleted.

G-25 Proposals and Bonds

Section 1-02.9 of the Standard Specifications is revised to read: Each proposal shall be sealed in a separate envelope, properly addressed to the Owner with the address indicated on the proposal form. The name and address of the bidder and the name of the project for which the bid is submitted shall be clearly written, printed or typed on the outside of the envelope.

In addition to the bid bond, the Contractor will provide a contract bond in the form made part of these contract documents. In addition to Section 1-03.4 of the Standard Specifications, the contract bond shall indemnify the City from defects appearing or developing in the material or workmanship provided or performed within a period of one year after its acceptance by the City.

Before work begins, the successful bidder must have a valid City of Bellingham Business Registration Certificate and will be subject to paying Bellingham business and occupation taxes. For additional information, call the Finance Department, 360/676-6900. Direct any bidding questions to the Purchasing Office 360/676-6870 and any technical questions to the Project Engineer 360/676-6961. When submitting a bid, use enclosed mailing label on a sealed envelope and complete TITLE, NUMBER, and OPENING DATE on the label.

G-30 Traffic Control Signs

The Contractor shall provide all traffic control and detour signs and any reference in the Standard Specifications that these signs are to be provided by the City is hereby deleted. Signing shall be in accordance with the latest adopted edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD) as Published by the U.S. Department of Transportation.

Signs shall meet the following standards:

A. They shall conform in size, shape, color, and message with those in Part VI of the MUTCD.

B. The use of stripes (other than the standard border) or other geometric patterns or contrasting colors on or around the sign in an attempt to make it more conspicuous shall not be permitted; however, standard fluorescent red-orange flags or yellow flashing lights may be used for added emphasis so long as they do not interfere with the sign message.

C. All signs used shall be properly reflectorized except for parking and pedestrian prohibition signs. Reflectorization of the sign face shall be accomplished using an approved weatherproof, reflectorized sheeting. Paint impregnated with glass beads shall not be used. Where reflectorization is rendered ineffective due to extraneous light sources, the sign shall be illuminated either externally or internally. Where external illumination is used, the source shall be properly shielded to reduce glare. Street or highway lighting shall not be considered adequate for illuminating signs. All reflectorized or illuminated signs should be checked by the Contractor during the hours of darkness to insure that they are functioning properly.

D. Signs shall be constructed from material which will not deteriorate abnormally under normal weather conditions. Sign blanks should be weatherproof plywood or non-corrosive metal. Roll-up signs fabricated from vinyl-coated nylon or vinyl-coated nylon mesh may also be used. If such signs are not reflectorized, they shall not be used at night.

G-31 Traffic Control Within and Abutting the Project

Any time the Contractor's operation is expected to disrupt the normal flow of traffic, the Contractor shall submit a traffic control plan to the Engineer for approval. As construction progresses, each traffic control plan shall be modified and re-submitted if deemed necessary by the Engineer. All signing and traffic control measures shall conform to the Manual on Uniform Traffic Control Devices as adopted by the State of

Washington. Construction shall not be allowed to commence until the traffic control plan is approved.

Streets within the project limits may be closed to traffic by the Contractor only under the following conditions:

A. The Contractor submits a complete signing and traffic control plan to the Engineer for approval five working days prior to the desired implementation date.

B. Approved traffic controls to be in place and operational before commencement of construction.

C. The Contractor shall have total responsibility for the procurement, installation, and maintenance of all traffic control devices required for the duration of the contract.

D. Arterial Streets

1. Complete closure of any arterial is strictly prohibited unless otherwise noted on the plans.

2. Flagging or lane closures, if allowed, shall be prohibited between the hours of 7 a.m. to 8:30 a.m., and 4:30 p.m. to 6 p.m.

All costs encountered in the maintenance of traffic, including the placement of traffic cones, construction signs, detours, etc., and traffic control within and abutting the project as specified above and in the Standard Specifications shall generally be considered incidental to construction and no compensation shall be allowed; any allowance for traffic control labor is, however, an exception.

The Contractor shall use an acceptable means of securing signs, cones, and barricades to prevent them from being wind-blown or tipped while in service. A penalty of twenty dollars ($20.00) will be assessed for each traffic control device which is not in its proper position because of poor installation techniques or lack of maintenance by the Contractor.

G-32 Notification of Adjacent Residents and Businesses

The Contractor shall notify residents and business occupants in writing a minimum of 36 hours and a maximum of 72 hours prior to any work affecting access or service. A daily notification record shall be maintained during the life of the contract. A copy of the notification record shall be supplied to the Engineer upon request. Access interruptions shall be minimized whenever possible. Any costs associated with these requirements shall be considered incidental to other items of work.

G-35 Existing Utilities

The Contractor is cautioned that underground utilities exist in the construction area which may interfere with trench excavation. The Contractor shall make every effort to locate the utilities ahead of the excavation and shall be responsible for their maintenance and protection during his operation. The Contractor is cautioned that the locations of existing utilities which are shown on the plans are approximate.

In the event that the owners of the utilities select to relocate them, the Contractor shall schedule and coordinate his work with that of the utilities owner so as to cause a minimum of mutual interference. Any delay or rescheduling of the Contractor's work caused by the relocation of utilities shall be considered as incidental to construction and no additional compensation shall be allowed therefor. The City will not pay for supporting utilities poles during construction. Support of poles shall be considered as incidental to construction and no additional compensation shall be allowed.

Any damages incurred by utilities of the City of Bellingham due to the Contractor's work shall be repaired by the Contractor at his expense.

G-40 Hours of Work

Contractors desiring to perform contractual work on City holidays, Saturdays or Sundays; or before 7:00 a.m. or after 5:00 p.m. on other days, shall apply to the City Engineer's office in writing. The City Engineer shall determine whether such work is essential. If such work is determined to be essential, permission will be granted under the below provisions for overtime inspection.

Inspection shall be required during time the Contractor is working on the construction site. Inspection, except for overtime inspection, shall be paid by the City of Bellingham at no cost to the Contractor. In the event the Contractor schedules his work in such a way as to make overtime inspection necessary, the Contractor agrees to pay for said inspection.

All time prior to 8:00 a.m. and after 4:30 p.m. on normal working days and all time on Saturdays, Sundays, and City holidays, shall be considered overtime. Costs for overtime shall be calculated based on the Inspector's hourly wages plus benefits, plus 20 percent overhead. All overtime costs shall be deducted from any monies due the Contractor on a monthly basis.

G-45 Retainage

Retainage will be administered in accordance with RCW 60.28.010, as amended, and in accordance with the "Retainage Investment Option" form, made part of these contract documents.

G-55 Sales Tax

The 8.2% retail sales tax required to be paid by the Contractor on the contract price under Title III of the "Revenue Act of 1935" as amended, shall not be included in the price bid for the several items in the contract. Sales tax for water and sewer related items will be computed by the Engineer and paid to the Contractor on the monthly construction estimates. No Washington State Sales Tax will be paid by the City of Bellingham on street related items of work.

G-60 Handicapped

The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices. Employment practices covered by these provisions include: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeships. The Contractor agrees to comply with the rules, regulations and relevant orders of the Secretary of Labor issued pursuant to Section 503 of the Rehabilitation Act of 1973.

In the event of the Contractor's noncompliance with the requirements of this affirmative action clause, actions for noncompliance may be taken in accordance with the rules, regulations and relevant orders of the Secretary of Labor issued under Section 503. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director of OFCCP, provided by or through the City. Such notices shall state the Contractor's obligation under the law to take affirmative action in accordance with Section 503. The Contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding that the Contractor is bound by the terms of Section 503 and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.

The Contractor will include the provisions of this clause in every subcontract or purchase order of $2,500 or more unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 503. With this inclusion in subcontracts and purchase orders, the provisions of the affirmative action clause will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Director of OFCCP may direct to enforce such provisions, including action for noncompliance.

G-65 Cleaning and Air Acceptance Testing

All gravity lines shall be cleaned and air tested in accordance with Section 7-17.3(4 of the Standard Specifications.

The Contractor shall furnish all facilities and personnel for conducting the tests under the observation of the Engineer.

The equipment and personnel shall be subject to the approval of the Engineer.

The Contractor may desire to make tests prior to backfilling for his own purposes. However, the acceptance tests shall be made after backfilling has been completed and compacted.

If the pipe installation fails to meet test requirements, the Contractor shall determine at his own expense the source or sources of leakage, and he shall repair (if the extent and

type of repairs proposed by the Contractor appear reasonable to the Engineer) or replace all defective materials or workmanship. The completed pipe installation shall meet the specified test requirements before being considered acceptable.

G-66 Water Main Connections or Caps

All existing water mains four inches and larger will be connected to the new water main or capped by the City Water Division. Each connection or cap will include all materials necessary to do the connection; resident notification; removal of existing tees, crosses, and valves that are made obsolete by the new main connection; and temporary restoration.

The Contractor shall prepare a sequencing plan for presentation at the project preconstruction conference. The sequencing plan shall depict each phase of water main installation, service transfers, and connections and caps including approximate dates for each. The City reserves the right to alter the sequencing plan during the meeting to reduce the impacts to property owners and to the traveling public.

The Engineer will schedule each connection or cap only after the Contractor submits a written request a minimum of 5 working days before the desired date of connection or cap. The Contractor shall schedule his work to allow the City an additional 3 working days to complete each connection or cap. If the connection cannot be made because of the Contractor's failure to perform, the Contractor shall make the required corrections and resubmit his connection or cap request.

The Contractor shall be responsible for removing temporary restoration and applying any final restoration deemed necessary by the Engineer. The Contractor shall make all necessary excavations to assure gradual transition between the new and existing water main. The new water main shall be installed to within 10 feet of the point of connection to the existing water main or as directed by the Engineer.

Restoration work will be paid at unit prices as described elsewhere in this document. All other work shall be considered incidental to other items of work and no additional payment will be made.

G-70 Disposal of Surplus Excavated Material

All excavated material deemed by the Engineer to be surplus material shall be hauled to a waste site obtained by the Contractor. If the quantity of surplus material hauled to any waste site exceeds 50 cubic yards, the Contractor shall obtain a Fill and Grading Permit from the Bellingham Planning and Economic Development Department or Whatcom County, whichever is appropriate. A copy of the permit shall be submitted to the Engineer prior to the Contractor's use of the site. Failure by the Contractor to provide a Fill and Grading Permit, where appropriate, will result in deduction of material excavation and haul costs from the City's monthly payments to the Contractor.

G-72 Stormwater Management Permit

Stormwater best management practices (BMP's) shall be used on this project to comply with the standards of Chapter 15.42 of the Bellingham Municipal Code. Information concerning BMP requirements can be obtained at the office of the Department of Public Works Engineering Division on the second floor of City Hall. The Contractor shall be responsible to obtain a Stormwater Management Permit prior to receiving notice to proceed. The permit fee shall be considered incidental to other items of work and no additional payment will be made.

G-75 City Electrical Permit

Before beginning illumination installation the Contractor shall apply and pay for an electrical permit at the Building Services counter of the City's Planning & Economic Development Department. The permit fee will be based on the cost of supplying and installing conduit, wiring, and connections for any circuit over 50 watts. Prior to construction the Contractor shall schedule a meeting with the City Electrical Inspector to discuss work notification, the construction schedule, and any other items of work deemed appropriate. The illumination system will not be activated until the Electrical Inspector approves the installation.

G-80 Illumination and/or Signal Pole Installation Certification

Prior to being given authorization to proceed the contractor shall certify in writing to the Engineer that illumination and/or signal poles will be delivered to the jobsite in a timely manner so as to allow installation within the time allowed in the contract. Failure to complete the illumination and/or signal system within the time allotted in the contract will result in assessment of liquidated damages in accordance with Section 1-08.9 of the Standard Specifications.

G-85 Other Contracts or Other Work

It is anticipated that the following work adjacent to or within the limits of this project will be performed by others during the course of this project and will require coordination of the work.

G-95 Safe Workplace

Contractor warrants that before starting the job, it will develop and furnish the City with a copy of its written Accident Prevention Program (APP) and a site specific Safety Plan, which identifies anticipated job safety hazards within the scope of its contract and for all phases of its contract and which addresses the specific means it will use to address each hazard. Contractor warrants that its APP and Safety Plan conforms to the requirements of the Washington Industrial Safety and Health Act. Contractor warrants it will ensure that its employees follow all APPs, Safety Plans and work rules. Contractor warrants that it will communicate all work rules to its employees and that it has a progressive disciplinary plan for safety or work rule violations which it consistently enforces and will continue to enforce throughout the length of this contract, no matter who discovers the violation. Contractor warrants that it will select and furnish to its employees all appropriate safety equipment and participate fully in coordination of all

safety issues among all contractors/subcontractors on the job. Contractor warrants that it will make its APP and Safety Plan available and accessible at the site to all of its employees. Contractor agrees that it will have available in its job file weekly documentation relating to Contractor's safety compliance, identification of hazards or safety violations, actions taken to correct them, disciplinary action taken and safety training undertaken. Contractor warrants that it will provide safety training on a regular basis to all workers as required by WISHA, will conduct safety inspections as required by WISHA and will report all identified hazards. Contractor warrants and agrees that it and each of its employees will comply with all rules and regulations relating to safety, including but not limited to, the WISHA regulations. Contractor agrees to undertake any abatement actions required as a result of the discovery of violations. Contractor warrants and agrees to require each subcontractor to have its own APP and site specific Safety Plan as follows:

SAFE WORKPLACE NOTICE FROM CONTRACTOR TO SUBCONTRACTOR

As a subcontractor to _____ you are required to do the following:

1. Have a written Accident Prevention Program (APP) and a site specific Safety Plan which identifies anticipated job safety hazards within the scope of your subcontract and for all phases of your subcontract, including the specific means you will use to address each hazard prior to starting the job. Your APP and Safety Plan must conform to the requirements of the Washington Industrial Safety and Health Act (WISHA). You must furnish us a copy of both the APP and the Safety Plan prior to starting the job. We will provide you with a copy of our APP, our site specific Safety Plan and our work rules prior to your starting the job.
2. Select all appropriate safety equipment required to do the job and furnish it to your workers.
3. Participate in coordination of all safety issues among all contractors on the job.
4. Make your APP and Safety Plan available and accessible to your workers at the site.
5. Abide by our work rules, which you will communicate to all of your workers. You must have a progressive disciplinary plan for safety or work rule violations which you consistently enforce, no matter who discovers the violations.
6. Provide us weekly documentation relating to your safety compliance, identification of hazards or safety violations, actions taken to correct them, disciplinary action taken and safety training undertaken.
7. Provide safety training on a regular basis to all workers as required by WISHA.
8. Conduct safety inspections as required by WISHA and report all identified hazards.

SECTION 01010: SUMMARY OF WORK

PART 1 – GENERAL

1.01 GENERAL DESCRIPTION OF SITE

The Holly Street Landfill site is a 13-acre historic municipal solid waste landfill located in the City of Bellingham's Old Town district. The general location and layout of the site is shown on Sheet G-1 of the Plans. Municipal solid waste is located on both sides of Whatcom Creek, with the landfill divided into a northern unit and a southern unit. Both the northern landfill unit on the north bank, and the southern landfill unit encompassing Maritime Heritage Park and the south bank of Whatcom Creek, are listed and ranked by Ecology as contaminated sites subject to the investigation and cleanup requirements of the Washington State Model Toxics Control Act (MTCA). Since these sites are essentially one site bisected by Whatcom Creek, Ecology has combined the sites into one site known as the Holly Street Landfill.

1.02 NATURE AND EXTENT OF SITE CONTAMINATION

A Remedial Investigation/Feasibility Study (RI/FS) was prepared by Anchor and Aspect (2003) for this site, including collection of data needed to evaluate the nature and extent of contamination. Soil, sediment, surface water, and groundwater conditions were characterized during the RI/FS. As set forth in Ecology's Cleanup Action Plan (CAP) for the site (included as Exhibit A to the Consent Decree), and based on the findings of the RI/FS, controls are needed at the site to continue to prevent future human and environmental exposure to buried (subsurface) refuse and associated soil contaminants. Moreover, although contaminants have not been detected in groundwater at the site at levels of potential concern, metals such as copper and zinc present in landfill refuse are mobilized by tidal processes affecting the shoreline landfill zone. These processes result in seepage to Whatcom Creek along a localized reach of the northern landfill unit shoreline that poses a potential risk to sensitive aquatic species in this area.

1.03 SELECTED CLEANUP REMEDY

The selected cleanup alternative for the site is a cap constructed along the northern landfill area (adjacent to the ReStore Building and the former Sash and Door property) and localized upland areas, in conjunction with institutional controls and monitoring of localized surface water seeps. Based on a consideration of geochemical processes controlling copper and zinc mobility at the site, the identified shoreline capping system would be designed to restrict tidal mixing and associated oxygen transfer into nearshore refuse deposits of the northwest landfill lobe. Such a cap system is expected to be effective in controlling the release of copper and zinc into Whatcom Creek. Furthermore, it offers a concurrent opportunity to improve the quality of intertidal habitat in this area.

This Project involves combining habitat restoration, public access, and land use elements into a single integrated cleanup remedy (also incorporating source control elements as discussed above). While the habitat restoration component is not necessary to achieve cleanup goals, it is fully consistent with remedial action objectives and the Bellingham Bay Comprehensive Strategy (Ecology 2000). The integrated plan includes:

- Excavating shoreline solid waste from the north bank, within and adjacent to the "B" Street right-of-way, and along localized portions of the south bank (Maritime Heritage Park)
- Backfilling the excavation areas with a clean cap material, graded to relatively flat slopes, concurrently providing slope stabilization and restoring historically lost aquatic habitat in this important estuary
- Enhancing the existing soil cap in portions of the Maritime Heritage Center to be consistent with other landfill areas already capped to ensure that humans and the environment are protected from buried solid waste
- Incorporating a public access boardwalk into the overall Project design to address existing community open space goals and planning objectives

The habitat restoration component of this Project includes conversion of approximately 0.3 acres of existing uplands to aquatic habitat via excavation and

removal of refuse. This will restore critical estuarine riparian buffers, marsh, and mudflat banks that existed historically in this area of Bellingham Bay, and is designed to provide a park-like setting allowing trail access along this stretch of Whatcom Creek to the Maritime Heritage Center, potentially linked into the larger Whatcom Creek Trail Master Plan.

1.04 SPECIFIC REQUIRED WORK TASKS

A. Refuse Excavation and Disposal

As generally described in the RI/FS and CAP, and consistent with the Comprehensive Strategy (Ecology 2000), refuse within a nominal 0.3-acre area within the existing B Street right-of-way (ROW) will be removed as part of the integrated cleanup and habitat restoration Project, and the excavation area backfilled with a clean cap graded material to achieve relatively flat slopes. This will result in a net conversion of uplands into aquatic habitat, providing a substantial net gain in habitat area and function.

As part of this Project, fill and refuse material will be removed (likely using an upland excavator) and transported/disposed at a permitted landfill (e.g., Roosevelt Regional Landfill). Most of the excavation is targeted along the north bank of Whatcom Creek; however, there is also limited excavation and grading on the south bank.

B. North Bank Shoreline Cap Design and Construction

The total thickness of cap material to be placed on the proposed site varies, but in general on the north bank of Whatcom Creek will be 3 to 3 ½ feet. The cap will be constructed in three to four separate compacted lifts, and will consist of separate layers including a clean, relatively fine-grained capping material, sand/gravel armoring material, and topsoil. Construction of the cap on the north bank will be limited to periods when tides are below the elevation of construction subgrade, and when there is no standing water present at the location of cap lift placement. Since the lowest elevation of cap material placement is +3 feet MLLW, the

Contractor shall sequence their operations to account for daily tidal fluctuations. The Contractor shall achieve a nominal degree of compaction on each lift underlying the topsoil layer, accomplished by rolling or tamping each lift-. The topsoil layer will not be tightly compacted with mechanical equipment, since this could adversely affect its ability to support vegetation.

In selected areas, anchored large woody debris will be installed to improve habitat conditions along the creek and to potentially help reduce the potential for bank erosion. Also, in order to limit site access, a large woody debris barrier will be constructed at the northern end.

C. Stabilization of South Bank

As part of remedial measures for the Holly Street Landfill, a rock and gravel "buttress" will be placed along the south bank slopes of Whatcom Creek, with a design grade of 2H:1V or flatter. This will serve to both "soften" the currently eroded escarpment geometry of this bank and increase its overall stability, particularly against failure during seismic events.

D. Public Access Boardwalk

Within the northern landfill lobe, a new shoreline boardwalk trail will be constructed in the middle level of the bank near the lower edge of the riparian zone, and above the lower bench/marsh zone. The trail will run parallel to the shoreline for approximately 500 feet, and will link to Holly Street on the west and the fish hatchery path on the east. From the fish hatchery, the new boardwalk will ultimately connect to the Whatcom Creek Trail over an existing bridge.

E. Plantings

The site will be revegetated through the planting of trees, shrubs, and ground cover. In some areas, erosion control fabric will be installed on freshly capped surfaces to help protect against erosion before the vegetation is established.

1.05 COORDINATION OF WORK WITH WATER LEVELS

Whatcom Creek undergoes variations in water levels in response to tidal cycles and flow volumes in the creek. In general, the Contractor is required to conduct earthwork activities (excavation, backfilling, and capping) at times when water levels are at least one foot below the elevation of the earthwork. Additional requirements are specified in Section 02300 – Earthwork.

END OF SECTION 01010

SECTION 01063: HEALTH AND SAFETY

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

This section specifies minimum requirements for health and safety related to site construction and cleanup activities.

The Contractor shall be responsible for health and safety measures and conditions at the site, including the health and safety of visitors such as City representatives, the Engineer, and others involved with the Project.

All applicable federal, state, and local regulations shall be adhered to by the Contractor.

Many of the work tasks are likely to place workers in the position of coming in contact with former landfill refuse and associated soil contaminants. Therefore, the Contractor shall be required to comply with 29 CFR 1910.120 and Chapter 296-62 WAC, Part P. The Contractor Health and Safety Plan (CHASP; see Part 1.03 of this Section) shall clearly define health and safety requirements for specific site activities. All visitors shall be required to read and adhere to the CHASP.

All Contractors and subcontractors will be required to have health and safety training as required by the Washington State Department of Labor and Industries (Chapter 296-62 WAC, Subpart P, Hazardous Waste Operations and Emergency Response), including on-site training. At a minimum, 40 hour health and safety training will be required for:

- Workers handling excavated landfill refuse and potentially contaminated materials
- Workers performing construction activities within excavated areas
- Workers in contact with spoils from construction activities, including boardwalk pile installation
- Workers performing placement of backfilling and capping materials

The CHASP may allow for reduced training requirements following exposure monitoring if deemed appropriate by the Contractor's Health and Safety Manager.

1.02 JOB CONDITIONS

A. Site Contaminants

Site activities may expose subsurface soil or groundwater containing metals, hydrocarbons, and various types of debris. Direct human contact with these materials must be minimized and limited to permissible exposure levels.

B. Potential Exposure Routes

Potential exposure routes include:

1. Dust Inhalation
2. Skin and Eye Contact
3. Ingestion

C. Potential Physical Hazards

Existing and construction-related physical hazards such as debris, excavations, heavy equipment traffic, fire, and construction activities may possibly cause safety-related concerns. Precautions to prevent construction-related hazards shall be addressed in the CHASP.

Use of impermeable protective clothing (Tyvek suits, gloves, etc.) presents a risk of heat stress. The use of these garments may reduce the ability of the body to cool off as a result of reduced evaporation. Precautions to prevent heat stress shall be addressed in the CHASP.

Notify the Engineer immediately if previously unknown underground storage tanks, barrels, or other chemical containers are found. Stop work in the vicinity of the unknown container until further direction is received from the Engineer.

The Contractor's personnel shall not enter excavations of a depth greater than four feet unless excavation side walls are sloped as specified in WAC 296-155-657, or if the side walls are supported by a means of sufficient strength to protect personnel. Excavation, shoring, and trenching precautions shall be specified in the CHASP, as set forth by WISHA regulations WAC 296-155, Part N.

1.03 SUBMITTALS

A. Contractor's Health and Safety Plan (CHASP)

The Contractor(s) shall submit a CHASP that presents the minimum health and safety requirements for job site activities, and the measures and procedures to be employed for protection of on-site personnel as well as visitors. The plan will cover the controls, work practices, personal protective equipment, and other health and safety requirements that will be implemented by the Contractor(s) in connection with the remedial action activities.

The CHASP shall be prepared by a person that has at least one year of experience in the development of site-specific safety Plans for hazardous waste sites.

The Contractor shall submit a copy of the CHASP to the Engineer for review 14 working days prior to conducting any work at the site. The Engineer will review the CHASP for general conformance with the Contract documents but will not be responsible for its adequacy or implementation.

Specific sections of the CHASP shall include the elements specified in WAC 296-62, Part P, but will not be limited to, the following:

1. Assignment of health and safety responsibilities on site
2. Proposed work activities
3. Hazard analysis for each site task

4. Monitoring procedures to include air monitoring, dust monitoring, noise monitoring, and personnel monitoring
5. Protection measures for specific activities
6. Site control measures including a site map, site work zones (i.e., exclusion zone, contaminant reduction zone, and support zone)
7. Site communications and site security
8. Trench safety systems and/or shoring
9. Medical surveillance requirements
10. Training requirements
11. Decontamination of equipment and personnel
12. Disposal of contaminated materials generated during site activities
13. Recordkeeping
14. Emergency procedures
15. Personal protective equipment
16. Spill containment program
17. Site visitors handling
18. Site safety meetings

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

A. Use of Contractor's Health and Safety Plan

The Contractor shall maintain the CHASP on site at all times. All individuals expected to work on the site shall read the CHASP and sign an acknowledgement before entering the site, stating that the individual has read and understands the CHASP.

The Contractor(s) will employ a Health and Safety Manager to implement the conditions of the CHASP.

During construction, the CHASP shall be amended as needed by the site Health and Safety Manager, to include special work practices warranted by site conditions actually encountered. Special practices could include the use of any special equipment not specified in the original plan.

B. Housekeeping and Sanitation

The Contractor shall comply with the applicable housekeeping requirements specified in WAC 296-155-020. In areas where workers may pass by or perform duties, all debris and accumulations of materials shall be removed. Storage of materials shall not create a hazard.

During the course of site construction, the Contractor shall ensure continuous cleanup of their work area, including removal of all rubble to trash disposal areas or staging areas.

The Contractor shall be responsible for providing an adequate supply of potable drinking water for its employees in accordance with the requirements of WAC 296-155-140 (1). Portable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap.

The Contractor shall be responsible for providing its employees with a means for personal cleanup at the work site, in accordance with WAC 296-155 (2), including provision of clean, tepid wash water (between 70 and 100°F) and cleansing agents.

The Contractor shall provide accessible toilet facilities for its employees in accordance with the requirements of WAC 296-155-140 (4).

C. First Aid

The Contractor shall have available at the site, at all times, a person or persons holding a valid certificate of first-aid training. The certificate shall be no more than three years old. The Contractor's crew leaders, supervisors, and persons in direct charge of crews (i.e., a group of two or more persons working at the site), shall possess a valid first-aid certificate.

The Contractor shall provide first-aid supplies at the work site for its employees as required by WAC 296-155-125.

PART 4 – MEASUREMENT

Not used.

PART 5 – PAYMENT

All costs for health and safety, including preparation of the CHASP, shall be incidental to the Contract and no separate payment shall be made for this work.

END OF SECTION 01063

SECTION 01310: COORDINATION AND MEETINGS

PART 1 – GENERAL

1.01 CONTACT PERSON

For further information relating to these Specifications please contact:

A. Prior to Contract Award: Sheila Hardy, City of Bellingham Office of Neighborhoods and Community Development. (360) 676-6880.

B. After Contract Award: Michael Whelan, P.E. or Peter Hummel, Anchor Environmental, L.L.C., Seattle, Washington. (206) 287-9130.

1.02 MEETINGS

A. Pre-Construction Conference

1. Prior to the commencement of work at the site, a pre-construction conference will be held at a mutually agreed upon time and place. The conference shall be attended by:

   a) Contractor and his/her superintendent

   b) Principal subcontractors

   c) Representatives of principal suppliers and manufacturers, as appropriate

   d) Representative of City

   e) Project Engineer

   f) Others as requested by Contractor, City, or Engineer

2. Unless previously submitted to Engineer, Contractor shall bring to the conference all required pre-construction submittals.

3. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

a) Contractor's schedules

b) Transmittal, review, and distribution of Contractor's submittals

c) Processing applications for payment

d) Maintaining record documents

e) Critical work sequencing

f) Required inspections and approvals

g) Communication links and authority for field decisions and change orders

h) Use of premises, office and storage areas, security, housekeeping, and Owner's needs

i) Major deliveries and priorities

j) Contractor's assignments for safety and first aid

4. The City's designated Project Engineer (Engineer) will preside at the conference and arrange for keeping the minutes and distributing the minutes to persons in attendance.

B. Weekly Progress Meetings

The City's Engineer will schedule and administer progress meetings at the Project site at weekly intervals and will prepare agendas with copies for participants, preside at meetings, record minutes, and distribute copies within five working days to Contractor, participants, and affected parties. Contractor shall provide acceptable location and fixtures (tables, chairs, etc.) for weekly progress meetings.

Attendees: In addition to the Engineer and representatives of the City, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress. The Engineer will coordinate attendance at weekly progress meetings with

Agencies whose attendance is deemed appropriate by the Engineer or the City, or is requested by the Contractor.

Agenda for weekly progress meetings may include the following:

1. Review of minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedules.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effects of proposed changes on progress schedule and coordination.
13. Health and safety report, including discussions of any incident and how it was addressed.
14. Other business relating to the Work.

All costs of the above-mentioned work shall be incidental to the Contract work.

END SECTION 01310

SECTION 01450: QUALITY CONTROL

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. This section describes the Contractor's quality control requirements, duties, and responsibilities during execution of the work. The intent of this section is to require the Contractor to establish a necessary level of control that will:

1. Adequately provide for the production of acceptable quality materials and constructed features.

2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements are and have been met.

B. The Contractor shall establish, provide, and maintain a Construction Quality Control (CQC) Plan as specified herein, detailing the methods and procedures that will be taken to assure that all materials and completed construction elements conform to Contract Plans, Specifications, and other requirements, whether these elements be manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the technical Specifications, it is the responsibility of the Contractor to ensure that construction and construction quality controls are accomplished in accordance with the stated purpose and Specifications as described herein.

C. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQC Plan has been reviewed and approved by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the CQC Plan has been reviewed and approved.

D. Quality control requirements contained in this section and elsewhere in the Contract technical Specifications are in addition to and separate from any acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer. The Contractor shall cooperate fully in facilitating the sampling and inspection necessary for an effective acceptance testing program by the Engineer.

1.02 SUBMITTALS

The Contractor shall be responsible for the following submittals:

A. CQC Plan (including Inspection and Test Plan)

B. Daily CQC Reports (including Daily Inspection Reports, and Daily Test Reports)

C. Certified test reports

PART 2 – PRODUCTS

Products that are used to accomplish or are incorporated into the work of this section shall be as selected by the Contractor, subject to approval by the Engineer.

PART 3 – EXECUTION

3.01 CONTRACTOR QUALITY CONTROL PROGRAM

The Contractor shall establish a Quality Control Program to perform inspection and testing of all items of work required by the technical Specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable Specifications and Plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical Specifications, in addition to other requirements of

this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

3.02 CONTRACTOR QUALITY CONTROL (CQC) PLAN

A. The Contractor shall describe the CQC in a written document titled "Contractor Quality Control Plan," which shall be submitted to the Engineer no later than 10 days prior to the start of any clearing, excavation, backfilling, capping, or construction. The CQC Plan will be used to document inspections, monitoring, surveys, and other actions to be taken by the Contractor to ensure that the work complies with all Contract requirements.

B. The CQC Plan shall demonstrate the Contractor's understanding of the total Quality Control requirements of the Contract and generally how these will be utilized to control all processes within material/construction tolerances and acceptance criteria.

C. The CQC Plan shall be organized to address, as a minimum, the following items:

1. General requirements.
2. Quality control organization.
3. Inspection and testing requirements.
4. Inspection and test plan.
5. Documentation of quality control activities.
6. Requirements for corrective action when quality control and/or acceptance criteria are not met.

D. The Contractor is encouraged to add any additional elements to the CQC Plan deemed necessary to adequately control all production and/or construction processes required by this Contract.

E. Control of Non-conforming Items:

The CQC Plan shall include a non-conformance procedure that provides for the identification, documentation, disposition and control of non-conforming items, and identifies the responsibilities for preparation, review, approval, and implementation of the proposed resolution.

F. Control of Measuring and Test Equipment:

The CQC Plan shall establish a system for the calibration, maintenance, and control of measuring and test equipment used by Contractor during construction. Procedures shall provide for the identification of each instrument or equipment item that requires calibration or checking, and the establishment of a calibration system based on elapsed time or usage cycles.

Records of calibration shall be traceable to nationally recognized standards; otherwise, the basis for calibration shall be established and documented. Calibration standards used must meet the accuracy tolerance recommended by the manufacturer of the equipment being calibrated.

G. Supplier Quality Control:

The CQC Plan shall establish a system for the evaluation and selection of suppliers of material, items and services. The system shall include:

1. Documented review and assessment of potential suppliers' quality system.

2. Development of specified evaluation criteria.

3. Inclusion of applicable quality criteria in purchase documents.

4. Regular reviews and evaluations of suppliers' on-going quality performance.

H. The CQC Plan shall describe the responsibility, authority and interrelation of all personnel who manage, perform, and verify work affecting quality. This shall include personnel who need organizational freedom and authority to:

1. Initiate the actions necessary to prevent the occurrence of non-conformances.

2. Identify and record any product quality problems.

3. Initiate, recommend or provide solutions through designated channels.

4. Verify the implementation of solutions.

5. Control further processing, delivery or installation of non-conforming material or items until the deficiency has been corrected.

3.03 QUALITY CONTROL ORGANIZATION

The CQC shall be implemented by the establishment of a quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel. The organizational chart shall be included in the CQC Plan. Qualifications of all proposed personnel and independent testing labs shall be documented and submitted in the CQC Plan.

The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

A. The Contractor shall designate an individual within its organization who is responsible for overall management of the Quality Control Program and has full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the Contract Plans and technical Specifications. This individual, termed the CQC

Supervisor, shall report directly to a responsible officer of the construction firm and not to this Project's line management.

B. The CQC Supervisor's qualifications shall be submitted to the Engineer for review and approval. At the option of the Engineer, the candidate(s) for CQC Supervisor shall be subject to interview by the Engineer prior to approval. The Contractor's approved CQC Supervisor shall not be removed or replaced without prior written approval by the Engineer.

C. The CQC Supervisor shall have the authority to stop the work when and where deemed necessary to ensure compliance with the Contract Documents.

D. The Contractor shall maintain a sufficient number of qualified Quality Control Personnel to adequately implement the Quality Control Program. The Contractor shall provide sufficient qualified Quality Control Personnel to monitor each work activity at all times. Quality Control Personnel shall report directly to the CQC Supervisor.

3.04 INSPECTION AND TESTING REQUIREMENTS

Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified herein.

A. The CQC Plan shall establish a system for ensuring that all inspections are performed in accordance with the Inspection and Test Plan defined in Section 3.06. The Contractor shall use only inspection personnel who are independent of craft supervision and field Engineering to perform quality verification inspection and testing.

B. The CQC Plan shall describe and specify control testing operations required to qualify, demonstrate, and/or ensure the quality and characteristics of items, site conditions, and/or the construction of

Contract required items. All testing shall be performed in accordance with the Inspection and Test Plan.

C. Modifications, repairs, and replacements required as a result of test failures shall be treated as non-conforming items and shall be controlled in accordance with the controls for non-conforming items.

D. Inspection and testing activities must be performed in accordance with procedures that may be supplemented by specific or standard instructions, work operations, or planning documents, including inspection Plans delineating inspection hold points. The inspection activities that shall be planned in advance include:

1. Receiving inspection.
2. Construction inspection and testing.
3. Installation inspection and testing.
4. Plant Inspections.

E. Inspection and test activities shall have documentation reflecting the applicable inspections or tests performed. Inspection and test procedures and instructions shall provide:

1. References to applicable documents, such as Drawings, Specifications, and procedures.
2. Identification of prerequisites and special-process control requirements, such as personnel, procedure or equipment qualifications, suitable and controlled environmental conditions, and calibrated instrumentation.
3. Identification of characteristics to be inspected.
4. Identification of individuals or groups responsible for performing the inspection.

5. Acceptance and rejection criteria (explicit or by reference) obtained from Specifications, Drawings, supplier instructions, and/or construction standards.

6. A description of the method of inspection and equipment to be used or reference to an appropriate procedure.

7. Identification or frequency of inspection or sampling.

8. Provisions for establishing mandatory inspection hold points for witness by the Engineer.

9. Requirements that inspections of modifications, repairs, and replacements be performed in accordance with either the original inspection procedure, instruction, plan, special procedures or Plans appropriate to the work activity.

10. Requirements that inspection and test records contain:

    a) A description of the observation.

    b) Record of the date and results of the inspection or test, including any special documentation and sign-off by the inspector.

    c) Inspector identification.

    d) Evidence as to acceptability of the results.

    e) Verification that inspection or test operations are complete and acceptable.

    f) Action taken to resolve any discrepancies noted.

    g) Adequate documentation to demonstrate that the completed inspections or tests have met the objectives defined in the Inspection and Test Plan.

F. Inspections shall be performed daily to ensure continuing compliance with Contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

1. During any plant operation for material production, quality control test results and periodic inspections shall be utilized to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical Specifications. All equipment utilized in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQC Plan shall detail how these and other quality control functions will be accomplished and utilized.

2. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment utilized in placing, finishing, grading, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical Specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and utilized.

3.05 PLANT INSPECTION

The Engineer or authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the Engineer conduct plant inspections, the following conditions shall exist:

A. The Engineer shall have the cooperation and assistance of the Contractor and the producer Contracted for materials.

B. The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

C. If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonable needed for conducting plant inspections. Office or working space shall be conveniently located with respect to the plant.

It is understood and agreed that the Engineer shall have the right to re-test any material which has been tested and approved at the source of supply after it has been delivered to the site. The Engineer shall have the right to reject only material which, when re-tested, does not meet the requirements of the Contract, Plans, or Specifications.

3.06 INSPECTION AND TEST PLAN

A. As a part of the overall Quality Control Program, the Contractor shall implement an Inspection and Test Plan, as required by the individual technical Specifications. The test plan shall include the minimum tests and test frequencies required by each technical specification item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

B. The Contractor shall prepare an Inspection and Test Plan that identifies all inspection and test activities required by the construction specification. The Inspection and Test Plan shall be included in their CQC Plan, and shall include:

1. An itemized listing of inspection and test requirements.

2. A reference of documents for each plan.

3. Inspection and test methods employed in determining compliance.

4. Documentation requirements necessary to show evidence of compliance.

5. Identification of the inspection or test status for work in process by using work sequence Plans, inspection or test records, tags, markings, or other devices compatible with the item, system, or operation being inspected or tested. Work sequence Plans shall identify hold and witness points for inspections and tests, which shall also be shown on the Project Schedule.

6. Any other information or verification required to assure compliance with Contractual requirements.

7. Verification that material marking is visible and correct material has been used.

8. Specification item number (e.g., P-401):

   a) Item description.

   b) Test standard (e.g., ASTM).

   c) Test frequency.

   d) Control requirements.

C. The Inspection and Test plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

D. All quality control test results shall be documented by the Contractor as specified herein.

3.07 DOCUMENTATION

A. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests

involved results of inspections or tests nature of defects, deviations, causes for rejection, proposed remedial action, and corrective actions taken.

B. Specific Contractor quality control records required for the Contract shall include, but are not necessarily limited to, the following records:

1. Certified test reports for off-site testing and inspections shall be submitted in accordance with Section 01330—Submittals.

2. Quality Control Records are those documents that have been reviewed and accepted by the Contractor as complete, correct and legible. Quality Control Records shall include the documents such as:

a) Drawings, Specifications, procedures used for construction, procurement documents, inspections and test records.

b) Submittals.

c) Personnel and procedure qualification records.

d) Material, chemical, and physical property test results.

e) Certificates of Compliance and shipment releases.

f) Supplier surveillance records.

g) Receiving inspection, storage, cleaning, and cleanliness control records.

h) Non-conformance reports and corrective actions.

All Quality Control records shall be identified in the CQC Plan and maintained in the Contractor's job site files. The Engineer shall be provided access to these files when requested. Upon the completion of the Contractor's Contractual activities, these files shall be turned over to the Engineer.

Quality control records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the Contract. Legible copies of these records shall be furnished to the Engineer daily as specified below. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQC Supervisor.

3. Daily CQC Report. The Contractor shall prepare and maintain a Daily CQC Report of operations. The daily CQC report shall include a Contractor's Daily Construction Report, and shall submitted on a daily basis to the City and the Engineer. At a minimum, information in the Daily CQC Report shall include the date, period covered by the report, equipment used, description of activity as identified by site coordinates, quantity of materials placed or installed that day and to date, downtime and delays to the operation, health and safety status, and other relevant comments concerning conduct of the operation. The report shall include the results of all inspections, surveys, and monitoring activities and shall be signed by the Contractor's Superintendent or CQC Supervisor. The Daily CQC Report shall also include the following elements:

    a) Daily Inspection Reports. Each member of the Contractor's quality control personnel shall maintain a daily report of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the Engineer. These daily inspection reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:

        i. Technical specification item number and description

ii. Compliance with approved submittals

iii. Proper storage of materials and equipment

iv. Proper operation of all equipment

v. Adherence to Plans and technical Specifications

vi. Review of quality control tests

vii. Inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed

The daily inspection reports shall be signed by the responsible quality control technician and the CQC Supervisor and shall be attached to the Contractor's Daily CQC Report.

b) Daily Test Reports. The Contractor shall be responsible for establishing a system that records all quality control test results. Daily test reports shall document the following information:

i. Technical specification item number and description

ii. Test designation

iii. Location

iv. Date of test

v. Control requirements

vi. Test results

vii. Causes for rejection

viii. Recommended remedial actions

ix. Retests

The daily test reports shall be signed by the responsible quality control technician and the CQC Supervisor and shall be attached to the Contractor's Daily CQC Report. When required by the technical

Specifications, the Contractor shall maintain statistical quality control charts.

C. Document Control

The Contractor's CQC Plan must require that Contractor-generated documents pertaining to quality related items be controlled. The following types of documents shall be on controlled distribution to ensure that changes to them are transmitted and received when applicable:

1. Manuals
2. Instructions
3. Procedures
4. Specifications
5. Drawings
6. Inspection and test Plans
7. Field change requests
8. Inspection Test and Manufacturing procedures

3.08 CORRECTIVE ACTION REQUIREMENTS

A. The CQC Plan shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance), and shall detail what action(s) will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical Specifications.

B. The CQC Plan shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when

a process is out of control and the type of correction to be taken to regain process control.

C. When applicable or required by the technical Specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

3.09 SURVEILLANCE BY THE ENGINEER

A. All items of material and equipment shall be subject to surveillance by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper is maintaining an adequate quality control system in conformance with the requirements detailed herein and the applicable technical Specifications and Plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer at the site for the same purpose.

B. Surveillance by the Engineer does not relieve the Contractor of performing quality control inspections of on-site or off-site work conducted by the Contractor or by subcontractors.

C. The Engineer may perform acceptance testing of all or portions of the Work at his/her discretion. See paragraph 1.01.D of this specification section.

3.10 NON-COMPLIANCE

A. The Engineer will notify the Contractor of any non-compliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his/her authorized representative to the Contractor or his/her authorized representative at the site of the work, shall be considered sufficient notice.

B. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the Contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

1. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.

2. Carry out the functions and operations of the Contractor's approved Quality Control Program. Costs incurred by the City to operate the Quality Control Program or to otherwise remedy the Contractor's non-compliance with quality-related provisions of the Contract shall be deducted from the total amount due the Contractor. This deduction shall be based on the actual cost to the City for operation of the Quality Control Program, as opposed to the amount that the Contractor may have bid initially for Quality Control services.

3. Order the Contractor to stop operations until appropriate corrective actions are taken.

C. Any failure by the Engineer to notify the Contractor of any non-compliance with any of the foregoing requirements shall not be deemed as a waiver of its enforcement rights hereunder and that the Contractor is still bound by the terms and conditions of said requirement.

PART 4 – MEASUREMENT AND PAYMENT

Contractor Quality Control is considered to be incidental to the Contract and no separate payment will be made for this work.

END OF SECTION 01450

SECTION 01505: CONSTRUCTION FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

The Contractor is required to make necessary provision for temporary utilities (electricity, lighting, heating, ventilation, telephone service, water, and sanitary), temporary controls (barriers, fencing, protection of work, security, and traffic), and construction facilities (parking and staging areas, progress cleaning, and offices) to fulfill the requirements of the Contract, support the Contractor's work force, and support the Owner's representatives.

1.02 TEMPORARY POWER

A. Contractor shall provide necessary power service.

B. Contractor shall arrange with the electrical utility, as needed, for additional power requirements, including power takeoff points, voltage and phasing, transformers, and metering, and shall pay resulting costs and fees.

1.03 TELEPHONE SERVICE

Contractor shall provide telephone service at the construction site office for Contractor's own use. Cellular telephone service is acceptable as a substitute for land-line telephone service.

1.04 TEMPORARY WATER SERVICE

Contractor shall provide necessary water service and any necessary special connections to a water supply.

1.05 TEMPORARY SANITARY FACILITIES

Contractor shall provide on-site toilet and wash-up facilities for the work force that comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of dwellings and camps.

1.06 TEMPORARY BARRIERS

Contractor shall provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities from damage during construction operations.

1.07 TEMPORARY FENCING

At all times during the construction period, the Contractor shall maintain fences that enclose the areas of the site to the satisfaction of the Owner's representative. The temporary fencing alignments shown on the Plans are the minimum allowable extents of temporary fencing. The Contractor shall provide gates at access points where required, and gates shall be kept locked during off-work hours. A key lock shall be given to the Engineer for the Engineer's use.

1.08 PROTECTION OF NEW WORK AND EXISTING PROPERTY

A. The Contractor shall protect existing structures, property, parking lot surfaces, cultivated or planted areas, paths, sidewalks, and other surface improvements from damage, and shall provide bracing, shoring, or other work necessary for such protection.

B. The Contractor shall protect installed work and shall provide special protection where required by the specifications.

C. The Contractor shall repair or replace damaged structures, vegetation, work, materials, or equipment to a condition equal to or better than the condition prior to the damage at no additional cost to the Owner. Any such repair and/or replacement shall be approved by the Engineer.

D. The Contractor shall restore all sites to their pre-construction condition, prior to completion of the work.

1.09 CONTRACTOR'S SECURITY

The Contractor shall provide security and facilities to protect the work and existing facilities from unauthorized entry, vandalism, or theft.

1.10 MAINTENANCE OF TRAFFIC

The Contractor shall conduct their work to interfere as little as possible with public travel, whether vehicular or by other modes. Contractor must obtain approval of haul routes and shall provide certified traffic control personnel to control access and movement of materials.

1.11 PARKING AND STAGING AREAS

There is limited room for parking and staging areas at the proposed site. Staging areas provided by the Owner are shown on the Contract Drawings. The Contractor shall be responsible for maintaining parking and staging areas and for restoring them upon completion of the work. The staging areas shall be fenced with temporary concrete block-based fences to deter unauthorized entry. Staging areas shall be primarily used for field offices, equipment and materials storage, and temporary soil stockpiling; with secondary use, as space allows, for employee parking. If additional area is required, the Contractor shall make his/her own arrangements with the Owner and/or with adjacent property Owners. Any unauthorized use of property for storage, parking, etc., shall be at the Contractor's sole risk and cost. Temporary material storage areas on the South Bank (Maritime Heritage Park) are only designated for short duration use for materials only.

1.12 PROGRESS CLEANING

A. The Contractor shall maintain areas free of waste materials, debris, and rubbish and shall maintain the project site in a clean and orderly condition.

B. The Contractor shall remove waste materials, debris, and rubbish from the site as soon as such materials become unfit for use in the work. In the event that such material is not removed immediately, the Owner reserves the right to have the material removed and charge the expense to the Contractor.

C. The Contractor shall prevent dirt and dust from escaping trucks that depart the site by covering dusty loads, by washing truck tires before trucks leave the site, or by other methods as applicable. This requirement also applies to the Contractor's trucks and equipment at the disposal site.

D. The Contractor shall provide a legal, off-site debris disposal site.

1.13 CONTRACTOR'S OFFICE

A. During the performance of this Contract, the Contractor shall maintain a suitable office near the site of the work that shall be the headquarters of a Contractor's representative authorized to receive Drawings, instructions, or other communications or articles.

B. Communications given to the Contractor's representative or delivered to the site office in the Contractor's absence shall be deemed to have been delivered to the Contractor.

C. The Contractor shall maintain copies of Drawings, specifications, material safety data sheets (MSDS) for all products to be used on site, and other Contract documents, available for review and use at all times, at the site office.

1.14 FIELD ENGINEER'S OFFICE

A. The Contractor shall provide a secure field office suitable for use by the Engineer and his/her resident inspection staff. The Engineer's field office shall be a minimum of 200 square feet in size and shall be separate from the Contractor's field office. It shall be for the exclusive use of the Engineer and his/her staff.

B. The office shall be complete with a 5-foot office desk with three drawers, office-type chairs, one layout table of 2½ by 5 feet, one two-drawer lockable metal filing cabinet, shelves, bulletin board, an additional chair, lights, ventilation, air conditioning, and heat.

The Contractor shall also provide two sets of keys providing access to the field office.

C. The Contractor shall also equip the Engineer's field office with the following for the entire project duration, and maintain as needed:

1. Two separate phone lines (one being a dedicated fax line)
2. A functioning touch-tone telephone with hands-free capability and voice messaging
3. A plain paper facsimile machine
4. A plain paper copy machine
5. Computer internet access

D. The Contractor's personnel will not be allowed use of the telephone in the Engineer's office.

E. Sanitary facilities shall be located nearby. The Contractor shall provide janitorial services on a regular basis to clean the field office.

PART 2 –PRODUCTS

Not used.

PART 3 –EXECUTION

Not used.

PART 4 –MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work required by this section. The cost for this portion of the work will be considered incidental to, and included in the payments made for, the applicable bid items in the Schedule of Unit Prices.

END OF SECTION 01505

SECTION 01533: TREE AND PLANT PROTECTION

PART 1 – GENERAL

1.01 SUMMARY

This section includes administrative and procedural requirements for the protection of trees, shrubs, and plant material not designated for removal. Such trees, shrubs, and plant materials shall be left in place and protected from damage or injury by the Contractor during construction using full and adequate methods of protection.

1.02 RELATED SECTIONS

Requirements of Section 02200 Site Clearing and Demolition and other Division 2 sections apply to protection of trees, shrubs, and plant materials.

1.03 DEFINITIONS

A. Drip line: The outer edge of the tree canopy.

B. Critical root zone: A circle around the tree trunk whose radius (in feet) is equal to the diameter of the tree trunk (in inches) as measured at breast height.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 PROTECTION WITHIN DRIP-LINE

A. Where existing trees to remain are within the area of work, or where existing trees outside the area of work have drip-lines extending into the area of work, the Contractor shall employ methods to minimize adverse impact to all parts of these existing trees including limbs and roots. The Contractor shall notify the

Engineer of any construction work within the drip-line of trees at least one working day before the scheduled activity. Methods or minimizing adverse impact may include:

1. Temporary construction fencing
2. Temporary tie-up of low limbs
3. Application of a 4- to 6-inch thick layer of mulch (or wood chips salvaged from clearing and grubbing operations) within the drip-line of trees
4. Timber or steel planking for protection of surface roots from equipment
5. Tree root pruning or other tree root treatment as directed by the Engineer, and with the assistance of the City Arborist, for roots two inches in diameter or larger
6. No storage of equipment or materials shall be allowed within the drip-line of trees not designated for removal. Steel or timber planking made of 4-inch thick material, each plank covering a minimum of eight square feet, shall be used to support backhoe and other equipment when set within the drip-line of a tree or sodded planting strip.
7. Where excavation or pavement removal or placement operations occur that impact tree roots two inches or greater in diameter, the Engineer, with the assistance of the City Arborist, will determine how these tree roots are to be handled.

3.02 ABOVE-GRADE WORK

A. Tree removal or tree trimming within 10 feet of any overhead utility line requires the Contractor to make notification to the appropriate utility company.

B. When the Contractor anticipates construction operations that will unavoidably affect tree limbs, the Contractor shall notify the Engineer and the City Arborist at least five working days in advance of commencing such operations.

1. Before trimming any trees, the Contractor shall notify the Engineer and the City Arborist of the proposed method and the amount of trimming required.

2. Trimming shall be done by a professional tree service company whose past and current performance is in accordance with National Arborist Association tree-pruning standards.

3.03 EXCAVATION AND TRENCHING WITHIN CRITICAL ROOT ZONE

A. Excavation or trenching of any kind within the critical root zone of trees to remain shall not be allowed unless the Contractor requests permission to do so at least two working days in advance and receives approval of the Engineer. The critical root zone is defined as an area surrounding the tree trunk with radius measuring one foot for each inch of tree trunk diameter at breast height.

B. Treatment of Roots: Excavation around roots 2 inches in diameter and greater requires handwork.

1. Individual tree roots 2 inches or greater in diameter shall not be cut, but rather protected when within the drip-line of the tree.

2. Tree roots smaller than 2 inches in diameter shall be cleanly cut flush with the edge of the excavation.

3. Ripping or tearing of tree roots will not be allowed.

3.04 REPAIR, REPLACEMENT, AND PAYMENT FOR DAMAGE

A. Trees or other plant material not ordered or designated to be removed but that are destroyed or irreparably damaged by

Contractor operations as determined by the Engineer, shall be repaired or replaced by the Contractor in accordance with the Engineer's recommendations.

1. Replacements shall be of the same species and as nearly as possible of the same size as the trees to be replaced. The Owner has the option to request a substitute species, and move smaller replacement trees of equal value to the location of damaged trees.

2. The Contractor shall allow two working days advance notice for inspection of nursery stock replacements by the Engineer and City Arborist.

B. Payment: In addition to the Contractor's restoration approved by the Engineer, the Contractor will be assessed damages for the difference in the dollar value of the damaged tree, shrub, or other plant material, and the dollar value of the replacement.

1. The dollar value will be determined by the Engineer from the "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers, current edition. Damages assessed will be deducted from moneys due or that may become due to the Contractor.

C. Planting of replacement stock shall be done in accordance with the requirements of the Contract Documents during the first fall or spring planting period, whichever comes first.

END OF SECTION 01533

END OF DIVISION ONE

SECTION 02100: MOBILIZATION / DEMOBILIZATION

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

The provisions and intent of the Contract, including the General Conditions, Supplementary Conditions, and General Requirements, apply to this work as if specified in this section.

1.01 DESCRIPTION OF WORK

Mobilization shall consist of preconstruction expenses and costs of preparatory work and operations performed by the Contractor which occur before 10 percent of the Awarded Contract Price is earned from other Bid Items. Items which are not to be included in the item of mobilization are:

A. Any portion of the Work covered by a specific Bid Item or incidental work which is to be included in a Bid Item or Items.

B. Profit, interest on bond money, overhead or management costs.

Demobilization shall consist of post-construction expenses and work that occur after 95 percent of the Awarded Contract Price.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

PART 4 – MEASUREMENT AND PAYMENT

Based on the lump sum Bid Item price for "Mobilization/Demobilization," partial payment will be made as follows:

A. When 10 percent of the Awarded Contract Price is earned, excluding mobilization and amounts paid for materials on hand, 60 percent of the amount bid for "Mobilization/Demobilization" will be paid.

B. When 95 percent of the Awarded Contract Price is earned from other Bid Items, excluding mobilization and amounts paid for materials on hand, an additional 35 percent of amount bid for "Mobilization/Demobilization" will be paid.

C. When all Project work is complete in accordance with the Contract and technical specifications, and all staging, storage, and access areas are returned to their preconstruction condition (subject to the approval of the Owner and Engineer), the remaining five percent of the amount for "Mobilization/Demobilization" will be paid.

END OF SECTION 02100

SECTION 02200: SITE CLEARING AND DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

This element includes the removal of brush and vegetation and other surface materials from specified areas along and within the project limits. Clearing and grubbing shall be performed only in areas shown on the Plans, and as specified herein. In any given area, clearing and grubbing shall occur prior to beginning excavation and related earthwork in that area. The operations under this item shall also include the removal and disposal of existing piles, debris, landscaping features, small structures and other items that are present in the Project area. Removed pilings and demolition debris will be disposed of off-site at a certified construction landfill.

Areas that are labeled "Protect Existing Vegetation" on the Plans shall not be damaged.

1.02 CONSTRUCTION REQUIREMENTS

In areas of excavation, all existing vegetation shall be removed to the minimum extent that allows for excavation and construction to occur as specified and as shown on the Plans. If areas beyond these limits are cleared, the Contractor will be responsible for restoration per section 1-07 of the 2002 WSDOT Standard Specifications.

PART 2 –PRODUCTS

Not applicable.

PART 3 –EXECUTION

3.01 METHODS OF CLEARING AND GRUBBING

The Contractor shall fully remove all vegetation from cleared areas. The Contractor shall remove all vegetation from the ground surface upward, and shall minimize the amount of soil that is removed with the vegetation. The

cleared surface shall be surveyed prior to excavation to set a more accurate surface for calculation of excavated volumes. Clearing and grubbing shall be accomplished without harming or disturbing vegetation in surrounding areas.

Cleared and grubbed vegetation may be temporarily stockpiled on site separately from excavated soils and debris. Unless retained for reuse on site, all cleared and grubbed vegetation shall become the property of the Contractor. All stockpiles of cleared and grubbed vegetation shall be removed from the site by the Contractor as required for construction or at the completion of the work.

3.02 RE-USE AND DISPOSAL OF VEGETATIVE MATTER

In general, the Contractor shall attempt to maximize the potential re-use of cleared vegetative matter, in accordance with Section 02950 – Planting, and Section 08100 – Large Woody Debris Installation.

On-site cleared vegetative matter meeting the specified requirements for Plant Materials or Willow Live Stakes shall be retained for potential reuse on site, as specified.

The Contractor may use or process bark from cleared vegetative matter for on-site reuse as Bark Mulch, subject to the approval of the Engineer and specified gradational requirements.

On-site cleared woody vegetation meeting the specified size and diameter for large woody debris or driftwood shall be retained for potential reuse on site, as specified. Any wood material to be reused shall first be inspected and approved by the Engineer. Only materials with suitable strength, natural appearance (no lumber), and not decayed or rotted, in the opinion of the Engineer, shall be retained for reuse.

Vegetative matter not suitable or needed for re-use shall be hauled to an appropriate waste site obtained and provided by the Contractor.

Burning shall not be allowed unless directed by the Engineer for restoration purposes.

3.03 DEMOLITION OF BULKHEAD PILES

Timber piles comprising the existing bulkhead along the South Bank of Whatcom Creek shall not be removed in their entirety, because their embedded portions are needed for bank stability. The Contractor shall remove only the upper exposed portions of these timber bulkhead piles, by saw cutting. This shall be done only after the rock buttress has been installed along the South Bank as indicated on the Plans, in order to minimize disturbance of the existing oversteepened and marginally stable South Bank slopes. The portion of each pile that is exposed above the rock buttress shall be removed.

3.04 REMOVAL OF SITE DEBRIS

The Contractor shall remove site surficial debris from the areas identified on the Plans. Most surficial debris is present at the ground surface, although some is partially embedded in the soil. Known debris includes concrete blocks, bricks, and wood lumber. Other types of debris may be encountered as well. All debris encountered in the areas identified shall be removed from the site.

PART 4 – MEASUREMENT

Not applicable.

PART 5 – PAYMENT

Payment for site clearing and demolition will be made at the Contract lump sum price for CLEARING, GRUBBING, AND DEMOLITION, payment of which shall constitute full compensation for all labor, equipment, and materials required to remove and dispose of vegetation and debris as described in this section, including haul and disposal costs.

END OF SECTION 02200

SECTION 02300: EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

The work includes all requirements to excavate and dispose of existing soils, asphalt pavement, concrete, and refuse from the North Bank of Whatcom Creek and localized areas on the South Bank, and to furnish and place appropriate backfill, cap, and rock armoring materials as indicated on the Contract Drawings and as described in these Specifications.

1.02 JOB CONDITIONS

A. Subsurface Conditions

Numerous soil sampling and exploratory borings have been accomplished at the Holly Street landfill site. A site plan showing locations of explorations, associated boring logs, and physical testing results are included in Appendix A of the accompanying Design Analysis Report.

The explorations are representative of the subsurface conditions at their respective locations. These conditions are generally described below. However, the Contractor shall determine the soil classifications to their own satisfaction prior to bidding. The materials encountered may vary somewhat from the descriptions provided in this Contract. Such variations will not be considered material differences from the Contract and, if encountered, variations in the materials from what is described here will not be considered as a basis for claims due to differing site conditions.

In general, the site's subsurface conditions appear to consist of a variably thick surficial layer of granular fill soils overlying landfill refuse. The majority of site excavation is expected to take place in the landfill refuse.

History of Site Landfilling. In the late 1800's, the Holly Street Landfill site was part of the original Whatcom Creek estuary and mudflat. Around

1905, private property Owners began filling portions of the site with dredge spoils and other materials to increase usable upland areas. From 1937 to 1953, and possibly continuing to as late as 1959, municipal waste was disposed on private tidelands within the former Whatcom Creek Estuary. Wastes disposed at the site included debris and scrap materials, consistent with landfill disposal practices of the time.

Physical Characteristics of Landfill Refuse. Most of the wastes disposed at the site are generally described in the historical documents as inorganic materials, largely devoid of putrescible wastes or flammable items, which were disposed at other locations. Specific descriptions of waste materials disposed at the Holly Street Landfill site have included glass, concrete, household debris, metal scrap, soil, coal slag, ashes, and woody debris, consistent with landfill disposal practices of the time. Few of the waste materials are currently exposed at the surface, and instead are largely covered by soil fills, gravel, buildings, and asphalt.

Based on a review of soil and solid waste boring logs conducted at the Holly Street Landfill Site (presented in Appendix A of the Design Analysis Report), there are likely to be significant variations in density within the landfill debris; voids may also be present. During excavation some of the softer spots may slough when exposed.

Although explorations conducted to date did not identify any large-scale hard debris, concrete or steel objects, or other potential impediments to excavation, it is possible that such materials or objects may be present in the site soils. Debris and existing riprap are expected to be present in some areas to be excavated. Riprap is present and visible on many of the existing slopes in the area. Concrete slabs, large timbers and similar waste materials, and other types of miscellaneous debris are also on the creek banks in some locations. The amount, distribution, and exact nature of debris is unknown. However, owing to the nature of this area as a historically active landfill, it is expected that various types of debris will be present. The Contractor(s) shall satisfy themselves(s) as to the potential for such debris and shall account for this in their bid.

B. Site Groundwater and Tidal Conditions

The groundwater system at the Holly Street Landfill site consists of a shallow unconfined aquifer within the refuse and underlying sediments. Depth to groundwater at the Holly Street Landfill site ranges from about 7 feet in the northwest refuse area to about 25 feet in the southeastern portion of the Maritime Heritage Park.

Whatcom Creek is tidally influenced in the area of the proposed Project work, and experiences low and high daily tides with magnitude, duration, and schedule effectively equivalent to nearby Bellingham Bay (which is encountered immediately west of the Holly Street bridge). Furthermore, this portion of Whatcom Creek is also influenced by fluctuations in water level as a result of precipitation and other factors that affect flow including upstream controls.

Monitoring performed during the RI/FS (Anchor and Aspect, 2003) indicated that copper and zinc concentrations exceed MTCA surface water cleanup levels in shoreline seeps along portions of the northwest lobe of the Holly Street Landfill. The geochemical data suggest that water within the Whatcom Creek estuary, high in dissolved oxygen, migrates into the shallow groundwater zone during high tides, creating oxidizing conditions within the saturated refuse. As discussed in the RI/FS, oxidizing conditions are expected to mobilize copper and zinc present within the refuse.

C. Availability of Reports

Complete reports are available at the offices of Anchor Environmental, L.L.C. and at the City of Bellingham, Office of Neighborhoods and Community Development for Contractor review. Anchor Environmental is located at 1423 3rd Avenue, Suite 300, Seattle, Washington. City offices are located at 144 W Magnolia Street, Suite 501, Bellingham, Washington.

1.03 SUBMITTALS

A. Construction Plan and Schedule

Not later than 14 days prior to the scheduled start of backfilling and capping operations, the Contractor shall submit a detailed, written Construction Plan and Schedule. No physical work is to be performed at the site until the Construction Plan and Schedule is reviewed and approved by the Engineer, the Owner, and Ecology.

The Construction Plan and Schedule will include (among others) a section entitled Excavation, Backfilling and Capping Plan. At a minimum, the Excavation, Backfilling and Capping Plan section of the Construction Plan and Schedule shall contain the following information:

1. The order in which the work is to be performed, indicating the work sequence; the number, types, and capacity of equipment to be used; hours of operation; methods of operation; and the time required to complete each activity.

2. Means of accomplishing work during periods of sufficiently low water levels so that as much work as possible can be performed "in the dry." This includes discussion of how excavation, backfilling, and capping activities will be accomplished below elevation +3 feet MLLW, where the available time periods of low water levels are briefer, as well as a detailed schedule of earthwork activities at these lower elevations.

3. A list of key construction personnel and the supervisory chain of responsibility.

4. The source of the backfilling and capping materials. Samples of the material are required to be submitted under Part 2.02 of this Section (02300 - Earthwork).

5. Procedures and equipment for coordinating and performing progress surveys.

6. Layout of the work and positioning of equipment to perform excavation, backfilling, and capping operations.

7. Procedures and sequence for placing backfill and cap materials.

8. Haul routes for imported materials.

B. Earthwork Materials

The Contractor shall submit test reports i for characteristics listed in Part 2.02 of this section for the following materials, included but not limited to:

1. Silty sand cap material

2. Well-graded gravel

3. Surficial gravel

4. Spalls

5. Riprap

6. Type A Topsoil

7. Type B Topsoil

8. Crushed Rock Base

1.04 STANDARD SPECIFICATIONS

The provisions and intent of the Contract, including the General Conditions, Supplemental Conditions, and General Requirements, apply to this work as if specified in this section. The standard Specifications for the work described in this section shall be the Standard Specification for Road, Bridge, and Municipal Construction prepared by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA), Washington State Chapter, 2002 Edition (or 2004 Edition if published at bid time). This document is available on the World Wide Web at: http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/2002SS.pdf

1.05 REGULATORY REQUIREMENTS

Backfilling and capping work under this Contract will be subject to the requirements of a U.S. Army Corps of Engineers 404 permit, issued prior to commencement of work.

The Contractor shall be responsible for adhering and conforming to all applicable provisions, conditions, and requirements of this permit.

Any conflicts between these Contract Specifications and issued permits will be brought to the attention of the Engineer. However, nothing whatsoever shall be deemed to authorize violation of issued permits.

PART 2 – PRODUCTS

2.01 GENERAL

The Contractor shall provide all required materials for the Project. Materials shall be of the quality, size, shape, and gradation as specified herein, or equal to that manufacture in the opinion of the Engineer.

2.02 BORROW SOURCE AND MATERIALS CHARACTERIZATION

The Contractor shall ensure that imported materials are natural, native, virgin materials and free of contaminants, including debris or recycled materials, and that they meet construction Specifications. The Engineer maintains the right to reject any materials that, in the Engineer's opinion, are determined to be substandard for any reason. In the event of rejections, it shall be the responsibility of the Contractor to remove all stockpiles of rejected material from the site.

A. General

A characterization of any and all imported material shall be performed or obtained by the Contractor prior to any on-site placement. The characterization will include analysis of borrow source samples, site inspection, and site characterization.

B. Source Identification

Prior to borrow source sampling, the Contractor shall provide documentation of the origin of borrow source materials and maps identifying specific location(s) of borrow sources.

C. Sample(s) Provided to the Engineer

The Contractor shall provide the Engineer with a 2-gallon sample of material from each borrow source, with the exception of riprap, which does not require a sample submittal. Each sample should be composited from no less than five subsamples taken throughout any one source. The Contractor shall assure that the samples(s) are representative of all materials to be imported. Sample(s) will be provided to the Engineer at least 14 days before the materials represented by the sample(s) are delivered to the site.

D. Inspection of Source

The borrow source shall be inspected by the Contractor. During such inspection, the Contractor shall assure that the materials to be delivered to the site are likely to meet the appropriate Specifications. The Contractor shall provide the Engineer with 14 day notice of such inspections. At the Engineer's discretion, the Engineer or the Engineer's designated representative may accompany the Contractor to witness such inspections. This witnessing shall in no way release the Contractor from complying with the Specifications and shall in no way be construed as approval of any particular source of material.

E. Testing, Reporting, and Certification

All placed earthwork materials shall meet the physical and chemical characteristics specified herein. Prior to the importation of any materials, the Contractor shall provide the Engineer with a certified test lab report of the sieve analysis of the product. The Engineer shall be the final determining factor in establishing compliance with sieve requirements.

No material shall be brought onto the job site until the initial sieve analysis has been approved in writing.

All imported earthwork materials shall be suitable for open-water disposal when tested against Dredge Material Management Program (DMMP) chemical guidelines.

The Contractor shall test sample(s) of all aggregate materials to be imported, with the exception of light loose riprap, for the following:

1. Grain Size Distribution (American Society for Testing and Materials [ASTM] method D422-63)
2. Priority Pollutant Metals (U.S. Environmental Protection Agency [EPA] publication SW846, the 6000/7000 method series)
3. Volatile Organic Compounds (EPA publication SW846, method 8260 as modified by Puget Sound Estuarine Protocols [PSEP])
4. Semivolatile Organic Compounds (EPA publication SW846, method 8270 as modified by PSEP)
5. Polychlorinated Biphenyls (PCBs) (EPA publication SW846, method 8082 as modified by PSEP)
6. Pesticides (EPA publication SW846, method 8081 as modified by PSEP)
7. Total Organic Carbon (Standard Methods [SM] method 5310B)

In addition, the Contractor shall obtain test results for all other properties that area specified in this section.

The Contractor shall provide the results of such tests at least 14 days before delivery of the materials to the site. The results shall be provided in report form, with the reports clearly identifying the following:

1. Source of samples
2. Sampling dates
3. Chain of custody
4. Sampling locations
5. Contractor's certification that the samples tested and the results provided are representative of materials that will be delivered to the site

The Contractor shall not import any material to the site until receiving written approval for that material from the Engineer.

F. Inspection of Materials at the Site

Truckloads of imported materials shall be visually inspected by the Contractor upon delivery. Materials shall be inspected for the presence of foreign, recycled, or reprocessed material. The Engineer may perform an independent inspection at any time. Material may be rejected if identified as substandard or test results show it to be substandard. Materials may be segregated for testing based on appearance or odor. Segregated materials may be tested according to designated procedures at the Engineer's discretion.

2.03 SILTY SAND CAP MATERIAL

A. Silty Sand Cap Material shall be imported soil consisting of naturally occurring earth, sand, and silt, free of frozen lumps, rocks greater than two inches in maximum dimension, and other deleterious matter. It shall have an organic content no greater than 10 percent.

B. Material shall be graded between the limits specified below:

Sieve Size	Percent Passing (by weight)
U.S. No. 4	100%
U.S. No. 10	50% to 80%
U.S. No. 40	25% to 50%
U.S. No. 200	15% to 25% (wet screen)

2.04 WELL-GRADED GRAVEL

A. Well-Graded Gravel shall be a clean, naturally-occurring round or sub-angular sandy gravel, primarily (greater than 80 percent) comprised of igneous or metamorphic rock. Individual stones shall be generally free of objectional coatings, seams, cracks, and other defects tending to destroy their resistance to weather. Bulk material shall be free of soil, clay balls, debris, wood, organic matter, and other extraneous material.

B. Well-Graded Gravel shall be graded between the limits specified below:

Sieve Size	Percent Passing (by weight)
8 inches	100%
4 inches	40% to 80%
1 inch	30% to 40%
U.S. No. 4	15% to 40%
U.S. No. 40	20% maximum

2.05 SURFICIAL GRAVEL

A. Surficial Gravel shall be a clean, free-draining, gravel and sand mix, from a recognized and established borrow site. The material shall be free of all objectionable coating.

B. Surficial Gravel shall be graded between the limits specified below:

Sieve Size	Percent Passing (by weight)
2 inches	**100%**
1 to 1½ inches	**80% to 95%**
¾ inch	**50% to 80%**
U.S. No. 4	**30% to 50%**
U.S. No. 200	**8% maximum (wet screen)**

2.06 SPALLS

Spalls shall be angular rock materials which meet the general requirements provided in Section 9-13 of the Standard Specifications, except that the following gradation is specified:

Sieve Size	Percent Passing (by weight)
10 inch	**100%**
6 inch	**30% to 50%**
2 inch	**10% to 30%**
.75 inch	**10% maximum**

2.07 RIPRAP

Riprap shall meet the general requirements provided in Section 9-13.1(2) of the Standard Specifications.

2.08 TOPSOIL

A. Type A Topsoil Mix:

Type A Topsoil Mix shall consist of 2/3 sandy loam and 1/3 composted organic material.

1. Sandy loam shall consist largely of sand, but with enough silt and clay present to give it a small amount of stability. Individual sand grains shall be of sufficient size to be seen and felt readily. On squeezing in the hand when dry, it shall form a cast that will not only hold its shape when the

pressure is released, but shall withstand careful handling without breaking.

2. The mixed soil shall meet the following gradation:

Sieve Size	Percent Passing (by weight)
3/8 inch	**100%**
#4	**95%**
#10	**85%**
#30	**70%**
#60	**50%**
#100	**30%**
#270	**15%**

3. Shall have pH range of 5.0 to 6.5, with dolomite lime added as necessary to attain this range.

4. Composted organic material shall consist of composted yard debris or organic waste material and shall consist of 100 percent recycled content. In addition, the organic material shall have the following characteristics:

   a) Shall be screened using a sieve no finer than 5/16 inch and no greater than 7/16 inch

   b) Shall pass a standard cress test for seed germination (90 percent germination compared to standard)

   c) Shall have a pH from 5.5 to 7.5

   d) Shall have a maximum electrical conductivity of 3.0 ohms/cm

   e) Shall have a maximum carbon to nitrogen ratio of 40:1

   f) Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by the United States Environmental Agency

g) Shall be fully composted, mature and stable before being acceptable

B. Type B Topsoil (for Intertidal Marsh)

Type B Topsoil will be used in the intertidal marsh area. It shall consist of a low permeability soil mix, with a uniform mixture of 80 percent silty clay and 20 percent compost (by volume). Compost shall be as specified above for Type A topsoil. Silty clay soil shall have no more than 50 percent (by weight) passing the number 200 sieve per ASTM D2487-90 soil classification using laboratory tests for "Fine Grained Soils-Slit and Clay."

2.09 CRUSHED ROCK BASE

Crushed Rock Base Course shall be placed over approved compacted subgrade in areas to receive cast-in-place concrete. It shall consist of 5/8" minus crushed rock, bearing no worn surfaces. The graduation shall be:

Sieve Size	Percent Passing
5/8" square sieve	**100%**
¼" square sieve	**50 – 75%**
No. 40 sieve	**8 – 24%**
No. 200 sieve	**10% maximum**

2.10 FILTER FABRIC

Filter fabric shall be a woven sheet of polymeric material which is chemically resistant to the conditions to which it will be exposed. Filter fabric shall be Mirafi 600X or approved equivalent.

2.11 COIR EROSION CONTROL FABRIC

A. Geocoir/DekoWe900 or approved equivalent. Available from Belton Industries, http://www.beltonindustries.com/, Roll size 118 inches, length 55 yards.

B. Stakes for coir fabric: Wood, Douglas Fir (untreated) stakes of the sizes shown on the Drawings.

PART 3 – EXECUTION

3.01 EXISTING UTILITIES

Known utility lines are shown on the Plans. However, this does not necessarily include all utility lines present, and may not be fully accurate. It is the Contractor's responsibility to ascertain for itself the locations and depths of any utilities or pipelines that may cross below the Project limits, Whatcom Creek, or the North Bank excavation area. It will also be the Contractor's responsibility to repair to pre-project conditions, at the Contractor's expense, any damage to buried utilities or pipelines caused by the Contractor's operations. The Contractor shall contact Utilities Underground Location Center (1-800-424-5555) for assistance in locating public utilities.

3.02 PROTECTION OF EXISTING FACILITIES

The Contractor shall exercise care when conducting its earthwork operations so as not to damage, undermine, or otherwise disturb existing structures, facilities, landscaping elements, and buildings (except for those that are specifically required to be removed). Care shall be taken when excavating, backfilling or capping not to hit any portions of the structures, facilities, and buildings with construction equipment. Any damage to existing structures or new structures that is caused by the Contractor's operations, as determined by the Engineer, shall be repaired at the Contractor's expense.

Existing monitoring well A-MW-3 in the area of excavation shall be abandoned in accordance with Department of Ecology guidelines. Refer to Appendix A of the Design Analysis Report for information on this and other monitoring wells in the vicinity of the site.

3.03 SURVEYING

A. Pre-Construction Survey:

The Contractor shall perform a pre-construction survey of the areas that will undergo earthwork activities. This pre-construction survey will be the basis against which subsequent surveys will be numerically compared for determination of pay quantities.

B. Post-Excavation Surveys:

The Contractor shall perform a Post-Excavation Survey before commencing backfilling and capping work in any given area, to verify excavation limits have been reached and to determine excavation quantities (by comparing to the Pre-Construction Survey). Survey data shall be made immediately available to the Engineer. The Engineer can choose to use the Contractor's survey data, or the Engineer can perform their own survey to calculate excavation quantities, in which case the Engineer's calculated quantity shall be the sole basis for payment.

C. Post-Backfill/Cap Survey:

After completion of backfilling and capping work, the Contractor shall perform a Post-Backfill/Cap survey. The Engineer may wish to perform their own survey for verification of backfill/cap grades and lift thicknesses, to ensure conformance to the specifications.

3.04 SITE EXCAVATION

A. General Excavation Requirements

The Contractor shall excavate to the lines, grades, slopes, and elevations shown on the Contract Drawings.

Excavation on slopes shall proceed downward, working from top of slope to toe of slope. As the work progresses, it is anticipated that some slope material will slough into the cut area. The Contractor shall remove this material and will make a final pass with the excavator bucket along the sections' edges when the excavation is completed to help assure proper backfill/cap depth.

The Contractor shall not store any equipment within five horizontal feet of the upper edge of any excavation.

The Contractor shall pay particular attention to the conditions of issued permits and authorizations requiring the minimization of turbidity and siltation and adherence to water quality requirements.

B. Schedule Constraints and Avoidance of In-Water Work

No excavation/backfill operations may occur during the times of fishery closure periods in Bellingham Bay, as determined by regulatory agencies such as the Washington Department of Fish and Game (WDFW). The start of WDFW's approved construction window is expected to be August 15 (or possibly earlier, subject to ongoing discussions).

All excavation along the North Bank will occur above elevation +3 feet MLLW. Localized excavations along the South Bank will generally take place above +3 feet MLLW as well, except for some areas where excavation is required at lower elevations.

All excavation shall be done "in the dry," meaning while the water level in Whatcom Creek is at least one vertical foot below the elevation of the excavation extent, at and throughout the duration of a the excavation activity. To accomplish this, excavation shall be done during periods of suitably low creek flow and suitably low tidal elevations. Each excavation procedure shall be completed before water levels rise to the elevation of the work. The Engineer shall be the ultimate judge of water level relative to planned excavations grades.

This requirement is applicable to excavation at all elevations. In localized portions of the south bank, limited excavation is required below elevation +3 feet MLLW. If the Contractor can demonstrate, to the satisfaction of the Engineer, that excavation below +3 feet MLLW in these areas is infeasible "in the dry," then excavation below +3 feet MLLW may be done through water only if previously approved in writing by the Engineer, and subject to the following conditions:

- In-water excavation in these areas shall be accompanied by water quality monitoring (as described in Section 02370 – Environmental Protection).
- In-water excavation in these areas may be observed by representatives of the City, the Engineer, and Ecology. The Contractor shall contact these parties at least seven days before doing any in-water excavation.
- Depending on water quality monitoring results, and on observations made in the field during in-water excavation, the Contractor may be required to institute water quality conservation measures and Best Management Practices (BMPs), as described in Section -2370 and in the Construction Quality Assurance Plan.

C. Management of Excavated Surfaces

The Contractor shall be aware of the potential for erosion, contamination, and generation of water sheen from newly excavated surfaces. The Contractor shall control the potential for erosion of materials and loss of contaminants from freshly exposed excavated surfaces by rolling the surfaces flat and smooth prior to the next tidal inundation. If this procedure is judged to be insufficient for protection against erosion in the opinion of the Engineer, then the Contractor shall institute additional procedures. Additional methods of controlling erosion include, but are not limited to, the following procedures:

1. Laying down the first lift of capping material on the freshly excavated subgrade immediately after excavation and prior to inundation by the tide, depending on conditions encountered in the field during construction. The Engineer will need to confirm that appropriate excavated grades were met prior to placing this initial lift.

2. Placement of filter fabric geotextile material over the freshly placed excavated subgrade prior to the next tidal inundation.

3. Use of approved BMPs for locations where excavation must be performed in-water, subject to the discretion of the City, the Engineer, and Ecology.

4. The Contractor may propose suitable alternatives, requiring the approval of the Engineer.

D. Excavation Along ReStore Building

The Contractor shall only excavate along the length of this building the extent which can be capped during the same work shift. Excavation shall be offset from the edge of the existing building a minimum of five feet. The Contractor shall place a 1-foot-thick lift of capping material at the edge of this excavation extending down to the toe of cut before the end of each shift.

E. Debris and Hazardous Waste

It is possible that the Contractor may encounter large debris or riprap that extends above or below the planned excavation grades. Depending upon the factors observed, including the type of the debris, and its estimated size and impact on the cap design if left in place, the Engineer may or may not order its removal. Removal volume will be treated as additional "Excavation and Grading" pay quantity.

Such large debris or riprap shall become the property of the Contractor, and shall be salvaged (if possible), or disposed at an appropriate off-site location. The cost of removing and disposing of such debris is incidental to the Contract and is considered part of the bid price for Excavation and Grading.

F. Disposal

Excavated landfill refuse and other soils shall be transported to a permitted landfill (such as the Roosevelt Regional Landfill).

Hazardous material and hazardous waste (as defined under the Resource Conservation and Recovery Act) shall be disposed of in accordance with

applicable federal, state, and local regulations. If and when such hazardous material/waste is encountered, the Contractor shall immediately notify the Engineer to determine what course of action is to be taken.

3.05 BACKFILLING AND CAPPING

A. General Requirements

The Contractor shall furnish and place materials to backfill and cap portions of Whatcom Creek as shown on the Contract Drawings. Any backfill or cap material that is deposited other than in the areas indicated on the Contract Drawings, or other than as approved by the Engineer, will not be included in the measurement for payment, and the Contractor may be required to remove such misplaced material and remove it or deposit it where directed at the Contractor's own expense.

The Engineer shall approve of the excavated conditions and grades before the Contractor commences backfilling or capping in the locations shown on the Plans.

Cap thickness will be verified by the Engineer, based on the difference between the Post-Excavation Survey and the Post-Backfill/Cap Survey of the site.

For capping areas with a specified thickness of multiple feet, the Contractor shall place the cap material in several lifts, each no thicker than 12 inches loose thickness. The first lift of cap material shall be placed with care so as to minimize disturbance of the underlying subgrade material. After the first lift of material has been placed, the Contractor may utilize any appropriate backfilling and capping method to construct the rest of the cap provided that the method that does not impact previous lifts.

B. Avoidance of Material Placement Through Water

Capping materials along the North Bank shall be placed only when water levels are one foot or more below subgrade elevation at the location of

capping or backfilling. The Engineer shall be the ultimate judge of water level relative to the backfilling and capping elevations.

Similarly, construction of the gravel berm (along the north bank) and rock buttress (along the south bank) above elevation +3 feet MLLW shall occur only when water levels are one foot or more below the working elevation.

For construction of portions of the gravel berm and rock buttress below elevation +3 feet MLLW, the Contractor has the following options:

1. Use the same procedure specified for construction above elevation +3 feet MLLW. Place gravel and rock materials only when water levels are one foot or more below the working elevation.

2. Place gravel and rock materials below elevation +3 feet MLLW through no more than two feet of water. Such work shall be accompanied by water quality monitoring (as described in Section 02370 – Environmental Protection), and possible use of water quality conservation measures and Best Management Practices (BMPs), as described in Section 02370 and in the CQAP, and as subject to the discretion of the City, the Engineer, and Ecology. Furthermore, if the Contractor elects to place materials through the water, placement shall be accomplished using equipment and techniques that cause minimal disturbance to the underlying sediments and create minimal turbidity in the water. The Contractor shall provide at least seven days notice to the City, the Engineer, and Ecology prior to accomplishing any material placement through the water.

3.06 PLACEMENT OF TOPSOIL

Place topsoil in one or two lifts, each no thicker than 6 inches, to the specified lines and grades. Each topsoil lift shall be lightly tamped to a smooth condition, but not compacted to a dense condition

Rake out all rocks, roots, sticks and other debris larger than 1-inch diameter or sticks longer than three inches. Perform fine grading to attain finish grades as shown on the Plans. Leave surface even and readily able to accommodate lawn or planting installation.

Topsoil in areas adjoining at grade paths shall be level with adjacent paving surfaces for smooth transition to adjacent surfaces.

Install coir erosion control fabric to the limits shown on the Drawings and per manufacturer's instructions. Install Coir fabric when tide levels are below the working surface.

3.07 COMPACTION

Silty Sand Cap Material and Well-Graded Gravel shall be compacted to at least 90 percent of maximum dry density minimum as specified by ASTM D 1557. Where Silty Sand Cap Material and Well-Graded Gravel must be moisture conditioned before compaction, uniformly apply water to the layer of material to prevent free water appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. If necessary, assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

Subgrades below Crushed Rock Base Course (for concrete pavement sections) shall be compacted to a firm and non-yielding condition, as determined by the Engineer.

3.08 INSPECTION

The Contractor shall notify the Engineer at least 48 hours in advance of the time of inspection required for completion of excavation or capping, compaction, subgrade preparation, or completion of soil preparation for planting of vegetation (trees, shrubs, and groundcovers), prior to placement of Coir material.

PART 4 –MEASUREMENT AND PAYMENT

Volumes of excavated materials, and volumes of earthwork materials used in accordance with these specification and Plans, will be paid for on a unit price basis as presented in the Schedule of Unit Prices, by the CUBIC YARD and TON, respectively.

Extra earthwork materials – including additional capping materials, spalls, riprap, and topsoil (as separate pay items) – that are required above and beyond the areas, extents, and volumes specified herein and on the Plans, shall be measured by cubic yard placed, as determined by progress surveys, and paid for by the ton, delivered to the jobsite and incorporated into the work in accordance with these Plans and Specifications. If certified weight tickets are not available for a particular material source, a conversion factor of 1.5 tons per cubic yard will be used for payment. Payment for these extra earthwork materials shall be full compensation for furnishing, loading, transporting, handling, and placing each respective earthwork material in accordance with these Specifications.

4.01 MEASUREMENT

The unit of measurement for excavation of materials shall be the BANK CUBIC YARD. Quantity shall be determined based on the surveyed volume difference between initial grade and final excavation grade, before any backfill is placed.

The unit of measurement for importing and placing or applying capping materials, rock, or topsoil, shall be the TON, based on measured weight of material used. Only truck loads of material actually used for an approved purpose in accordance with these Specifications will be considered part of the measurement. Material which is hauled away shall be weighed and deducted from the amount brought on site. Certified scale tickets will be the basis for payment to the Contractor, subject to verification by the Engineer through comparison of Post-Excavation Surveys and Post Backfill/Cap Surveys.

4.02 PAYMENT

Payment for EXCAVATION AND GRADING will be full compensation for excavating soil, removing debris, placing excavated materials into temporary

stockpiles, and attaining specified grades. Any excavation that does not comply with project Plans and Specifications will not be paid for.

Payment for IMPORT AND PLACE specified materials shall be full compensation for furnishing, loading, transporting, handling, and placing backfill and capping materials in accordance with these Specifications and the Contract Drawings. Any backfill and capping materials furnished, loaded, transported, handled and/or placed, that do not comply with project Plans and Specifications, will not be paid for.

END OF SECTION 02300

SECTION 02325: SOIL MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

This work includes requirements for managing soils accumulated from excavation or imported for use on-site. This includes soil stockpiling and on-site handling procedures. It also consists of transporting and disposing of materials off-site.

1.02 DEFINITIONS

Excavated materials shall be classified into the following general categories:

A. Potentially Reusable Soil. The Contractor may elect to reuse near-surface fill soils provided that they meet the specification for earthwork materials in 02300-Earthwork.

B. Landfill Refuse. Excavated landfill refuse shall not be re-used on-site.

C. Debris. This includes non-soil materials that are removed as part of excavation. Debris shall become the property of the Contractor, and shall either be disposed off-site, reused on-site subject to the Engineer's approval, or salvaged by the Contractor.

1.03 JOB CONDITIONS

The currently paved area located north of Whatcom Creek and east of the Re-Store Building and Astor Street right-of-way, will be available for staging and stockpiling. Temporary material stockpiling can also be done south of Whatcom Creek at the location shown on the Plans.

1.04 SUBMITTALS

A. Soil Management and Disposal Plan

The Contractor shall submit a Construction Plan and Schedule (as described under Section 02300 – Earthwork), which will include (among

others) a section entitled Soil Management and Disposal Plan. At a minimum, the Soil Management and Disposal Plan section of the Construction Plan and Schedule shall contain the following information:

1. Methods, procedures, and equipment to be used for stockpiling, rehandling, transporting, and disposing of excavated material.

2. Haul routes for excavated materials.

3. Disposal site(s) for excavated materials.

B. Certificates

The Contractor shall provide the Engineer with copies of the following documentation:

1. Landfill Disposal Site(s)

The Contractor shall submit for review, at the Pre-Construction Conference, the name, location, and applicable state and federal identification numbers of the off-site facility or facilities to be used for disposal of material from this Project. The Contractor shall also submit a letter of commitment from the landfill facility or facilities at which they are proposing to dispose of the materials.

2. Shipping and Disposal Documents

The Contractor shall submit copies of top tickets and Certificates of Disposal signed by the receiving disposal facility for any waste transported from the site. The Contractor shall also submit all manifests and shipping documents.

PART 2 – PRODUCTS

The Contractor shall provide containers for packaging all waste materials destined for off-site disposal. Containers shall be in accordance with Federal and WSDOT regulations.

The Contractor shall provide all of the materials required for stockpiling.

PART 3 – EXECUTION

3.01 SEGREGATION OF SOILS

During construction, the Contractor shall segregate Potentially Reusable Soil from Landfill Refuse and Debris.

3.02 STOCKPILING OF SOIL

Excavated material shall be hauled directly off the site by truck or shall be placed in temporary stockpiles within the available area(s) shown on the Plans. All stockpiles of excavated and imported material shall be kept only within these areas. Stockpiles shall not be placed within five horizontal feet of the upper edge of any excavation.

Stockpiles and stockpile areas shall be maintained in good condition and constructed of materials that are compatible with the material being stored.

Stockpile areas shall be fenced and locked while no work is taking place on the site. The Contractor shall also post a sign at each entrance to the stockpile areas, bearing the legend "Unauthorized Persons Keep Out," or an equivalent legend, legible from a distance of 25 feet or more.

No material shall be stockpiled in such a manner as to endanger a partly finished structure, impair the efficiency or appearance of any structure, impair access to adjacent sites or facilities, or be detrimental to the completed work in any way.

Stockpiles shall be underlain by a chemically resistant polyethylene geomembrane underliner with a minimum thickness of 10 mils. Scrim-reinforced underliners shall have a minimum weight of 40 pounds per 1,000 square feet. Adjacent geomembrane sections shall be continuously overlapped by a minimum of three feet. It is not necessary to seam adjacent geomembrane sections below the stockpiles.

The ground surface on which the underliner is placed shall be free of rocks greater than 1/2 inch in diameter and any other object which could damage the underliner. Alternatively, the Contractor may place a layer of geotextile or plywood to fully underlie and protect the underliner in any locations containing

rocks or debris which are greater than 1/2 inch in diameter, on the ground surface, or in any areas through which vehicular traffic will travel.

Stockpiles shall be covered to prevent precipitation from entering the stockpile. Stockpile covers shall be polyethylene geomembrane with a minimum thickness of 10 mils. The stockpile cover shall be anchored to prevent it from being removed by wind.

A written log shall be kept to track the source of all material in each stockpile. Stockpile areas shall be returned to their original or better condition after completion of construction.

3.03 WASTE DISPOSAL

If the Engineer's on-site representative finds any evidence of contamination (by visual, olfactory, or other means), the potentially contaminated soil shall be stockpiled separately and sampled and analyzed to determine disposal options.

Soil which is designated for landfill disposal and which contains free water, where required by the disposal facility, shall be stabilized at the landfill using moisture absorbent material such as lime, cement, or fly-ash.

Material that is excavated shall be placed in lined, sealed dump trucks and hauled to the disposal site. The Contractor shall not spill, overflow, or release excavated material during transport to the disposal site.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

All material hauled away by vehicle shall be weighed on off-site certified scales such as truck scales on highways or at the disposal sites. The scales shall be of sufficient capacity to permit weighing the transporting vehicle both empty and full. Scales shall be of the type that will print weigh tickets. A duplicate copy of each weigh ticket shall be furnished to the Engineer as well as a copy of the latest scale certification.

4.02 PAYMENT

Payment will be made at the Contract unit price for DISPOSAL OF EXCAVATED MATERIAL, payment of which shall constitute full compensation for management, stockpiling, off-site transportation, disposal, and preparation and submittal of reports and certificates as specified.

END OF SECTION 02325

SECTION 02370: ENVIRONMENTAL PROTECTION

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

The Contractor shall perform the work in such a way as to minimize escape of materials and pollution into the surrounding environment. This section outlines specific requirements for controlling erosion, monitoring water quality, and preventing spills of hazardous materials.

The Contractor shall perform monitoring during the remedial action to ensure that worker and public health and safety are protected during construction.

Water quality monitoring will be performed by the Contractor during the construction work to ensure that water quality is protected in Whatcom Creek. Various construction controls will be implemented during the activity, and water quality monitoring will be used to identify the need for additional controls as required.

1.02 SUBMITTALS

For construction activities, the Contractor(s) will be required to submit a Construction Plan and Schedule, for approval by the Engineer and by Ecology. Further information on this submittal is provided in Section 02300 – Earthwork. No physical work is to be performed at the site until the plan is reviewed and specific authorization to start the work is obtained.

The Construction Plan and Schedule will include a section entitled the Environmental Protection Plan. This section of the Construction Plan and Schedule will cover potential environmental degradation as a result of the Contractor(s) operations, and shall include, at a minimum, the following information:

A. Procedures for environmental protection and monitoring, including procedures for emergency spill containment and removal operations.

B. Location of temporary stockpiles and methods of stockpile protection.

C. Description of methods for contamination prevention, closure, cleanup, and erosion and turbidity control.

D. Means of accomplishing excavation and/or backfilling and capping work through the water (only allowed at elevations below +3 feet MLLW), and provisions for minimizing the potential for turbidity losses from such operations.

PART 2 – MATERIALS

The Contractor shall provide spill response materials including, but not limited to, the following: containers, absorbents, shovels, and personal protective equipment (PPE). Spill response materials shall be available at all times in areas where potentially hazardous materials and/or landfill refuse are being excavated, accumulated, handled, or transported.

The Contractor shall provide the miscellaneous equipment and tools necessary to handle hazardous materials in a safe and environmentally sound manner. At a minimum, the Contractor shall provide emergency response equipment to respond to releases, fires, and explosions involving hazardous materials.

PART 3 – EXECUTION

A. Water Quality Monitoring

The Contractor will be responsible for monitoring water quality during excavation and construction activities. The Contractor will obtain and analyze water quality samples to monitor and control, if necessary, short-term water quality impacts from excavation and construction activities, and to invoke corrective actions or modify operations, if necessary, to bring construction activities into compliance with water quality performance criteria.

The Contractor will be responsible for monitoring water quality in the Whatcom Creek estuary during all construction periods and at all representative high and low tide conditions, to ensure that water quality protection is achieved during the implementation of the remedial action. Monitoring stations will be established at locations approximately 200 feet upstream and downstream of the active in-water construction area (final mixing zone boundaries and sampling Plans will be determined by Ecology as part of substantive Water Quality Certification review of the draft final design submittal). At each sampling location, water quality parameters including temperature, salinity, pH, turbidity and dissolved oxygen (DO) will be monitored at a midpoint depth within the water column.

Monitoring equipment will include DO, turbidity, temperature, salinity, and pH probe(s). Equipment will be maintained in good working order and in safe-working conditions at all times. Survey equipment will be maintained and calibrated for the life of the Contract. Any calibration techniques necessary to ensure accuracy of performance will be prescribed in either the CQC Plan (dredging equipment and survey equipment) or the SAP and QAPP Addenda.

In the event that the initial monitoring data reveal a turbidity (or other parameter) release that exceeds applicable water quality standards, the Contractor will be required to modify operations as appropriate to further reduce such releases (e.g., by placing temporary silt fences at the boundary of the excavation area during low tide conditions).

B. Avoidance of In-Water Work

Earthwork (excavation, backfilling, and capping) above elevation +3 feet MLLW shall be done “in the dry,” when water levels are at least one foot below the working surface. Excavation through water will not be allowed, with the only possible exception being cases where the Contractor can demonstrate to the satisfaction of the Engineer that excavation “in the dry” is infeasible, and then will only be accepted for elevations below +3

feet MLLW. The Contractor may elect to place rock and gravel materials through water only below elevation +3 feet MLLW, subject to the approval of the Engineer. Any earthwork done through the water shall be subject to water quality monitoring and possible use of additional BMPs, at the discretion of the City, the Engineer, and Ecology. See Section 02300-Earthwork for further details.

C. Erosion Control/Turbidity Prevention

The Contractor shall control potential turbidity releases from the construction area by using complementary conservation measures (BMPs), such as:

1. Restricting excavation work to times when tide levels are below the working surface
2. Rolling freshly excavated surfaces to a relatively flat and smooth condition
3. Using equipment and techniques that cause minimal disturbance to existing subgrades and creek sediments

Depending on the results of water quality monitoring, additional methods for control of turbidity releases may be required by the City, the Engineer, or Ecology:

1. Placement of an initial lift of capping material on freshly excavated subgrades, prior to subsequent tidal inundation
2. Placing a layer of filter fabric geotextile over freshly placed subgrades, prior to subsequent tidal inundation

D. Control of Other Pollutants

Other pollutants that occur on site during construction shall be handled and disposed of in a manner that does not contaminate stormwater or surface water. Fueling of Contractor's equipment shall be performed away from storm drain inlets. Extreme care shall be taken to prevent fuel spills.

The Contractor shall comply with the Preparedness and Prevention Requirements specified in WAC 173-303-340.

A Contractor's representative shall be present at all times when equipment is being fueled. In the event of a spill, the National Spill Response hotline shall be called at (800) 424-8802 and the Department of Ecology's Southwest Region hotline at (360) 407-6300. Absorbent oil pads and drip pans shall be placed beneath the vehicle being fueled. Absorbent materials, shovels, and appropriate containers shall be provided and maintained for spill cleanup. No vehicle maintenance other that emergency repair shall be performed on the Project site, nor are engine fluids to be stored on the Project site.

E. Misplaced Material

Should the Contractor during execution of the work, lose, dump, throw overboard, sink, or misplace any material, machinery, or appliance into Whatcom Creek, the Contractor shall promptly recover and remove the same regardless of cause. The Contractor shall give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Engineer and shall mark location of such obstructions until they are removed.

F. Stabilized Construction Entrance and Wheel Wash

The Contractor shall install a stabilized construction entrance at a single point of entry and egress from the site. This entrance shall be located along the north side of the Sash and Door property parcel, east of the existing ReStore Building. This stabilized construction entrance shall include a pad of gravel at least one foot thick and a truck wheel wash facility. The Contractor shall be responsible for arranging a water supply for the wheel wash facility and a wash water collection and treatment system.

The Contractor shall remove the stabilized construction entrance and restore its area to original conditions at the end of construction.

PART 4 – MEASUREMENT

Not applicable.

PART 5 – PAYMENT

Payment for providing and maintaining environmental protection, controls, and monitoring shall be paid at the Contract unit price for ENVIRONMENTAL PROTECTION AND MONITORING, payment of which shall constitute full compensation for the activities specified in this section.

END OF SECTION 02370

SECTION 02810: IRRIGATION

PART 1 –GENERAL

1.01 SCOPE

This Section specifies all work the Contractor shall provide for construction of irrigation systems including furnishing all labor, materials, equipment, and services necessary for a functional irrigation system as shown on the Drawings and specified herein.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

A. Layout of the system as shown on Drawings is schematic. Follow as closely as possible. Modify locations as required by plant materials, utilities, and other obstructions.

B. Full and complete head to head irrigation coverage is required. Make adjustments to layout, irrigation zone pressure, or as needed, to achieve full coverage of irrigated areas without overspray onto roadways, sidewalks, or buildings.

1.03 SUBMITTALS

A. Submit Product Data a minimum of 30 working days before beginning work, unless otherwise approved. Include data for all products to be installed in these systems. Include material showing manufacturer's name, catalog numbers, catalog cuts, technical data manufacturers' installation, operation, and maintenance instructions for each product.

B. Schedule: Thirty days prior to beginning work, submit a work schedule to include dates, location, and type of work to be performed.

C. Point of Connection Water Pressure Test: Test water pressure at the Irrigation System point of connection prior to beginning work. Submit results of test to Engineer/Landscape Architect.

D. Site Inspection Report: Submit statement confirming a site inspection has been conducted, noting discrepancies between ground measures and plans, and hazards or site conditions, which will interfere with installation or operation of the system prior to beginning of work.

E. Record Drawings

1. Maintain a complete set of record Drawings, corrected daily, to show design and specification changes, and location of system components. Submit copies as requested.

2. At completion, submit reproducible Mylar plan at the same scale as the construction plans, indicating the elevations of mainlines, valves, backflow preventers, zone outlines, and other system elements. Indicate locations with dimensions from building, curb lines, or other fixed site features.

F. Submit three sets of keys, hose swivels, quick coupler operating keys, and unique tools or devices needed to access, operate, adjust, or maintain the system. Obtain receipt indicating location and custodian of each set.

G. Operating and Maintenance Data

1. Submit the name and address of permanent service organizations maintained or trained by the manufacturers that will render service within eight hours of receipt of notification of service request.

2. Zone Map: Submit an irrigation plan for the site indicating, by varying colors, the area of coverage for each control valve. Indicate the number and location of the valve. The number is to correspond to that on the controller for that zone.

3. Submit controller timing schedule indicating on a weekly basis the day, time, and duration of watering for each control valve.

4. Provide the zone map and controller timing schedule, folded into a plastic envelope, of a size capable of being installed in the door of the controller.

5. Submit operating and maintenance guides for the entire system and for each piece of equipment in the system. Instructions for system winterization are to be included.

1.04 QUALITY ASSURANCE

A. Comply with requirements of utility supplying water for prevention of backflow and back siphonage.

B. Comply with requirements of authority with jurisdiction for irrigation systems.

C. Installer Qualifications: Engage an experienced Installer who has completed irrigation systems similar in material, design, and extent to that indicated for projects that have resulted in construction with a record of successful in-service performance.

1.05 PROJECT CONDITIONS

A. Environmental Requirements: Perform work under environmental conditions suitable for the tasks being undertaken.

B. Existing Conditions:

1. Visit the site and note conditions which affect work under this Section.

2. Locate all utilities, lines, and piping in the work area. Provide adequate protection during all phases of work.

3. Repair utilities, lines, piping, and paving damaged by this work to the satisfaction of the Owner of the line, at no change in Contract Price.

4. Notify Engineer/Landscape Architect of unsatisfactory conditions. Proceed with work only after conditions have been corrected.

5. Field Measurements: Take field measurements of irrigated areas to determine if differences occur between plans and ground dimensions. Notify Engineer/Landscape Architect of differences before proceeding with work.

6. Irrigation is not permitted during the following conditions:

   a) When the temperature is less than 35° F or greater than 90° F.

   b) When planting area soil is saturated, frozen, or dry.

   c) When wind velocities are greater than 30 mph.

1.06 SEQUENCING AND SCHEDULING

Complete irrigation system installation and make fully operational before landscape seeding and sodding takes place.

1.07 WARRANTY

A. Refer to the General and Supplementary General Conditions.

B. Additional Requirements:

1. Repair settling of trenches. Include complete restoration of plantings, mulch, grades, pavements, or other improvements.

2. Correct irrigation system problems or damage within five working days of notice until the final acceptance of the Irrigation System.

PART 2 –PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. As shown on the Drawings or specified herein. Alternate materials will be acceptable if approved in writing by Engineer/Landscape Architect.

B. Other Manufacturers: Submit substitution request in accordance with the requirements of the General Conditions.

2.02 MATERIALS

A. Mainline (pressure pipe) and lateral line (circuit/zone pipe): As indicated on Drawings. Schedule 40 PVC.

B. Poly Pipe and Fittings: Thick walled polyethylene pipe specifically designed for connection of irrigation sprinklers to lateral lines.

C. Sleeves: ASTM D1783, NSF61 approved, PVC Schedule 40.

D. Pipe Fittings:

1. For plastic pipe solvent welded socket type fitting, ASTM D2466, PVC pipe fitting, Schedule 40.

2. For plastic pipe threaded fitting, ASTM D2464, PVC pipe fitting, Schedule 80. No female adapters.

E. Jointing Materials:

1. PVC solvent cement, NSF61 approved solvent for PVC through 4-inch, meeting requirements of ASTM D2564.

2. PVC primer and cleaner, compatible for use with PVC pipe.

3. Teflon tape sealer, 1/2-inch wide, of Teflon Dope, use at all threaded joints.

F. Valves:

1. Manual Drain valves shall be the non-lubricated type, capable of sealing in either flow direction, with true union end connections and lever type operator. PVC ball valves shall be constructed using a PVC body and ball, Teflon seats and FPM (viton) o-rings. Provide PVC ball valves from Asahi America, Chemtrol Division, NIBCO Inc., or approved equivalent.

2. Electric Latching Solenoid Valves shall be Rainbird PEB Series electric solenoid valves. Replace standard solenoids with Rainbird model TBOSPSOL potted latching solenoids.

3. Gate Valves shall be Brass, line size, WATTS WGV X, Pegler 1068, or approved equivalent.

4. Pressure Reducing Valve: Wilkins model 510YSBRSC 1-1/2" size for below-ground applications.

G. Valves Boxes: Carson Standard or Jumbo vaults, as detailed.

H. Backflow Preventer: Double Check Type, Febco 850U, or approved equivalent.

I. Automatic Controller: One Rainbird TBOS4CMUS 4-station battery-operated buriable controllers, with one Rainbird TBOSFTUS field transmitter.

J. Spray Heads: Acceptable Manufacturer, Rain Bird 1800-SAM-PRS Series.

K. Low Voltage Control Wire and Connectors:

1. Wire, solid copper, UL listed for direct burial in ground, minimum size #14 AWG. Increase size as needed for length of wire run.

2. Connectors, 3M DBY electrical connectors.

L. Other Materials:

1. Drain Rock: Washed, round river pea gravel, no fines.

2. "Air Compressor" Valve: Size to fit quick coupling valve keys.

3. Swing Joints: LASCO schedule 80 three-way assembly or approved alternate.

4. Quick Coupling Valve: Bronze, two piece construction, size as noted on the Drawings. Rainbird 44LRC.

5. Valve Keys, 3-feet long (minimum), with tee handle and key end to fit manual valves.

6. Quick coupler keys and hose swivel ells, brass, size, and type to fit quick coupler shown on the Drawings.

M. Provide other materials, not specifically described but required for a complete and proper installation, as selected by Contractor subject to the approval of the Owner.

PART 3 –EXECUTION

3.01 EXAMINATION

Investigate and determine available water supply pressure and flow characteristics. Report results of pressure test at point of connection in writing to Engineer/Landscape Architect before beginning installation work.

3.02 PROTECTION

A. Provide protection for system components at all times. Keep rock, gravel, debris, and all other foreign materials from entering piping, valves, and other equipment

B. Provide barriers, crossings, markers, and other devices necessary to protect materials and pedestrians at open trenches, holes, stockpiles, etc.

3.03 INSTALLATION

A. Trenches:

1. Excavate trench bottoms with uniform slopes, 4 inch minimum width. Bottoms shall be smooth and free of rocks or other objects which might damage pipe.

2. Make trenches wide enough to allow for tamping around pipe.

3. Excavate trenches to a depth allowing for pipe slopes to drains, sand setting bed, and the following minimum coverage depths:

   a) Non-Pressure Laterals: 18-inch depth minimum.

   b) Pressure Mainlines: 24-inch depth minimum.

   c) Pressure Mainlines Under Paving: 24-inch depth minimum.

   d) Common and Control Wire: Install below mainlines or 18 inches where wire not in trench.

4. Do not lay pipe on unstable materials in wet trench or when trench or other conditions are unsuitable.

B. Pipe:

1. Lay pipe and make connections in accordance with irrigation industry standard practices and manufacturer's recommendations.

2. Solvent weld all non-threaded joints. Use Teflon tape to seal all threaded joints. Do not weld in temperatures below 35° F. Weld under cover in rainy conditions.

3. Clean interior of pipe before installation. Keep pipe clean during and after laying by plugs or other means.

4. No fittings are to be closer than 6 inches apart.

5. Set lines in common trenches whenever possible, side by side, two lines maximum per trench.

C. Sleeves:

1. Install sleeves in all locations where piping and control wiring pass under paved areas and curbs or through walls. Extend sleeve 12 inches beyond edge of paving, curb, or wall. Cap and mark the location with temporary 2 inch x 4 inch Fir stake 18 inches above grade. Remove stake once pipe and wires have been routed through sleeves.

2. Set top of sleeve 18-inch minimum below top of sub-grade, and below paved, mulched, gravel, or other surfaces. Fill three inches below, around, and above pipe, to top of trench with mason's sand. Compact to density required for pavement subgrade.

D. Backfill

1. Backfill trenches after inspection of pressure test as part of the work of this Section, observation of the results by Engineer/Landscape Architect. Place sand 3 inches below and 6 inches above all pipe. Fill the rest of the trench with clean excavated site soil. Thoroughly compact to give support to the pipe and prevent subsidence of backfill materials.

2. Fill piping with water at approximately 25 pounds per square inch (psi) during backfilling operations.

3. Backfill to finish grade, place backfill carefully around and over piping. Lay and compact in layers not over 6 inches thick.

4. Remove all excess excavated material from the project site.

E. Control Wire

1. Route red control and white common wires from controller to control valves and make connections at each end.

2. Splice only at the valves, not between valves or between valve and controller.

3. Route wire below main line wherever possible. Where not routed below mainline, install 4-6 inch wide yellow plastic warning tape six inches above the control wire.

F. Automatic Control Valves

1. Install complete with valve boxes as shown on Drawings, no closer than 24 inches apart, two valves per valve box maximum.

2. Thoroughly flush supply lines before installing valves.

G. Sprinkler Heads

1. Install as shown on Drawings and as recommended by manufacturers.

2. No head shall be closer than 4 inches from walk, curb, or wall.

3. Make minor changes in head location as necessary to achieve full head to head coverage. Adjust spray patterns and pressure to achieve coverage and eliminate over-spray onto pavements or buildings.

4. Flush line before installing sprinklers.

3.04 FIELD QUALITY CONTROL

A. Testing:

1. Notify Engineer/Landscape Architect in writing at least three work days prior to all tests and inspections. Inspection and reports must be made for all tests.

2. Thoroughly flush piping before testing and installation of sprinklers.

3. Test all exposed piping, valves, joints and fittings at 100 psi for one hour prior to inspection by Engineer/Landscape Architect. If pressure loss occurs, inspect the entire system, make watertight, and retest until no pressure loss occurs for a one-hour testing period. Control valves to be tested with isolation valves open, and flow control in operating position.

4. Pressure test must show no pressure loss for the specified period and be approved by the Engineer/Landscape Architect before backfill of trenches will be allowed.

B. Inspection: Upon completion of the installation and adjusting of the irrigation system, notify the Engineer/Landscape Architect for a system inspection. At that time present the following:

1. Zone by zone system demonstration.

2. Location of major system components.

3. Winterization and maintenance procedures.

4. Procedures for setting the controller.

5. Location of Zone Map and Controller Schedule.

3.05 ADJUSTING AND TIMING

A. Adjust and balance irrigation system to provide uniform coverage and prevent overspray onto pavements and structures.

B. Set timing on irrigation controller before final inspection. Obtain recommendations of landscaping work installer before setting timing.

3.06 CLEAN UP

A. Area shall be kept free of debris during the course of this project.

B. Remove all debris, dirt, and rock. Sweep and wash walls and roadways upon completion of work daily.

END OF SECTION 02810

SECTION 02950: PLANTING

PART 1 – GENERAL

1.01 DESCRIPTION

Provide planted trees, shrubs and ground covers as shown and specified. The work includes:

A. Plants and planting

B. Specified planting soils

C. Mulch and fertilizer

D. Staking

E. Maintenance

1.02 RELATED SECTIONS

A. Section 02300 Earthwork

B. Section 02811 Landscape Irrigation

1.03 QUALITY ASSURANCE

A. Comply with sizing and grading standards of the 2000 edition of "American Standard for Nursery Stock."

B. Nomenclature shall conform with Hortus Third compiled by the L. H. Bailey Arboretum, Cornell University, 1976.

C. All plants shall be nursery grown or collected materials that has been held in a nursery for at least one year. Nursery climatic conditions must be similar to those in the locality of the Project. All plants shall be weed free at the time of planting.

D. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants

indicated by two measurements so that only a maximum of 25 percent are of the minimum size indicated and 75 percent are of the maximum size indicated.

1.04 SUBMITTALS

A. Submit the following material sample per Section 01340:

1. Mulch submittal including the source of supply and provide a two-pound sample for approval before installation

B. Submit the following product data per Section 01340:

1. Planting fertilizer

2. Mulch

3. Plant material sources: Within 15 days of award of Contract, submit documentation that plant materials have been ordered, nursery names, and representative color photographs of each plant species. Plant materials shall not be shipped until approved by the Engineer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

B. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock. On arrival, the certificate shall be filed with the Owner. Protect all plants from desiccation. Wiltproof or another antidesicant shall be applied only with approval of the Engineer. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Engineer.

Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

C. Cover plants transported on open vehicles with a protective covering to prevent wind-burn.

D. Provide dry, loose soils for planting. Frozen or muddy soil is not acceptable.

E. Stock shall be handled by root ball only, not the trunks, stems, or tops.

1.06 PROJECT CONDITIONS

A. Work notification: Notify Engineer at least seven working days prior to installation of plant material.

B. Protect existing utilities, paving, and other facilities from damage caused by planting operations.

C. Do not install plant material when ambient temperatures may drop below 35°F or above 80°F.

D. Do not install plants when wind velocity exceeds 30 MPH.

E. Confine work to designated areas. Do not disturb existing vegetation outside Project limits and protect all trees, shrubs, and ground covers within Project limits not designated to be removed. Do not permit vehicular traffic or materials storage under or around new or existing trees.

F. Install planting material when tide levels are below the elevation of the working surface.

1.07 SEQUENCING AND SCHEDULING

Install plants during the period from October 1 through April 1, except willow live stakes. Willow live stakes shall be installed between November 1 through March 1.

1.08 WARRANTY

A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of one year after Physical Completion. Inspection of plants will be made by the Engineer at the completion of planting.

B. Within this warranty period, Contractor shall replace, in accordance with the Drawings and Specifications, all plants that are dead or, as determined by the Engineer, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at the Contractor's expense. Warrant all replacement plants for one year after installation, unless otherwise specified.

C. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, floods, freezing rains, lightning storms, or winds over 75 MPH, winter kill caused by extreme cold and severe winter conditions not typical of planting area, acts of vandalism, or negligence on the part of the Owner.

D. Remove and immediately replace all plants, as determined by the Engineer, to be unsatisfactory during the initial planting installation.

E. This warranty also applies to existing trees, shrubs and ground covers that are to be removed and heeled-in for later replanting on-site.

PART 2 – PRODUCTS

2.01 PLANT MATERIALS

Plants: Provide plants typical of their species or variety, with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from weeds, defects, disfiguring knots, sunscald

injuries, and abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids, open spaces, broken branches, flush cuts or stubs.

A. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and absorbing root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock." Cracked or mushroomed balls are not acceptable.

B. Bare-root plants: Dug with adequate fibrous roots, covered with a uniformly thick coating of mud by being puddled immediately after they are dug, or packed in moist straw, sawdust, or peat moss.

C. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.

1. No plants shall be loose in the container.

2. Container stock shall not be pot bound.

D. No pruning wounds shall be present with a diameter of more than one inch and such wounds must show vigorous callous on all edges. Trees shall not be pruned within six months prior to delivery.

E. Willow Live Stakes: Live stakes shall be live wood two to five years old with smooth bark that is not deeply furrowed. Make clean cuts and trim branches of stakes as closely as possible. Stakes with split ends, or peeled bark, are unacceptable. The stakes shall be consistently cut so that the top end is square, and the bottom end (planted end) is angled. Live stakes shall be a minimum of 2 feet and a maximum of 3 feet

2.02 FERTILIZER

Fertilizers shall be "Bio Paks 16-6-8 plus minors and biostimulants" available from Reforestation Technologies International (RTI), 1-800-788-4769, or approved equal.

2.03 BARK MULCH

A. Bark mulch shall be ground fir or hemlock bark, free from weed seeds, sawdust, splinters, or other debris. Bark mulch shall not contain resin, tannin, wood fiber, or other compounds detrimental to plant life.

B. Ground bark shall meet the following gradation requirements:

Sieve Sizes	**Percent Passing**
1/4 inch	95% to 100%
No. 8	80% to 100%
No. 35	0% to 80%

2.04 GOOSE EXCLOSURE MATERIALS

A. Rebar Stakes: Bars per Section 03200-2.01.

B. Polypropylene Rope: one quarter inch diameter, polypropylene rope. Color: yellow, red, or blue.

C. Reflective Mylar Tape: "Flash Scare Tape, one inch wide × 500 feet rolls.

PART 3 –EXECUTION

3.01 INSPECTION

A. Finish grading shall be inspected and approved by the Engineer prior to planting.

B. The irrigation system shall be inspected and approved by the Engineer prior to planting.

C. Plant material shall be inspected and approved by the Engineer at the nursery or site prior to installation. Remove unsatisfactory material from the site immediately.

3.02 PREPARATION

Contractor shall locate plants by staking with stakes and flags as indicated on the Drawings or as approved in the field. If obstructions are encountered that are not shown on the Drawings, do not proceed until Engineer has selected alternate plant locations.

3.03 INSTALLATION

A. Cleanly cut an "X" in coir erosion control fabric in approved locations for individual plants.

B. Excavate circular plant pits with scarified vertical sides, except for plants specifically indicated to be planted in beds. Provide planting pits at least twice the diameter of the root system or container. Depth of pit shall accommodate the entire root system. Scarify the bottom and sides of the pit to a depth of four inches.

C. Place specified planting soil for use around the balls and roots of the plants.

D. Prior to completing backfilling of rootball of trees and shrubs, place Bio Paks on sides evenly around rootball, 1-inch minimum and 4-inch maximum below the finish grade and approximately two inches from root tips. Place quantities of Bio Paks based on plant size per manufacturer's instructions. Do not install BioPaks in Saltmarsh areas (below elevation 10 feet MLLW datum).

E. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set crown of plant material at the finish grade. No filling will be permitted around trunks or stems or above grafts on grafted trees.

Backfill the pit with specified soil. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.

F. After balled and burlapped plants are set, water in soil mixture around bases of balls and fill all voids.

1. Remove all burlap, or plastic wrapping materials, twine, and wires, and wire baskets from root balls.

2. If burlap has been chemically treated (green color), remove from the planting pit.

G. Space ground cover plants using triangular spacing in accordance with indicated dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Plant to within 18 inches of the trunks of trees and shrubs within planting bed and to within 12 inches of edge of bed.

H. Spread and arrange roots of bare-rooted plants in their natural position. Work in specified planting soil. Do not mat roots together. Cut all broken and frayed roots before backfilling with remaining specified planting soil.

I. Willow Live Stakes:

1. Preparation of Cuttings: All cuttings shall be soaked in water immediately after cutting and for a minimum of five days prior to delivery to the site. Cuttings shall be planted the same day that they are delivered to the site. Cuttings shall be kept continually soaked in water on-site until immediately before planting.

2. Installation of Live Stakes: Use an iron stake or bar of similar diameter to the live stakes to create a pilot hole of sufficient depth. Plant stakes with angled bottom end in the ground and at least two to five emerging buds exposed at the top

end. Install stakes with a rubber mallet and protect stakes from damage such as splitting, bark peeling, and bud breakage during installation. Install each stake with 80 percent (4/5) buried and 20 percent (1/5) exposed. Ensure good contact with soil by tamping or backfilling. Install stakes perpendicular to the slope as shown on Drawings.

J. Mulching:

1. Mulch tree and shrub planting pits and shrub beds with required mulching material two inches deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

2. Mulch ground cover beds with one to one and one-half inches deep immediately after planting.

K. Staking: Stake all deciduous and coniferous trees immediately after planting.

L. Pruning: Prune all trees only to remove broken or damaged branches, or for aesthetic purposes as directed by the Engineer. Branches will be pruned at the branch collar. Neither stubs nor flush cuts will be acceptable.

3.04 MAINTENANCE

A. Maintain planting for a period of at least 60 days after completion of planting operations or until all plants are sufficiently recovered from transplanting and in a healthy growing condition acceptable to the Engineer.

B. Maintenance shall include cultivating, weeding, watering, and pruning (only as directed), as necessary to maintain plants in a healthy and vigorous condition.

1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.

2. Straighten, repair and adjust guy wires and stakes as required.

3. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.

4. Water trees, plants, and ground cover beds within the first 24 hours of initial planting, and until final acceptance.

3.05 PHYSICAL COMPLETION

A. Inspection to determine physical completion of planted areas will be made by the Engineer, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.

Planted areas will be excepted provided all requirements, including the maintenance period have been complied with and plant materials are alive and in a healthy, vigorous condition.

B. Upon physical completion, the Owner will assume plant maintenance.

3.06 CLEANING

Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

END OF SECTION 02950

SECTION 03100: CONCRETE FORMWORK

PART 1 –GENERAL

1.01 DESCRIPTION

Construct all formwork systems to provide only those lines and delineations indicated, unless otherwise approved by the Engineer, construct formwork to allow erection in proper sequence and to permit removal without damage to the finished concrete surfaces. Construct all formwork to the shapes, lines and dimensions of concrete members with specified tolerances.

1.02 RELATED SECTIONS

Section 02300: Earthwork

Section 03200: Concrete Reinforcement

Section 03300: Cast-in-Place Concrete

1.03 REFERENCE STANDARDS

Conform to requirements of the following Reference Standards as the Engineer judges them applicable and as modified and supplemented herein.

A. ACI Specifications for Structural Concrete for Buildings, ACI 301.

B. ACI Recommended Practice for Concrete Formwork, ACI 347.

1.04 QUALITY ASSURANCE

A. Special Inspection: Notify the Engineer at least 48 hours before pouring concrete for review of forms and reinforcement. No concrete shall be placed without formwork and reinforcement review by Engineer.

B. Inspection by Other Trades: Where items, such as anchors, fastenings, conduit, piping and other items are supplied by other trades and specified elsewhere in these Specifications, in the forms, obtain approval of their placement prior to placing any concrete.

1.05 HANDLING

A. Protection of Forms: Design, construct, and erect all forms for reuse; withdraw projecting nails or other objects from contact surfaces before reusing; clean and completely recondition all forms prior to reuse; and repair any damage to forming surfacing cause during previous usage. Obtain approval for each reuse. Formwork with patches or repairs affecting appearance of the concrete surfaces will not be permitted.

B. In order that reused forms will not contain patches resulting from alterations, reuse forms on identical sections only; reuse no forms showing excessive surface wear or other imperfections impairing quality of finish of concrete surface.

C. Precautions: Contractor is responsible for the strength and suitability of the formwork.

PART 2 –PRODUCTS

2.01 FORMS

For Footings and Concrete Slabs: Fabricate forms of MDO plywood, metal or plastic as judged best suited for shapes. Construct with a minimum of joints, sufficiently tight to prevent leakage.

2.02 INSERTS/SLEEVES

As required by Manufacturer's Specifications.

2.03 FORM RELEASE AGENT

Release agent with non-staining and non-interference characteristic with bonding capabilities of paints, plasters, adhesives, other surface coatings or materials. Contractor shall guarantee proper bonding of such subsequent coatings or materials applied over concrete.

PART 3 –EXECUTION

3.01 PREPARATION

All areas of formwork and concrete placement shall have an approved crushed rock base as specified and shown on the Drawings prior to executing formwork.

3.02 DESIGN AND CONSTRUCTION

A. Erect forms to conform accurately to the shapes, dimensions, locations and profiles indicated. Fit joints between adjacent assembled panels and components tightly and seal with gasket material. Inspect all contact surfaces prior to concrete placement; verify that surfaces are clean, smooth, and free from foreign matter or imperfections affecting appearance of finished concrete.

B. Camber: Design and erect formwork for anticipated deflection due to weight and pressure of fresh concrete. Provide positive means for adjustment of shores and struts to take up settlement during placement.

3.03 FORM TREATMENT

Before erection of forming, plug and seal all cracks, holes, slits, gaps, and other "telegraphing" imperfections in contact surfaces. Apply bond-breaking coating in amounts that will leave surfaces in proper condition to receive subsequent material application. Contractor shall be responsible for being certain that bond release coatings are applied only in amounts that will leave surfaces in proper condition to receive subsequent material application.

3.04 FORM REMOVAL

A. Formwork designed for easy removal without damaging or marring finished surfaces of the concrete. Prying against face of concrete will not be permitted; where mechanical means are

necessary to release forms, use wood wedges only and then only if approved by the Engineer.

B. Removal Strength: Formwork for footings shall remain in place until concrete has hardened sufficiently to resist damage from the removal operations. Determine concrete removal strength based on test cylinders, field cured under the most unfavorable conditions prevailing for any portion of the work represented.

END OF SECTION 03100

SECTION 03200: CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.01 REFERENCE STANDARDS

Conform with requirements of the following Reference Standards as the Engineer judges them applicable and as modified and supplanted herein.

A. ACI Building Code Requirements for Reinforced Concrete, ACI 318

B. ACI Specifications for Structural Concrete for Buildings, ACI 301

C. ACI Detailing Manual, ACI 315

1.02 QUALITY ASSURANCE

Special Inspection: Notify the Engineer at least 48 hours before placing any concrete in accordance with Section 03100.

1.03 SUBMITTALS

Product Data: Submit manufacturers' published literature for specified products and accessories as applicable, including manufacturers' Specifications, physical characteristics, and performance data. Submit as a supplement, manufacturers' instructions, and directions for application if not included in manufacturers' published literature.

PART 2 –PRODUCTS

2.01 MATERIALS

A. Bars: ASTM A615 (including Supplement S1); Grade 60, Fy=60,000 psi sizes as indicated and noted on Drawings; all bars shall be free from rust and loose scale at time of installation.

B. Tie wire: 16-gauge double annealed wire. Provide galvanized tie wire for exposed concrete.

PART 3 –EXECUTION

3.01 FABRICATION AND DETAILING

A. Fabricate steel bar reinforcement to shapes and dimensions as shown and placed as indicated.

B. Bending and Straightening: Form bars accurately to detail, other kinks or bends will not be permitted; conform with requirements of ACI 318. Make bends cold around pin with diameter at least six times bar dimension; heating of reinforcement will be permitted only if entire operation is approved. No bending of reinforcement after partial embedment in concrete will be permitted, unless approved by the Engineer.

C. Splices: Obtain approval of all splices not indicated on Drawings. In general avoid splices at points of maximum stress. Saw, shear or flame-cut bar ends; straighten ends of sheared bars; chip and wire brush ends of flame-cut bars. Wire brush splice area to remove burrs, paint, oil, and other foreign matter before splicing.

3.02 PLACEMENT

A. Clean reinforcing bars free from loose rust, mud, oil and other foreign matter affecting or reducing bond using approved portable sandblasting equipment. Accurately position bars in accordance with approved placement Drawings and secure against displacement. Lap at intersections as indicated or as directed; extend reinforcement through, and lap beyond, construction joints.

B. Displacement: If bars are displaced, or if it is necessary to move bars to avoid interference with other reinforcing or embedded items, and if bars are moved to exceed tolerances, obtain approval of resulting arrangement prior to placing concrete.

C. Miscellaneous: After cutting tie-wire, turn wires to the inside of the section and bend in such manner that concrete placement will not force ends to exposed concrete surfaces.

D. Contact Engineer at a minimum of 48 hours before placing concrete to review reinforcing

END OF SECTION 03200

SECTION 03300: CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 RELATED WORK

A. Section 03100: Concrete Formwork

B. Section 03200: Concrete Reinforcing

C. Section 03345: Concrete Finishing

1.02 REFERENCE STANDARDS

Conform to requirements of the following Reference Standards or as modified and supplemented hereinafter.

A. ACI Specifications for Structural Concrete for Buildings, ACI 301

B. ACI Recommended Practice for Selecting Proportions for Concrete, ACI 613.

C. ACI Recommended practices for Cold Weather Concreting, ACI 306.

D. ACI Recommended Practice for Hot Weather Concreting, ACI 605.

1.03 QUALITY ASSURANCE

A. Special Inspection: Notify the Engineer at least 48 hours before inspection will be required; inspection will be required immediately prior to any intended pours or placement of concrete.

B. Concrete Work: Concrete work, where indicated, shall be exposed, as finished. Special care must be taken to provide specified, finished surfaces without gravel pockets, and other defacements.

C. Concrete work shall be performed by a company specializing in cast-in-place concrete with a minimum five years experience. Any

work not conforming to the construction documents shall be rejected, removed and replaced.

1.04 SUBMITTALS

A. Submit, for approval, product data per Section 01340 for joint filler; and mixtures and curing compounds for all cast-in-place concrete work. Submit concrete design mix.

B. Refer to Section 03100 for additional requirements.

C. Mockups: Prepare mockup per Section 01340 of natural color Portland cement with broom finish and one expansion joint. Protect mockup on-site until concrete work is accepted.

D. Records: Maintain records of all concrete placements; indicate exact mix proportions, list time, date, location in the Project, weather conditions at the time of placement, and the source of the concrete supply. Make records available to Engineer at any time during the course of construction and submit at end of concrete placement phase of Project for the purposes of preparing record documents.

E. Certificates: Submit certification of previously tested mix designs.

PART 2 –PRODUCTS

2.01 CONCRETE MATERIALS

A. Aggregates:

Standard: ASTM C33

B. Cements:

1. Provide cements obtained from same source or of same brand for concrete in same element or portion of the work.

2. Standard Portland Cement: Columbia, Ideal, Kaiser, Lone Star, or approved. Standard gray Portland cement, ASTM C150; uses type I or type III.

C. Cementious Materials:

Fly ash, ASTM C618 type F, except that the maximum allowable loss on ignition shall be 0.75 percent. Use for all concrete.

D. Admixtures:

1. Use only one brand of admixtures.

2. Water-Reducing Admixture: Master Builders Pozzolith 300-N, or approved. Chemical admixture conforming with requirements of ASTM C494, Type A.

3. Retarder-Densifying Admixture: Master Builders Retarding Pozzolith, or approved; ASTM C494, Type B.

4. Accelerator: Chemical admixture designed to accelerate set on concrete but not corrode reinforcing steel; ASTM C494, Type C.

5. Air Entraining Agent: Conform to requirements of ASTM C260.

E. Other Ingredients:

Provide other ingredients as indicated or as required by Code or Reference Standards.

2.02 CONCRETE MIX

Concrete mix shall have the characteristics as follows:

28 day compressive strength.....3,000, psi
Sacks cement.....5 per cubic yard
(see "Cement" below)
Fine aggregate #2 .....203 per sack, lb.
(see "Aggregates" below)
Coarse aggregate #5.....320 per sack, lb.
(see "Aggregates" below)
Maximum water, gallons per sack 5.5
Slump, inches.....2.0 to 3.5 per ASTM C143
Water-cement ratio (air entrained).....0.46

2.03 PORTLAND CEMENT

Use only Type II Portland Cement, as specified in d AASHTO M 85. Use one brand and color of cement for all exposed concrete.

2.04 AGGREGATES

A. Fine Aggregates:

Fine Aggregates shall consist of sand or other inert materials, or combinations thereof, having hard, strong, durable particles free from an adherent coating. Fine Aggregate shall be washed thoroughly to remove clay, loam, alkali, organic matter, or other deleterious matter. Fine Aggregate #2 Particle Gradation is as follows:

Sieve Size	**Percent Passing**
#4	95% to 100%
#8	85% to 95%
#16	45% to 85%
#30	40% to 60%
#50	10% to 30%
#100	2% to 10%
#200 (wet)	0% to 2.5%

B. Coarse Aggregates:

Coarse Aggregate shall consist of gravel, crushed stone, or other inert material or combination thereof having hard, strong, and durable pieces free from adherent coatings. Coarse Aggregate shall be washed to thoroughly remove clay, silt, bark, sticks, alkali, organic matter, or other deleterious material. Coarse Aggregate Particle Gradation is as follows:

Sieve Size	**Percent Passing**
1/2 inch square	100%
3/4 inch square	80% to 100%
3/8 inch square	10% to 40%
#4	0% to 4%

2.05 BONDING AGENTS AND ADHESIVES

A. Bonding Agents as required.

B. Primers and Sealers: As recommended by the adhesive and bonding agent manufacturers.

2.06 EXPANSION JOINTS

A. Joint Filler: Pre-formed, non-extruding asphalt impregnated resilient material; ASTM D1752, Type I, 3/8 inch wide by depth required to bring top surface within ½ inch of slab surface.

B. Joint Sealer: Self-leveling polyurethane; ASTM C920, Type M, Grade SL, Class 25. Color: gray.

C. Expansion Joint Cap: Removable, high impact extruded polystyrene, placed on joint filler during concrete placement. Joint cap by Burke Company or equal.

2.07 CONCRETE MIXES

A. Quality of Concrete: Assumed compressive strengths and locations of same are noted on Drawings.

B. The fly ash content shall not exceed seven percent by weight of the total cementious material.

C. Admixtures:

1. Add in accordance with manufacturer's directions.

2. If approved, water-reducing retardant may be used when the temperature of the concrete, as placed, exceeds 65°F.

3. If approved, accelerator may be used when temperature of concrete is less than 40°F.

4. No calcium chloride or other water-soluble chloride ion admixtures will be permitted, unless otherwise approved by Engineer.

5. Use retarder/densifier when placing other concrete in warm weather conditions or when ambient temperature exceeds 65°F.

6. Use air-entraining agent in concrete subjected to freezing temperatures after curing. Total air content shall be in accordance with Table 26-B of UBC.

2.08 PROPORTIONING

A. General: Concrete for all parts of the work shall be homogeneous and when hardened, shall have the required strength, resistance to abrasion, watertightness, appearance, resistance to deterioration, durability, and other properties specified herein.

B. Slump. Slump for concrete as determined by "Method of Test for Slump of Portland Cement Concrete" ASTM C 143-69, shall be two to three and a half inches.

C. Proportion of Ingredients: Proportion ingredients to produce the proper placeability, durability, and strength.

D. Proportion ingredients to produce a mixture which will work readily into the corners and angles of the forms, and around reinforcement by the methods of placing and consolidation employed on the work, but without permitting the materials to segregate, or excessive free water to collect on the surface.

2.09 MIXING CONCRETE

Standard Concrete -- Ready-Mixed Concrete: Mix and transport in accordance with ASTM C94.

Slump: Mix concrete only in quantities for immediate use. Do not make indiscriminate addition of water to increase slump. When concrete arrives at the Project with slump below that suitable for placing, water may be added only if the maximum permissible water-cement ratio or the maximum slump is not exceeded, and only at the direction of the Engineer.

PART 3 –EXECUTION

3.01 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete any unfinished formwork, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers,

place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.

2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least six inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.

E. Cold Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing action, or low temperatures.

F. When air temperature has fallen to or is expected to fall below, 40°F (4°C), uniformly heat water and aggregates before mixing, to obtain a concrete mixture temperature of not less than 50°F (10°C) and not more than 80°F (27°C), at point of placement.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen sub-grade or on sub-grade containing frozen materials.

2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

G. Hot Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90°F (32°C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover reinforcing steel with water soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.

3. Fog spray forms, reinforcing steel, and sub-grade just before placing concrete. Keep sub-grade moisture uniform without puddles or dry areas.

4. Use water reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Engineer.

3.02 CONSTRUCTION JOINTS

A. Form all joints perpendicular to main reinforcement. Continue reinforcing across joints, unless otherwise indicated; provide longitudinal keys at least 1-1/2 inch deep at all joints in walls between walls and slabs or footings. Remove key forming wood inserts and thoroughly clean surface of concrete at all joints before placing next lift.

B. Roughen surface of concrete at joints and remove laitance to obtain bond before placing next lift; if use of keys is impractical due to congestion or inaccessibility or if it is inadvisable to disturb surface

before it has hardened, use only wet sandblast method for preparing surface.

C. Dampen hardened concrete of joints between footings and walls, joints in unexposed walls, and all others not specifically mentioned here in after and roughen by air water cutting.

D. Dampen hardened concrete joints in exposed work and roughens by air/water cutting. Thoroughly cover joint surfaces with neat cement mortar of similar proportions to mortar in concrete; apply mortar as thick as practicable on vertical surfaces and a minimum of 1/2 inch thick on horizontal surfaces; place next lift before mortar has reached its initial set.

E. For bonding new concrete to existing concrete use bonding agent. For grouting dowels and reinforcing bars use specified adhesives in accordance with manufacturer's instructions.

F. Provide key forming wood inserts strips in walls; pour concrete to 1/2 inch above lower edge or strip.

3.03 EXPANSION JOINTS

A. Provide pre-molded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated.

B. Locate expansion joints as noted on Drawings.

C. Extend joint fillers full width and depth of joint and not less than 1/2 inch or more than 1 inch below finished surface where joint sealer is indicated. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Protect top edge of joint filler during concrete placement with expansion joint cap. Remove joint cap protection after concrete has cured and been placed on both sides of joint and before sealant is applied.

D. Fillers and Sealants: install polyurethane sealant in a continuous, smooth joint, wiping excess sealant from adjacent concrete.

E. Provide expansion joints at spacing shown on Drawings and not more than 30 feet apart in footings. Run no reinforcement or other metal trim continuous through joints, unless otherwise indicated.

3.04 CLEANING

Leave premises clean and free of residue from work in this section.

END OF SECTION 03300

SECTION 03345: CONCRETE FINISHING

PART 1 – GENERAL

1.01 REFERENCE STANDARDS

Conform with requirements of the following Reference Standards or as modified and supplemented hereinafter.

A. ACI Specifications for Structural Concrete for Buildings, ACI 301

B. ACI Recommended Practice for Cold Weather Concreting, ACI 306

C. ACI Recommended Practice for Hot Weather Concreting, ACI 605

1.02 QUALITY ASSURANCE

Concrete Work: Concrete work where indicated to be exposed is architecturally finished concrete; special care must be taken to provide specified, finished surfaces without gravel pockets, and other defacements. Engineer shall inspect concrete after removal of forms and before concrete repair work begins.

1.03 PROTECTION

Protect persons and adjacent materials and finishes from dust, dirt and other surface or physical damage during finishing operations, including materials driven by wind.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 REPAIRS

A. Immediately after removal of forms, cut back ties and inspect surfaces for defects. Repair or patch defects only after defects are inspected by the Engineer and then only with his permission. Do all cutting and repair within 48 hours after removal of forms; cure repairs same as new concrete.

B. Defective Areas: Where patches are allowed, repair and patch areas; they must match surrounding areas in color and texture so as to be indistinguishable after completion, including curing and finishing. Determine mix for color by trial mixes before patching; after initial cure, dress patch or repair area mechanically or by hand for texture match.

3.02 FINISHES FOR FORMED SURFACES

A. Rough Form Finish: Provide for surface of walls and footings adjacent to grade or below grade. This is the concrete surface having texture imparted by form facing material use with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth Formed Finish: Provide a smooth formed finish on formed concrete surfaces exposed to view. This is an as-cast concrete surface obtained with selected form facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections completely and smoothed. Repair and patch honeycombs and defective areas as directed by the Engineer.

C. Sacked Finish:

1. On all designated surfaces of the exposed concrete, provide a sacked finish by coating the concrete with sacking mortar. Sacking of patched or defective concrete surfaces may be required by the Engineer for areas not otherwise already requiring this work.

2. Repair and patch tie holes, honeycombs and defective areas and trowel to smooth finish. Remove fins and other projections completely and smoothed.

3. Thoroughly wet surface to prevent absorption.

4. Coat entire surface with sacking mortar as soon as surface of concrete approaches surface dryness.

5. Thoroughly and vigorously rub mortar over area with clean burlap pads to fill all voids.

6. While mortar is still plastic but partially set (so it cannot be pulled from voids), sack-rub surface with dry mix of sacking mortar (leave out water). There should be no discernible thickness of mortar on concrete surface, except in voids; all surfaces should be uniformly textured.

7. Immediately begin a continuous moist cure for 72 hours.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.03 FINISHES FOR UNFORMED SURFACES

A. Screed all slabs, for whatever finish, to true levels or slopes, work surfaces only to the degree required to produce the desired finish. Do no finishing in areas where water has accumulated; drain and re-screed. In no case use cement and sand sprinkling to absorb moisture. Carefully finish all joints, including tool joints and expansion joints, edges with proper tools, and to the radii specified on Drawings unless otherwise specified.

B. Broom Finish: Apply a non-slip broom finish to all exterior concrete slabs, stairs, walks, and ramps, and elsewhere as indicated. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route.

C. Defective Work: Remove and replace when directed by the Engineer, surfaces which show excessive shrinkage cracks.

3.04 CURING

A. Protect freshly deposited concrete from premature drying and excessively hot or cold temperatures; maintain minimal moisture loss at relatively constant temperature for necessary hydration time and proper relatively constant temperature for necessary hydration time and proper hardening of concrete.

B. Duration of Curing: In addition to overnight initial curing, continue final curing operations until the cumulative number of days or fractions thereof, not necessarily consecutive, during which temperature of the air in contact with concrete is above 50°F equals seven days; if high-early strength concrete has been used, continue final during operation for three days total calculated as before. Take care to prevent rapid drying at the end of the curing period. If early removal of forms is approved and forms are removed during the curing period apply one of the curing methods specified in Reference Standards and continue curing for the remainder of the required curing period.

3.05 INSPECTION

Contractor shall notify Engineer that they are starting concrete finish repair work at least 48 hours prior to the beginning of work.

3.06 CLEANING

Leave premises clean and free of residue from work in this section.

END OF SECTION 03345

SECTION 05120: STRUCTURAL STEEL

PART 1 –GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes structural steel, including materials for steel pipe mini-piles.

1.03 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Shop Drawings detailing fabrication of structural steel components.

1. Include details of cuts, connections, holes, and other pertinent data.

2. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.

3. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.

C. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance.

B. Comply with applicable provisions of the following specifications and documents:

1. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

C. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code—Steel."

1. Present evidence that each welder has satisfactorily passed AWS and WABO qualification tests for welding processes involved and, if pertinent, has been recertified.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver structural steel to Project site in such quantities and at such times to ensure continuity of installation.

B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.

PART 2 –PRODUCTS

2.01 MATERIALS

A. Plates and Bars:

1. Carbon Steel: ASTM A 36.

B. Galvanized Cold-Formed Structural Steel Tubing: ASTM A 500, Grade B.

C. Anchor Rods, Bolts, Nuts, and Washers: As follows:

1. Headed Bolts: ASTM A 307, Grade A carbon-steel, hex-head bolts; and carbon-steel nuts.

2. Plate Washers: ASTM A 36

3. Finish: Hot-dip zinc-coating, ASTM A 153, Class C.

D. Welding Electrodes: E-70xx low-hydrogen electrodes complying with AWS D1.0 requirements.

2.02 GALVANIZING REPAIR PAINT

A. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds and repair painting galvanized steel, with dry film containing not less than 93 percent zinc dust by weight, and complying with DOD-P-21035A or SSPC-Paint 20.

2.03 FABRICATION

A. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC specifications referenced in this Section and in Shop Drawings.

B. Remove blemishes in architecturally exposed structural steel by filling, grinding, or by welding and grinding, prior to cleaning, treating, and galvanizing.

C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

D. Holes: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on Shop Drawings. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning.

2.04 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to all structural steel according to ASTM A 123 for shapes

and weldments and A153 for fasteners and connectors. Galvanize after welding operations to greatest extent possible.

PART 3 –EXECUTION

3.01 EXAMINATION

A. Before erection proceeds, verify elevations of bearing surfaces and locations of anchorages for compliance with requirements. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.02 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC specifications.

3.03 FIELD CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

3.04 FIELD QUALITY CONTROL

A. Owner will engage an independent testing and inspecting agency to perform field inspections and tests and to prepare test reports. Testing agency will observe the work and state in each report whether tested Work complies with or deviates from requirements.

B. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.

3.05 CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint as specified.

END OF SECTION 05120

SECTION 06100: ROUGH CARPENTRY

PART 1 –GENERAL

1.01 SUMMARY

A. Provide rough carpentry:

1. Framing with pressure-treated dimension lumber for handrail system.

2. Miscellaneous Lumber

1.02 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials as required to preserve appearance and quality.

B. Lumber Standards and Grade Stamps: DOC PS 20 and agency grade stamps.

C. Preservative Treatment: AWPA C2 waterborne pressure treatment.

PART 2 –PRODUCTS

2.01 MATERIALS

A. Dimension Lumber:

1. Handrail Posts and Blocking: Hem-Fir Select Structural

2. Framing between posts: Douglas Fir Select Structural

3. Cap rail: Western Cedars, Select, Appearance Grade

4. Miscellaneous Framing: Hem-Fir #1

PART 3 –EXECUTION

3.01 INSTALLATION

A. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated,

B. Provide nailers and blocking where required. Set work plumb, level and accurately cut.

C. Repair all cuts and holes per AWPA C-2 before installation.

D. Restore damaged components. Protect work from damage.

END OF SECTION 06100

SECTION 06170: PARALLEL STRAND STRUCTURAL TIMBER

PART 1 –GENERAL

1.01 SUMMARY

A. Section Includes: Parallel Strand (PSL) framing members.

1.02 REFERENCES

A. ASTM D2559 Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions.

B. ASTM D5456 Specification for Evaluation of Structural Composite Lumber Products.

C. National Design Specification for Wood Construction (NDS).

D. Materials shall comply with NES Report #NER-481 or CCMC Report #11161-R

1.03 SUBMITTALS

A. Manufacturer's Product and Material Safety Data Sheets, for all specified products.

B. Shop Drawings: Submit data showing product components, including finish.

C. Wood Treatment Certificate signed by wood treatment agency certifying that treatment complies with specified requirements.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer experienced in PSL production, and capable of providing field service representation during construction.

1.05 DELIVERY, STORAGE & HANDLING

A. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

PART 2 –PRODUCTS

2.01 ENGINEERED PARALLEL STRAND STRUCTURAL UNITS

A. Basis for Design: Trus Joist MacMillan Parallam PSL Heavy Timber.

B. Douglas Fir, Larch or Hemlock, touch sanded, E = 2.0E6 psi, Fb = 2900 psi; sizes, shapes and profiles as indicated in Contract Documents.

C. Grade Stamps: All Parallam PSL materials shall comply with NES Report No. NER-481 or CCMC Report No. 11161-R.

D. Pressure-treat with ACQ or K-8™ preservative to a retention level to meet AWPA standards UC3A or UC3B, then kiln dry to an average moisture content of 15%.

2.02 MATERIALS

A. PSL shall be manufactured in a continuous process from wood fiber with all strands oriented to the length of the member and then fed into a press. All members are to be free of finger or scarf joints.

B. Adhesives shall be of waterproof type conforming to the requirements of ASTM D2559.

2.03 FABRICATION

A. PSL shall be manufactured in a plant listed in the above referenced reports under the supervision of an approved third-party inspection agency. It shall be manufactured in a continuous process with all grain parallel with the length of the members.

PART 3 –EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 ERECTION AND INSTALLATION

A. Install per the Contract Documents and manufacturer's recommendations. Holes, cuts or notches not shown on the contract documents shall not be permitted.

B. Repair and field treat all cut, drilled and damaged surfaces per AWPA C2

3.03 CLEANING AND REPAIR

A. Repair or replace damaged installed products. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 06170

SECTION 06600: FIBERGLASS REINFORCED PLASTIC (FRP) PRODUCTS

PART 1 –GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

1.02 SUMMARY

This section includes the following FRP products and fabrications:

A. FRP Gratings and Frames

B. FRP Gritted Plate

1.03 SCOPE OF WORK:

A. Furnish all labor, materials, equipment and incidentals necessary to install the fiberglass reinforced plastic (FRP) products as specified herein.

1.04 QUALITY ASSURANCE:

A. The material covered by these specifications shall be furnished by a reputable and qualified manufacturer of proven ability who has regularly engaged in the manufacture and installation of FRP systems.

B. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

1.05 DESIGN CRITERIA:

A. The design of FRP products including connections shall be in accordance with governing building codes and standards as applicable.

B. Design of FRP live loads on grating shall not be less than 100 pounds per square foot. Also, grating shall be designed to resist a concentrated load of 1500 pounds applied to a 6 inch by 6 inch square, or an axle load of 3000# with a center-to-center axle spacing of 5' 0". Concentrated load need not be applied simultaneous to uniform load. Grating deflection at the center of a simple span not to exceed .25 inch.

1.06 SUBMITTALS:

A. Manufacturer's catalog data showing:

1. Dimensions, spacings, and construction of grating

2. Design tables showing limits for span length and deflection under various uniform and concentrated loads

3. Materials of construction

B. Samples of each type of product proposed shall be submitted for approval prior to placement of purchase orders.

1.07 SHIPPING AND STORAGE INSTRUCTIONS:

A. All systems, sub-systems and structures shall be shop fabricated and assembled into the largest practical size suitable for transporting.

B. All materials and equipment necessary for the fabrication and installation of the grating and stair treads shall be stored before, during and after shipment in a manner to prevent cracking, twisting, bending, breaking, chipping or damage of any kind to the materials or equipment. Any material which in the opinion of the Owner, has become damaged as to be unfit for use, shall be promptly removed from the site of work, and the Contractor shall receive no compensation for the damaged material or its removal.

PART 2 –PRODUCTS

2.01 GENERAL:

A. Materials used in the manufacture of the FRP products shall be new stock of the best quality and shall be free from all defects and imperfections that might affect the performance of the finished product.

B. All FRP products noted in 1.02 shall be manufactured using a pultruded process utilizing either an isophthalic polyester or a vinyl ester resin with flame retardant and ultra-violet (UV) inhibitor additives. A synthetic surface veil shall be the outermost layer covering the exterior surface. The FRP shapes shall achieve a flame spread of 25 or less in accordance with ASTM method E-84.

C. After fabrication, all cut ends, holes and abrasions of FRP shapes shall be sealed with a compatible resin coating to prevent intrusion of moisture. Bevel sharp edges prior to coating.

D. FRP products shall contain an ultraviolet inhibitor; in addition a one mil minimum U.V. coating shall be applied.

E. All exposed surfaces shall be square, flat and true to form.

2.02 GRATINGS:

A. General

1. Grating shall be Duragrid I-4000 as manufactured by Strongwell, or approved equal.

2. Grating shall be shipped from the manufacturer, palletized and banded with exposed edges protected by cardboard to prevent damage in shipment.

3. Each piece shall be clearly marked showing manufacturer's applicable drawing number.

B. Design

1. The panels shall be 1.50 inches deep, and bearing bars shall be located at 1 inch on center. The maximum gap between bars shall be 0.40 inch.

2. The bearing bars shall be joined into panels by passing continuous length fiberglass pultruded cross rods through the web of each bearing bar at maximum 12 inches on center, and 3 inches maximum to the end of any panel. The pultruded cross rod assembly shall consist of two cross rod spacers that have notches cut into them to fit the distance between the web of each bearing bar, and a continuous fiberglass pultruded bar shaped section wedged between the two cross rod spacers, mechanically locking the notches in the cross rod spacers to the web of the bearing bars. Continuous chemical bonding shall be achieved between the cross rod spacers and the bearing web and between the bar shaped wedge and the two cross rod spacers locking the entire panel together to give a panel that resists twist and prevents internal movement of the bearing bars.

3. The top surface of all panels shall have a nonskid grit affixed to the surface by an epoxy resin followed by a top-coat of epoxy resin.

4. Panels shall be fabricated to minimize the number of joints. Panels shall be continuous full length, except that panel length need not exceed 16'0". Panel splices shall be centered on a support.

5. Hold down clamps shall be type 316L stainless steel saddle clips, hidden style, at locations shown on drawings (four minimum per panel).

6. Color shall be dark gray to match existing FRP grating placed on nearby sections of the Whatcom Creek Trail.

7. All bearing bars shall be coated with polyurethane coating with a minimum thickness of 1 mil.

8. Surface grit shall be standard (medium) grit to match existing.

2.03 FRP GRITTED PLATE

A. Design

1. Product shall be SAFPLATE. SAFPLATE shall be EXTREN as manufactured by Strongwell. Plate thickness shall be .25 inch.

2. SAFPLATE shall be manufactured using a premium grade polyester or vinyl ester resin with fire retardant additive to meet Class 1 flame rating of 25 or less as tested by ASTM E-84 and meet the self-extinguishing requirements of ASTM D-635. All plate shall contain a U.V. inhibitor; in addition a one mil. minimum U.V. coating shall be applied.

3. SAFPLATE shall have a non-skid grit surface affixed to the top of the plate by epoxy resin, followed by a top coat of epoxy resin.

4. Panels shall be fabricated to the sizes shown on drawings.

5. Segments requiring seams shall be fastened at both ends of the plate sections with a maximum spacing of 3 inches from either end of the plate.

6. Plate shall be secured using Stainless Steel screws as shown on the structural drawings. All holes shall be pre-drilled prior to installation of fasteners; installation of fasteners to be flush with the plate surface. See drawings for minimum dimensions and layout of fasteners.

7. Color shall be dark gray; color and surface texture to match the grating specified above.

PART 3 –EXECUTION

3.01 PREPARATION:

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, including anchor bolts. Coordinate delivery of such items to project site.

3.02 INSTALLATION, GENERAL:

A. Cutting, fitting and placement: Perform cutting, drilling and fitting required for installation of miscellaneous FRP fabrications. Set FRP fabrication accurately in location, alignment and elevation; with edges and surfaces level, plumb, true and free of rack; and measured from established lines and levels.

B. Screw fasteners for the SAFPLATE shall be stainless steel flat head screws with the head flush with the surface.

C. Provide temporary bracing or anchors in form work for items that are to be built into concrete masonry or similar construction.

3.03 ALL FRP INSTALLATION:

A. All field cut and drilled edges, holes and abrasions shall be sealed with a catalyzed resin compatible with the original resin as recommended by the manufacturer. Color to match the grating. The sealing of the edges shall prevent premature fraying at the field cut edges and prevent moisture ingress. All unsupported cut ends of grating shall be provided with a 1/4 inch by 1½ inch fiberglass angle edge band, as manufactured by the FRP manufacturer, to be adhered with methods and materials recommended by the manufacturer.

B. Install items specified as indicated and in accordance with manufacturer's instructions.

END OF SECTION 06600

SECTION 08100: LARGE WOODY DEBRIS INSTALLATION

PART 1 –GENERAL

1.01 DESCRIPTION OF WORK

Provide and install driftwood and anchored large woody debris structures and barrier as shown and specified on the Plans.

1.02 PROJECT CONDITIONS

A. Work notification: Notify Engineer at least seven working days prior to installation of woody debris.

B. Protect existing utilities and previously placed rock and capping materials from damage during installation of driftwood and large woody debris.

C. Confine work to designated areas. Do not disturb existing vegetation outside Project limits and protect all trees, shrubs and ground covers within Project limits not designated to be removed.

PART 2 –PRODUCTS

2.01 LARGE WOODY DEBRIS

A. Logs shall consist of salvaged natural wood that has not been preservative treated. Preservative treated logs are not acceptable. All anchored logs shall have root wads attached. The Contractor shall obtain logs with root wads from approved off-site sources. Use of decay resistant species, such as Madrone, Black Locust, Cedar, and Douglas Fir, are preferred. Logs shall be a minimum of 12 inches in diameter, four feet from the base, and shall be a minimum length as shown on the Contract Drawings. Trim woody debris as directed by Engineer. Logs shall be washed of soil and debris prior to installation.

B. No split logs or individual root wads without trunks will be accepted.

2.02 DRIFTWOOD

Driftwood shall consist of natural wood obtained from an accepted offsite source or salvaged from Site Preparation and Clearing and Demolition operations during conduct of this project, subject to the Engineer's approval. Driftwood shall be logs a minimum of 12 inches in diameter, four feet from the base, and shall be a minimum of 15 feet long. Trim driftwood as directed by Engineer. Driftwood shall be washed of soil and debris prior to installation. No split logs or individual root wads without trunks will be accepted.

2.03 CONCRETE ANCHORS

Concrete Anchors shall be rectangular blocks of concrete measuring 2′ x 2′ x 6′ (commonly termed "Ecology Blocks") with a steel eye for chain connection. The Contractor shall obtain Concrete Anchors from approved off-site sources.

2.04 CHAINS

Chains shall be ½-inch galvanized lashing chains with one screw shackle per log. The Contractor shall obtain chains from approved off-site sources.

PART 3 –EXECUTION

3.01 INSPECTION

Finish grading and woody debris placement shall be inspected and approved by the Engineer.

3.02 PREPARATION

Contractor shall locate woody debris by staking with stakes and flags as indicated on the Drawings or as approved in the field. If obstructions are encountered that are not shown on the Drawings, do not proceed until Owners representative has selected alternate locations.

3.03 INSTALLATION OF ANCHORED LARGE WOODY DEBRIS

Construct anchored large woody debris as shown on the Drawings. Placement and selection of woody debris shall be as directed by the Engineer and shall occur at low tides. Engineer shall be present during installation of woody debris. Securely fasten logs to steel chain and concrete anchors to prevent movement by high water. Conceal concrete anchors from view. Concrete anchors, branches, and root mass shall not disturb the surficial cap.

3.04 INSTALLATION OF LARGE WOODY DEBRIS BARRIER

Construct large woody debris barrier as shown on the Drawings. Placement and selection of woody debris shall be as directed by the Engineer. Engineer shall be present during installation of woody debris. Concrete anchors shall be buried at least six inches underneath final surface elevation. Securely fasten logs to steel chain and concrete anchors to prevent movement. Large woody debris shall not be buried.

3.05 INSTALLATION OF DRIFTWOOD

Install driftwood after installation of topsoil, installation of coir erosion control fabric, and finish grading is completed, and prior to planting. Engineer shall be present during installation of driftwood.

PART 4 –MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Materials provided and placed as defined in this Section will be measured as Lump Sum.

4.02 PAYMENT

Payment shall be full compensation for furnishing, loading, transporting, handling, and placing materials in accordance with the Contract Drawings and these Specifications.

END OF SECTION 08100