

## **PROJECT MANUAL**

# **BALLARD CORNERS PARK PHASE II IMPROVEMENTS**

**BID OPENING:  
Friday, November 7, 2008  
At 2:00 P.M.**

Issued: October 17, 2008

City of Seattle  
Parks and Recreation  
Planning and Development Division  
800 Maynard Avenue South, 3rd Floor  
Seattle, WA 98134  
contact Pam Kliment 206-684-7556

Barker Landscape Architects  
October 17, 2008  
contact John Barker 206-783-2870

## SOLICITATION FOR BIDS

for

# BALLARD CORNERS PARK PHASE II DEVELOPMENT

**BIDS DUE: NOVEMBER 7, 2008**

**PROJECT LOCATION:** 1702 NW 62nd Street, Seattle, WA

**PROJECT DESCRIPTION – BASE BID ITEMS:**

ITEM 1 – Raingardens: mobilization, temporary facilities, erosion control, silt fencing, selective clearing, vegetation removal and disposal per plans, excavation and export, imported fill material, compaction, misc. gravels, trenching, drainage and irrigation, soil preparation, including trees, shrubs and ground covers, and mulching per plans, installation and maintenance of temporary erosion sedimentation controls.

ITEM 2 – Shotcrete “Living Room”: Artist to construct and install shotcrete “living room”, including couch, armchair, end table, concrete sidewalk, concrete slab and insert pavers.

ITEM 3 – Corner Entry Structure: Contractor to fabricate, construct and install corner entry structure, including all paving materials, columns, metal work, interpretive archway, counter and seating – See Sheets L-5A, L-11 and L-13.

**ESTIMATE:** The Engineer’s Estimate for this project is **\$150,000 including all work and taxes.**

**BID SUBMITTAL:** Sealed bids will be received for this project by Barker Landscape Architects at the following address no later than **FRIDAY, NOVEMBER 7, 2008 at 2:00 p.m.**

**Barker Landscape Architects**  
**1514 NW 52nd Street, Seattle, WA 98107**

Plans, specifications, addenda, and self-registered bidders list for this project are available through City of Anacortes on-line plan room. Free of charge access is provided to Prime Bidders, Subcontractors, and Vendors by going to: "<http://bxwa.com>" and clicking on: "**Posted Projects**"; "**Public Works**", "**City of Anacortes** receive automatic email notification of future addenda and to be placed on the "Bidders List". This on-line plan room provides Bidders with fully usable on-line documents; with the ability to: download, print to your own printer, order full / partial plan sets from numerous reprographic sources (on-line print order form), and a free on-line digitizer / take-off tool. Contact Builders Exchange of Washington at 425-258-1303 should you require assistance.

Barker Landscape Architects will not be responsible for a late bid. Bids received after the deadline will be returned unopened. Bids received by 2:00 p.m. August 29, 2008 will be publicly opened and read immediately after 2:00 p.m.

**BID DEPOSIT:** Bidders must submit a bid deposit equal to 5 percent of the bid amount. The deposit may be in cash, certified check, cashier's check, or surety bond. The OWNER reserves the right to reject any and all bids and to waive any minor irregularities in the bidding documents.

**PRE-BID SITE INSPECTION:** No pre-bid inspection has been scheduled for this project, but may be arranged by calling the architect.

**Ballard Corners Park Phase II Development**  
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## SECTION 00010 PRE-BID INFORMATION

- 1.01 **Receipt of Bids:**  
Sealed bids will be received by Barker Landscape Architects at 1514 N.W. 52<sup>nd</sup> St., Seattle, WA. 98107 until 2:00 p.m. Friday, November 7, 2008..
- 1.02 **Description of Work:**  
The work consists of but is not limited to: mobilization, environmental protection, site preparation, demolition, earthwork, storm drainage, irrigation, trenching and backfilling, soil amendments, fine grading, crushed rock paths, metal work, , concrete pavers, curbing, and concrete flatwork.
- 1.03 **Location of Work:** 1702 NW 62nd Street, Seattle, WA
- 1.04 **Time for Completion**  
The work of the Contract shall be Substantially Complete within 100 working days and Physically Complete within 120 working days of the Notice to Proceed.
- 1.05 **Notice to Proceed:**  
It is anticipated that Notice to Proceed will be issued in November, 2008.
- 1.06 **Type of Contract:**  
This is a lump sum contract.
- 1.07 **Liquidated Damages:**  
Liquidated damage will be assessed at \$300 per working day.
- 1.08 **Site Inspection:**  
***Onsite inspection is encouraged for all bidders. Call Architect to arrange a walkthrough.***
- 1.09 **Substitution requests**  
Refer to Section 01630 for detailed instructions on Requests for Product Substitution.
- 1.10 **Change in Waste Disposal Procedures:**  
See Section 00800, Supplementary Conditions for details.
- 1.11 **Standard Specifications:**  
All street improvements within the public right-of-way shall be carried out in accordance with the most recent edition of the City of Seattle Standard Specifications. Copies of the Standard Specifications may be obtained from Seattle Public Utilities records vault, Contracts and Standards Section, 700 – 5<sup>th</sup> Avenue, Suite 4700, Seattle, WA 98104-1879, phone (206-684-5132), or at website <http://www.cityofseattle.net/util/engineering/>.
- 1.12 **Standard Plans:**  
All street improvements within the public right-of-way shall be carried out in accordance with the latest edition of the City of Seattle Standard Plans. Copies of the Standard Plans may be obtained from Seattle Public Utilities records vault, Contracts and Standards Section, 700 – 5<sup>th</sup> Avenue, Suite 4700, Seattle, WA 98104-1879, phone (206-684-5132), or at website <http://www.cityofseattle.net/util/engineering/>.
- 1.13 **Recycling:**
- A. All bidders are hereby advised that this project will be requiring pro-active recycling participation for waste disposal and use of material with recycled content. Upon award each subcontractor shall be required to complete a disposal questionnaire and make a diligent effort to recycle materials where economically feasible. All Contractors are encouraged to participate in the recycling program. Submit completed "Recycled Product Information Certification Form" at the pre-construction meeting. A copy of the form (Exhibit A) follows this section.
- B. **Definitions:**
1. The term "Recyclable Product" means a product or package made from a material for which curbside or drop-off collection systems are in place for a majority of City residents and/or businesses, to divert from City solid

waste for use as a raw material in the manufacture of another product or the reuse of the same product.

2. The term "Recycled Content Product" means a product containing a minimum of 25%\* recycled materials, except in those cases where the U.S. Environmental Protection Agency has adopted procurement guidelines under the Resource Conservation and Recovery Act of 1976 (Public Law 94-580, 42 U.S.C. Section 6901 et seq.). In those cases, the minimum content of recycled material shall not be less than specified in the most current adopted issue of those guidelines. (\*The percentage of recycled material shall be as recommended by the product manufacturer, so as not to alter or compromise the quality and performance of the final product.)
3. The term "Recycled Materials" means post-consumer waste and/or secondary waste that has been recovered or diverted from solid waste and that can be utilized in place of a raw or virgin material in manufacturing a product.

1.14 Additional Information:

All technical matters shall be directed to Barker Landscape Architects at 206-783-2870 or fax 206-783-3212.

**END OF SECTION 00010**



Friends of Ballard Corners Park  
The City of Seattle

## BID FORM

For

## **BALLARD CORNERS PARK PHASE II IMPROVEMENTS**

**BIDDER NAME AND COMPANY:**

**1.01 TO THE FRIENDS OF BALLRD CORNERS STEERING COMMITTEE:**

- A. The undersigned Bidder hereby certifies to have personally and carefully examined the Bid Documents issued for Ballard Corner's Park Phase II Improvements as authorized by Seattle Parks and Recreation.
- B. The Bidder has examined the site where the Work is to be performed and the conditions affecting the Work;
- C. The Bidder has attached a bid guaranty in the amount of five Percent (5%) of the Total Bid that could be awarded and retail sales tax if applicable in the form of cashier's check, certified check, or bid bond;
- D. The Bidder hereby proposes to furnish all material and labor and to perform all work which may be required, and to complete the work within the time fixed and upon the terms and conditions provided in the Bid Documents for the following total bid without tax:

**AMOUNT** \_\_\_\_\_  
(DOLLARS AND CENTS)  
9% WASHINGTON STATE SALES TAX

---

**TOTAL BASE BID LUMP SUM PRICE:**

---

**Total Bid price must match attached Detailed Bid Form**

**BIDDER'S SIGNATURE:** \_\_\_\_\_

**Business Name:** \_\_\_\_\_

## 1.02 DETAILED BID FORM

(NOTE TO BIDDER: Use **BLACK** ink when completing this proposal form)

FROM: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_

DATE: \_\_\_\_\_

TO: Barker Landscape Architects  
ADDRESS: 1514 NW 52nd Street  
Seattle, WA 98103

PROJECT TITLE: BALLRD CORNER'S PARK PHASE II IMPROVEMENTS

### Bidder Declaration and Understanding

The undersigned Bidder hereby declares that they have carefully examined the Contract Documents including the following addenda (receipt of all of which is hereby acknowledged):

Number	_____	Date	_____
	_____		_____
	_____		_____
	_____		_____

The undersigned Bidder hereby declares that they have personally inspected the site, that they have satisfied themselves as to the quantities involved, including materials and equipment, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the quantities with the detailed requirements of the Contract Documents, and that this Bid is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Bid. The Bidder further declares that they have exercised their own judgment regarding the interpretation of subsurface information and has utilized all data, which they believe pertinent from the Engineer, Owner, and other sources and have made such independent investigations as the Bidder deems necessary in arriving at their own conclusions.

### Bidding Schedules

There are three Bidding Schedules for this project. Bid Schedule A includes all work required in the Contract Documents for the Raingarden. Bid Schedule B includes all work required in the Contract Documents for the "Corner Store". Bid Schedule C includes all work required in the Contract Documents for the "Living Room". The bidder is to provide lump sum for each bid item in each of the three bidding schedules.

Lump Sum Items

The bidder is to provide the price to perform all work as specified herein, including labor, materials, equipment, and all overhead and profit, as well as any other ancillary costs associated with completing the work.

BASE BID: RAINGARDENS

ADDITIONAL BID #1: LIVING ROOM

ADDITIONAL BID #2: CORNER ENTRY STRUCTURE

**BASE BID**  
**RAINGARDENS**

ITEM NO.	APPROX. QUANTITY	UNITS	ITEM DESCRIPTION	
1	1	LS (lump sum)	Mobilization, temporary facilities, installation and maintenance of temporary erosion sedimentation controls and silt fencing	
2	1	LS	Selective clearing, vegetation removal and disposal, excavation and export per plans	
3	1	LS	Imported fill material, compaction, misc. gravels per plans	
4		LS	All storm drainage pipes, structures, Fittings and connections	
5	1	LS	Irrigation system	
6	1	LS	All concrete curbs, sidewalks and flatwork	
7	1	LS	Soil preparation including trees, shrubs, groundcovers and mulching per plans	
8	1	LS	Closeout, and any other work necessary for a complete project as shown in plans	

**SUBTOTAL BASE BID** \$ \_\_\_\_\_

**9.0% WSST** \$ \_\_\_\_\_

**TOTAL BASE BID (MUST MATCH page 7)** \$ \_\_\_\_\_

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Phase II Improvements  
SECTION 00300 – BID FORM  
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**ADDITIVE BID #1**  
**LIVING ROOM**

ITEM NO.	APPROX. QUANTITY	UNITS	ITEM DESCRIPTION	AMOUNT
1.1	1	LS (lump sum)	Shotcrete "Living Room": Artist to construct and install shotcrete "living room", including couch, armchair, end table, concrete sidewalk, concrete slab and insert pavers.	_____
1.2	1	LS	Any and all other work necessary for a complete project as shown in plans	_____

**SUBTOTAL ADDITIVE BID #1**      \$ \_\_\_\_\_

**9.0% WSST**                          \$ \_\_\_\_\_

**TOTAL ADDITIVE BID #1**      \$ \_\_\_\_\_

**ADDITIVE BID #2**  
**CORNER ENTRY STRUCTURE**

ITEM NO.	APPROX. QUANTITY	UNITS	ITEM DESCRIPTION	UNIT PRICE	AMOUNT
2.2	1	LS (lump sum)	Corner Entry Structure: Contractor to fabricate, construct and install corner entry structure, including all paving materials, columns, metal work, interpretive archway, counter and seating		_____
2.2	1	LS	Any and all other work necessary for a complete project as shown in plans		_____

**SUBTOTAL ADDITIVE BID #2**      \$ \_\_\_\_\_

**9.0% WSST**                          \$ \_\_\_\_\_

**TOTAL ADDITIVE BID #2**      \$ \_\_\_\_\_

**1.03 - AFFIDAVIT**

State of Washington  
County of King

The Bidder, being first duly sworn on oath says that the bid herewith submitted will be conditioned by the following:

- A. **BID:** The Bidder agrees to perform the Work in compliance with the Bid Documents, for the prices stated in Section 00300, Paragraph 1.01 of the Bid Form.
- B. **RCW 35.22.650:** The Bidder has complied with RCW 35.22.650.
- C. **AFFIRMATIVE ACTION/EQUAL EMPLOYMENT OPPORTUNITY SWORD STATEMENT:** The Bidder agrees to ensure equal opportunity for employment and to engage in affirmative action in accordance with SMC 20.44 and as required in the Project Manual.
- D. **NON-COLLUSION:** The Bidder, by signing and having the Bid Form notarized, swears, deposes and says that the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in the preparation and submission of a Bid to the Owner for consideration in the award of a contract on the improvement described in the Bid Documents.

**BIDDER:**

Business Name

:

Business Address (Street or P.O. Box) City State Zip Code:

Business Telephone Number Business Fax Number:

**State of Washington Contractor Registration No.:**

**City of Seattle Business License No.:**

**Receipt is hereby acknowledged of Addenda No(s).:**

**OFFICIAL AUTHORIZED TO SIGN FOR BIDDER:**

Signature Print Name and Title :

I certify that I know or have satisfactory evidence that \_\_\_\_\_  
signed this instrument, on oath stated that the party is 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.

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

NOTARY PUBLIC in and for the State of \_\_\_\_\_

residing at : \_\_\_\_\_

My appointment expires: \_\_\_\_\_

**END SECTION 00300**

**SECTION 00500  
AGREEMENT FORM**

**AGREEMENT FORM**

This agreement by and between the Friends of Ballard Corner's Park Steering Committee, acting on behalf of The City of Seattle, a municipal corporation of the State of Washington, hereinafter referred to as the Owner, and \_\_\_\_\_, referred to as the Contractor, witnesseth that in accordance with the terms and conditions of Contract awarded the day of \_\_\_\_\_ 2008, the parties agree as follows:

**SECTION 1.** That the Contractor shall do or cause to be done all work and shall furnish or cause to be furnished all tools, materials, equipment and labor necessary to improve

**BALLARD CORNER'S PARK PHASE II**

In accordance with, and as described in the Project Manual and Drawings now on file in the office of the Engineer for the following Awarded Contract Price:

Base Bid		
Additive Bid #1 (Living Room)	\$	_____
Additive Bid #2 (Corner Entry Structure)	\$	_____
Subtotal	\$	_____
Sales Tax 9%	\$	_____
Awarded Contract Price	\$	_____

The Contractor shall provide and bear the expense of all equipment, material, work, and labor of any sort whatsoever that may be required for the transfer of materials and for constructing and completing the work provided for in this Contract and every part thereof, except such as are mentioned in the Contract Documents furnished by the Owner.

**SECTION 2.** The parties shall be bound by the Constitution and Laws of the State of Washington and the Charter, Ordinances, Rules and Regulations of The City of Seattle and by all applicable federal laws and government regulations, which provisions are incorporated by reference herein.

For the convenience of the parties of this Contract it is mutually agreed that any claims or causes of action which the Contractor has against the Owner arising from this Contract shall be brought within 180 calendar days from the Completion Date. It is further agreed by the parties that any such claims or causes of action shall be brought only in the Superior Court of King County. The parties understand and agree that the Contractor's failure to bring suit within the time period provided shall be a complete bar to any such claims or causes of action.

**SECTION 3.** The Contractor shall begin the Work in the Contract immediately after written Notice to Proceed has been issued to said Contractor by the Owner, and to carry said work on regularly and without interruption thereafter (unless the Owner shall otherwise, in writing, specifically direct) with such forces as to complete said work in a manner acceptable to the City as follows:

**Substantially Complete within 100 calendar days and Physically Complete  
within 120 calendar days of the Notice to Proceed**

after such notice to begin work; the time of beginning, rate of progress, and time of completion being essential and material provisions of the Contract.

**SECTION 4.** If the Work is not completed within the time specified, the Contractor shall pay to the Owner, as liquidated damages, the sum of \$ dollars for each and every working day that Substantial Completion is delayed, exclusive of those days wherefore the Engineer has granted an extension of time.

The Contractor hereby agrees the amount set forth above is a fair and reasonable estimate of actual damage which would be caused by the failure to complete the work on time, and that the amount indicated is for liquidated damages and is not a penalty.

**SECTION 5.** The Owner agrees to employ the Contractor to complete the Work in accordance with the Contract Documents and agrees to pay for the same according to the schedule of unit, lump sum, or itemized prices listed in the Bid Form, at the time and in the manner and upon the conditions provided for in the Contract.

The Contractor shall inform all subcontractors who work on the improvement named in Section 1 of this Agreement of the manner and method of payment and the manner and method of measuring or computing the quantities of subcontracted work.

**SECTION 6.** In accordance with Chapter 39.12 RCW, the City Charter, and the Project Manual, the Contractor shall pay, or cause to be paid to persons employed on or in connection with this work, not less than the prevailing rate of wage for an hour's work specified for the labor performed.

**SECTION 7.** The Contractor on behalf of his or her heirs, executors, administrators, successors, and assigns, does hereby agree to the full performance of all the covenants to which the Contractor is obligated under the terms of the Contract.

**SECTION 8.** It is further provided that no liability shall attach to the Owner by reason of entering into this Contract except as expressly provided herein.

SECTION 9. In the event of violation of any of these covenants or any provisions thereof, payment due from the Owner on any work done under the Contract may be withheld until full compliance therewith; that the work may be stopped, or, at the discretion of said Owner the Contract may be cancelled and forfeited. IN WITNESS WHEREOF, the Owner has caused these presents to be signed by the designee of the Director of Executive Administration and the Contractor has hereunto affirmed his or her signature.

## THE CITY OF SEATTLE

By \_\_\_\_\_ Date \_\_\_\_\_  
Director, Contracting Services Division

### **CONTRACTOR**

Business Name \_\_\_\_\_  
By \_\_\_\_\_ Date \_\_\_\_\_  
Title \_\_\_\_\_

**Date**

END SECTION 00500

Ballard Corners Park  
Phase II Improvements  
SECTION 00500 – AGREEMENT FORM  
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**SECTION 00800**  
**SUPPLEMENTARY CONDITIONS**

**SUPPLEMENTARY CONDITIONS**

- 1.01 Effective June 1, 1991, and in accordance with SMC 21.36 as amended by Ordinance 115589, no waste generated within the City of Seattle shall be deposited in a waste disposal facility owned and operated by King County.
- Waste that is Unacceptable Waste must be disposed of in accordance with all applicable local, state and federal regulations. Waste that appears to be an Unacceptable Waste must obtain a Waste Clearance through the Seattle King County Department of Public Health (SKCDPH). A sample of the Waste Clearance Form is provided in the Appendix. Additional copies of the form or information regarding the form may be obtained by calling SKCDPH at 296-4633.
- A list of some disposal options and approximate rates is provided in the Appendix. Also provided is a list of recycling and disposal sites. The information provided is for the convenience of the Contractor. It is the responsibility of the Contractor to verify the accuracy of this information prior to bid.

**END OF SECTION 00800**

## **SECTION 00820**

### **PREVAILING WAGE REQUIREMENTS**

#### **1.01    GENERAL**

The Work is subject to the wage requirements of RCW 39.12 (Prevailing Wages on Public Works), RCW 49.28 (Hours of Labor), and to RCW 49.46 (Minimum Wage Act) as amended or supplemented. On projects funded in whole or part from Federal monies, Federal wage laws and rules shall also apply. When the Work is subject to both State and Federal prevailing wage requirements, the Contractor and every subcontractor must comply with whichever standard is higher.

The Contractor, any subcontractor or other person doing any portion of the Work, shall not pay any laborer, worker, or mechanic less than the applicable prevailing hourly wage rates and fringe benefits for said worker's classification. Higher wages and benefits may be paid at the Contractor's option. It shall be the sole responsibility of the Contractor to assign the appropriate classification to all laborers, workers or mechanics who perform any work pursuant to this Contract, in conformance with the scope of work descriptions of the Industrial Statistician of the Washington State Department of Labor and Industries. It shall also be the Contractor's sole responsibility to ascertain the applicable prevailing rate of wage for each such classification. Laborers, workers, and mechanics must be paid in full at least once each week and in lawful money of the United States. The Owner holds the Contractor responsible for compliance of all subcontractors with payroll reporting requirements and payment of prevailing wages.

Pursuant to the provisions of State law, the Contractor, every subcontractor, and all other individuals or firms required to pay prevailing wages for work performed on this Contract, shall be subject to investigation by the State of Washington Department of Labor and Industries for failing to pay the required prevailing wage to workers, laborers, and mechanics employed on the project. Such investigation may result in the State issuing a *Notice of violation* in accordance with WAC 296-127-150.

To the extent an individual or firm required to pay prevailing wages is found by the Department of Labor and Industries to have violated the requirement to pay the prevailing rate of wage, the unpaid wages shall constitute a lien against the Contractor's bond and retainage. Consistent with RCW 39.12.065 and 39.12.050, the contractor or subcontractor may also be subject to civil penalties and may be prohibited from bidding on any public works contract within the State of Washington.

#### **1.02    PREVAILING WAGE RATES**

The Project Manual includes hourly minimum rates for wages and fringe benefits to be paid laborers, workers and mechanics employed in the Work as established by the State Department of Labor and Industries. When the project is funded in whole or part from Federal monies, the Project Manual also includes the Federal hourly minimum wage and fringe benefit rates, as identified by the U.S. Department of Labor's "General Wage Decision."

Any listing of wages and fringe benefits in the Project Manual for any classification is intended only as a guideline for the Contractor and does not necessarily reflect the most recent classification or prevailing wage rate. Prevailing wage rates will be determined by the Department of Labor and Industries and published only on the first

business day of February and the first business day of August of each year. All prevailing wage rates become effective thirty days after they are published. Current prevailing wage information may be obtained upon request from the Industrial Statistician of the Department of Labor and Industries, ESAC Division, P.O. Box 44540, Olympia, WA 98504-4540, telephone (360) 902-5335. For projects funded in whole or part with Federal monies, current Federal prevailing wage information may be obtained upon request from the U.S. Department of Labor, Employment Standards Administration, Wage and Hour Division, Federal Office Building, Seattle, WA 98104, telephone (206) 553-1914.

By including wage and fringe benefit rates in the Project Manual, the Owner does not imply that the Contractor will find labor available at those rates. The Contractor shall calculate any amount above the minimums which have to be paid.

If the Contractor employs labor in a classification not listed in the Project Manual, the Contractor shall, on projects where only State prevailing wage rates apply, request the Industrial Statistician of the Washington State Department of Labor and Industries to determine the correct prevailing wage rate for that classification and locality. If the project is funded in whole or part with Federal monies, the Contractor shall request the Industrial Statistician of the Washington State Department of Labor and Industries to determine a State prevailing wage rate for that classification and locality and shall ask the U.S. Department of Labor to determine a Federal prevailing wage rate for that classification and locality. Should those wage rates differ, the Contractor shall use the highest wage rate determined.

**1.03    OVERTIME**

Pursuant to the provisions of Chapter 49.28 RCW and WAC 296-127-022, work performed on public works contracts will not require the payment of overtime rates for the first two hours worked in excess of eight hours per day when the employer and employee voluntarily enter into an agreement wherein the employee will work up to ten hours per day in a four-day week to accomplish forty hours of work.

Recognizing that there may be days when a full ten hours of work is not available, the remainder of the forty hours may be made up on another work day or days within the same work week, except work performed on Saturdays, Sundays, and holidays is subject to the established prevailing over time provisions for a given trade or occupation, as provided in Chapter 39.12 RCW.

For the purpose of this section an agreement must:

1.    have been authorized by employees who bargained collectively with their employers through representatives of their own choosing; or
2.    be obtained in writing, signed, and dated by both parties; and
3.    be entered into separately for each public works project, except that an employer, at its option, may obtain an annual authorization; and
4.    state the name of the public works project with specificity; and
5.    be entered into voluntarily by the employer and employee.

Each employer must retain copies of individual employee authorization agreements for three years from the Completion Date of the Work. Absence of an authorization record for an employee shall be deemed per se evidence of lack of that employee's authorization.

It is prohibited to work more than ten hours in any calendar day on a public works project except in cases of extraordinary emergency, such as danger to life or property.

Notwithstanding the above provisions, overtime rates must be paid for all hours worked in excess of 40 hours per week.

This section provided a minimum public works overtime standard, and does not supersede prevailing overtime wage rates established under the authority of Chapter 39.12 RCW.

**1.04    EFFECTIVE DATE FOR DETERMINING PREVAILING WAGES**

In accordance with WAC 296-127-011, the effective date for determining State prevailing wages will be the date of bid opening, provided the Contract is awarded within six months after bids are due. If the Contract is not awarded within six months after bids are due, the effective date for determining prevailing wages shall be the date the Contract is awarded. If the Contract is not awarded pursuant to bids (e.g. emergency contracts), the effective date for determining prevailing wages shall be the Award Date of the Contract.

For projects funded in whole or part with Federal monies, the effective date for determining prevailing wages shall be 10 days prior to the date bids are due provided the Contract is awarded within 90 days after bids are due, unless the Owner determines there is sufficient time to notify bidders of changes in the prevailing wage rates up to the date of bid opening, in which case those rates shall apply. If the Contract is not awarded within 90 days after the bids are due, the effective date for determining prevailing wages shall be the Award Date of the Contract.

**1.05    PAYROLLS**

(Not Applicable) On federally funded projects only, payroll reports for the Contractor, every subcontractor, and all other individuals or firms required to pay prevailing wages for work performed on this Contract shall be submitted weekly to the Contracting Services Division of the Department of Executive Administration, City of Seattle, Arctic Building, Suite 800, 700 Third Avenue, Seattle, Washington, 98104 within 72 hours after the expiration of each pay period. On non-federally funded projects, the Owner and Engineer reserve the right to request payroll reports from the Contractor, every subcontractor, and all other individuals or firms required to pay prevailing wages for work performed on this contract. When required or requested, the payroll reports shall contain the following information:

1. Name and residence address of each worker.
2. Social Security number of each worker.
3. Classification of work performed by each worker. The classification must be specific and match the classification categories listed in the Project Manual.
4. Total number of hours employed each day.
5. Total number of hours employed during the payroll period.
6. Straight time and overtime hourly rate of wages paid to each worker.
7. Total or gross amount earned by each worker.
8. Deductions for Medical Aid, FICA, Federal withholding tax, and any other deductions taken.
9. Net amount paid each worker.
10. Contractor's (or subcontractor's) name and address.
11. Days and dates worked.
12. Date of final day of pay period.
13. Whether fringe benefits were paid to each worker as part of the hourly wage rate or whether fringe benefits were paid into an approved plan, fund, or program.

Payrolls may be submitted on Federal payroll form WH-347 (or equivalent), which may be obtained from the Federal Bookstore, Federal Building, 915 Second Avenue, Room 194, Seattle, WA 98174, telephone (206) 553-4270. The reverse side of the form contains an affidavit which must be filled out and signed. If the Contractor's payroll reports are computerized, the computerized reports may be submitted along with a Statement of Compliance affidavit form which may be photocopied from the sample in the Project Manual.

The first payroll submitted for the Work for both the Contractor and each subcontractor shall be labeled "Initial". The last payroll submitted for the Work for both the Contractor and each subcontractor shall be labeled "Final". Payrolls shall be sequentially numbered for all periods in which work is performed.

**1.06 REQUIRED DOCUMENTS**

Before payment is made by the Owner of any sums due under this Contract, the Contracting Services Division of the Department of Executive Administration shall receive from the Contractor and each subcontractor a copy of a "Statement of Intent to Pay Prevailing Wages" (form F700-029-000), approved by the Industrial Statistician of the Washington State Department of Labor and Industries.

Upon completion of the Work, the Contracting Services Division of the Department of Executive Administration shall receive from the Contractor and each subcontractor a copy of a "Affidavit of Wages Paid" (form L700-007-000), approved by the Industrial Statistician of the Washington State Department of Labor and Industries. These forms, along with other requirements outlined in Paragraph 1.09 J. of Section 00700 of these specifications, shall be received by the Contracting Services Division of the Department of Executive Administration prior to release of retainage. A fee of \$25.00 per each "Statement of Intent to Pay Prevailing Wages" and "Affidavit of Wages Paid" is required to accompany each form submitted to the Department of Labor and Industries. The Contractor is responsible for payment of these fees and shall submit all forms directly to the Department of Labor and Industries for approval. The cost of these fees shall be included in the prices of the various units of work which comprise this contract.

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The required forms specified herein may be obtained from the Department of Labor and Industries.

Each progress estimate submitted for payment shall include or have attached a statement signed by the Contractor that the prevailing wages have been paid in accordance with the prefiled Statement of Intent to Pay Prevailing Wages on file with the Contracting Services Division of the Department of Executive Administration, or the estimate will not be paid. The following is a sample of the wording required:

Project: \_\_\_\_\_ PW#: \_\_\_\_\_

I certify that the prevailing wages have been paid in accordance with the prefiled Statement or Statements of Intent to Pay Prevailing Wages on file with the Contracting Services Division of the Department of Executive Administration for the period covering

\_\_\_\_\_, 20\_\_\_\_ to \_\_\_\_\_, 20\_\_\_\_\_.  
\_\_\_\_\_

Contractor Signature

This letter shall be signed by an authorized representative of the Contractor prior to payment of any voucher pursuant to RCW 39.12.040.

1.07

APPRENTICES

A laborer, worker, or mechanic employed on the Work for whom an apprentice agreement is registered and approved by the State Apprenticeship Council pursuant to Chapter 49.04 RCW within 60 days of hiring may be paid the applicable prevailing hourly rate for an apprentice of that trade. If formal registration with the State Apprenticeship Council is not accomplished within 60 days of hiring, the laborer, worker or mechanic must be paid the prevailing hourly journey level rate for all hours worked on the Contract until an apprenticeship agreement is registered.

If the Contractor makes use of an apprentice on Work also governed by Federal wage rates and regulations, the Contractor shall present to the Owner written evidence of registration of such employees in a program approved by the Washington State Apprenticeship Council and recognized by the U.S. Bureau of Apprenticeship and Training. On federally funded projects where submission of payroll reports is required, such evidence shall be submitted with the first payroll upon which the name of the employee appears. In the absence of such a state apprenticeship council program, the Contractor shall submit evidence of approval and registration by the U.S. Bureau of Apprenticeship and Training.

1.08

POSTING NOTICES

In a location acceptable to the Department of Labor and Industries, and in compliance with the requirements of RCW 39.12.020, the Contractor shall post:

1. one copy of the approved "Statement of Intent to Pay Prevailing Wages," for the Contractor, each subcontractor, and each agent of a subcontractor; and
2. the address and telephone number of the Industrial Statistician for the Department of Labor and Industries (along with notice that complaints or questions about wage rates may be directed there).

1.09

DISPUTES

In the event any dispute arises as to what the prevailing wages are for this Contract, and the dispute cannot be resolved by the parties involved, the matter shall be referred to the Director of the Department of Labor and Industries of the State of Washington when such dispute involves State prevailing wage rates. In such case, the Director's decision shall be final, conclusive, and binding on all parties.

If the dispute involves a Federal prevailing wage rate, the matter shall be referred to the U.S. Secretary of Labor for a decision. In such case, the Secretary's decision shall be final, conclusive, and binding on all parties.

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When the Work is subject to both State and Federal prevailing wage requirements, the Contractor and every subcontractor shall comply with whichever standard is higher.

1.10 **AUDITS**

The Contractor's records pertaining to wages paid and payrolls shall be open to inspection or audit by representatives of the Owner and, if applicable, representatives of grant agencies funding or controlling funding for the project at any time during the life of the Contract and for a period of not less than three years after the Completion Date. The Contractor shall retain such records for that period. Where such records pertaining to wages paid on any payrolls are maintained by subcontractors or agents of the Contractor, the Contractor guarantees that the records of such subcontractors or agent shall be open to inspection and audit on the same terms and conditions as the records of the Contractor.

If an audit is to be commenced more than 60 days after the Completion Date of the Contract, the Contractor will be given a reasonable notice of time when such audit is to begin.

**END SECTION 00820**

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State of Washington  
**DEPARTMENT OF LABOR AND INDUSTRIES**  
Prevailing Wage Section - Telephone (360) 902-5335  
PO Box 44540, Olympia, WA 98504-4540

**Washington State Prevailing Wage Rates For Public Works Contracts**

The PREVAILING WAGES listed here include both the hourly wage rate and the hourly rate of fringe benefits. On public works projects, workers' wage and benefit rates must add to not less than this total. A brief description of overtime calculation requirements is provided on the Benefit Code Key.

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<u>Classification</u>	<u>PREVAILING WAGE</u>	(See Benefit Code Key)		
		<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
ASBESTOS ABATEMENT WORKERS				
JOURNEY LEVEL	\$38.06	1H	5D	
BOILERMAKERS				
JOURNEY LEVEL	\$33.32	1		
BRICK AND MARBLE MASONS				
JOURNEY LEVEL	\$45.05	1M	5A	
CABINET MAKERS (IN SHOP)				
JOURNEY LEVEL	\$16.67	1		
CARPENTERS				
ACOUSTICAL WORKER	\$46.32	1M	5D	
BRIDGE, DOCK AND WARP CARPENTERS	\$46.16	1M	5D	
CARPENTER	\$46.16	1M	5D	
CREOSOTED MATERIAL	\$46.25	1M	5D	
DRYWALL APPLICATOR	\$46.42	1M	5D	
FLOOR FINISHER	\$45.98	1M	5D	
FLOOR LAYER	\$45.98	1M	5D	
FLOOR SANDER	\$45.98	1M	5D	
MILLWRIGHT AND MACHINE ERECTORS	\$47.16	1M	5D	
PILEDRIVERS, DRIVING, PULLING, PLACING COLLARS AND WELDING	\$46.36	1M	5D	
SAWFILER	\$45.98	1M	5D	
SHINGLER	\$45.98	1M	5D	
STATIONARY POWER SAW OPERATOR	\$45.98	1M	5D	
STATIONARY WOODWORKING TOOLS	\$45.98	1M	5D	
CEMENT MASONS				
JOURNEY LEVEL	\$46.81	1M	5D	
DIVERS & TENDERS				
DIVER	\$92.31	1M	5D	8A
DIVER TENDER	\$49.84	1M	5D	
DREDGE WORKERS				
ASSISTANT ENGINEER	\$47.09	1T	5D	8L
ASSISTANT MATE (DECKHAND)	\$46.58	1T	5D	8L
BOATMEN	\$47.09	1T	5D	8L
ENGINEER WELDER	\$47.14	1T	5D	8L
LEVERMAN, HYDRAULIC	\$48.71	1T	5D	8L
MAINTENANCE	\$46.58	1T	5D	8L
MATES	\$47.09	1T	5D	8L
OILER	\$46.71	1T	5D	8L
DRYWALL TAPERS				
JOURNEY LEVEL	\$46.04	1E	5P	
ELECTRICAL FIXTURE MAINTENANCE WORKERS				
JOURNEY LEVEL	\$18.69	1		

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<u>Classification</u>	<u>PREVAILING WAGE</u>	(See Benefit Code Key)		
		<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
<b>ELECTRICIANS - INSIDE</b>				
CABLE SPLICER	\$58.34	1E	5A	
CABLE SPLICER (TUNNEL)	\$62.86	1E	5A	
CERTIFIED WELDER	\$56.29	1E	5A	
CERTIFIED WELDER (TUNNEL)	\$60.60	1E	5A	
CONSTRUCTION STOCK PERSON	\$28.83	1E	5A	
JOURNEY LEVEL	\$54.25	1E	5A	
JOURNEY LEVEL (TUNNEL)	\$58.48	1E	5A	
<b>ELECTRICIANS - MOTOR SHOP</b>				
CRAFTSMAN	\$15.37	2A	6C	
JOURNEY LEVEL	\$14.69	2A	6C	
<b>ELECTRICIANS - POWERLINE CONSTRUCTION</b>				
CABLE SPLICER	\$56.53	4A	5A	
CERTIFIED LINE WELDER	\$51.64	4A	5A	
GROUNDPERSON	\$37.15	4A	5A	
HEAD GROUNDPERSON	\$39.19	4A	5A	
HEAVY LINE EQUIPMENT OPERATOR	\$51.64	4A	5A	
JACKHAMMER OPERATOR	\$39.19	4A	5A	
JOURNEY LEVEL LINEPERSON	\$51.64	4A	5A	
LINE EQUIPMENT OPERATOR	\$43.83	4A	5A	
POLE SPRAYER	\$51.64	4A	5A	
POWDERPERSON	\$39.19	4A	5A	
<b>ELECTRONIC TECHNICIANS</b>				
ELECTRONIC TECHNICIANS JOURNEY LEVEL	\$31.00	1		
<b>ELEVATOR CONSTRUCTORS</b>				
MECHANIC	\$60.85	4A	6Q	
MECHANIC IN CHARGE	\$66.25	4A	6Q	
<b>FABRICATED PRECAST CONCRETE PRODUCTS</b>				
ALL CLASSIFICATIONS	\$13.15	2K	5B	
<b>FENCE ERECTORS</b>				
FENCE ERECTOR	\$18.71	1		
FENCE LABORER	\$12.77	1		
<b>FLAGGERS</b>				
JOURNEY LEVEL	\$32.41	1H	5D	
<b>GLAZIERS</b>				
JOURNEY LEVEL	\$45.20	1H	5G	
<b>HEAT &amp; FROST INSULATORS AND ASBESTOS WORKERS</b>				
MECHANIC	\$47.58	1S	5J	
<b>HEATING EQUIPMENT MECHANICS</b>				
MECHANIC	\$33.65	1		
<b>HOD CARRIERS &amp; MASON TENDERS</b>				
JOURNEY LEVEL	\$39.25	1H	5D	
<b>INDUSTRIAL ENGINE AND MACHINE MECHANICS</b>				
MECHANIC	\$15.65	1		
<b>INDUSTRIAL POWER VACUUM CLEANER</b>				
JOURNEY LEVEL	\$9.24	1		
<b>INLAND BOATMEN</b>				
CAPTAIN	\$38.87	1K	5B	
COOK	\$32.73	1K	5B	
DECKHAND	\$32.42	1K	5B	
ENGINEER/DECKHAND	\$35.20	1K	5B	
MATE, LAUNCH OPERATOR	\$36.85	1K	5B	

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<u>Classification</u>	<u>PREVAILING WAGE</u>	(See Benefit Code Key)		
		<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
<b>INSPECTION/CLEANING/SEALING OF SEWER &amp; WATER SYSTEMS BY REMOTE CONTROL</b>				
CLEANER OPERATOR, FOAMER OPERATOR	\$31.49	1		
GROUT TRUCK OPERATOR	\$11.48	1		
HEAD OPERATOR	\$24.91	1		
TECHNICIAN	\$19.33	1		
TV TRUCK OPERATOR	\$20.45	1		
<b>INSULATION APPLICATORS</b>				
JOURNEY LEVEL	\$46.16	1M	5D	
<b>IRONWORKERS</b>				
JOURNEY LEVEL	\$47.92	1O	5A	
<b>LABORERS</b>				
ASPHALT RAKER	\$38.77	1H	5D	
BALLAST REGULATOR MACHINE	\$38.06	1H	5D	
BATCH WEIGHMAN	\$32.41	1H	5D	
BRUSH CUTTER	\$38.06	1H	5D	
BRUSH HOG FEEDER	\$38.06	1H	5D	
BURNERS	\$38.06	1H	5D	
CARPENTER TENDER	\$38.06	1H	5D	
CASSION WORKER	\$39.25	1H	5D	
CEMENT DUMPER/PAVING	\$38.77	1H	5D	
CEMENT FINISHER TENDER	\$38.06	1H	5D	
CHANGE-HOUSE MAN OR DRY SHACKMAN	\$38.06	1H	5D	
CHIPPING GUN (OVER 30 LBS)	\$38.77	1H	5D	
CHIPPING GUN (UNDER 30 LBS)	\$38.06	1H	5D	
CHOKER SETTER	\$38.06	1H	5D	
CHUCK TENDER	\$38.06	1H	5D	
CLEAN-UP LABORER	\$38.06	1H	5D	
CONCRETE DUMPER/CHUTE OPERATOR	\$38.77	1H	5D	
CONCRETE FORM STRIPPER	\$38.06	1H	5D	
CONCRETE SAW OPERATOR	\$38.77	1H	5D	
CRUSHER FEEDER	\$32.41	1H	5D	
CURING LABORER	\$38.06	1H	5D	
DEMOLITION, WRECKING & MOVING (INCLUDING CHARRED MATERIALS)	\$38.06	1H	5D	
DITCH DIGGER	\$38.06	1H	5D	
DIVER	\$39.25	1H	5D	
DRILL OPERATOR (HYDRAULIC, DIAMOND)	\$38.77	1H	5D	
DRILL OPERATOR, AIRTRAC	\$39.25	1H	5D	
DUMPMAN	\$38.06	1H	5D	
EPOXY TECHNICIAN	\$38.06	1H	5D	
EROSION CONTROL WORKER	\$38.06	1H	5D	
FALLER/BUCKER, CHAIN SAW	\$38.77	1H	5D	
FINAL DETAIL CLEANUP (i.e., dusting, vacuuming, window cleaning; NOT construction debris cleanup)	\$29.59	1H	5D	
FINE GRADERS	\$38.06	1H	5D	
FIRE WATCH	\$32.41	1H	5D	
FORM SETTER	\$38.06	1H	5D	
GABION BASKET BUILDER	\$38.06	1H	5D	
GENERAL LABORER	\$38.06	1H	5D	
GRADE CHECKER & TRANSIT PERSON	\$38.77	1H	5D	
GRINDERS	\$38.06	1H	5D	
GROUT MACHINE TENDER	\$38.06	1H	5D	

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		<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
GUARDRAIL ERECTOR	\$38.06	1H	5D	
HAZARDOUS WASTE WORKER LEVEL A	\$39.25	1H	5D	
HAZARDOUS WASTE WORKER LEVEL B	\$38.77	1H	5D	
HAZARDOUS WASTE WORKER LEVEL C	\$38.06	1H	5D	
HIGH SCALER	\$39.25	1H	5D	
HOD CARRIER/MORTARMAN	\$38.77	1H	5D	
JACKHAMMER	\$38.77	1H	5D	
LASER BEAM OPERATOR	\$38.77	1H	5D	
MANHOLE BUILDER-MUDMAN	\$38.77	1H	5D	
MATERIAL YARDMAN	\$38.06	1H	5D	
MINER	\$39.25	1H	5D	
NOZZLEMAN, CONCRETE PUMP, GREEN CUTTER WHEN USING HIGH PRESSURE AIR & WATER ON CONCRETE & ROCK, SANDBLAST, GUNITE, SHOTCRETE, WATER BLASTER	\$38.77	1H	5D	
PAVEMENT BREAKER	\$38.77	1H	5D	
PILOT CAR	\$32.41	1H	5D	
PIPE POT TENDER	\$38.77	1H	5D	
PIPE RELINER (NOT INSERT TYPE)	\$38.77	1H	5D	
PIPELAYER & CAULKER	\$38.77	1H	5D	
PIPELAYER & CAULKER (LEAD)	\$39.25	1H	5D	
PIPEWRAPPER	\$38.77	1H	5D	
POT TENDER	\$38.06	1H	5D	
POWDERMAN	\$39.25	1H	5D	
POWDERMAN HELPER	\$38.06	1H	5D	
POWERJACKS	\$38.77	1H	5D	
RAILROAD SPIKE PULLER (POWER)	\$38.77	1H	5D	
RE-TIMBERMAN	\$39.25	1H	5D	
RIPRAP MAN	\$38.06	1H	5D	
RODDER	\$38.77	1H	5D	
SCAFFOLD ERECTOR	\$38.06	1H	5D	
SCALE PERSON	\$38.06	1H	5D	
SIGNALMAN	\$38.06	1H	5D	
SLOPER (OVER 20")	\$38.77	1H	5D	
SLOPER SPRAYMAN	\$38.06	1H	5D	
SPREADER (CLARY POWER OR SIMILAR TYPES)	\$38.77	1H	5D	
SPREADER (CONCRETE)	\$38.77	1H	5D	
STAKE HOPPER	\$38.06	1H	5D	
STOCKPILER	\$38.06	1H	5D	
TAMPER & SIMILAR ELECTRIC, AIR & GAS	\$38.77	1H	5D	
TAMPER (MULTIPLE & SELF PROPELLED)	\$38.77	1H	5D	
TOOLROOM MAN (AT JOB SITE)	\$38.06	1H	5D	
TOPPER-TAILER	\$38.06	1H	5D	
TRACK LABORER	\$38.06	1H	5D	
TRACK LINER (POWER)	\$38.77	1H	5D	
TRUCK SPOTTER	\$38.06	1H	5D	
TUGGER OPERATOR	\$38.77	1H	5D	
VIBRATING SCREED (AIR, GAS, OR ELECTRIC)	\$38.06	1H	5D	
VIBRATOR	\$38.77	1H	5D	
VINYL SEAMER	\$38.06	1H	5D	
WELDER	\$38.06	1H	5D	
WELL-POINT LABORER	\$38.77	1H	5D	

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***** (See Benefit Code Key)					
<u>Classification</u>	<u>PREVAILING WAGE</u>	<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>	
<b>LABORERS - UNDERGROUND SEWER &amp; WATER</b>					
GENERAL LABORER	\$38.06	1H	5D		
PIPE LAYER	\$38.77	1H	5D		
<b>LANDSCAPE CONSTRUCTION</b>					
IRRIGATION OR LAWN SPRINKLER INSTALLERS	\$13.56	1			
LANDSCAPE EQUIPMENT OPERATORS OR TRUCK DRIVERS	\$28.17	1			
LANDSCAPING OR PLANTING LABORERS	\$17.87	1			
<b>LATHERS</b>					
JOURNEY LEVEL	\$46.42	1M	5D		
<b>METAL FABRICATION (IN SHOP)</b>					
FITTER	\$15.86	1			
LABORER	\$9.78	1			
MACHINE OPERATOR	\$13.04	1			
PAINTER	\$11.10	1			
WELDER	\$15.48	1			
<b>MODULAR BUILDINGS</b>					
CABINET ASSEMBLY	\$11.56	1			
ELECTRICIAN	\$11.56	1			
EQUIPMENT MAINTENANCE	\$11.56	1			
PLUMBER	\$11.56	1			
PRODUCTION WORKER	\$9.40	1			
TOOL MAINTENANCE	\$11.56	1			
UTILITY PERSON	\$11.56	1			
WELDER	\$11.56	1			
<b>PAINTERS</b>					
JOURNEY LEVEL	\$33.94	2B	5A		
<b>PLASTERERS</b>					
JOURNEY LEVEL	\$44.83	1R	5B		
<b>PLAYGROUND &amp; PARK EQUIPMENT INSTALLERS</b>					
JOURNEY LEVEL	\$8.42	1			
<b>PLUMBERS &amp; PIPEFITTERS</b>					
JOURNEY LEVEL	\$59.24	1G	5A		
<b>POWER EQUIPMENT OPERATORS</b>					
ASSISTANT ENGINEERS	\$44.64	1T	5D	8L	
BACKHOE, EXCAVATOR, SHOVEL (3 YD & UNDER)	\$47.42	1T	5D	8L	
BACKHOE, EXCAVATOR, SHOVEL (OVER 3 YD & UNDER 6 YD)	\$47.91	1T	5D	8L	
BACKHOE, EXCAVATOR, SHOVEL (6 YD AND OVER WITH ATTACHMENTS)	\$48.46	1T	5D	8L	
BACKHOES, (75 HP & UNDER)	\$47.00	1T	5D	8L	
BACKHOES, (OVER 75 HP)	\$47.42	1T	5D	8L	
BARRIER MACHINE (ZIPPER)	\$47.42	1T	5D	8L	
BATCH PLANT OPERATOR, CONCRETE	\$47.42	1T	5D	8L	
BELT LOADERS (ELEVATING TYPE )	\$47.00	1T	5D	8L	
BOBCAT (SKID STEER)	\$44.64	1T	5D	8L	
BROOMS	\$44.64	1T	5D	8L	
BUMP CUTTER	\$47.42	1T	5D	8L	
CABLEWAYS	\$47.91	1T	5D	8L	
CHIPPER	\$47.42	1T	5D	8L	
COMPRESSORS	\$44.64	1T	5D	8L	
CONCRETE FINISH MACHINE - LASER SCREED	\$44.64	1T	5D	8L	
CONCRETE PUMPS	\$47.00	1T	5D	8L	
CONCRETE PUMP-TRUCK MOUNT WITH BOOM ATTACHMENT	\$47.42	1T	5D	8L	
CONVEYORS	\$47.00	1T	5D	8L	

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		Over <u>Time Code</u>	Holiday <u>Code</u>	Note <u>Code</u>
CRANES, THRU 19 TONS, WITH ATTACHMENTS	\$47.00	1T	5D	8L
CRANES, 20 - 44 TONS, WITH ATTACHMENTS	\$47.42	1T	5D	8L
CRANES, 45 TONS - 99 TONS, UNDER 150 FT OF BOOM (INCLUDING JIB WITH ATTACHMENTS)	\$47.91	1T	5D	8L
CRANES, 100 TONS - 199 TONS, OR 150 FT OF BOOM (INCLUDING JIB WITH ATTACHMENTS)	\$48.46	1T	5D	8L
CRANES, 200 TONS TO 300 TONS, OR 250 FT OF BOOM (INCLUDING JIB WITH ATTACHMENTS)	\$47.03	1T	5D	8L
CRANES, A-FRAME, 10 TON AND UNDER	\$44.64	1T	5D	8L
CRANES, A-FRAME, OVER 10 TON	\$47.00	1T	5D	8L
CRANES, OVER 300 TONS, OR 300' OF BOOM INCLUDING JIB WITH ATTACHMENTS	\$47.09	1T	5D	8L
CRANES, OVERHEAD, BRIDGE TYPE ( 20 - 44 TONS)	\$47.42	1T	5D	8L
CRANES, OVERHEAD, BRIDGE TYPE ( 45 - 99 TONS)	\$47.91	1T	5D	8L
CRANES, OVERHEAD, BRIDGE TYPE (100 TONS & OVER)	\$48.46	1T	5D	8L
CRANES, TOWER CRANE UP TO 175' IN HEIGHT, BASE TO BOOM	\$48.46	1T	5D	8L
CRANES, TOWER CRANE OVER 175' IN HEIGHT, BASE TO BOOM	\$47.03	1T	5D	8L
CRUSHERS	\$47.42	1T	5D	8L
DECK ENGINEER/DECK WINCHES (POWER)	\$47.42	1T	5D	8L
DERRICK, BUILDING	\$47.91	1T	5D	8L
DOZERS, D-9 & UNDER	\$47.00	1T	5D	8L
DRILL OILERS - AUGER TYPE, TRUCK OR CRANE MOUNT	\$47.00	1T	5D	8L
DRILLING MACHINE	\$47.42	1T	5D	8L
ELEVATOR AND MANLIFT, PERMANENT AND SHAFT-TYPE	\$44.64	1T	5D	8L
EQUIPMENT SERVICE ENGINEER (OILER)	\$47.00	1T	5D	8L
FINISHING MACHINE/BIDWELL GAMACO AND SIMILAR EQUIP	\$47.42	1T	5D	8L
FORK LIFTS, (3000 LBS AND OVER)	\$47.00	1T	5D	8L
FORK LIFTS, (UNDER 3000 LBS)	\$44.64	1T	5D	8L
GRADE ENGINEER	\$47.00	1T	5D	8L
GRADECHECKER AND STAKEMAN	\$44.64	1T	5D	8L
GUARDRAIL PUNCH	\$47.42	1T	5D	8L
HOISTS, OUTSIDE (ELEVATORS AND MANLIFTS), AIR TUGGERS	\$47.00	1T	5D	8L
HORIZONTAL/DIRECTIONAL DRILL LOCATOR	\$47.00	1T	5D	8L
HORIZONTAL/DIRECTIONAL DRILL OPERATOR	\$47.42	1T	5D	8L
HYDRALIFTS/BOOM TRUCKS (10 TON & UNDER)	\$44.64	1T	5D	8L
HYDRALIFTS/BOOM TRUCKS (OVER 10 TON)	\$47.00	1T	5D	8L
LOADERS, OVERHEAD (6 YD UP TO 8 YD)	\$47.91	1T	5D	8L
LOADERS, OVERHEAD (8 YD & OVER)	\$48.46	1T	5D	8L
LOADERS, OVERHEAD (UNDER 6 YD), PLANT FEED	\$47.42	1T	5D	8L
LOCOMOTIVES, ALL	\$47.42	1T	5D	8L
MECHANICS, ALL	\$47.91	1T	5D	8L
MIXERS, ASPHALT PLANT	\$47.42	1T	5D	8L
MOTOR PATROL GRADER (FINISHING)	\$47.42	1T	5D	8L
MOTOR PATROL GRADER (NON-FINISHING)	\$47.00	1T	5D	8L
MUCKING MACHINE, MOLE, TUNNEL DRILL AND/OR SHIELD	\$47.91	1T	5D	8L
OIL DISTRIBUTORS, BLOWER DISTRIBUTION AND MULCH SEEDING OPERATOR	\$44.64	1T	5D	8L
PAVEMENT BREAKER	\$44.64	1T	5D	8L
PILEDRIVER (OTHER THAN CRANE MOUNT)	\$47.42	1T	5D	8L
PLANT OILER (ASPHALT, CRUSHER)	\$47.00	1T	5D	8L
POSTHOLE DIGGER, MECHANICAL	\$44.64	1T	5D	8L
POWER PLANT	\$44.64	1T	5D	8L
PUMPS, WATER	\$44.64	1T	5D	8L

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***** (See Benefit Code Key)				
<u>Classification</u>	<u>PREVAILING WAGE</u>	<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
QUAD 9, D-10, AND HD-41	\$47.91	1T	5D	8L
REMOTE CONTROL OPERATOR ON RUBBER TIRED EARTH MOVING EQUIP	\$47.91	1T	5D	8L
RIGGER AND BELLMAN	\$44.64	1T	5D	8L
ROLLAGON	\$47.91	1T	5D	8L
ROLLER, OTHER THAN PLANT ROAD MIX	\$44.64	1T	5D	8L
ROLLERS, PLANTMIX OR MULTILIFT MATERIALS	\$47.00	1T	5D	8L
ROTO-MILL, ROTO-GRINDER	\$47.42	1T	5D	8L
SAWS, CONCRETE	\$47.00	1T	5D	8L
SCRAPERS - SELF PROPELLED, HARD TAIL END DUMP, ARTICULATING OFF-ROAD EQUIPMENT ( UNDER 45 YD)	\$47.42	1T	5D	8L
SCRAPERS - SELF PROPELLED, HARD TAIL END DUMP, ARTICULATING OFF-ROAD EQUIPMENT (45 YD AND OVER)	\$47.91	1T	5D	8L
SCRAPERS, CONCRETE AND CARRY ALL	\$47.00	1T	5D	8L
SCREED MAN	\$47.42	1T	5D	8L
SHOTCRETE GUNITE	\$44.64	1T	5D	8L
SLIPFORM PAVERS	\$47.91	1T	5D	8L
SPREADER, TOPSIDE OPERATOR - BLAW KNOX	\$47.42	1T	5D	8L
SUBGRADE TRIMMER	\$47.42	1T	5D	8L
TOWER BUCKET ELEVATORS	\$47.00	1T	5D	8L
TRACTORS, (75 HP & UNDER )	\$47.00	1T	5D	8L
TRACTORS, (OVER 75 HP)	\$47.42	1T	5D	8L
TRANSFER MATERIAL SERVICE MACHINE	\$47.42	1T	5D	8L
TRANSPORTERS, ALL TRACK OR TRUCK TYPE	\$47.91	1T	5D	8L
TRENCHING MACHINES	\$47.00	1T	5D	8L
TRUCK CRANE OILER/DRIVER ( UNDER 100 TON)	\$47.00	1T	5D	8L
TRUCK CRANE OILER/DRIVER (100 TON & OVER)	\$47.42	1T	5D	8L
TRUCK MOUNT PORTABLE CONVEYER	\$47.42	1T	5D	8L
WHEEL TRACTORS, FARMALL TYPE	\$44.64	1T	5D	8L
YO YO PAY DOZER	\$47.42	1T	5D	8L
<b>POWER EQUIPMENT OPERATORS- UNDERGROUND SEWER &amp; WATER</b> (SEE POWER EQUIPMENT OPERATORS)				
<b>POWER LINE CLEARANCE TREE TRIMMERS</b>				
JOURNEY LEVEL IN CHARGE	\$37.61	4A	5A	
SPRAY PERSON	\$35.73	4A	5A	
TREE EQUIPMENT OPERATOR	\$36.19	4A	5A	
TREE TRIMMER	\$33.69	4A	5A	
TREE TRIMMER GROUNDPERSON	\$25.43	4A	5A	
<b>REFRIGERATION &amp; AIR CONDITIONING MECHANICS</b>				
MECHANIC	\$56.21	1G	5A	
<b>RESIDENTIAL BRICK &amp; MARBLE MASONS</b>				
JOURNEY LEVEL	\$27.05	1		
<b>RESIDENTIAL CARPENTERS</b>				
JOURNEY LEVEL	\$23.47	1		
<b>RESIDENTIAL CEMENT MASONS</b>				
JOURNEY LEVEL	\$22.64	1		
<b>RESIDENTIAL DRYWALL TAPERS</b>				
JOURNEY LEVEL	\$46.04	1E	5P	
<b>RESIDENTIAL ELECTRICIANS</b>				
JOURNEY LEVEL	\$26.24	1		
<b>RESIDENTIAL GLAZIERS</b>				
JOURNEY LEVEL	\$31.99	1H	5G	

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		<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
RESIDENTIAL INSULATION APPLICATORS				
JOURNEY LEVEL	\$17.60	1		
RESIDENTIAL LABORERS				
JOURNEY LEVEL	\$18.12	1		
RESIDENTIAL PAINTERS				
JOURNEY LEVEL	\$18.36	1		
RESIDENTIAL PLUMBERS & PIPEFITTERS				
JOURNEY LEVEL	\$22.95	1		
RESIDENTIAL REFRIGERATION & AIR CONDITIONING MECHANICS				
JOURNEY LEVEL	\$56.21	1G	5A	
RESIDENTIAL SHEET METAL WORKERS				
JOURNEY LEVEL (FIELD OR SHOP)	\$19.48	1		
RESIDENTIAL SOFT FLOOR LAYERS				
JOURNEY LEVEL	\$37.08	1B	5A	
RESIDENTIAL SPRINKLER FITTERS (FIRE PROTECTION)				
JOURNEY LEVEL	\$31.01	1B	5C	
RESIDENTIAL TERRAZZO/TILE FINISHERS				
JOURNEY LEVEL	\$26.30	1		
RESIDENTIAL TERRAZZO/TILE SETTERS				
JOURNEY LEVEL	\$43.61	1M	5A	
ROOFERS				
JOURNEY LEVEL	\$38.28	1R	5A	
USING IRRITABLE BITUMINOUS MATERIALS	\$41.28	1R	5A	
SHEET METAL WORKERS				
JOURNEY LEVEL (FIELD OR SHOP)	\$54.07	1E	6L	
SHIPBUILDING & SHIP REPAIR				
BOILERMAKER	\$32.56	1H	6W	
CARPENTER	\$30.91	1B	6X	
ELECTRICIAN	\$30.34	1B	6X	
HEAT & FROST INSULATOR	\$47.58	1S	5J	
LABORER	\$29.24	1B	6X	
MACHINIST	\$30.27	1B	6X	
OPERATOR	\$32.66	1B	6X	
PAINTER	\$30.24	1B	6X	
PIPEFITTER	\$30.30	1B	6X	
RIGGER	\$30.17	1B	6X	
SANDBLASTER	\$29.24	1B	6X	
SCREW METAL	\$28.90	1B	6X	
SHIPFITTER	\$30.32	1B	6X	
TRUCKER	\$30.13	1B	6X	
WAREHOUSE	\$30.19	1B	6X	
WELDER/BURNER	\$30.32	1B	6X	
SIGN MAKERS & INSTALLERS (ELECTRICAL)				
SIGN INSTALLER	\$22.92	1		
SIGN MAKER	\$21.36	1		
SIGN MAKERS & INSTALLERS (NON-ELECTRICAL)				
SIGN INSTALLER	\$27.28	1		
SIGN MAKER	\$33.25	1		
SOFT FLOOR LAYERS				
JOURNEY LEVEL	\$37.08	1B	5A	
SOLAR CONTROLS FOR WINDOWS				
JOURNEY LEVEL	\$12.44	1	5S	

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<u>Classification</u>	<u>PREVAILING WAGE</u>	(See Benefit Code Key)		
		<u>Over Time Code</u>	<u>Holiday Code</u>	<u>Note Code</u>
SPRINKLER FITTERS (FIRE PROTECTION) JOURNEY LEVEL	\$57.29	1X	5C	
STAGE RIGGING MECHANICS (NON STRUCTURAL) JOURNEY LEVEL	\$13.23	1		
SURVEYORS				
CHAIN PERSON	\$9.35	1		
INSTRUMENT PERSON	\$11.40	1		
PARTY CHIEF	\$13.40	1		
TELECOMMUNICATION TECHNICIANS				
TELECOMMUNICATION TECHNICIANS JOURNEY LEVEL	\$22.76	1		
TELEPHONE LINE CONSTRUCTION - OUTSIDE				
CABLE SPLICER	\$31.46	2B	5A	
HOLE DIGGER/GROUND PERSON	\$17.58	2B	5A	
INSTALLER (REPAIRER)	\$30.17	2B	5A	
JOURNEY LEVEL TELEPHONE LINEPERSON	\$29.26	2B	5A	
SPECIAL APPARATUS INSTALLER I	\$31.46	2B	5A	
SPECIAL APPARATUS INSTALLER II	\$30.82	2B	5A	
TELEPHONE EQUIPMENT OPERATOR (HEAVY)	\$31.46	2B	5A	
TELEPHONE EQUIPMENT OPERATOR (LIGHT)	\$29.26	2B	5A	
TELEVISION GROUND PERSON	\$16.67	2B	5A	
TELEVISION LINEPERSON/INSTALLER	\$22.19	2B	5A	
TELEVISION SYSTEM TECHNICIAN	\$26.42	2B	5A	
TELEVISION TECHNICIAN	\$23.76	2B	5A	
TREE TRIMMER	\$29.26	2B	5A	
TERRAZZO WORKERS & TILE SETTERS				
JOURNEY LEVEL	\$43.61	1M	5A	
TILE, MARBLE & TERRAZZO FINISHERS				
FINISHER	\$37.44	1B	5A	
TRAFFIC CONTROL STRIPERS				
JOURNEY LEVEL	\$37.90	1K	5A	
TRUCK DRIVERS				
ASPHALT MIX ( TO 16 YARDS)	\$43.45	1T	5D	8L
ASPHALT MIX (OVER 16 YARDS)	\$44.25	1T	5D	8L
DUMP TRUCK	\$43.45	1T	5D	8L
DUMP TRUCK & TRAILER	\$44.25	1T	5D	8L
OTHER TRUCKS	\$44.25	1T	5D	8L
TRANSIT MIXER	\$23.45	1		
WELL DRILLERS & IRRIGATION PUMP INSTALLERS				
IRRIGATION PUMP INSTALLER	\$17.71	1		
OILER	\$12.97	1		
WELL DRILLER	\$18.00	1		

**SECTION 01010  
SUMMARY OF WORK**

**PART 1 - GENERAL**

This project is for the development of 2 residential lots into a public park. The work will include selective clearing, demolition, earthwork, site preparation, compaction and backfilling, storm drainage, irrigation, cast in place concrete, gravels, unit pavers, concrete and metal entry structure, site furnishings, soil preparation, and plant procurement.

There also will be a second phase of the work that includes all the right of way work (demolition, concrete, storm drainage, irrigation, soil preparation, and plant procurement). It is shown on the plans but is not permitted by SDOT at this date.

- 1.01 BASE BID: The Scope of Work includes the following items:

**SCHEDULE A: RAINGARDEN**

1. **Environmental Protection**: Mobilization, temporary facilities, erosion control, silt fencing, selective clearing, vegetation removal and disposal per plans
2. **Earthwork & Site Preparation**: Excavation & export, imported fill material, compaction, misc. gravels.
3. **Trenching & Backfilling**: Trenching, compaction & backfilling for all footings, wiring, drainage and irrigation
4. **Electrical Service**: New 125 amp electrical service
5. **Cast-In-Place Concrete**: Concrete flatwork, walls, curbing
6. **Irrigation**: New automatic irrigation system
7. **Planting**: Soil preparation, including trees, shrubs and ground covers, and mulching per plans

**SCHEDULE B: “CORNER STORE”**

1. Contractor to fabricate, construct and install Corner Entry Structure, including all paving materials, columns, metal work, interpretive archway, counter, & seating. (See Sheet L-5A, L-11 & L-13)

**SCHEDULE C: “LIVING ROOM”**

1. Artist to construct and install shotcrete "Living room", including couch, armchair, end table, concrete sidewalk, concrete slab and inset pavers. Contact Nathan Arnold, Artist at (206) 547-3082. (See Sheet L-5A & L-13)

1.03 CONTRACT RESPONSIBILITIES

- A. CONTRACT: There will be one Contract for the project, which includes the Work described in the Project Manual and Drawings.
- B. ITEMS INCLUDED: The Contractor shall provide all items, articles, materials, operations or methods listed, noted or scheduled on the Drawings and/or herein, including all labor, equipment and incidentals necessary and required for proper and timely completion of the Work. Contractor shall use new materials unless specifically noted or directed. Contractor shall provide all testing as required by these specifications for concrete and compaction.
- C. PERSONNEL: The Contractor shall employ only fit and skilled persons and maintain proper order at the place of work and shall maintain each Project Site as a safe and secure work place conforming to all applicable codes and regulations.

1.04 USE OF DOCUMENTS

Technical Specifications are enumerated in the Table of Contents of the Project Manual. Numbering of Sections is for identification only and may not be consecutive. Contractor shall check his/her copies of the Specifications with Table of Contents to verify that they are complete. Notify the Owner's representative of incomplete copies.

1.05 COPIES FURNISHED

- A. The Contractor shall be furnished FIVE (5) copies of the Contract Documents without charge. Contractor may obtain additional partial or complete copies from the Owner's representative at the cost of reproduction.
- B. Contractor to provide 1 set of Record Drawings following construction illustrating any changes for the original contract documents.

1.06 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit his/her use of the premises for work and for storage, to allow for Owner access.
- B. Coordinate use of the premises under the direction of the Owner's representative.
- C. Assume full responsibility for the protection and safekeeping of products under this contract, stored on the site.
- D. Move any stored products, under the Contractor's control, which interfere with operations of the Owner.
- E. Obtain and pay for the use of additional storage or work areas needed for operations.

1.07 CONSTRUCTION STAGING AREA – Close adjacent sidewalks and upland area adjacent as shown on plans and as adjusted in field with Owner's approval. Contractor shall coordinate use of the site with the Owner's representative prior to utilization of area. Providing barriers is the Contractor's responsibility. Exact locations of staging areas will be determined at the Pre-construction Meeting.

1.08 SALVAGED MATERIALS

Salvage only items that are noted in the Contract Documents.

1.09 STORAGE AND PROTECTION

Store products in accordance with manufacturer's instructions; seals and labels intact and legible. Store products subject to damage by the elements in weather tight enclosures. Maintain temperature and humidity within the ranges required by manufacturer's instructions. Storage of hazardous materials and wastes shall be in accordance with

local, State and Federal fire codes and regulations. Note requirements on Materials Safety Data Sheets (MSDS).

Exterior Storage:

1. Store fabricated products above ground. Position on blocking or skids; prevent soiling or staining. Cover products subject to deterioration with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
2. Store loose granular materials in well-drained areas on solid surfaces. Prevent mixing with foreign matter.

**1.10 SAFETY PRECAUTIONS**

The Contractor shall provide barricades, safety guards, temporary fencing, signage and/or other methods to secure trenches, open excavations, and other unsafe conditions resulting from this construction.

**1.12 EXISTING UTILITIES**

Contractor shall verify the location of all underground utilities before beginning work. An independent utilities location service may be contracted by the Contractor. Contractor shall assume all responsibility for damage to utilities not scheduled for removal. In the event that utilities are damaged, the Contractor shall repair and restore utilities to the original condition at the Contractor's expense.

**1.13 MISCELLANEOUS**

A. Items included, but are not limited to:

1. Maintaining a pedestrian and vehicular access to and around existing facilities.
2. Not unreasonably encumbering site with materials or equipment.
3. Assuming full responsibility for protection and safekeeping of products stored on premises.
4. Obtaining and paying for use of additional storage or work areas needed for operation.
5. Patching any damaged existing paving on adjacent properties.
6. Keeping streets and public areas clean of dirt and other debris.
7. Maintain dust free site by watering on a daily basis as needed.

**1.14 ANTICIPATED SCHEDULE**

Bidding: Oct-Nov 2008

Award: November 2008

Construction: November – December 2008, if additives January 2009

**END OF SECTION 01010**

**SECTION 01030  
BASE BID ITEMS**

**PART 1 - GENERAL**

**1.01 DESCRIPTION:**

It is the intent of the Engineer to award a Contract for Base Bid construction of the project as shown on the Drawings and specified herein.

**1.02 RELATED SECTIONS:**

- A. Instructions to Bidders
- B. Section 00300 Bid Form
- C. Section 01010 Summary of Work.

**1.03 BASE BID**

Bids Required:

- 1. A sum for the Base Bid as defined below.
- A. Base Bid is the sum proposed to perform all General work as specified and shown in Division 2 Technical Specifications of the Project Manual and the Project Drawings.
- B. Base Bid excludes the following:
  - 1. Work specifically shown or noted as Not-In-Contract (NIC)
  - 2. Work specifically shown as By Volunteers or By Others.
  - 3. Owner supplied products noted as Furnished by Owner, Installed by Contractor (FOIC).

**PART 2 - PRODUCTS: (*Not Used*)**

**PART 3 – EXECUTION (*Not Used*)**

**3.01 GENERAL REQUIREMENTS:**

All general and technical specification references that apply to the rest of the project shall also apply to the work in this section.

**END OF SECTION 01030**

**SECTION 01035  
MODIFICATION PROCEDURES**

**PART 1 – GENERAL**

**1.01 SUMMARY OF MODIFICATIONS PROCEDURES**

- A. When field conditions or contract documents require clarification or verification either by the Contractor and or the Owner's Rep which results in a change to either the Work, Drawings and or Project Manual, the Contractor shall prepare a written request for information using a form provided by the Owner's Rep. Design Clarifications shall be dated and numbered in sequence. The Contractor shall provide copies of all Design Clarifications to the Owner's Rep. The Contractor shall keep a copy of all Design Clarifications and maintain a log of all Design Clarifications, which shall be incorporated into the weekly construction minutes. When a Design Clarification results in an increase or decrease in the cost of the Work, the Contractor shall prepare a modification proposal for review and approval as described in this section.  
Changes to the Work may be required due to field conditions, requests made by the Engineer, clarifications to the bid documents, or other needs that result in a change in the cost of the work and/or change in the number of contract days per 00700.1.02.D. The changes to the work will be tracked individually as Modification Proposals (MP.).  
Modification Proposals may either be prepared as a Field Directive, or as a request for pricing prior to proceeding with the work.
- B. A change order will be issued for one or more MP's grouped into a single change order. Payment for changed work cannot be paid until the change order is finalized and signed by the Director of the Planning and Development Division (PDD).
- C. The Modification Proposal shall clearly identify all labor, material, equipment, incidentals, including subcontractor's and supplier's invoices or quotes and Contractor's timecards. A reference from the latest approved schedule shall be attached justifying any time extension request. Mark ups for all overhead, profit, bond cost, B & O taxes, and insurance shall be added per 00700.1.09 D, E or F. The form included at the end of this section will be used for directing the work to be done in one of the two manners described below.
- D. Contractor, and Subcontractors where required, shall provide a breakdown of labor costs including basic wage rates, fringe benefits, FICA, FUTA and SUCA add-ons, per 00700 1.09 F. Where premium time is involved, the Contractor shall provide a breakdown of costs in the same detail.

**1.02 FIELD DIRECTIVE MODIFICATION PROPOSALS**

- A. Changed conditions and or unanticipated circumstances may require immediate revisions to the Work which are essential and from which a delay would result in a time and or cost penalty to the project. When such a condition exists, the Owner's Rep shall issue a written Field Directive to the Contractor on a form to be provided by the Owner's Rep.
- B. The written Field Directive shall be based upon a discussion with the Contractor and the Owner's Rep identifying the necessary changes to be made and the cost of the work

based upon unit pricing, lump sum or force account in conjunction with the signatures of the Contractor and the Owner's Rep.

- C. The Contractor shall be responsible for obtaining the written approval of the Field Directive by the Owner's Rep within five (5) working days of authorization to proceed with the work and insuring that it is dated and numbered in sequence. The Contractor shall be responsible to insure that the Owner's Rep receives copies of the fully signed Field Directive and that a log of all Field Directives is kept as part of the weekly construction minutes.
- D. The Contractor within ten working days of the written approval of the Field Directive by the Owner's Rep shall prepare either a modification proposal or a change order in accordance with the provisions of paragraph 1.04. of this section based upon the dollar value of the work.
- E. Payment for work authorized under a Field Directive cannot be made until a change order incorporating the work has been prepared and approved by the Owner's Rep.

#### 1.03 LUMP SUM MODIFICATION PROPOSALS

- A. Changed conditions, unanticipated circumstances, design clarifications and or the needs of the Owner's Rep and or recommendations from the Contractor may require revisions to the WORK, which based upon the scope and dollar value may not support the immediate processing of a formal Change Order. When such conditions exist a Modification Proposal, referred to as a MP, may be initiated by the Owner's Rep to document the need, scope of work and or deletion, total costs and or credit including all overhead and additional time to be added or subtracted to or from the contract, if necessary, to complete the change.
- B. Upon discussion between the Owner's Rep and Contractor that changes to the Work is needed, the Owner's Rep shall prepare a written MP that describes the proposed changes and the reason for the change in conjunction with supporting drawings and/or specifications to define the additional work to be priced by the Contractor. The Owner's Rep shall prepare the MP and provide such document to the Contractor for pricing and implementation considerations. The preparation of the MP and submittal to the Contractor is for information only and is not an authorization to proceed with the additional work and or stop work in progress.
- C. Upon receipt of the MP the Contractor shall proceed to determine the cost and or credit for the proposed change and additional time to be added or deleted, if any, to implement the change. The Contractor shall notify the Owner's Rep within five working days or less if additional information is needed to provide cost information. The Contractor as part of his or her pricing of the change shall provide supporting documentation regarding the costs and or credit for labor, materials, equipment, mobilization, subcontractors and material suppliers costs and markups and overhead and all appropriate overhead. The Contractor shall identify any conditions that are necessary to be met in order to implement the proposed change. The Contractor shall also identify additional contract days to be added or deleted to implement the proposed change with an explanation. The cost developed by the Contractor shall include all extended overhead if additional time is requested. The Owner's Rep shall return the MP to the contractor within ten working days from the time that sufficient information was provided by the

Contractor to determine the costs for the proposed change. If a written reply is not received within the time specified, the Contractor reserves the right to price the change unilaterally, and Owner's Rep waives the right of claim under other provisions of the Contract Documents.

- D. Upon receipt of the MP from the Contractor the Owner's Rep shall review the pricing and request for additional time, if any, for appropriateness. Within five working days or less the Owner's Rep shall advise the Contractor whether the pricing, conditions, and or additional time requested is appropriate. The Owner's Rep will provide a recommendation to the Owner as to whether to accept the MP as provided by the Contractor or consider changes to either pricing, conditions, and or request for additional time.
- E. The Owner within five working days of receipt of the Owner's Reps recommendation shall either approve the MP, negotiate changes with the Contractor, instruct the Contractor to proceed with the MP with changes made by the Owner's Rep with the right of filing a protest, or disapprove the MP.
- F. Upon approval of the MP, the Owner's Rep shall notify the Contractor either orally, at the weekly project meeting, or in writing to proceed with the work.
- G. Payment for work authorized under a MP shall not be made until a change order incorporating the work has been approved by the Owner's Rep. The Owner's Rep shall establish a threshold amount at which time a Change Order will be prepared to approve a single approved MP or a series of approved MPs providing that the total dollar amount of MPs does not exceed \$50,000. The Owner's Rep shall initiate the preparation and the approval process for a Change Order within ten working days of the approval the last MP when the dollar value of that MP or the accumulated dollar values of previously approved MPs exceeds the Owner's Reps' threshold amount but in case no more than \$50,000. If the work associated with a individual MP or two or more previously approved MPs is completed and the dollar value has not reach the Owner's Reps' threshold amount, the Owner's Rep shall prepare a change order to approve the MP or MPs so that application for payment for the completed work can be submitted by the Contractor.
- H. MPs shall be dated and numbered in sequence. The Owner's Rep shall be responsible to insure that the Contractor and the Owner receive a copy of the fully signed MP, will retain a copy for their file and insure that a log of all MPs and status is kept as part of the weekly construction minutes.

#### 1.04 CHANGE ORDERS

- A. Changes to the Work as described in Division O shall require the preparation, processing and approval of a Change Order. The Change Order documents the need, scope of work and or deletion, total costs and or credit including all overhead, and additional time to be added or subtracted to or from the contract, if necessary, to complete the change. The Contractor, Owner's Rep or Owner can initiate Change Orders.
- B. When the dollar value of a proposed change or credit exceeds the threshold value established by the Owner's Rep, a Change Order shall be initiated by the Owner's Rep. The procedure for preparing the Change Order shall be the same as the process outlined for MPs of this section. The MP documentation shall function as supporting information

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for the Change Order. When two or more approved MPs exceed the threshold value for either a cost increase or credit as established by the Owner's Rep, the Owner's Rep shall initiate a Change Order. The approved MPs will be referenced on the Change Order regarding proposed changes, reason for changes, cost increase and or credit and increase or decrease in contract time, if any. The MPs shall be attached as supporting documentation for the Change Order.

- C. If quantities involving unit prices established as part of the contract increase and or decrease approving the changes will be treated in the same manner as a MP and Change Order as described in paragraphs 3.01 and 4.01 of this section.
- D. Payment for work authorized under a change order shall not be approved until the final written signature has been obtained.
- E. Change Orders shall be dated and numbered in sequence. The Owner's Rep shall be responsible to insure that the Contractor and the Owner receive copies of the fully signed Change Order, retain a copy for their file and insure that a log of all Change Orders and status is kept as part of the weekly construction minutes.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

**END OF SECTION 01035**

NOTE: A sample Modification Proposal form follows this section.



**MODIFICATION PROPOSAL/FIELD DIRECTIVE**

<b>CONTRACTOR:</b>		<b>MP Number</b>	
<b>PWCC#</b>		<b>DATE:</b>	
<b>PROJECT NAME:</b>		<b>CONSULTANT</b>	

**Please furnish your proposal to perform the following work.**

<b>DESCRIPTION:</b>
<b>ATTACHMENTS:</b>

<b>COST OR (DEDUCT)</b>	\$	
<b>TIME EXTENSION:</b>		
<b>CONSULTANT'S REVIEW:</b>	SIGNATURE	DATE
<b>PROJECT MANAGER'S REVIEW</b>	SIGNATURE	DATE
<b>ENGINEER'S REVIEW</b>	SIGNATURE	DATE

**Field Order. Proceed with the work immediately if signed below as a field directive.**

<b>ENGINEER:</b>	SIGNATURE	DATE
<b>NOT TO EXCEED PRICE:</b>	\$	

The payments and/or additional time specified and agreed to in this modification proposal include every claim by the contractor for any extra payment, extended overhead or extension of time with respect to the work described herein, including delays to the overall project. The work covered by this modification proposal must be performed under the same terms and conditions as that included in the original contract

Submitted by:

--	--

**AUTHORIZED CONTRACTOR SIGNATURE**

**DATE**

**SECTION 01040**

**SECTION 01040**  
**COORDINATION AND PROTECTION**

**PART 1 - GENERAL**

**1.01 PROJECT COORDINATION**

- A. Coordinate construction activities included under various Sections of these specifications especially between all subcontractors to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
- B. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
- C. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
- D. Make adequate provisions to accommodate items scheduled for later installation.
- E. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
  - 1. Prepare similar memoranda for separate subcontractors where coordination of their Work is required.

**1.02 CLEANING AND PROTECTION**

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary throughout the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. To limit exposure, supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

- Excessive static or dynamic loading
- Excessive internal or external pressures
- Excessively high or low temperatures
- Thermal shock
- Excessively high or low humidity
- Air contamination or pollution
- Water or ice
- Solvents
- Chemicals

- Light
- Radiation
- Puncture
- Abrasions
- Heavy traffic
- Soiling, staining and corrosion
- Bacteria
- Rodent and insect infestation
- Combustion
- Electrical current
- High-speed operation
- Improper lubrication
- Unusual wear or other misuse
- Contact between incompatible materials
- Destructive testing
- Misalignment
- Excessive weathering
- Unprotected storage
- Improper shipping or handling
- Theft
- Vandalism

PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION: Not Used

**END OF SECTION 01040**

**SECTION 01045**  
**CUTTING AND PATCHING**

**PART 1 - GENERAL**

**1.01 SUMMARY:**

- A. This section includes administrative and procedural requirements for cutting and patching.
- B. Related Sections: The following sections contain requirements that relate to this section:
  - 1. Division 1 Section “Coordination and Protection” for procedures for coordinating cutting and patching with other construction activities.
  - 2. Refer to other sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
    - 1. Requirements of this section apply to mechanical and electrical installations. Refer to Division 15 and 16 sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.
    - 2. Requirements of Division 2 sections apply to cutting, patching, and restoration of areas of the site outside the boundaries of unlimited Contractor access. Cutting, patching, and restoration of such areas must be completed according to the requirements of the Engineer’s schedule for use of limited access areas, and so as to avoid creating safety hazards or inconvenience for the public using such areas of limited Contractor access.

**1.02 SUBMITTALS:**

- A. Cutting and Patching Proposal: When Engineer’s approval of cutting and patching procedures is required, submit a proposal for Engineer’s review describing procedures well in advance of the time cutting and patching will be performed. Request approval to proceed. Include the following information, as applicable, in the proposal:
  - 1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
  - 2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the Work’s appearance and other significant visual elements.
  - 3. List products to be used and firms or entities that will perform work.
  - 4. Indicate dates when cutting and patching will be performed.
  - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
  - 6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
  - 7. Approval by the Engineer to proceed with cutting and patching does not waive the Engineer’s right to later require complete removal and replacement of the unsatisfactory work.

**1.03 QUALITY ASSURANCE:**

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
    - a) Foundation construction.
    - b) Bearing and retaining walls.
    - c) Structural concrete.
    - d) Structural steel.
    - e) Lintels.
    - f) Timber and primary wood framing.
    - g) Structural decking.
    - h) Stair systems.
    - i) Miscellaneous structural metals.
    - j) Equipment supports.
    - k) Piping, ductwork, vessels, and equipment.
- B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
    - a) Primary operational systems and equipment.
    - b) Air or smoke barriers.
    - c) Water, moisture, or vapor barriers.
    - d) Membranes and flashings.
    - e) Fire protection systems.
    - f) Noise and vibration control elements and systems.
    - g) Control systems.
    - h) Communication systems.
    - i) Conveying systems.
    - j) Electrical wiring systems.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Engineer's opinion, reduce the Work's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace any construction cut and patched in a visually unsatisfactory manner, as determined by the Engineer.

#### 1.05 WARRANTY:

- A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as to maintain in effect any warranties required or existing.

#### PART 2 - PRODUCTS

#### 2.01 MATERIALS – GENERAL:

- A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

### **PART 3 - EXECUTION**

#### **3.01 INSPECTION:**

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
  - 1. Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

#### **3.02 PREPARATION:**

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Work that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Avoid cutting existing pipe, conduit, or ductwork serving the Project but schedule to be removed or relocated until provisions have been made to bypass them.

#### **3.03 PERFORMANCE:**

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
  - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
  - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. To avoid marring existing finished surfaces, but or drill from the exposed or finished side into concealed surfaces.
  - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.

4. Comply with requirements of applicable Division 2 sections where cutting and patching requires excavating and backfilling.
  5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug-and-seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after bypassing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
  2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  3. Where removal of walls and partitions extends one finished area into another, patch and repair floor, wall, and ceiling surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing ceiling system or finish, and floor and wall coverings, and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a) Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
  4. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.04 CLEANING:

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

**END OF SECTION 01045**

**SECTION 01200  
PROJECT MEETINGS**

**PART 1 - GENERAL**

**1.01 PRE-BID CONFERENCE:**

- A. A mandatory pre-bid conference is scheduled at the project site. The purpose of the Conference is to inform potential bidders, subcontractors and or suppliers of unique or special requirements associated with the project. The Owner's Rep will conduct the meeting. The Owner's Rep shall be responsible for preparing minutes of the meeting and will provide copies to attendees upon request.
- B. Scheduling conference: If a pre- bid conference is to be held, the date, time, and location will be shown in the advertisement for bid.
- C. Attendees: The Property Owner, Owner, Owner's Rep, and Contractor. A representative for all bidding contractors must be present. The Owner's Rep shall be responsible for developing an attendees list. The list will be used in verifying and recommending contract award to eligible bidders. Attendance is mandatory.
- D. Submittals: None
- E. Agenda: Owner's Rep shall review the following topics:
  - 1. Introduction, general scope, budget, schedule, special permits, special conditions and or requirements.
  - 2. Review of project drawings and technical specifications and any special conditions and or requirement affecting the project.
  - 3. Tour of the Work Site if feasible with additional comments from the Owner's Rep.

**1.02 PRE-CONSTRUCTION CONFERENCE MEETING:**

- A. The Owner's Rep will establish the date, time and place for the Pre-Construction Conference. The Owner's Rep will conduct the meeting to review responsibilities, procedures, personnel assignments and to exchange preliminary submittals. The Owner's Rep shall be responsible for taking and preparing minutes. Copies of the minutes will be distributed by the Owner's Rep at the first progress meeting.
- B. Attendees: The Property Owner, Owner, Owner's Rep and Contractor with his/her superintendent.
- C. Submittals: The Contractor shall provide a preliminary construction schedule; traffic control plan; schedule of values; list of subcontractors; list of material suppliers, preliminary data submittals, and submittals/shop drawings for long lead material items identified in the project manual.
- D. Agenda: The following items shall be reviewed at the meeting using a format provided by the Owner's Rep.

1. Lines and methods of communication between the Owner's Rep and Contractor.
2. Coordination of Project
  - a. Owner's Rep's reviews
  - b. Construction Review Plan
  - c. Special inspections/testing
  - d. Working hours
  - e. Date, time and location for weekly construction meetings
  - f. Safety
  - g. Traffic control
  - h. Verification of schedule compliance and remaining construction days
3. Submittals to be provided by Contractor at meeting
  - a. Identification of Contractor's Personnel: Project Manager, Superintendent, other
  - b. Subcontractor Applications
  - c. Contractor Work Force Report (original and one (1) copy)
  - d. Critical Path Schedule (preliminary)
  - e. Schedule of Values
  - f. List of required Submittals/ Shop Drawings from Project Manual
  - g. Subcontractor's List
  - h. Material Suppliers
  - i. Prevailing Wage Reports
4. Procedures and sample pay request forms with prevailing wage certification.
5. Procedures and examples of Design Clarification, Field Directives, MP, and Change Orders
6. Procedures for submitting submittals/shop drawings and request substitutions
7. Responsibility of contractor to maintain record documents
8. Emergency Telephone Contact List
9. Special Items
  - a. Work Limits/Security and safety-first aid procedures and confines spaces procedure
  - b. Permits
  - c. Staging, deliveries, and contractor/employee parking
11. Verification of Drawings and Project Manual by Contractor
12. Notice to Proceed date
13. Other

1.03 PROGRESS MEETINGS:

- A. The Owner's Rep will conduct the weekly progress meetings on a day, time and location determined at the pre-construction conference. The Owner's Rep shall be responsible for taking and preparing weekly project minutes. Copies of the minutes shall be distributed prior to the next meeting.
- B. Attendees: Property Owner, Owner, Owner's Rep and Contractor, with any other concerned parties such as contractor's superintendent, subcontractors, material suppliers.
- C. Agenda: The following items will be reviewed and discussed using a format provided by the Owner's Rep:
  - 1. Review and approve minutes of the previous meeting.
  - 2. Review status/issues/problems of work in progress with needed action items.
  - 3. Review new work that has started prior to the last meeting and or will start before the next meeting and identify any issues, concerns, or problems requiring action.
  - 4. Review status, progress, issues related to compliance with construction schedule and identify construction days used and days remaining under the Contract and any request for time extensions. Determine if schedule needs to be updated to reflect any changes. Develop and maintain a work item schedule status using a format provided by the Owner's Rep.
  - 5. Establish and maintain a submittal/shop drawing status for all items identified in the project manual using a format provided by the Contractor. Review status of long lead delivery items requiring expedited review.
  - 6. Establish and maintain log and status of Design Clarifications, Field Directives, MP, and Change Orders using a format provided by the Owner's Rep. Review status of pending actions, degree of completion, and the need for processing change orders.
  - 7. Review status of special testing if required and implementation of inspection schedule.
  - 8. Review changes to record documents.
  - 9. Review status of in- process, pending pay requests.
  - 10. Review other issues affecting implementation of project

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

**END OF SECTION 01200**

**SECTION 01270**  
**MEASUREMENT AND PAYMENT**

**PART 1 - GENERAL**

**1.01 SCHEDULE OF VALUES:**

Contractor shall submit a Schedule of Values for the review and approval by the Engineer at the pre-construction meeting. Content shall include the following:

- A. Identify each line item including mobilization and demobilization with number and title of the respective Specification sections and include the O & M Manual and As-Builts as line items for each section.
- B. Include in each line item a directly proportionate amount of Contractor's overhead and profit.
- C. For items on which progress payments will be requested for stored materials, break down the cost of materials, delivered and unloaded, with taxes and the like paid, and indicate total materials installed.
- D. Round off figures to the nearest whole dollar amount.
- E. Make sum of total scheduled costs equal the Awarded Contact Price, rounded to whole figures.

**1.02 APPLICATION FOR PAYMENT:**

- A. Format and Data Required: Submit Applications for Payment using City of Seattle Department of Parks and Recreation Monthly Estimates with itemized data typed on continuation sheets including values established on Schedule of Values. Procedures and terms will be presented and reviewed at the Pre-construction Conference.
- B. Either prior to or concurrent with the submitted pay estimate, the Engineer, Consultant, and Contractor shall agree on the percentage of work completed on each line item of the schedule of values. This shall be the basis for payment identified on the pay estimate.
- C. Preparation of Progress Payment Application:
  1. Complete all required information including:
    - a. Provide information based upon the approved Schedule of Values.
    - b. Change orders approved prior to Application submittal date.
    - c. Summary of dollar values to agree with respective total indicated on continuation sheets, if used.
    - d. Signature of responsible officer of Contractor
  2. Submit two signed originals of pay application with respective signed "Certificate of Intent to Pay Prevailing Wages" to the Consultant who will review and approve request for payment by signing the pay request or requesting changes before forwarding to the Engineer for his/her review, approval, and processing.
  3. Continuation Sheets:

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- a. Fill in all scheduled component work items completely. Show item number/scheduled dollar value/item/schedule of values.
- b. Fill in dollar value in each column for each scheduled line item.
- c. Round off values to nearest dollar/tally sheet.
- d. If no work has been performed enter zero (0).

At end of continuation sheets, list each change order approved prior to submission date. Also list each by change order number and description. Show and calculate for all other scheduled component items of work.

C. Substantiating Data for Progress Payments:

1. When the Consultant requires substantiating data, submit suitable information with cover letter including:
  - a. Project Name.
  - b. Application number and date.
  - c. Detailed list of enclosures.
  - d. For stored products: Identify item as shown on application; describe specific material; provide invoice from supplier.

1.03 UNIT PRICES: *Not Used*

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

**END OF SECTION 01270**

**SECTION 01300**  
**SUBMITTALS**  
**PART 1- GENERAL**

**1.01 SUBMITTALS:**

- A. A variety of forms, documents, drawings, and samples, referred to as Submittals, need to be exchanged between the Contractor and the Owner's Rep and reviewed and approved by the Owner's Rep in order to insure that the requirements of the Project Drawings and Manual are met. The transmittal and approval of this information takes place throughout the life of the project starting at the Pre-Construction meeting, at progress meetings and ending at project close out.
- B. Examples of the types of Submittals provided at the various stages of the project are identified below:
  1. Pre- Construction Meeting: subcontractor approval forms; contractor work force/EEO reports; construction schedule; schedule of values; listing of required shop drawing/sample/product data sheet submittals; subcontractor/material supplier list, emergency phone number list, inspection/special testing plan, and copies of design clarification, field directive, MP, change order, pay request, material substitution forms.
  2. Progress Meetings: shop drawing, samples and or product date for all technical sections of the Project Manual as required and as identified in the listing of required technical submittals.
  3. Project Close Out: maintenance and operation manuals, record documents, and warranties.

**1.02 SUBMITTAL SCHEDULE FOR SHOP DRAWING, PRODUCT DATA, AND SAMPLES**

The Contractor shall be responsible for preparing a submittal schedule which shall identify all shop drawing, product data and or sample requirements as identified in the technical sections of the project manual. The schedule shall also identify items requiring long-term production and or delivery times. Such schedule shall be prepared and submitted at the Pre-Construction meeting.

**1.03 SUBMITTAL PROCEDURES FOR SHOP DRAWING, PRODUCT DATA, AND SAMPLES**

- A. Coordination:
  1. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
  2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
  3. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

4. The Owner's Rep reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing:

1. The Contractor shall allow sufficient time so that installation will not be delayed as a result of the time required to process submittals including time for resubmitting.
2. The Contractor should allow ten (10) working days for the initial review plus an additional five (5) working days if the Owner's review is required. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Owner's Rep shall advise the Contractor when a submittal being processed must be delayed for coordination.
3. The Contractor shall allow five (5) additional working days for reprocessing each submittal.
4. No extension of Contract Time will be authorized because of failure to transmit submittals to the Owner's Rep sufficiently in advance of the Work to permit processing.

C. Preparation:

1. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
2. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractors review and approval markings and the action taken.
3. Include the following information on the label for processing and recording action taken: project name; date; name and address of Owner's Rep; name and address of Contractor; name and address of subcontractor, name and address of supplier; name of manufacturer; and number and title of appropriate specification section.

D. Transmittal:

Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Owner's Rep using a transmittal form. Submittals received from sources other than the Contractor will be returned without action. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.

E. Shop Drawings:

1. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings.

2. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
3. Include the following information on all shop drawings:
  - a. Dimensions
  - b. Identification of products and materials included
  - c. Compliance with specified standards
  - d. Notation of coordination requirements
  - e. Notation of dimensions established by field measurement.
4. Sheet Size:

Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 24" x 36".
5. Initial Submittal:

Submit one correctable translucent reproducible print and five blue or black line prints for the Owner's Reps review and action. The reproducible print and three copies of the submittal with the Owner's Rep's action will be returned to the Contractor. The Owner's Rep shall retain one copy for the record and include record copy in the O/M manual and provide information copy to the Committee.
6. Do not use Shop Drawings without an appropriate final stamp taken in connection with construction. Improvements installed by the Contractor requiring submittal approval, where such approval was not obtained prior to installation, shall be the Contractor's responsibility for replacing such at their costs.

**F. Product Data:**

1. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturers installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings".
2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
  - a. Manufacturer's printed recommendations
  - b. Compliance with recognized trade association standards
  - c. Compliance with recognized testing agency standards
  - d. Application of testing agency labels and seals
  - e. Notation of dimensions verified by field measurement
  - f. Notation of coordination requirements.

3. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed. Include a signed certificate of compliance with each Product Data submitted.
  4. Submittals: Submit 5 copies of each required submittal. The Owner's Rep shall retain one, distribute one to the Owner and Property Owner and will return 3 marked with action taken and corrections or modifications required. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
  5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data applicable is in the installers' possession. Do not permit use of unmarked copies of Product Data in connection with construction.
- G. Samples:
1. Submit Samples as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, or swatches showing color, texture and pattern.
  2. Display or package Samples in the manner specified to facilitate review of qualities indicated. Include the following:
    - a. Generic description of the Sample
    - b. Sample source
    - c. Product name or name of manufacturer
    - d. Compliance with recognized standards
    - e. Availability and delivery time.
  3. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
  4. Where variation in color, pattern, texture or other characteristics is inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
  5. Refer to other Specification Sections for requirements for Samples to illustrate workmanship, fabrication techniques, and details of assembly, connections, operation and similar construction characteristics.
  6. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned and marked with the action taken. The Owner's Rep shall retain one set to be include in the M/O manual and provide the Engineer with the other set.

7. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
8. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
9. Sample sets may be used to obtain final acceptance of the construction associated with each set.
10. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

H. Owner's Rep's Action

1. Except for submittals for record, information or similar purposes, where Action and return is required or requested, the Owner's Rep shall review each submittal and mark it to indicate action taken, and return promptly within ten (10) working days from receipt from Owner's Rep. If the submittal involves either changes to the drawings and or project manual or contains information not reviewed and approved as part of the project drawings and or project manual by the Owner's Rep, the Owner and Property Owner shall also review and approve the submittal. All resubmittals will require an additional five(5) working days for approval. Compliance with specified provisions of the technical sections of the Project Manual shall be the sole responsibility of the Contractor.
2. Action Stamp: The Owner's Rep will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
  - a. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend on that compliance.
  - b. Final, but Restricted Release: Where submittals are marked "Make Corrections Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
  - c. Returned for resubmittals: Where submittals are marked "Amend and Resubmit" or "Rejected," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
3. Do not permit submittals marked "Amend and Resubmit" or "Rejected," to be used at the Project site, or elsewhere where Work is in progress.
4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, un-marked.

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PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION: Not Used

**END OF SECTION 01300**

**SECTION 01310  
SCHEDULES**

**PART 1 - GENERAL**

**1.01 CONSTRUCTION SCHEDULE:**

- A. The Contractor shall prepare a construction schedule showing specific tasks, dates and critical path necessary for completion of the project within the contract time limits. The preliminary schedule will be submitted at the pre-construction meeting and approved or returned for correction within five (5) working days of the pre-construction meeting by the Engineer. Within five (5) working days, the Contractor shall revise the preliminary schedule in accordance with the Engineer's corrections and submit the revised schedule for acceptance. Upon the Engineer's acceptance, the schedule shall become the Project Construction Schedule. The Project Construction Schedule will be reviewed and updated at each progress meeting. All changes to the progress schedule of more than 3 working days shall be documented on the updated progress schedule and shall be submitted both in writing and electronic format (e-mailed) and submitted to the Project Manager. The Project Construction Schedule, as accepted by the Engineer, will be an integral part of the contract and will establish interim completion dates for the various activities under the contract. The schedule shall be submitted weekly in paper and electronic formats.
- B. The Schedule format shall be a critical path method. The Schedule shall identify the work clearly, showing the detailed items of work. The breakdown of work shall, at a minimum, show all of the items identified in the Schedule of Values. Submittals and long lead items shall be included and the relationship between submittal and the work item shall be identified. The relationship between the work items shall clearly show the starting dates, and include all details of the work within the time frame shown.
- C. The Schedule shall include sufficient time for cleaning, punch list review and completion of punch list items prior to the designated substantial completion date.
- D. The Schedule shall be used to justify time extension days requested by the Contractor. For additional days requested, the Schedule shall be detailed enough to identify the work item(s) affected and the relationship to the changed or added work.
- E. Should any activity not be completed by the stated scheduled date, the Engineer will have the right to require the Contractor to expedite completion of the activity by whatever means appropriate and necessary, without additional compensation to the Contractor.

**1.02 SCHEDULED WORK ITEMS:**

- A. None.

**PART 2 - PRODUCTS: (*Not Used*)**

**PART 3 - EXECUTION: (*Not Used*)**

**END OF SECTION 01310**

**SECTION 01400**  
**QUALITY CONTROL AND TESTING**

**PART 1 - GENERAL**

**1.01 SUMMARY OF WORK:**

- A. All workmanship and materials shall be subjected to inspection by the Engineer, who may select samples of materials in such number and quantities as he/she may deem necessary to determine their conformance with the specifications and project intent.
- B. All rejected materials and work shall be promptly removed by the Contractor from the premises and adjacent surroundings.
- C. All rejected work or materials shall be promptly replaced to the satisfaction of the Engineer.
- D. The Engineer reserves the right to inspect any component of the work at any time. The items of work are being reviewed for conformance with the design intent as well as workmanship and quality of materials. The Contractor shall cooperate with the Engineer's inspections. When identified in Technical Specifications, notification shall be provided to the Engineer 48 hours in advance of the time the inspections are needed.

**PART 2 - PRODUCTS: *Not Used***

**PART 3 - EXECUTION**

**3.01 INSPECTION AND TESTING:**

- A. The Contractor shall furnish samples of materials for testing, if requested by the Engineer, at no additional cost. Tests by the Engineer will be made in accordance with commonly recognized standards of national materials testing organizations and any such other special methods as deemed necessary.
- B. Any and all materials necessary for the construction of any part of the work and associated improvements not specified shall be of the best available quality acceptable to the Engineer.

**3.02 SAMPLES:**

- A. The Contractor shall prepare and submit such samples as are required elsewhere in these specifications at such time as is necessary to allow sufficient time for retesting or modification of the work, at the Engineers discretion, based on evaluation of the samples.

**3.03 FINAL INSPECTION:**

Final inspection shall take place after all requirements for Substantial Completion have been completed, including all punch list items outlined in other Sections of these specifications. Final inspection of the work by the Engineer will be made no later than five (5) Working Days after receipt of Contractor's written request for final inspection.

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Before Final Payment will be made, defects or omissions noted on the final inspection must be corrected by the Contractor without additional cost to the Owner. See Section 01770 "Contract Closeout."

**END OF SECTION 01400**

**SECTION 01520**  
**TEMPORARY FACILITIES**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

Work and requirements include, but are not limited to the following:

- A. Furnish, install, maintain, and protect temporary utilities required for construction; remove on completion of work.
- B. Installations are required to be safe, non-hazardous, and sanitary. They are to be protective of persons and property, and be free of deleterious effects.
- C. Perform required removals after completion of Work.

**1.02 TEMPORARY FACILITIES:**

- A. Meals and Lodging: The Owner will not provide meal and lodging facilities for the Contractor's personnel.
- B. The Contractor shall make all necessary arrangements for temporary water service. All costs thereof shall be borne by the Contractor.
- C. Electric Power: The Contractor shall make all necessary arrangements for temporary electrical service. All costs thereof shall be borne by the Contractor.
- D. Toilet Facilities
  - 1. The Contractor shall provide and maintain adequate chemical toilet facilities for all individuals connected with the work, with separate facilities for men and women.
  - 2. The Contractor shall keep the toilet facilities in sanitary condition in accordance with the King County Health Department.
  - 3. The Contractor shall remove the toilet facilities at completion of the contract and shall disinfect the premises.
- E. Telephone Service: The Contractor shall make arrangements for temporary telephone service. All costs thereof shall be borne by the Contractor.
- F. The Contractor shall maintain the construction area in a neat and orderly condition throughout the contract. Food and garbage shall be stored properly to prevent attracting animals, including bear and rodents. Remove food and garbage from the site during non-work hours. Practice controls to stop rodent infestation of temporary facilities and the job site.
- G. Staging and stockpiling areas will be determined in the pre-construction conference.
- H. Temporary Buildings: The Contractor may construct or provide temporary buildings, at an approved or designated location, as may be necessary for the performance of the work. At the completion of the work, the Contractor shall remove all temporary buildings.
- I. Hydrant Use Permits: The Contractor shall obtain required hydrant use permits from the Water Utility having control over fire hydrants. All costs thereof shall be borne by the Contractor.

- J. After completion of Work the Contractor shall remove all temporary facilities and shall restore the temporary facilities area to its original state.

1.03 MATERIAL DELIVERY AND STORAGE:

- A. Delivery of materials shall be made only during the Contractor's working hours and at such times as they have a representative available.
- B. The Contractor shall store materials within the work site area at an area determined in pre-construction conference or designated by the Owner's rep.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

3.01 GENERAL

Contractor shall maintain, operate, modify, and extend systems as work progress requires. Make accommodations to assure continuous services.

3.02 REMOVAL

- A. Contractor shall completely remove temporary materials and equipment when no longer required.
1. Clean and repair damage caused by temporary installations and use of temporary facilities.
  2. Disinfect premises occupied by temporary sanitary facilities.
- B. Restore existing facilities used for temporary services to specified or original condition.

**END OF SECTION 01520**

## **SECTION 01545 EXISTING UNDERGROUND UTILITIES**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK:**

**The Contractor shall protect from damage private and public utilities encountered during the work. Utilities shall include, but are not limited to, sewer and storm drain systems; water distribution systems; electrical distribution systems; natural gas distribution systems; telephone, telegraph, and CATV systems; fire alarm systems; petroleum pipe lines; steam distribution systems; traffic control systems; powerlines and appurtenances; and similar facilities and systems.**

Public and private utilities, or their contractors, will furnish all work necessary to adjust, relocate, repair or construct their facilities unless otherwise provided for in the Contract Documents.

The Contractor shall, before an excavation begins, call the Utilities Underground Location Center 1-800-424-5555. It is the Contractors responsibility to contract with an independent underground locator service to identify utilities within the project site. The Contractor must further discover utilities within the jurisdiction of the Property Owner, City of Seattle Department of Parks and Recreation, by formally requesting, a minimum of 3 business days prior to commencing any excavation or demolition, location services by the Property Owner's forces.

Where it is necessary to remove or relocate private utilities in order to accommodate the Work, the removal or relocation will normally be accomplished in advance of construction. Under some circumstances, however, this removal or relocation may have to be performed concurrent with the Work. In this case, the Contractor shall coordinate the Contract Work with that of the utilities so as to cause the least possible interference with both kinds of work. Where a private utility should have been removed or relocated prior to the Contractor beginning the Work at the point affected, and such work by the utility was not accomplished, the Contractor shall note the presence of the facility and immediately notify the Owner's Rep in writing.

The right is reserved to the Owner's Rep and the owners of utilities, or their authorized agents, to enter upon the right-of-way for the purpose of making changes, connections, or repairs to their facilities. The Contractor shall cooperate with forces engaged in this work and shall avoid any unnecessary delay or hindrance to work being performed by other forces. It shall be the Contractor's responsibility to make whatever notifications and applications as may be necessary in coordinating utility and Contractor work.

Should the Contractor desire to have any adjustments in line or grade made on any utility, or other improvement, for the Contractor's convenience in order to facilitate the Work, and rearrangement is in addition to or different from the rearrangements indicated in the Contract Document, the Contractor shall make whatever notifications and applications as are necessary with the owners of the utility for such rearrangement and bear all expenses in connection to that work.

Locations and dimensions shown in the Drawings for existing facilities are in accordance with available information obtained without uncovering, measuring or other verification.

Attention is directed to the possible existence of underground facilities that are not shown in the Contract Documents. When the relocation of these facilities are necessary to accommodate the Work, the Owner's Rep will provide for the relocations of these facilities by other forces, or the relocations shall be performed by the Contractor as extra work pursuant to a Change Order.

It is anticipated that the Contractor may encounter private water service utilities (water service lines running between meters and private residences) during work operations. The Property Owner or the

Seattle Water Department do not maintain records of these utilities; therefore, they do not appear on the Drawings. The locations of these private utilities can usually be ascertained by relative meter location, residence location, or through discussion with various private property owners. It shall be the Contractor's responsibility to locate and protect these private water services from damage.

If it is necessary to provide temporary water supply connections due to conflict with existing private water service pipes during the course of construction, it shall be the responsibility of the Contractor to do so.

In all cases, private water service lines damaged by the Contractor shall be repaired by the Contractor at the Contractor's expense. The Contractor shall notify the Owner's Rep immediately of any such damage and shall begin repairs immediately and work continuously until water service is restored. Repair of damaged private water service lines shall be inspected by the Seattle Water Department or applicable water utility prior to backfilling.

The Contractor is alerted to the existence of RCW 19.122, an act relating to underground utilities and prescribing penalties. Any cost or scheduling impact incurred by the Contractor by reason of Contractor's required compliance with these statutory provisions shall be borne by the Contractor.

No excavation shall begin until all known facilities in the vicinity of the excavation area have been located and marked.

Except as otherwise provided herein, all costs incurred by the Contractor in complying with requirements of this Section shall be included in the lump sum Bid or the unit prices for the various items of Work listed in the Bid Form.

## 1.02 CLEARANCES FROM WATER MAIN - SEWERS

Where possible, sewers shall be laid at a lower invert elevation than water mains.

Water mains and sewers shall be spaced apart horizontally a minimum of 10 feet, measured center to center, except the spacing may be reduced to the following "nearest point measurements:

1. 5 feet horizontal when the water main is a ductile iron water main.
2. Less than 5 feet when the water main is ductile iron, when
  - a. The sewer is constructed of materials and with joints that are equivalent to water main standards; and
  - b. The bottom of the water main is at least 18 inches above the top of the sewer.

Water mains crossing over sewers shall be constructed of ductile iron and shall be spaced to provide a minimum separation of 18 inches between the bottom of the water main and the top of the sewer. Water mains passing under sewers shall be protected in addition to the requirements above providing:

1. A minimum vertical spacing of 18 inches between the bottom of the sewer and the top of the water main;
2. Adequate support for the sewer to prevent excessive deflection of joints and settling on and breaking the water main; and
3. The point of crossing centered between two successive joints of the water main pipe.

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When the water main is existing and new side sewers are being installed or reconnected the following requirements pursuant to Seattle Municipal Code Chapter 21.16 shall apply:

1. Ductile iron pipe shall be used for all side sewers over water mains, for a distance of at least 5 feet from the center of the water main. Side sewers laid below water mains shall be laid at least 6 inches below and 12 inches horizontal, from all water mains and water service lines as measured from the "nearest points," unless cast iron pipe is used for the side sewer.

Exceptions to the above requirements must be approved by the Seattle Water Department, Water Quality Control Division.

#### 1.03 CLEARANCES FROM WATER MAIN - GAS MAINS AND OTHER UTILITIES

A minimum of 1-foot vertical and 6 inch horizontal clearance shall be provided between existing gas mains or gas service lines, and new ductile iron water lines. If relocation of either utility is not practical, a protective wrap shall be provided for the entire distance where clearance is less than required. Wrapping material shall consist of either a split PVC pipe or PVC wrapping of at least 0.04-inch thickness, and shall be applied to either one of the pipes.

A clearance of 6 inches or more is desired between water mains and all other utilities except gas mains, gas service lines, and sewers. If the separation is less than 6 inches, a separation of at least 2 inches shall be maintained and a sheet of 2 inch thick polyethylene plastic foam material shall be placed in the separation between the water main and the other utility (except gas lines and sewer lines).

PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION: Not Used

**END SECTION 01545**

**SECTION 01566  
ENVIRONMENTAL POLLUTION CONTROL**

**PART 1 - GENERAL**

- 1.01    Section Includes:
- 1.01    PREVENTION OF ENVIRONMENTAL POLLUTION AND PRESERVATION OF PUBLIC NATURAL RESOURCES

**During the life of the Contract the Contractor shall comply with all provisions of Federal, State and local statutes, ordinances and regulations pertaining to the prevention of environmental pollution and the preservation of public natural resources. Pursuant to RCW 39.04.120 (Ch. 62, Sec 1, Laws of 1973, 1st Ex. Session) such provisions as are reasonably obtainable are set forth below. Further, if the Contractor must undertake additional work not contemplated by the Contract, due to the enactment of new or the amendment of existing statutes, ordinances, rules, or regulations occurring after the submission of the successful Bid, the Owner will issue a Change Order setting forth the additional work that must be undertaken, which shall not invalidate the Contract. Such additional work shall be considered extra work and will be compensated as such.**

- 1.02    RELATED SECTIONS:
- A.    Section 01310 - Schedules
- B.    Section 01330 - Submittals
- 1.03    SUBMITTALS:
- A.    Within 10 days of Notice to Proceed, the Contractor shall submit an Environmental Pollution Control Plan. The Plan shall include:
1.    Water quality

**WATER QUALITY**

The Contractor shall comply with city ordinances, State, and Federal laws and other regulations or rules as are applicable to water pollution occurring in waters of the State and in interstate waters.

The Contractor shall:

1.    Exercise precautions throughout the life of the Contract to prevent pollution, erosion, siltation, and damage to property;
2.    Provide for the flow of all water courses, including but not limited to streams, ditches, sewers, and drains, intercepted during the progress of the Work;
3.    Completely restore disturbed watercourses in as good condition as the Contractor found them, or make such final provisions for them as the Owner's Rep may direct;
4.    Do not obstruct the gutter of any street;
5.    Use all proper measures to provide for the free passage of surface water; and
6.    Make provisions to take care of all surplus water, mud, silt, slickings, or other run-offs pumped from excavations or resulting from sluicing or other operations.

The Contractor shall comply with the water quality criteria set forth by the Department of Ecology and regulations set forth by:

1. The Washington State Departments of Wildlife and Fisheries;
2. Those Federal statutes on oil spills enacted under the Federal Water Pollution Control Act Amendments of 1972 (a copy of which may be obtained from the U.S. Environmental Protection Agency);
3. The water quality standards of the State of Washington as set forth in Chapter 173-201 of the Washington Administrative Code; and
4. Any local statutes, regulations, ordinances, or rules, which stipulate the various types of discharge prohibited in public sewer systems or any drainage ditch in the local jurisdiction.

State statutes on water pollution covering liability of the Contractor, penalty for violation, liability and damages for injury or death of fish, animals or vegetation are set forth in RCW 90.48. As an aid to the Contractor, some, though not all, of the rules set forth by the various State departments are summarized below. The Contractor is cautioned, however, that each Department of the State may add other restrictions, as they deem necessary to protect fish and to prevent air or water pollution:

1. State Departments of Wildlife and Fisheries: In doing the work the Contractor shall:
  - a. Not degrade water quality in a way that would harm fish. (The Washington State Water Quality Regulations will serve as water quality criteria for the Work);
  - b. Release into a flowing stream or open water any fish stranded by the Work;
  - c. Replant any stream bank or shoreline areas if the Work has disturbed the vegetative cover. (Any trees, brush, and grasses used in replanting shall resemble the type and concentration of surrounding vegetation, unless the Project Manual provides otherwise);
  - d. Provide an open water channel at the lowest level of any isolated pothole remaining when the Work is complete;
  - e. Protect fish by preventing harmful siltation on the bed or bottom of any body of water;
  - f. Not block stream flow or fish passage;
  - g. Keep all equipment out of any flowing stream or other body of water (except as the Project Manual may permit);
  - h. Not remove gravel or other bottom material from within the high-water flow channel bed of any stream nor from the bottom of any other body of water (except as the Project Manual may permit);
  - i. Dispose of any project debris beyond high-water flows.
2. State Department of Ecology: In doing the work, the Contractor shall:
  - a. Obtain a waste discharge permit from the Ecology Department before:

- 1) Washing aggregate; and
  - 2) Discharging into a ground or surface waterway, water from pit sites or excavations, when the water contains turbidity, silt, or foreign materials;
- b. Provide the Owner's Rep with a copy of each waste discharge permit before starting the Work;
  - c. Control drainage and erosion to minimize the pollution of any waterway;
  - d. Dispose of all toxicants (including creosote, oil, cement, concrete, and water used to wash equipment) in ways that will prevent them from entering State waters;
  - e. Dispose of all debris, overburden, and other waste materials in ways that will prevent them from entering State waters.
  - f. Immediately notify the Owner's Rep and the Department of Ecology if any accidental spill of oil, chemical or sewage occur into the waters of this State.

The Contractor shall perform such temporary work as may be necessary to effectively control water pollution, erosion, and related damage within the Project Site or which might be necessary at work areas located outside the Project Site. These outside areas may include, but are not limited to, equipment, material and other storage sites. When temporary control facilities or measures are no longer needed, they shall be removed and the areas restored or finished as designated by the Owner's Rep.

If work is suspended for an extended period of time, the Contractor shall be responsible for controlling erosion, pollution, and runoff during the shutdown period.

In addition to other requirements in the Contract Documents this temporary work shall include, but is not limited to, the following water quality considerations:

1. **Diversion of Uncontaminated Water:** Storm water shall be diverted around the project to prevent pickup of silt. This may be accomplished by pumping; improvising ditches; lining channels or by placing metal, plastic or concrete gravity pipe; constructing ditches, berms, culverts, etc., to control surface water; or constructing dams, settling basins, or energy dissipaters to control down stream flows.
2. **Intercepting Ground Water:** Surfacing ground water shall be intercepted and routed around the construction site to prevent silt erosion by the use of gravel trenches, French drain tiles, well points, or interceptor ditch. The Contractor shall provide means of controlling underground water that may be encountered during Work.
3. **Turbid Water Treatment Before Discharge:** Determination of turbidity in surface waters shall be at the discretion of the Owner's Rep; for Lake Class Receiving Waters, turbidity shall not exceed 5 NTU (Nephelometric Turbidity Units) over background conditions; for Class AA and Class A Waters, turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU; for other classes of waters, refer to WAC 173-201-045.

The term turbidity means the optical property of sample demonstrating the scattering and absorption of light caused by suspended material as expressed in Nephelometric Turbidity Units and measured with a calibrated turbidimeter.

Discharges to a State waterway caused by aggregate washing, drainage from aggregate pit sites, and stockpiles or dewatering of pits and excavations shall not increase the existing turbidity of the receiving waters.

Turbid water from the Project Site shall be treated before being discharged into stream or other State waters. Turbidity may be removed by the use of lagoons or holding ponds, settling basins, overflow weir, polymer water treatment, discharging to ground surface, by percolation, evaporation or by passing through gravel, sand or fiber filters.

4. **Erosion Control:** Temporary erosion control shall be exercised by minimizing exposed areas and slopes until permanent measures are effective. Plastic sheet covering shall be placed over exposed ground areas to protect from rain erosion. Other alternative methods for erosion control under certain situations may include netting, mulching with binder, and seeding.  
  
Should rutting and erosion occur the Contractor shall be responsible for restoring damaged areas and for clean-up of eroded material including that in ditches, catch basins, manholes, and culverts and other pipes.
5. **Chlorine Residual:** Water containing chlorine residual shall not be discharged directly into storm drains, streams, or State waters. Chlorine water may be discharged into sanitary sewers or disposed on land for percolation. Chlorine residual may be reduced chemically with a reducing agent such as sodium thiosulphate. Water shall be periodically tested for chlorine residual.
6. **Vehicle and Equipment Washing:** Water used for washing vehicles and equipment shall not be allowed to enter storm drains, streams or other State waters unless separation of petroleum products, fresh concrete products or other deleterious material is accomplished prior to discharge. Detergent solution may be discharged into sanitary sewers or be held on the ground for percolation. A recirculation system for detergent washing is recommended. Steam cleaning units shall provide a device for oil separation.
7. **Oil and Chemical Storage and Handling:** Handling and storage of oil and chemicals shall not take place adjacent to waterways. The storage shall be made in dike tanks and barrels with drip pans provided under the dispensing area. Shut-off and lock valves shall be provided on tanks. Shut-off nozzles shall be provided on hoses. Oil and chemicals shall be dispensed only during daylight hours unless the dispensing area is properly lighted. Disposal of waste shall not be allowed on oil and chemical spills. Fencing shall be provided around oil storage. Locks shall be provided on valves, pumps, and tanks.
8. **Sewage:** If a sanitary sewer line is encountered and repair or relocation work is required, the Contractor shall provide blocking and sealing of the sanitary sewer line. Sanitary sewer flow shall be pumped out, collected, and hauled by tank truck or pumped directly to a sanitary system manhole for discharge. The Contractor shall maintain the existing sewers without interruption with the use of temporary sewer bypasses. In addition, the excavated materials adjacent to and around a rupture of a sanitary sewer line shall be removed from the Project Site and deposited into refuse trucks for haul to a sanitary fill site. Equipment and tools in contact with the above materials shall be washed by pressure water lines and the attendant wash water discharged into a sanitary sewer line for transmission to a sewage treatment plant.

In the event of a sanitary sewage spill, notification shall be made to the Seattle-King County Health Department, 587-4632 and METRO, 447-6666.

The Contractor shall immediately notify the Owner's Rep and the local United States Coast Guard office of all incidents of chemical, oil, or other contaminated spills or discharges into State Waters that become known to the Contractor. If the local Coast Guard office cannot be reached the Contractor shall call the Department of Ecology at 867-7000 or the toll-free number 1-(800)-424-8802. The toll free number is for the National Response Center, Washington, D.C. operated 24 hours a day by the Coast Guard.

2. Air quality, including dust control

AIR QUALITY

The Contractor shall not cause or allow the discharge of particulate matter, the emission of any air contaminants or odor bearing gases in excess of the limits specified under Regulation I of the Puget Sound Air Pollution Control Agency, Article 9 - Emission Standards.

Paragraph 1.03 (Continued)

The Contractor shall maintain air quality within the National Emission Standards for Hazardous Air Pollutants. Air pollutants being defined as that to which no ambient air quality standard is applicable and which in the judgement of the Administrator of the Environmental Protection Agency Clean Air Act may cause, or contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness.

1. Noise pollution
2. Temporary water pollution/erosion control
3. 'Oil, Fuel, and Chemical Storage, Handling, Spill Prevention, and Control'.

1.04 NOTIFICATIONS RELATIVE TO CONTRACTOR'S ACTIVITIES:

A. The Contractor shall plan and schedule Contractor work activities to conform to and allow time for notifications, approvals, reviews, and other conditions of the Contract Documents. The following notifications required for spills or discharges are specified in Section 00700, subparagraphs 1.04.S.3 and 1.04.S.3:

1. ***Sanitary Sewer Spills***
2. ***Chemical, Oil, Hazardous Substance, or other Contaminant Spill or Discharge***

1.05 PREVENTION OF ENVIRONMENTAL POLLUTION AND PRESERVATION OF PUBLIC NATURAL RESOURCES:

A. General:

1. During the life of the Contract, the Contractor shall comply with all provisions of federal, State and local statutes, ordinances and regulations pertaining to the prevention of environmental pollution and the preservation of public natural resources. Pursuant to RCW 39.04.120 such provisions as are reasonably obtainable are set forth below. Further, if the Contractor must undertake extra work not contemplated by the Contract, due to the enactment of new, or the amendment of existing, statutes, ordinances, rules, or regulations occurring after the submission of the successful Bid, the Engineer will issue a Change Order setting forth the extra work that must be undertaken, which shall not invalidate the Contract.

1.06 WATER QUALITY:

- A. The Environmental Pollution Control Plan shall identify the onsite individual responsible for water quality, and specific activities and locations and specific means and methods to prevent and/or control impacts to water quality.
- B. The Contractor shall comply with city ordinances, State, and federal laws and other regulations or rules applicable to water pollution occurring in waters of the State and in interstate waters. The Contractor shall:
  - 1. Exercise precautions throughout the life of the Contract to prevent pollution, erosion, siltation, and damage to property.
  - 2. Provide for the flow of all watercourses, including but not limited to streams, ditches, sewers, and drains intercepted during the progress of the Work.
  - 3. Completely restore disturbed watercourses in as good condition as the Contractor found them, or make such final provisions for them as the Engineer may direct.
  - 4. Not obstruct the gutter of any Street.
  - 5. Use all proper measures to provide for the free passage of surface water.
  - 6. Remove and dispose of all surplus water, mud, silt, slicking, or other run-offs pumped from excavations or resulting from sluicing or pavement cleaning or other operations.
  - 7. Make all applicable notifications required by **Section 00700, Paragraph 1.04.S.**
- C. The Contractor shall comply with the water quality criteria required by the Department of Ecology and regulations of:
  - 1. The Washington State Department of Fish and Wildlife.
  - 2. Those federal statutes on oil spills enacted under the federal Water Pollution Control Act Amendments of 1972 (a copy of which may be obtained from the U.S. Environmental Protection Agency).
  - 3. The water quality standards of the State of Washington as set forth in Chapter 173-201A WAC.
  - 4. Any local statutes, regulations, ordinances, or rules, which stipulate the various types of discharge prohibited in public sewer systems or any drainage ditch in the local jurisdiction.
- D. State statutes on water pollution covering liability of the Contractor, penalty for violation, liability and damages for injury or death of fish, animals or vegetation are set forth in Chapter 90.48 RCW. As an aid to the Contractor, some though not all, of the rules set forth by the various State departments are summarized below. The Contractor is cautioned, however, that each Department of the State may add other restrictions, as they deem necessary, to protect fish and to prevent air or water pollution:
  - 1. **State Department of Fish and Wildlife:** In doing the Work the Contractor shall:
    - a. Not degrade water quality in a way that would harm fish. (The Washington State Water Quality Regulations will serve as water quality criteria for the Work.)
    - b. Release into a flowing stream or open water any fish stranded by the Work.
    - c. Replant any stream bank or shoreline areas if the Work has disturbed the vegetative cover. (Any trees, brush, and grasses used in replanting shall resemble the type and concentration of surrounding vegetation, unless the Contract provides otherwise.)

- d. Provide an open water channel at the lowest level of any isolated pothole remaining when the Work is complete.
  - e. Protect fish by preventing harmful siltation on the bed or bottom of any body of water.
  - f. Not block stream flow or fish passage.
  - g. Keep all Equipment out of any flowing stream or other body of water (except as the Contract may permit).
  - h. Not remove gravel or other bottom material from within the high-water flow channel bed of any stream nor from the bottom of any other body of water (except as the Contract may permit).
  - i. Dispose of any Project debris beyond high-water flows.
2. **State Department of Ecology:** In doing the Work, the Contractor shall:
- a. Obtain a waste discharge permit from the Department of Ecology before:
    - 1) Washing aggregate, and
    - 2) Discharging water into a ground or surface waterway from pit sites or excavations when the water contains turbidity, silt, or foreign materials.
  - b. Provide the Engineer with a copy of each waste discharge permit before starting the Work.
  - c. Control drainage and erosion to minimize the pollution of any waterway.
  - d. Dispose of all toxicants (including creosote, oil, cement, concrete, and water used to wash Equipment) in ways that will prevent them from entering State waters.
  - e. Dispose of all debris, overburden, and other waste materials in ways that will prevent them from entering State waters.
- E. The Contractor shall perform such temporary work as may be necessary to effectively control water pollution, erosion, and related damage within the Project Site or which might be necessary at work areas located outside the Project Site. These outside areas may include, but are not limited to, equipment, material and other storage sites. When temporary control facilities or measures are no longer needed, they shall be removed and the areas restored or finished as designated by the Engineer.
- F. If Work is suspended for an extended period of time, the Contractor shall be responsible for controlling erosion, pollution, sedimentation, and runoff during the shutdown period.
- G. In addition to other requirements in the Contract, this temporary work shall include, but is not limited to, the following water quality considerations:
1. **Diversion of Storm Water:** Storm water shall be diverted around the Project to prevent pickup of silt. This may be accomplished by pumping; improvising ditches; lining channels or by placing metal, plastic or concrete gravity pipe; constructing ditches, berms, Culverts, etc., to control surface water; or constructing dams, settling basins, or energy dissipaters to control down stream flows.
  2. **Intercepting Ground Water:** Surfacing ground water shall be intercepted and routed around the construction site to prevent silt erosion by the use of gravel trenches, French drain tiles, well points, or interceptor ditch. The Contractor shall provide means of controlling underground water that may be encountered during the Work.

3. **Turbid Water Treatment Before Discharge:** Determination of turbidity in surface waters shall be at the discretion of the Engineer; for Lake Class Receiving Waters, turbidity shall not exceed 5 NTU (Nephelometric Turbidity Units) over background conditions; for Class AA and Class A Waters, turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU; for other classes of waters, refer to WAC 173-201-045 and WAC 173-201A-030.
  - a. The term turbidity means the optical property of sample demonstrating the scattering and absorption of light caused by suspended material as expressed in Nephelometric Turbidity Units and measured with a calibrated turbidimeter.
  - b. Discharges to a State waterway caused by aggregate washing, drainage from aggregate pit sites, and stockpiles or dewatering of pits and excavations shall not increase the existing turbidity of the receiving waters.
  - c. Turbid water from the Project Site shall be treated before being discharged into stream or other State waters. Turbidity may be removed by the use of lagoons or holding ponds, settling basins, overflow weir, polymer water treatment, discharging to ground surface, by percolation, evaporation or by passing through gravel, sand or fiber filters.
4. **Temporary Erosion Control:** Temporary erosion control shall be exercised by minimizing exposed areas and slopes until permanent measures are effective. Plastic sheet covering shall be placed over exposed ground areas to protect from rain erosion. Other alternative methods for erosion control under certain situations may include netting, mulching with binder, and seeding. Should rutting and erosion occur the Contractor shall be responsible for restoring damaged areas and for cleanup of eroded material including that in ditches, catch basins, manholes, and Culverts and other pipes.
5. **Chlorine Residual:** Water containing chlorine residual shall not be discharged directly into Storm Drains, streams, or State waters. Chlorine water may be discharged into sanitary sewers or disposed on land for percolation. Chlorine residual may be reduced chemically with a reducing agent such as sodium thiosulphate or vitamin C. Water shall be periodically tested for chlorine residual.
6. **Vehicle and Equipment Washing:** Water used for washing vehicles and Equipment shall not be allowed to enter Storm Drains, streams or other State waters unless separation of petroleum products, fresh concrete products or other deleterious material is accomplished prior to discharge. Detergent solution may be discharged into sanitary sewers or held on the ground for percolation. A recirculation system for detergent washing is recommended. Steam cleaning units shall provide a device for oil separation.
7. **Oil and Chemical Storage and Handling:** Handling and storage of oil and chemicals shall not take place adjacent to waterways. The storage shall be made in dike tanks and barrels with drip pans provided under the dispensing area. Shut-off and lock valves shall be provided on tanks. Shut-off nozzles shall be provided on hoses. Oil and chemicals shall be dispensed only during daylight hours unless the dispensing area is properly lighted. Should an oil or chemical spill occur, the Contractor shall make the notification in accordance with **Section 00700, Paragraph 1.04.S.** Fencing shall be provided around oil storage. Locks shall be provided on valves, pumps, and tanks.
8. **Sewage:** If a sanitary Sewer line is encountered and repair or relocation work is required, the Contractor shall provide blocking and sealing of the sanitary Sewer line. Sanitary Sewer flow shall be pumped out, collected, and conveyed or pumped directly to a sanitary Sewer system manhole for discharge. The existing Sewers shall be maintained by the Contractor without interruption of service by the use of temporary

Sewer bypasses. In addition, the excavated materials adjacent to and around a rupture of a sanitary or combined Sewer pipeline shall be removed to a disposal site. Equipment and tools in contact with the above materials shall be washed by pressure water lines and the attendant wash water discharged into a sanitary Sewer line for transmission to a sewage treatment plant.

9. **Sawcutting, Planing, and Grinding By-Products:** The Contractor shall take special precautions to ensure that no concrete, asphalt, concrete by-products, or asphalt byproducts from, or used in, the saw-cutting, grinding, or planing of asphalt cement or cement concrete pavements, sidewalks, curbs, etc. are discharged into any Storm Drain or surface water system. Such discharge is prohibited by the Department of Ecology. In as much as saw-cutting by-products increase the pH of the wastewater, filtering prior to discharge will NOT be acceptable. Impervious surfaces contaminated with sediment and grit from saw-cutting, planing or pulverizing operations shall be cleaned by sweepers to prevent contaminants from entering the Storm Drainage system or surface waters when it rains.
10. **Gutters and other Surface Drainage Channels:** All Construction, Demolition, and Landclearing Waste and byproduct entering gutters and other pavement surface drainage channels shall be prevented from entering any inlet, catch basin, or other drainage structure or feature. Material shall be removed from drainage channels on a regular basis. If necessary, temporary filters or filter materials shall be placed in drainage channels to prevent the passage of material.

1.07 AIR QUALITY:

- A. The Contractor shall identify those portions of the Work that have the greatest potential to impact air quality.
  1. Specific means and methods to prevent and/or control impacts to air shall be described for each such portion of work.
- B. The Contractor shall not cause or allow the discharge of particulate matter, the emission of any air contaminants or odor bearing gases in excess of the limits specified under Regulation I of the Puget Sound Clean Air Agency, Article 9 - Emission Standards.
- C. The Contractor shall maintain air quality within the National Emission Standards for Hazardous Air Pollutants. Air pollutants are defined as that part of the atmosphere to which no ambient air quality standard is applicable, and which, in the judgment of the Administrator of the Environmental Protection Agency Clean Air Act, may cause or contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness.
- D. The Contractor shall minimize the potential for air pollution by the use of emission control devices on Contractor operated equipment and by the shut-down of motorized equipment when not in use.
- E. The Contractor shall control dust throughout the project.
- F. No burning, including trash or vegetation, will be permitted.
- G. Refer to Regulation III Puget Sound Clean Air Agency Article 4, Asbestos Control Standard, in the event the Contractor damages an existing duct, asbestos cement pipe, or any other facility that may contain asbestos.

1.08 NOISE POLLUTION:

- A. The Contractor shall take all reasonable measures for the suppression of noise resulting from Work operations. Mobile engine driven cranes, loaders and similar material handling Equipment; engines used in stationary service for standby power; air compressors for high and low pressure service; and other similar Equipment shall be equipped with exhaust and air intake silencers

designed for the maximum degree of silencing. The type of silencer required is that for use in critical noise problem locations such as high density residential, hotel, and hospital areas.

- B The Contractor shall conduct performance of the Work consistent with the applicable noise control levels set forth in SMC Chapter 25.08 or, if outside the City limits and in King County, Chapters 12.86 through 12.100, King County Code.

1.09 LIABILITY AND PAYMENT:

- A. The Contractor shall be liable for the payment of all fines and penalties resulting from failure to comply with the Federal, State and local pollution control regulations even though the Engineer is on the job at the time of the violation.
- B. Except as may be otherwise provided for in the Contract, costs pertaining to the prevention of environmental pollution and the preservation of public natural resources as outlined in the Contract shall be considered as incidental to the Work and such costs shall be included in the Bid item prices for the various Bid items of Work which comprise the Contract.

1.10 ARCHAEOLOGICAL AND HISTORIC PRESERVATION:

- A. Should the Contractor discover during any construction activity or in any other way discover any artifacts, skeletal remains, or other archaeological resources (as defined under RCW 27.53.040) at the Project Site, it shall be the responsibility of the Contractor to both immediately cease construction activity at the discovery site and surrounding area, and promptly notify the Engineer. If ordered by the Engineer, the Contractor shall suspend construction activity that, in the opinion of the Engineer, would be in violation of Chapter 27.53 RCW. Suspension of this construction activity shall remain in effect until the Engineer has obtained permission to proceed from the State Historic Preservation Officer or from other authority.

1.11 TEMPORARY WATER POLLUTION, EROSION, AND sedimentation CONTROL:

- A. Temporary water pollution, erosion, and sedimentation control work shall comply with the Construction Stormwater Control Technical Requirements Manual (based on SMC Chapter 22.800 Stormwater, Grading & Drainage Code) and DPD's Best Management Practices Manual which consist of temporary measures that may be indicated in the Contract, that may be proposed by the Contractor and approved by the Engineer, or may be ordered by the Engineer during performance of the Work. This temporary work is intended to provide prevention, control, and abatement of water pollution/erosion/sedimentation within the limits of the Project, and to minimize damage to the Work, adjacent property, streams, and other bodies of water.

- B. Controlling and preventing pollution, erosion, run-off, sedimentation, and related damage may require the Contractor to perform temporary work items including but not limited to:

1. Providing ditches, berms, Culverts, and other measures to control surface water;
2. Building dams, settling basins, energy dissipaters, and other measures, to control downstream flows;
3. Controlling underground water found during construction; or
4. Covering or otherwise protecting slopes until permanent erosion-control measures are working.

- C. The Contractor is hereby notified that compliance with these requirements may necessitate performance of certain items of work at a different time or in a different manner than has been considered normal construction practices in the past and that such revisions in scheduling of Work may interfere with said normal construction practices.

- D. Therefore, if required by the Contract, the Contractor shall, before starting the Work, submit to the Engineer for approval an effective temporary water pollution/erosion/sedimentation control plan. The plan shall show the scheduling, as it relates to the Contractor's critical path schedule, for permanent pollution, sedimentation, and erosion control work and for temporary erosion,

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pollution, and sedimentation prevention control measures the Contractor proposes to take due to the Work on:

1. Areas within the limits of the Project Site.
  2. Other work areas outside the Project Site.
  3. Haul roads.
  4. Adjacent property.
  5. Streams and other bodies of water.
- E. The Contractor shall not perform clearing, grubbing or any other earthwork on the Project, other than that specifically authorized in writing by the Engineer, until the plan has been approved. The Contractor shall revise and bring the plan up to date whenever the Engineer provides Written Notice requesting revision. The Contractor shall allow the Engineer not less than five Working Days for the review of a submitted plan whether the original or revised. The Engineer will not be liable to the Contractor for failure to approve all or any portion of an originally submitted or revised water pollution/erosion/sedimentation control plan, nor for any delays to the Work due to the Contractor's failure to submit an acceptable plan.
- F. The Contractor shall coordinate temporary water pollution/erosion/sedimentation control work with the permanent drainage, sedimentation, and erosion control work that may be specified in the Contract to ensure continuous water pollution/erosion/sedimentation control is maintained during performance of the Work.
- G. If the Engineer, under **Section 00700, Paragraph 1.08.K**, orders the Work suspended for an extended time, the Contractor shall make, before the Engineer assumes maintenance responsibility, every effort to control erosion, pollution, sedimentation, and run-off during shutdown. **Section 00700, Paragraph 1.08.L** describes the Engineer's responsibility in such cases.
- H. The extent of excavation, borrow, and embankment operations in progress will be limited commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other permanent pollution/erosion/sedimentation control measures current according to the accepted critical path schedule. If the Engineer determines that water pollution or erosion or sedimentation could occur due to seasonal limitations, the nature of the material, or the Contractor's progress, temporary water pollution/erosion/sedimentation control measures shall be taken immediately. The Engineer may require the Contractor's operations to be scheduled so those permanent pollution/erosion/sedimentation control features will be installed concurrently with or immediately following grading operations.
- I. Under no conditions shall the amount of surface area of erodible earth material exposed at one time by clearing and grubbing, excavation, borrow or fill within the Right of Way exceed 18,000 square feet without prior approval by the Engineer.
- J. Permanent pollution/erosion/sedimentation control work ordered by the Engineer and not covered in the Bid will be considered extra work and paid for as such. Only pollution/erosion/sedimentation control included in the Bid Form or designated by the Engineer and ordered as extra work will be considered permanent control measures.
- K. Temporary erosion control, temporary sedimentation control, and temporary water pollution control shall be the Contractor's responsibility. Costs for temporary erosion control, for temporary sedimentation control, and for temporary water pollution control work will be considered incidental to the Work and such costs shall be included in the Bid item prices for the various Bid items of Work listed in the Bid Form, unless a specific Bid item for temporary erosion/pollution/sedimentation control work is included in the Bid Form.

- L. Records of submitted and actual pollution/erosion/sedimentation controls and plans shall be retained for a period of three years after the Completion Date and shall be available at reasonable times and places for inspection by the Engineer and, when applicable, other entities providing funds for the Work.
- 1.12 DEWATERING:
  - A. The Contractor shall operate and maintain all pumps, tanks and other equipment necessary for the environmentally safe removal and disposal of water from the various parts of the work. The method proposed by the Contractor for removal of water from excavations shall be subject to the approval of the Engineer. The Engineer has the right and authority to disapprove any method proposed for discharge of water from excavations.
  - B. When discharge of water from the site is subject to approval of any Federal, State or local agency, the Contractor shall be responsible for obtaining such approval before commencing any pumping or de-watering operation.
  - C. The Contractor shall include a plan to control and treat any wastewater created from dewatering activities in the Environmental Pollution Control Plan.
- 1.13 DUST CONTROL:
  - A. Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with all local regulations.

#### PART 2 - PRODUCTS

Not applicable.

#### PART 3 - EXECUTION

Not applicable.

#### **END OF SECTION 01566**

**SECTION 01600**  
**MATERIAL AND EQUIPMENT**

**PART 1 - GENERAL**

**1.01 PRODUCT DELIVERY, STORAGE, AND HANDLING**

**A. Delivery**

1. The Contractor shall deliver, store and handle products in accordance with the manufacturers' recommendations, using means and methods that will prevent damage deterioration and loss, including theft;
2. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces;
3. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses;
4. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

**B. Inspection**

The Contractor shall inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

**C. Storage**

1. The Contractor shall store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units;
  2. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction;
  3. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instruction;
  4. Protect finished surfaces through which equipment and materials are handled;
  5. Provide protection for finished paved surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces;
  6. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner's Rep.
- D. In the event of damage, the Contractor shall promptly make replacements and repairs at no additional cost to the Owner.

Additional time required securing replacements and to make repairs will not be considered to justify an extension of the Contract Time.

**1.02 INSTALLATION STANDARDS**

The Contractor shall comply with manufacturer's instructions and recommendations for installation of products in the applications indicated; and anchor each product securely in place, accurately located and aligned with other Work.

PART 2 - PRODUCTS: Not Used

PART 3 - EXECUTION: Not Used

**END OF SECTION 01600**

**SECTION 01630**  
**SUBSTITUTIONS AND PRODUCT OPTION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION:**

Contractor shall furnish and install all products specified herein. Substitutions will be considered only after the Award of Contract. The Owner's Rep will review the substitution request as stated in this Section.

**1.02 RELATED SECTIONS:**

Coordinate related requirements specified in other parts of the Project Manual.

**1.03 PRODUCTS:**

- A. Where specified only by reference standards, the Contractor shall select any product meeting the standards, by any Manufacturer.
- B. Where specified by naming one or more products, but indicating "or approved equal" after specified listing, submit any request for another product substitution on a form provided by the Owner's Rep.

**1.04 SUBSTITUTIONS:**

- A. As required, the Contractor shall submit written substitution requests on forms provided by the Owner's Rep no less than ten (10) days prior to the Pre-construction Conference: Two copies of the Substitution Request form for each product substitution being proposed.
- B. The Contractor shall indicate one or more of the following reasons for request:
  1. Substitution is required for compliance with final Code interpretation requirements or insurance regulations.
  2. Specified product is unavailable through no fault of Contractor/Subcontractor.
  3. Subsequent information discloses specified product unable to perform properly
  4. Manufacturer or fabricator refuses to certify or guarantee performance of specified product, as required.
  5. Substitution saves substantial cost, time or other considerations. Show accurate cost data on proposed substitution in comparison with product or method specified or backup documentation from the Manufacturer pertaining to delivery times.
- C. In making request for Substitution, Manufacturer/Contractor represents:
  1. He/she has personally investigated proposed product, and in his/her opinion, it is equal or superior in all respects to that specified.
  2. He/she will coordinate installation of accepted substitution and guarantees to complete it in all respects. He/she has outlined any changes required in accordance with form.
  3. He/she will provide an equal or greater guarantee for Substitution as for specified product.

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4. He/she waives all claims for additional costs related to Substitution, which consequently become apparent.
  5. Cost data is complete and includes all related costs under his/her Contract, but excludes: Cost under separate Contracts. (Show impact on Substitution Request form).
- D. Substitutions will not be considered if:
1. They are indicated or implied on Shop Drawings or other project data submittals, without proper notice shown on Substitution Request form.
  2. Approval will require substantial revisions of Contract Documents.
- E. Approval Process:
1. The Owner's Rep upon receiving an application for a Substitution shall within five (5) working days determine if the request is warranted.
  2. The Owner's Rep shall have an additional five working days to consider the request and the recommendation of the Contractor before approving and or disapproving.
  3. If the Substitution request is approved by the Owner's Rep and the Property Owner and it does not involve a cost increase or credit, change in the contact time, or material change to the project drawings and or manual, the approved application will serve as documentation of the change. If any of the prior conditions is changed as a result of the substitution approval the Contractor shall be instructed to prepare an MP and a subsequent Change Order to officially approve the change.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

**END OF SECTION 01630**

Substitution Request form follows on next page

**SUBSTITUTION REQUEST FORM**

TO:

PROJECT NAME: \_\_\_\_\_

CONTRACT NUMBER: \_\_\_\_\_

MANUFACTURER: \_\_\_\_\_

We submit for consideration the following product instead of the specified item.

SECTION	PARAGRAPH	SPECIFIED ITEM
_____	_____	_____

PROPOSED SUBSTITUTION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Attach and submit:*

- Complete dimensional information and technical data, including laboratory tests if applicable.
- Complete information on changes to drawings and specifications which the proposed substitution will require for its proper installation.
- All necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance. Indicate differences in quality of materials and construction.

*Fill in the blanks below:*

1. Does the substitution affect dimensions shown on the Drawings, including details?  
Yes \_\_\_\_ No \_\_\_\_ If yes, clearly indicate changes (attach shop drawings as necessary to clearly illustrate the requested changes.)
2. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?  
Yes \_\_\_\_ No need \_\_\_\_
3. What effect does the substitution have on other trades, other contracts and contract completion date?
4. What effect does the substitution have on Code requirements?

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5. Describe the differences between the proposed substitution and specified items:
  
  
  
6. Compare the manufacturer's guarantees of the proposed substitution and specified items.  
Same \_\_\_\_\_ Different \_\_\_\_\_ (explain)

**CERTIFICATION OF EQUAL PERFORMANCE AND  
ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE**

Signature must be by a person having authority to legally bind his firm to the above terms. Failure to provide legally-binding signature will result in approval retraction.

Submitted by (signature): \_\_\_\_\_

Name and title (printed): \_\_\_\_\_

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Date: \_\_\_\_\_

**CONCURRENCE BY:**

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Consultant	Date	Parks Dept.	Date
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**SECTION 01710  
FINAL CLEANING**

**PART 1 - GENERAL**

**1.01 SUMMARY:**

- C. This section includes administrative and procedural requirements for final cleaning of the Work prior to acceptance by Engineer, including but not limited to:
  - 1. Cleaning procedures
  - 2. Inspection
- D. Do not use cleaning materials that may damage finished surfaces.
- E. Do not use cleaning materials hazardous to health or property.
- F. Use only cleaning materials and methods recommended by manufacturer of item or material to be cleaned.

**PART 2 - PRODUCTS: *Not Used***

**PART 3 – EXECUTION**

**3.01 DURING CONSTRUCTION**

- A. The Contractor shall execute periodic cleaning keeping work, site, and adjacent properties free from accumulation of construction waste materials, rubbish, and windblown debris:
  - 1. Protect new materials from damage by construction debris;
  - 2. Dispose daily all flammable, hazardous, and toxic waste materials.
- B. The Contractor shall provide on-site containers for collection of general non-hazardous waste materials, debris, and rubbish:
  - 1. Periodically remove from site;
  - 2. Dispose of legally at disposal areas away from site.
- C. Site:
  - 1. The Contractor shall inspect the site and pick up all scrap, debris, and waste material DAILY. Remove such items to the place designated for their storage.
  - 2. The Contractor shall inspect all arrangements of materials stored on the site; restack, tidy, or otherwise service arrangements to meet the requirements of this article.
  - 3. Absolutely NO construction debris may be buried on site. Especially hazardous are plastics, metal parts and filings, and liquid chemicals such as adhesives, caulking

**3.02 DUST CONTROL**

- A. Contractor shall schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

**3.03 FINAL CLEANING:**

- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a typical commercial building/site cleaning and maintenance program. Comply with manufacturer's instructions. Final cleaning includes but is not limited to the following procedures:
2. Remove dust and dirt in corners.
  3. Remove grease, mastic, adhesives, glazing compounds, dust, dirt, stains, fingerprints, non-permanent labels, and other foreign materials from interior and exterior surfaces exposed to view.
    - a) Clean hard-surface finishes to dirt-free condition, free of dust, stains, films and similar noticeable distracting substances.
    - b) Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces.
    - c) Restore reflective surfaces to original reflective conditions.
  3. Remove debris and surface dust from limited-access spaces including trenches, equipment vaults, manholes, catch basins, and similar spaces.
    - a) Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition. Remove stains, petro-chemical spills and other foreign deposits. Rake grounds which are neither planted nor paved to a smooth, even-textured surface.
    - b) Leave concrete floors broom-clean.
    - c) Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Work of rodents, insects, and other pests.
- C. Removal of Protection: Except as otherwise indicated or requested by the Consultant or the Engineer, remove temporary protection devices and facilities installed to protect previously completed work during the remainder of the construction period.
- D. Extra Materials: Where excess materials of value remain after completion of associated work, these materials become the property of the Engineer. If declined by the Engineer, the Contractor shall dispose of these materials as directed by the Engineer.

3.02 INSPECTION:

- E. Prior to requesting inspection for certification of Substantial Completion, inspect exposed surfaces. Verify entire Work is clean.
- F. Prior to certifying Substantial Completion, the Engineer will make a detailed inspection of buildings and site, and will prepare a check list of cleaning and debris removal remaining to be completed before certification of Substantial Completion. Complete items on the Engineer's check list, so that entire Project is clean and ready for occupancy by staff and public.

**END OF SECTION 01710**

**SECTION 01730**  
**OPERATIONS AND MAINTENANCE DATA**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS:**

**OPERATION AND MAINTENANCE MANUALS:**

The Contractor shall provide three (3) copies of manuals containing all operating and maintenance data relevant to the Work. Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy duty 2-inch, 3-ring vinyl covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Provide neat, clean, legible copies of data, 8-1/2" x 11" size, provide drawings in 11" x 17" size, accordion folded for binding. Provide type written, plastic coated tabs for each section. Final approval of O&M manuals must be obtained by the Owner's Rep prior to Physical Completion. Contractor shall provide information in the following format:

- A. Imprint the front cover of the binder with the name of the project, Owner's Rep and Contractor.
- B. Imprint the spine of the binder with the project name.
- C. Provide a "Project Team Page" with the names, addresses and phone numbers of the project manager, landscape Owner's Rep, general contractor and major subcontractors.
- D. Provide a complete index listing major sections of the Project Manual and clearly identify categories of information in each section using C.S.I. format.
- E. Divide Sections into the following components:
  1. Warranties: Provide copies of warranties by site, as applicable
  2. Preventative Maintenance Schedules: For each Project Site provide, in 12-month calendar form, such preventative maintenance tasks as required to ensure the longest possible useful life of the improvements. Label Key Tasks throughout the calendar, referencing those tasks with complete and detailed descriptions of the work to be performed. Include any and all pertinent information as recommended and made available by the manufacturer or supplier of materials.
  3. Catalog Cuts: Provide copies of catalog cuts of all material submittals as required by the specifications. Complete by specification section.

**1.02 ADDITIONAL COPIES**

- A. Preliminary O&M data

Prior to requesting the preliminary inspection by the Owner's Rep incidental to declaring Substantial Completion, the Contractor shall assemble a preliminary draft copy of the O&M data applicable to all mechanical, electrical and plumbing systems. This draft shall be available on-site for reference by the Owner's Rep.

- B. Warranties

When O&M manuals are required for warranty construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.03 WORK IN OTHER SECTIONS:

Coordinate related work specified in other parts of the project manual

1.04 DESCRIPTION OF WORK:

The Manual shall contain: all operating and maintenance data relevant to all landscape and irrigation components; architectural products, finishes and furnishings; mechanical equipment and components; electrical equipment and components; and any other special equipment and components as required for the project. **Note: All warranted items and products shall be itemized and placed in an indexed list at the beginning of the O & M Manual for easy reference.**

1.05 MANUAL FORM:

- A. Organization - the Manual shall be organized in accordance with the 16 Division CSI (The Construction Specifications Institute) numbering system. Divisions shall be flagged with tabs.
- B. Size – shall be 8-1/2" x 11"
- C. Paper – provide 20 pound minimum; white for typed pages.
- D. Text – provide Manufacturer's printed data, or neatly typewritten information.
- E. Drawings - accordion fold all oversize drawings to 8-1/2" x 11" size for binding.
- F. Flyleaf- provide for each separate product and major component parts of equipment followed by typed descriptions. Provide indexed tabs.
- G. Binders – provide:
  1. Commercial quality three-ring binders with hard durable and cleanable plastic covers.
  2. Maximum ring size: As suitable to content, 3 inch maximum. Minimum ring size: one inch.
  3. When multiple binders are used, correlate data into related groupings.
- H. Tabs- shall be typewritten, plastic coated, reinforced, and indexed.
- I. Cover - identify the front cover (and each volume in case of multi-volume manual) with typed title: "Operating and Maintenance Instructions". Label volumes as 1 of 4, 2 of 4, 3 of 4, etc.

The front cover shall show: Title of project, names of Engineer, Consultant, Engineer, Contractor, appropriate mechanical, electrical or other subcontractor(s), and Final Completion date of the project. Show CIP Project number, Public Works Contract number, and other information as needed.

The spine shall show: Name of the project, identity of general subject matter covered in the Manual, and the year the project was completed.

1.06 CONTENTS:

- A. Title Page - provide it shall contain title of the Project and names, addresses, telephone numbers of the Project Manager, Consultant, major sub-consultants, General Contractor, major sub-contractors, and date of Physical Completion.
- B. Table of Contents - provide a complete table of contents listing major sections of the Manual and clearly identifying categories of information in each section.
- C. Body of Manual - shall be in the Construction Specification Institute (CSI) Format.
  - 1. Divisions 2 through 14.  
Bind all product data, product maintenance data, and warranty information together for each product listed. All products and systems that could require replacement during the 40-year life of this project must be covered in this manual.

Product Data:

- a. Product Data - submit original product literature only. Mark each sheet to clearly identify specific products and component parts and data applicable to installation. Modify product data as required to accurately represent completed installation. Delete inapplicable information.
- b. Products, Applied Materials and Finishes- include all product data with catalog number, size, composition, and color and texture designations. Provide all necessary information for re-ordering custom manufactured items. ***For all painting work, provide a complete finish schedule of products, colors, and gloss used. Provide a drawing showing all paint and color locations.***
- c. Moisture Protection and Weather Exposed Products- include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- d. For each product or finish, list names, addresses and telephone numbers of suppliers, including local source of supplies and replacement parts.
- e. Drawings - supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Document as maintenance drawings.
- f. Additional Requirements- as specified in individual specification sections and such data that becomes apparent during instruction of Parks' personnel.

Product Maintenance:

- a. Preventative Maintenance Instruction- prepares Preventative Maintenance Instructions. Include for each piece of equipment or system furnished requiring periodic inspections, lubrication, adjustment and the like, to ensure optimum and continued performance as originally specified.
- b. Instructions for Care and Maintenance- include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommend schedule for cleaning and maintenance.

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- c. Provide a Table showing maintenance schedules and what is to be done to all equipment, i.e. scheduled maintenance spreadsheet.

**Product Warranties:** Include copies of all extended warranties with products that have them. See individual sections for requirements. Add item to the itemized list at the beginning of the Manual.

2. Division 15 - Mechanical Equipment and Systems:

Bind all product data, product maintenance data, and warranty information together for each product listed. All products that could require replacement during the 40-year life of this project must be covered in this manual.

- a. Product Data - submit original product literature only. Mark each sheet to clearly identify specific products and component parts and data applicable to installation. Modify product data as required to accurately represent completed installation. Delete inapplicable information.
- b. Include unit and component part description, operating procedures, sequence of operation, maintenance procedures, preventive maintenance schedules, and servicing and lubrication schedule listing lubricants required.
- c. Include heat loss and cooling load calculations, fan curves, pump curves and other pertinent calculations, air balancing reports, sequence of operations for HVAC equipment.
- d. Manufacturer's printed operating and maintenance instructions, description of operating and maintenance instructions, original manufacturer's information (parts list, illustrations, assembly drawings and diagrams) required for maintenance, as-installed control diagrams by control Manufacturer (include one extra [each] framed and install under glass; locate room where directed), each Contractor's coordination drawings with as-installed color coded piping diagrams, charts of valve tag numbers (with location and function of each valve), list of original Manufacturer's spare parts, maintenance of finishes, and other data as required under pertinent Specification Sections.
- e. Prepare and include additional data when the need for such data becomes apparent during instruction of Engineer's personnel.

3. Division 16 – Electrical:

Bind all product data, product maintenance data, and warranty information together for each product listed. All products that could require replacement during the 40-year life of this project must be covered in this manual.

- a. Product Data - submit original product literature only. Mark each sheet to clearly identify specific products and component parts and data applicable to installation. Modify product data as required to accurately represent completed installation. Delete inapplicable information.
- b. Include electrical control diagrams, description of system and component parts, circuit directories of panel boards, as-installed color coded wiring diagrams, operating procedures, maintenance procedures, manufacturer's printed operating and maintenance instructions, listed under pertinent Specifications Sections. This section shall also include lighting fixtures with all data.

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- c. Prepare and include additional data when the need for such data becomes apparent during instruction of Engineer's personnel.
- D. Warranties and Bonds:
  - 1. Bind in copy of each with each product or system. One original of each shall be bound in a separate labeled hard cover binder and submitted with approved O & M Manuals. See section 01740 Warranties and Bonds.

**1.07 SUBMITTAL SCHEDULE**

- A. Submit one copy of preliminary draft of proposed formats and outlines of contents to the Consultant for review and approval. After review, the copy will be returned to the contractor with accompanying comments.
- B. Submit one copy of completed data in approved final form to the Consultant for final review. This copy will be required prior to Contractor training of Parks' personnel
- C. Submit three (3) copies of approved Manuals in final form at or before Physical Completion.

**PART 2- PRODUCTS: (Not Used)**

**PART 3- EXECUTION: (Not Used)**

**END OF SECTION 01730**

**SECTION 01740**  
**WARRANTIES AND BONDS**

**PART 1 – GENERAL**

**1.01 GENERAL:**

- A. This section addresses the need, if required, to either extend the bonded warranty for the Contractor and/or obtain extended warranties from subcontractors, suppliers and or manufacturers for materials, equipment, and installation as identified in the technical specifications of the Project Manual, maintenance contracts and warranty inspections.
- B. The general guaranty and warranty for the entire project shall be provided per section 00700, paragraph 1.03.J.

**1.02 EXTENSION OF STANDARD CONTRACTOR-BONDED WARRANTY:**

- A. If, as part of developing the technical specification, it is determined that the standard one year warranty period from date of Physical Completion should be extended, it shall be so noted in the technical specification.

**1.03 EXTENDED WARRANTY FOR MATERIALS, EQUIPMENT AND INSTALLATION:**

- A. Individual technical sections may require specific warranties beyond the standard one-year bonded warranty.
- B. Subcontractors, manufactures and or suppliers may provide limited and/or full warranty for products that they provide.
- C. Extended warranties shall start at Physical Completion and cover the warranty period specified in the technical specifications or the time period provided by the subcontractor, supplier and or manufacturer, which ever is longer. Warranties shall cover material and or equipment replacement, costs of installation, and costs associated with repair of damages caused by the removal and replacement of the defective product. The degree to which full coverage is required will be based upon the risk of failure to the Owner's Rep, the costs of the coverage, and the availability of coverage.

D. Form of extended Warranty:

"I (We), (insert the name of Contractor), certify (insert name of trade or portion of work being guaranteed) installed by (insert name of appropriate subcontractor) on (insert name of job) located at (street address or location), is performed in strict accordance with the contract documents. Further, I (we) guarantee this work to be free of defects in materials and workmanship, for (fill in specific required guarantee period) years from (date of physical completion), and will repair, or replace, without delay, any defects in materials or workmanship, and associated damage discovered within the warranty period by replacing the defective material and or equipment at no cost to the Engineer.

Sincerely,  
(Name of Contractor/responsible principal/address/telephone number):

Signed by Principal, Partner, or other person authorized to commit firm.

**1.04 SUBMITTAL REQUIREMENTS:**

Submit three (3) copies each of the extended warranties and service and maintenance contracts specified in respective specification sections to the Consultant for their review and approval. Submit at or before Physical Completion. . The Contractor shall submit the warranties and service and maintenance contracts to the Owner's Rep before the Owner's Rep recommends that the construction contract is complete.

**1.05 WARRANTY PROVISIONS:**

The bonded warranty period for the Contractor extends for one year from the date of Physical Completion.

- A. In the event of failure of any part of the Work during the warranty period, repair, or remove and replace the defective components, including repair/replacement of any overlying or dependent construction, at no additional charge to the Owner.
- B. Repair and replacements shall be completed in accordance with all the requirements of the contract documents. Repaired or replaced work shall be an exact match for original work unless otherwise approved in writing by the Owner's Rep.
- C. In the event of repeated failure of any repaired component, or if the Owner's Rep is not satisfied that the quality of repairs meets the requirements of the contract documents, the Owner's Rep may order defective work completely removed and replaced with new.

The Owner's Rep shall schedule a warranty inspection of all work completed under the Contract within one year of the date of Physical Completion. The Owner's Rep shall establish the date, time and place for the warranty inspection and notify the Contractor and Consultant to send representatives. The Owner's Rep shall be responsible working with the Contractor, Owner and Property Owner to identify valid warranty defects and prepare a warranty inspection list of items to be corrected. The Owner's Rep shall provide a copy of the warranty inspection list to the Contractor, Owner and Property Owner. The Contractor shall respond in a reasonable time not to exceed two months to correct and or replace defective items or defective workmanship in a reasonable time, not to exceed two months. Failure of the Contractor to correct identified warranty deficiencies may result in Owner's Rep referring the matter for corrective action to the Owner and Property Owner.

**PART 2 - PRODUCTS: *Not Used***

**PART 3 - EXECUTION: *Not Used***

**END OF SECTION 01740**

**SECTION 01770  
CONTRACT CLOSE OUT**

**PART 1 - GENERAL**

**1.01 DESCRIPTION:**

- A. Supplemental requirements to the Conditions of the Contract and Specifications for administrative procedures in closing out the Work.

**1.02 REQUIREMENTS FOR ACHIEVING SUBSTANTIAL COMPLETION:**

- A. Prior to requesting Engineer's inspection for certification of Substantial Completion, the following requirements must be met:

1. The facility shall be sufficiently complete and cleaned with all construction material removed, to allow the unrestricted use of the facility including installation of permanent cores in locks, and transmittal of keys to Engineer.
2. Submittal of pay request for all items completed in order to satisfy the requirements of Substantial Completion.
3. Complete and submit a release, granting the Engineer's staff and facility users' full and unrestricted use of the Work and access to services and utilities including final building permit inspection and occupancy or temporary occupancy permits as required.
4. Complete start-up of systems and provide copies of initial balancing reports.
5. Project Record Documents have been submitted to and approved by the Consultant in accordance with the requirements of Section 01781 – Project Record Documents.
6. Operating and Maintenance Manuals have been submitted to and approved by the Consultant in accordance with the requirements of Section 01730 – Operating and Maintenance Manual.
7. All Warranties and Bonds, including but not limited to special guarantees, workmanship and maintenance bonds, maintenance agreements, final certifications and similar documents have been provided and inserted into the O & M Manual in accordance with the requirements of Section 01740 – Warranties and Bonds.
8. Write a letter to the Engineer on the attached form requesting that a Substantial Completion Date be established.

- B. Process to achieve Substantial Completion:

1. Upon receipt of Contractor's request, Engineer shall request that the Consultant conduct a preliminary inspection to verify if the project meets the requirements for substantial completion. If the Consultant concurs that substantial completion has been met, the Engineer will be so notified and a punch list inspection will be scheduled within ten (10) working days of the notification. If the Consultant determines that the project is not Substantially Complete, the Engineer will be so notified and the Engineer will notify the Contractor of the portions of the Work that must be completed before a punch list inspection can be scheduled.
2. The Owner's Rep shall be responsible for preparing the punch list based upon the results of the inspection. The Engineer's designated representative will also inspect the project and provide a written punch list to the Consultant. These lists will be compiled into a single list by the Consultant and issued to the Contractor.

- If the inspection reveals that the Work is not Substantially Complete, the process in 1.02.B.1 shall be repeated.
3. Upon the determination that substantial completion has been met based upon the results of the initial punch list inspection and or follow-up inspections if needed, the Owner's Rep shall prepare certificate of Substantial Completion establishing the date of compliance and providing a copy to the Contractor in conjunction with a copy of the punch list. The date of Substantial Completion shall be used to determine the cut off date for liquidated damages.
  4. **Re-inspection Fees:** When inspection shows that the Work has not attained the completion status claimed, the Contractor shall compensate the Engineer for additional time expended in subsequent inspections at the Engineer's standard hourly billing rate.

#### 1.03 REQUIREMENTS FOR ACHIEVING PHYSICAL COMPLETION:

- A. The Contractor shall show evidence of compliance with requirements of the following:
  1. All permits as required by regulatory agencies have been issued.
  2. Make final change over of locks and transmit keys to Owner's Rep and advise Property Owner personnel of change over in security provisions.
  3. Discontinue (or change over) and remove from project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.
  4. All items identified on the punch list have been satisfied.
  5. Upon satisfying all punch list items, the Contractor shall notify the Owner's Rep that physical completion has been satisfied and that a final inspection should be scheduled with the Owner's Rep, Owner and Property Owner.
- B. Process to Achieve Physical Completion:
  1. Upon receipt of the Contractor's request, the Owner's Rep shall verify that all punch list items have been satisfied. If the Owner's Rep concludes that final completion has been met, a final completion inspection will be performed within five (5) working days of the notification. If the Owner's Rep determines that the punch list items have not been satisfied, the Owner's Rep will notify the Contractor of the items that must be completed before a final punch list inspection can be scheduled.
  2. The Consultant shall prepare the final punch list inspection report based upon the results of the inspection. If the final inspection reveals that punch list items remain to be corrected, the process in 1.03.B.1 shall be repeated.
  3. Upon the determination that all punch list items have been satisfied based upon the results of the final punch list inspection, and or follow-up inspections if needed, the Owner's Rep shall prepare the certificate of Physical Completion establishing the date of compliance and provide a copy to the Contractor in conjunction with a copy of the final punch list. The date of Physical Completion shall be used to determine the start of the one-year warranty period.

4. Re-inspection Fees: Should the Owner's Rep perform re-inspection due to failure of the Work to comply with completion status claimed, the Contractor shall compensate the Owner's Rep for each additional service at the Owner's Rep's standard hourly billing rate.

**1.04 RECOMMENDATION FOR CONTRACT COMPLETION BY THE OWNER'S REP:**

The following items must be completed before the Owner's Rep can recommend in writing to the Owner that the contract has been completed. This written recommendation is required in order to initiate the contract completion date approval process.

- A. All Warranties and Bonds including special guarantees, workmanship and maintenance bonds, maintenance agreements, final certifications and similar documents have been provided.
- B. All permits have been approved and issued.
- C. All change order work has been approved and completed with corresponding changes to contract price, time and bond in conjunction with payment of pay request marked as "Final".
- D. Dates for substantial and physical completion have been established in writing.
- E. A contractor's performance evaluation has been completed.
- F. All final testing of operating systems has been completed.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

**END OF SECTION 01770**

(Substantial Completion and Physical Completion form letters follow)

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**SUBSTANTIAL COMPLETION**

Date:

....., Engineer  
Seattle Department of Parks and Recreation  
800 Maynard Avenue South, 3<sup>rd</sup> Floor  
Seattle, Washington 98134-1336

Re: *Project Name*

The Work performed under this Contract has been substantially completed. The Contractor, (*Name*), hereby requests a Punch List Inspection of Substantial Completion and establishment of the date of Substantial Completion.

The Contractor will complete or correct the Work on the punch list within (# of days) working days from the date of Substantial Completion established by the Engineer.

---

\_\_\_\_\_  
Contractor \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

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***PHYSICAL COMPLETION***

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

....., Engineer  
Seattle Department of Parks and Recreation  
800 Maynard Avenue South, 3<sup>rd</sup> Floor  
Seattle, Washington 98134-1336

Re: *Project Name*

The Work items identified in the inspection punch list have been completed. The Contractor,  
\_\_\_\_\_, hereby requests certification of Physical  
Completion and establishment of the date of Physical Completion and the beginning of the warranty  
period.

The Contractor understands that the Seattle Department of Parks and Recreation will assume all  
maintenance of the facility upon Physical Completion.

---

Contractor \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

**SECTION 01781  
PROJECT RECORD DRAWINGS**

**PART 1 - GENERAL**

**1.01 RECORD DRAWINGS:**

- A. Maintain a clean, undamaged set of diazo or xerographic copies of Contract Drawings and Shop Drawings. Clearly identify the set as "RECORD DRAWINGS". Mark the set to show the actual installation of materials and systems wherever the installation varies substantially from the Work as originally shown in the contract documents. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

**1.02 USE AND PROTECTION:**

The Contractor shall not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Owner's Rep's reference during normal working hours.

**1.03 QUALITY ASSURANCE:**

- A. Delegate the responsibility for maintenance of record prints to one person on the Contractor's staff, as approved by the Engineer.
- B. Make entries on the record prints clearly showing as-built conditions within 24 hours after completing any element of work.
- C. Accuracy of records:
  - 1. The Contractor shall coordinate changes and additions within the record prints, making adequate and proper entries on each page of specifications and each sheet of drawings and other documents where such entry is required to show the change properly.
  - 2. Accuracy of records shall be such that future search for items shown in the contract documents may rely reasonably on information obtained from the approved project record documents.

**1.04 MAINTENANCE OF RECORD DOCUMENTS:**

- A. Contractor shall maintain and store in field office apart from documents used for construction, the following documents:
  - 1. Permit drawings, bearing building permit approval from DPD and/or other regulatory agency having jurisdiction, if any.
  - 2. Specifications, bearing building permit approval from DPD and/or other regulatory agency having jurisdiction, if any.
  - 3. Contract Documents, including Addenda.
  - 4. Design Clarifications, Field Directives, Modification Proposals, Change Orders, and approved Substitutions.
  - 5. Approved shop drawings and other submittals.

6. Field test records.
- B. Provide files and racks for storage of documents
- C. File documents in accordance with project manual table of contents.
- D. Maintain documents in orderly, clean and legible conditions. *Do not use record documents for construction purposes.*
- E. Make documents available for weekly progress meeting and at all times for inspection by Consultant.
- F. In the event of loss of recorded data, the Contractor shall use all means necessary to again secure the data to the Engineer's satisfaction.
- G. Payment may be withheld or pay requests modified for incomplete recording of as-built data.
- H. The Engineer may request confirmation of recorded work by independent survey. If inaccuracies are found, Engineer may order hidden elements to be exposed for recording. All costs associated with the work may be deducted from the Contractor's contract amount if the information has either not been recorded or has been recorded incorrectly.

1.05 SUBMITTALS:

- A. At or before Physical Completion the Contractor shall deliver a complete set of record documents to the Owner's Rep for review and approval. The record documents will consist of one blue or black line record drawing set; annotated project manual; and approved shop drawings, product data, and samples which clearly and legibly show all deviations from the Contract Documents with colored pencil. The Contractor shall submit approved Record Documents to the Consultant for review and acceptance before the Owner's Rep recommends to the Owner's Rep that the construction contract is complete.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION

3.01 RECORDING:

- A. Mark record documents with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
- B. Mark new information that was not shown on Contract Drawings or Shop Drawings, and as directed by the Engineer.
- C. Indicate changes to the work and/or the project site that were not known prior to beginning the work but were visible as part of the project implementation that did not result in a change order.
- D. Note all changes resulting from Modification Proposals by MP# and including approved substitutions.

- E. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- F. The Contractor and its subcontractors shall coordinate recording of information as follows:
  - 1. Each subcontractor is responsible for making record notations for his/her own work and forwarding these not less than weekly to the general Contractor. The general Contractor will transfer each subcontractor's notations as well as record its own notations of the general Work to a single set of record documents.
  - 2. Legibly mark record set of drawings and addenda to show the following:
    - a) Accurate measurements and locations of underground services and utilities, referenced to the building or other permanent construction as directed by the Engineer.
    - b) Note changes of direction and locations, by horizontal dimension and vertical elevations, as utilities are actually installed.
    - c) Note deviations from the contract documents, and reference reason for change (e.g., construction meeting minutes, telephone call report, field order, etc.).
    - d) Show details and locations not on original contract drawings.
    - e) Indicate field changes of dimensions and details.
- G. Specifications and addenda: Legibly mark each section to record:
  - 1. Manufacturer, trade name, catalog number, and supplier of each equipment item actually installed; and
  - 2. Changes made by field order or by change order.
- H. Shop drawings, product data sheets and samples: Maintain one complete set as record documents and legibly annotate to record all approved changes.

### 3.02 ORGANIZATION OF RECORD DOCUMENTS:

- A. Organize all record documents into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

**END OF SECTION 01781**

**SECTION 02050  
SITE PREPARATION**

**PART 1 – GENERAL**

**1.01 Description:**

This Section includes all site preparation as indicated on the Drawings. Work includes but is not limited to the following:

- A. Pre-mobilization Video of Existing Site Conditions
- B. Locate and Documentation of underground utilities and controls
- C. Protect from harm any trees or other objects not designated for removal.
- D. Temporary security fencing.
- E. Temporary Erosion and Sedimentation Control (TESC) facilities.
- F. Temporary construction access pads.
- G. Staging & Stockpile Areas
- H. Temporary Facilities
- I. Installation, Continuous Maintenance, and final Removal of each element included in this Section.

**1.02 Related Sections:**

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

***Section 02051 - Tree and Plant Protection***

***Section 02100 - Site Demolition***

***Section 02120 - Site Utility Removal***

***Section 02200 - Earthwork for Site work***

***Section 02720 - Storm Sewer Systems & Sub-surface Drainage***

**1.03 Submittals:**

- A. Submit for the Engineers Project file 1 copy of VHS Video tape of existing conditions of fences, surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to the removal operation. The Engineer, prior to any mobilization onto the project site (See Section 01010) must receive this submittal.
- B. Submit for review and approval a complete site access, staging, and stockpiling plan using a copy of the basic site layout. Identify all areas to be used for access, staging, and stockpiling throughout various phases of the construction sequence. Provide a legend or key as appropriate where phasing affects location.
- C. Submit the following product information for approval prior to delivery or installation:
  1. Shop drawing of portable temporary fencing panels and connection hardware for approval.
  2. Signage- shop drawing or sample.
  3. Source of supply for straw bales- includes supplier name and address, location of origination.
  4. Filter Fabric for Inlet Protection and Siltation Control Fencing- provide 12"x12" sample and technical data.

5. Geotextile for Temporary Access Pad- provide 12"x12" sample and technical data.
6. Particle Gradation / Sieve Analysis for Temporary Access Pad base and surfacing.

1.04 References:

- A. City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction (most recent edition).
- B. SMC Title 22.800, Stormwater, Grading, & Drainage Control Code, Volume 2 "Construction Stormwater Control Technical Requirements Manual" (most recent edition).

## PART 2 - PRODUCTS

2.01 Temporary PVC Fencing:

- A. 4' wide rolls Orange PVC Web Fencing for low security and approved tree protection applications.
- B. 6' lengths of #5 deformed steel reinforcing bar.
- C. Safety caps for #5 steel reinforcing bar.

2.02 Temporary Chain Link Fencing:

Prefabricated portable galvanized chain link fence panels including fabric, posts, top and bottom rails, and driven posts with rolled fabric & wire ties for areas of uneven terrain.

- A. Prefabricated portable fence panels shall be a minimum of 6 feet high by maximum 10 feet wide. Post bases shall be minimum 16 inches by 8 inches by 8 inches high concrete pier with sleeve for post, or as approved.

1. Posts - minimum 1-1/2" OD Schedule 40 galvanized steel pipe.
2. Fabric - minimum 11 gauge galvanized two-inch diamond mesh steel wire interwoven. Knuckled or twisted selvage is acceptable.

Prefabricated portable temporary fence panels shall be constructed to industry standards for fixed chain link fencing.

B. Bracing:

Provide additional panels or outriggers as necessary to provide a rigid, stable run of fence.

C. Driven Post Fencing:

1. Posts - Schedule 40 galvanized steel pipe.
2. Fabric - minimum 11 gauge galvanized two-inch diamond mesh steel wire interwoven. Knuckled or twisted selvage is acceptable.
3. Wire Ties – minimum 9-gauge aluminum wire.

- D. Gates shall be 20 feet wide (two prefabricated panels) with double padlocks to allow Contractor and Owner forces entry. Hinged sides of each operating panel shall include double bracketing. Owner will provide 1 lock keyed for City personnel for each entry. Contractor shall provide a lock keyed for Contractor and Subcontractor for each entry.

- E. Signage:

Provide warning signage every 50' of running fence line. Signage shall be a minimum of 18" square, brightly colored with contrasting lettering as follows:

WARNING  
CONSTRUCTION  
KEEP OUT

Or, as approved by the Engineer.

- F. Barbed wire will not be allowed.

2.03 Temporary Erosion and Sedimentation Control:

- A. Straw bales/mulch: wheat straw or similar straw, which is free of weed seeds. Do not use hay cut from Reed Canary Grass.
- B. Filter fabric: shall be polyvinyl chloride (PVC) woven cloth, reinforced chlorosulfonated polyethylene cloth.

Type of filter fabric used for siltation control fencing and methods for securing it using stable, durable staking methods and shall be as approved by the Engineer.

- C. Catch Basin sediment control sock: shall be a pre-manufactured Catch Basin Insert, as approved by the Engineer.
- D. Plastic covering: shall be 6 mil clear plastic sheeting.
- D. Sand bags: shall be ½ to 1 cubic foot capacity constructed of UV stabilized synthetic woven materials of sufficient strength to support the weight of the bag capacity in mineral aggregate.

2.04 Temporary Construction Access:

- A. Woven polypropylene Geotextile, LINQ Industrial Fabrics GTF 200S, or approved equal.
- B. 2"x4" Fractured Aggregate ("Rip-Rap") base.
- C. 1¼" minus crushed fractured aggregate, City of Seattle Standard Specifications (most recent edition) Section 9-03.9(3) - Crushed Surfacing.

2.05 Temporary Facilities:

- A. Temporary Enclosed Work Space: provide a temporary enclosed workspace ("Job Shack" or Trailer) suitable for storage of Project Documentation and use as meeting space, minimum interior space 6' x 20'. Furnish the interior with a working surface

sufficient to accommodate the Contract Documents, minimum 3' x 4'. Provide a minimum of 4 chairs and a table of sufficient size to conduct weekly Project Meetings.

- B. Temporary Sanitation Facilities: engage the services of a licensed, commercial provider of portable temporary sanitary facilities. Provide sufficient capacity and maintenance for no less than 125% of the anticipated peak workforce.

### **PART 3 - EXECUTION**

#### 3.01 Authorization to Commence:

- A. The Engineer will issue a formal Notice to Proceed authorizing commencement of the work. No work shall begin until the date specified on this notice.
- B. Obtain required permits and permission from local governing authorities and Engineer prior to commencing work.

#### 3.02 Documentation of Utilities and Controls:

Maintain a separate drawing to be stored on-site for identifying key utilities and controls. Identify and apply color-coded markings identifying shut-offs for domestic water, irrigation water, power, and gas. Identify sanitary sewerage, stormwater discharge, gas, fiber optics, and telephone (all as appropriate) lines, which are to be maintained in service during the work.

Color-code emergency contact information for each utility directly on the drawing. Additionally;

- A. Coordinate location of Domestic Service and Irrigation Point of Connection systems with the Engineer.
- B. Maintain domestic water supply to sanitary facilities in the Park throughout the course of construction, except temporarily while isolating Irrigation Systems.
- C. Protect and maintain sanitary sewerage lines throughout the Park.

#### 3.03 Temporary Security Fence:

Secure the project site from trespass or unintentional entrance by unauthorized personnel.

- A. All disturbed ground stockpiles, staging and on-site transport routes shall be fully enclosed by a perimeter security fence. Areas either under construction or completed but not specifically accepted by the Engineer as Substantially Complete shall be completed enclosed. Areas included in the Contract but not yet under construction may be left open to public access at the discretion of the Engineer.
- B. Temporary chain link fence panels shall be connected mechanically by means of pre-fabricated, bolted bracket manufactured specifically for the purpose. Fencing shall not be wired together.

Where long straight runs result in an unstable condition, sufficient out-rigging shall be incorporated to maintain fencing upright. Use only pre-manufactured outriggers or additional fence panels. Out-riggers shall be placed on the interior side of the fence

unless approved by the Engineer. Alternatively, and where appropriate, a “zig-zag” arrangement of panels for stability may be used.

D. Uneven Terrain:

Where uneven terrain will not allow the use of pre-manufactured portable fence panels, or where otherwise directed by the Engineer, drive posts directly into the earth plumb and 8' on center along the approved alignment. It is the Contractors responsibility to perform a complete locates for underground utilities in any area to receive driven posts. Drive posts to sufficient depth to assure stability and durability for the life of the installation, maintain a minimum of 6' above grade. Reset loose posts at the direction of the Engineer. Secure chain link fabric to posts using approved wire ties within 6" of the top and bottom of each post, and a minimum of 18" on center between. Provide posts at each end of each driven post installation at a point that is sufficiently level to clamp prefabricated portable fence panels directly to the driven post installation.

E. Where approved for short-term, low security applications, use 4' high orange PVC web fencing wired to #5 reinforcing bar “posts” set 5' on center or as appropriate. Cap each bar with a safety cap manufactured specifically for #5 reinforcing steel.

3.04 Temporary Erosion and Sedimentation Control (TESC):

Shall conform to SMC Title 22.800, Stormwater, Grading, & Drainage Control Code, Volume 2 “Construction Stormwater Control Technical Requirements Manual” (most recent edition), and Section 01566 of the Project Manual.

- A. Keep streets and site drains open for drainage at all times. TESC facilities shall be inspected daily during periods of rain, otherwise inspected weekly.
- B. The Contractor shall clean out catch basin sumps prior to placement of filter fabric. At no time shall more than one inch of sediment shall be allowed to accumulate on the filter fabric in the catch basin. Sediment buildup on catch basin filter fabric shall be removed or the fabric replaced. The Contractor shall clean out catch basins again after completion of construction. The cleaning operation shall not flush sediment-laden water into the downstream system.
- C. Any area stripped of vegetation where no further work is anticipated for a period of 15 days, shall be immediately stabilized with clear plastic covering or straw mulch. During periods when a reasonable expectation of significant rainfall may be present, the contractor shall cover any stripped slopes 4:1 or steeper with plastic sheeting. Straw, when used, shall be applied at a thickness of 2 inches minimum.
- D. If sediment is transported on to a road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by a method as approved by the Engineer and be transported to a controlled sediment disposal area. Street washing shall be allowed only after sediment has been removed in this manner.
- E. The Contractor shall protect stockpile areas from release of sediment. Stockpiles shall be covered at all times while not in use to keep stored material dry. Materials stockpiled on pavement shall be surrounded by two rows of straw bales with joints staggered.
- F. Siltation Control Fencing:

1. Silt Control Fencing shall be installed as directed by the Engineer. A linear measurement equal to the perimeter of the Contract site shall be installed as directed by the Engineer. Additional lengths of silt control fencing shall be installed as deemed necessary by the Engineer throughout the Contract.
  2. Silt Control Fencing shall be installed reasonably taught between stakes, with no sagging or bunching of the fabric. Bottom edge of fabric shall be embedded into the sub-grade and back-filled with 5/8" pea gravel in areas where significant future work is anticipated. In areas at the project limit, where no significant restoration or additional work is anticipated by the Engineer, do not trench bottom edge of fabric into ground, rather fold inward toward the source of potential siltation and cover with 5/8" pea gravel.
  3. Maintain Silt Control Fencing by removing accumulated materials off-site when accumulations exceed 6" above original grade or grade behind the fencing.
  4. Inspect undisturbed ground down-flow of fencing to verify functionality. Where the fencing has failed, correct it. Where accumulated water has focused erosive forces down-flow of fencing, provide additional silt fence or hay-bale baffles to dissipate erosive energy.
- G. Settling Ponds: During periods of excessive precipitation or when dewatering significant volumes of inadvertently detained stormwater, or when directed by the Engineer, construct temporary stormwater settling ponds for storage of silt-laden runoff. Provide sufficient pumping capacity to remove the settled water to the stormwater conveyance as directed.

**3.05 Temporary Access Pads:**

The Contractor, for approval, shall submit layout and design of stabilized construction entrances and wash pads by the Engineer. The entrances shall be installed at the beginning of construction and maintained to meet applicable standards for the duration of the project. Additional measures may be required to ensure that all paved areas are kept clean for the duration of the project.

Following approval of layout by the Engineer;

- A. Remove sufficient existing earth to accommodate a minimum 12" depth of stabilizing aggregates.
- B. Install stabilizing geotextile with a minimum 12" overlap at each joint. Extend geotextile 24" beyond excavation limit.
- C. Place 2"x4" fractured aggregate base material to settled depth of approx. 9".
- D. Cover with 1 1/4 "minus crushed aggregate surfacing.

**3.06 Tree Protection:**

- A. Foot and vehicular traffic over root systems of existing trees to remain is not permitted.
- B. All trees in the construction area shall be protected with PVC Web fence to the drip line of the tree. Stake the location of protection fencing. Notify Engineer at least 48 hours prior to commencing work for approval of flagging and fencing.
- C. Do not park any vehicles or equipment, store materials or stockpile soil, dispose of building materials, chemicals, or other detrimental substances within drip line of trees.

- D. If required, trimming or pruning of tree branches shall be executed by a qualified tree surgeon. Do not prune unless approved and directed by the Engineer.
- E. Excavate within the drip line of trees only where designated. Where trenching for utility lines within the drip line, hand dig around or tunnel under roots whenever possible. Cut all roots encountered with sharp pruners or saws. Notify Engineer before cutting any roots over 2 inches in diameter.
- F. Trees, which are to be protected, that become damaged or die shall be replaced with tree of same species and equal size. Damaged or destroyed trees which cannot be replaced, shall be paid for at the rate of \$50.00 per square inch of cross sectional area of the trunk, measured 3 feet above existing grade, for trees up to and including 6 inch caliper, and at the rate of \$100.00 per square inch of cross sectional area for trees larger than 6 inches in caliper size. This amount shall be credited to the Owner.

**3.07 Removal:**

All materials and debris associated with the work of this Section shall be removed at the appropriate time as follows;

- A. Removal and restoration of Temporary Access Pads shall be undertaken as quickly as possible following the conclusion of transport of bulk materials and demobilization of heavy equipment, with the prior approval of the Engineer.
- B. Removal of Trailer and Sanitary Facilities shall not be undertaken until the Engineer has established that the work is Substantially Complete according to the requirements of Section 00700, or as directed by the Engineer.
- C. Removal of temporary siltation control fencing shall be performed at the direction of the Engineer, but in no case prior to establishment of the Contract as Substantially Complete. The Owner reserves the right to take ownership and control of temporary siltation control facilities following thorough maintenance by the Contractor and immediately prior to acceptance of the Contract as Physically Complete.
- D. Removal of Temporary Tree Protection and Security Fencing shall be performed within 2 weeks of establishment of the Contract Work as Substantially Complete. The Owner reserves the right of transfer of any rental agreement or contract for Temporary Fence installations, with the cost of eventual removal to be born by the Contractor upon transfer.
- E. Following establishment of the work as Substantially Complete and removal by the Contractor of accumulated sediment from all manholes, catch basins, and inlets, the Contractor shall place new filter fabric as specified between each the frame and grate of each structure.
- F. All removal shall include complete site restoration as directed by the Engineer and as identified in Section 02990, Site Restoration.

**END OF SECTION 02050**

## **SECTION 02051 TREE AND PLANT PROTECTION**

### **PART 1 - GENERAL**

1.01 Summary:

- G. 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.
- H. Related Sections: The following sections contain requirements that relate to this section:
  - 3. Requirements of Seattle Parks and Recreation (SPR) Standard Specifications, Section 02050 - Site Preparation and other SPR Standard Specification Division 2 Sections that apply to the protection of trees, shrubs, and plant materials.

### **PART 2 - PRODUCTS**

2.01 Rigid Tree Protection Fencing:

- A. Rigid tree protection fencing shall be comprised of the following:
  - 1. Chain link fencing materials including posts, rails, braces and mesh, 6' in height.
  - 2. Posts and rails shall be a minimum of 1-1/2" OD steel pipe.
  - 3. Mesh shall be 2"x 2" x 11ga. minimum woven chain link fabric.
  - 4. Post bases shall be minimum 16"x 8" x 8" high concrete piers with sleeves for posts, or approved equal.
  - 5. Plywood shall be a minimum of 1/4", or approved equal.

### **PART 3 - EXECUTION**

3.01 Protection within the Drip-Line:

- E. Where existing trees 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 all methods to minimize adverse impact to 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 (1) Working Day before the scheduled activity. These methods may include but not be limited to:
  - 4. Temporary chain link construction fencing.
  - 5. Temporary tie-up of low limbs.
  - 6. 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.
  - 7. Timber or steel planking for protection of surface roots from Equipment.
  - 8. Tree root pruning or other tree root treatment as directed by the Engineer and/or Urban Forester.

- B. No storage of equipment or materials shall be allowed within the drip-line of trees not designated for removal. Steel planking, or timber planking made of 4-inch thick material, each plank covering a minimum of 8 square feet, shall be used to support backhoe and other Equipment stabilizers when set within the drip-line of a tree or sodded planting strip.
- C. Where sidewalk, curb, and pavement removal and placement operations occur that impact tree roots 2-inches or greater in diameter, the Engineer will determine how these tree roots are to be handled.

**3.02 Above-grade Work:**

- G. Tree removal or tree trimming within 10 feet of any overhead utility line requires the Contractor to make the notification specified in City of Seattle Standard Specifications (most recent edition), Section #1-07.28.
- H. When the Contractor anticipates construction operations that will unavoidably affect tree limbs, the Contractor shall notify the Engineer at least five (5) Working Days in advance of commencing such operations.
  - 1. Before trimming any trees, the Contractor shall notify the Engineer 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 Trenching and Tunneling with the Drip-Line**

- C. Trenching and tunneling within the drip-line of existing trees not designated for removal shall be in accordance with the City of Seattle Standard Plans (most recent edition), and defined zone clearance requirements.
- D. Excavation or tunneling of any kind within the “critical root zone,” as defined by the Standard Plans, will not be allowed unless the Contractor requests permission to do so at least two (2) Working Days in advance and receives approval of the Engineer.
- E. 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 trench or tunnel.
  - 3. Ripping or tearing of tree roots will not be allowed.

**3.04 Repair, Replacement and Payment for Damage:**

- B. 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 (at least 2 replacement trees for every 1 tree removed).
  - 1. Replacements shall be of the same species and as nearly as possible of the same size as the trees to be replaced (minimum of 2" caliper).

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2. The Contractor shall allow one (1) Working Day advance notice for inspection of nursery stock replacements by the Engineer.
- 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 02051**

**SECTION 02100**  
**SITE DEMOLITION**

**PART 1 – GENERAL**

1.01 Description:

Work includes, but is not limited to the following:

***Selective Demolition of Concrete Paving, curbs and roadway***

1.02 Related Sections:

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

***Section 02050 - Site Preparation***  
***Section 02520 - Concrete Paving***  
***Section 02990 - Site Restoration***  
***Section 03300 - Cast-in-Place Concrete***

1.03 Submittals:

***Not used.***

1.04 Existing Conditions:

- A. Underground utilities and elements: locate all underground utilities and elements prior to digging and/or driving stakes. Take care, to neither disturb nor damage any existing above ground or underground utilities or elements. Keep streets, sidewalks and site clean, free from debris and affected drains open and free flowing at all times. You must call **Utilities Underground Location Services @ (800) 424-5555** for utility location at or near the street right of way and can call **Locating, Inc. @ (425) 392-6412 or CNI @ (206) 255-8650 or Applied Professional Services 2 (425) 313-1034** for location of utilities within the site (**Note: these firms will charge for services rendered**). Contractor shall meet with the Engineer to verify location of utilities with Contractor's location service.
- B. Contact the Engineer at **(206) 684-7034** and SPR's Plumbing Shop at **(206) 684-7250** to request shut-off of pressurized or powered utilities. Verify that all appropriate services have been disconnected. The Contractor shall pay for all fees and costs associated with utility disconnect, capping of lines and meter removals required within the Public Right of Way.
- C. Do not shut off or cap utilities without prior notice. Coordinate work with Division 1 requirements. Maintain street and site drains and sewers open for free drainage. Provide catch basin protection.
- D. Objectionable Noises: Limit use of air hammers and other noisy equipment as much as possible. Conform to local governing requirements and Section 01566 of these Specifications.

**PART 2 - PRODUCTS (not used)**

### PART 3 - EXECUTION

3.01 Protection of Facilities:

Follow all procedures in Section 02050, Site Preparation for protection of drainage structures, utilities, trees, and other facilities during demolition work.

3.02 Demolish Asphalt Paving:

3.03 Demolish Concrete Paving:

Identify areas of existing Concrete Paving to be removed by marking centerline of chain link fence posts and offsetting as appropriate with grease pencil or paint for approval of the Engineer prior to commencing this work. When markings are approved, provide a clean, sawn edge through a minimum of 2/3 of the thickness of the material to be removed to protect adjacent paving to remain. Use care to protect edge to remain as saw-cut edge will remain as a finished edge against new Concrete work (Section 02520). Completely remove Concrete paving, including base rock.

3.05 Demolish Cast-in-Place Concrete: *(not used)*

3.06 Disposal of Materials:

The Contractor, in a manner consistent with all government regulations, shall dispose of the refuse resulting from demolition. In no case shall refuse material be left on the project site, or be buried in embankments or trenches on the project site. All effort shall be made to recycle materials whenever possible. Maintain hauling routes clean and free of any debris resulting from work of this Section.

**END OF SECTION 02100**

**SECTION 02101**  
**TREE REMOVAL**

**PART 1 – GENERAL**

**1.01 Description:**

The work of this section shall consist of clearing, grubbing, removing and disposing of all vegetation and debris which are within work limits as designated on the contract drawings except such objects as are designated to remain or are to be removed in accordance with other sections of these specifications. This work shall also include the preservation from injury or defacement of all vegetation and objects designated to remain.

**1.02 Related Sections:**

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

Section 02050 - Site Preparation  
Section 02051 - Tree and Plant Protection  
Section 02100 - Site Demolition  
Section 02200 - Earthwork for Site Work

**PART 2 – PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**2.01** Trees shall be felled and removed in such a manner as to avoid injury to other trees or other objects designated to remain. Clearing and grubbing and related work shall be accomplished only in the areas as designated on the contract drawings.

- A. Clearing: Shall Include the cutting and removal of all trees, shrubs, brush and other designated unwanted growth and the removal and disposal of logs, rubbish piles, refuse, and other objectionable or unwanted matter.
- B. Grubbing: Shall include the removal of all stumps, roots and other objectionable or unwanted matter, lying wholly or in part below the surface of the ground to a minimum depth of 3 feet below grade.

**2.02 Protection:**

Objects designated to remain shall be carefully protected during construction operations in accordance with Section 02051.

**2.03 Disturbance:**

In case of injury to the bark, limbs or roots of vegetation designated to remain, the Contractor shall repair such damage by corrective pruning or other methods, to be approved by the Engineer

and/or SPR's Senior Urban Forester. Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. All trimming shall be done by an ISA Certified Arborist and in accordance with good tree surgery practices.

2.04 Holes from which designated vegetation is removed:

Holes shall be backfilled with topsoil and compacted as specified in other sections (Section 02200 – Earthwork for Site Work) of these specifications.

2.05 Disposal:

All cleared and grubbed materials shall be recycled and/or disposed of by the Contractor as specified or directed by the Engineer. Unless otherwise specified, all merchantable timber shall become the property of Seattle Parks and Recreation. The Contractor shall deliver merchantable timber to SPR facility as directed by the Engineer.

**END OF SECTION 02101**

**SECTION 02120  
SITE UTILITY REMOVAL**

**PART 1 – GENERAL**

1.01 Description:

- A. Capping and plugging of electrical equipment, water lines, drainage pipes and structures, and other utility connections as necessary.
- B. Seattle Parks and Recreation (SPR) assumes no responsibility for actual conditions of existing utilities. Drawings of existing facilities are available for information only and do not necessarily reflect the actual conditions. The Contractor shall verify locations of existing utilities prior to proceeding with any work.
- C. Disposal of materials from site.

1.02 Related Sections:

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

Section 02050 - Site Preparation  
Section 02100 - Demolition  
Section 02200 - Earthwork for Sitework

1.03 Existing Conditions:

- A. Existing utilities that are not scheduled for removal shall be protected, per the requirements of Sections 01760 and 02050.
- B. Verify site conditions before beginning work.

**PART 2 - PRODUCTS**

2.01 Salvage:

All items of salvageable value shall be salvaged and disposed of by the Contractor and shall become the Contractor's property.

**PART 3 - EXECUTION**

3.01 Disconnection of Utilities:

Before starting demolition, the Contractor shall call Utilities Underground Location Services @ (800) 424-5555 for utility location at or near the street right of way and can call Locating, Inc. @ (425) 392-6412 or CNI @ (206) 255-8650 or Applied Professional Services 2 (425) 313-1034 for location of utilities within the site (Note: these firms will charge for services rendered). Contractor shall meet with the Engineer to verify location of utilities with Contractor's location service.

The Contractor shall notify utility agencies and shall arrange for disconnection of utility services as required. The Contractor shall pay for all capping or disconnection fees. Contact the Engineer at (206) 684-7034 and SPR's Plumbing Shop at (206) 684-7250 to request shut-off of pressurized or powered utilities. Verify that all appropriate services have been disconnected. The Contractor shall pay for all fees and costs associated with utility disconnect, capping of lines and meter removals required within the Public Right of Way.

B. Existing irrigation pipe shall be abandoned in the ground in locations where the pipe does not conflict with the proposed drainage and irrigation piping Work. In areas where existing irrigation pipe conflicts with proposed piping, the irrigation pipe shall be cut and removed completely from the site and disposed of.

C. The disconnection of electrical equipment shall be done by a licensed electrician, prior to beginning electrical demolition.

D. Existing site storm drains and catch basins, as indicated on the plans or as directed in the field, shall be kept open and operable at all times. Catch basins shall be protected from silt by filter fabric insert 'sock' during construction, per Section 02050. Catch basins or pipes that become blocked shall be cleaned immediately by the Contractor.

E. Dispose of all waste material at an approved disposal facility. All efforts should be made to recycle concrete and asphalt materials.

### 3.02 Removal of Existing Irrigation Heads:

A. Locate all existing irrigation heads within the limits of grading or as otherwise indicated on the contract drawings by the following means:

Call the Engineer at (206) 684-7034 to request an Irrigation Coverage Test for the facility under construction. Note the location of all operable irrigation heads and their respective Control Zones directly on the Record Drawings.

2. At the time of the above mentioned coverage test, and in consultation with the Engineer, refer to the drawings for locations of irrigation heads that may not be operating and hence may not have been visible during the test. Locate by hand digging as necessary.

B. Carefully record the head locations and the remaining risers and swing joints by surveying their actual locations onto the record drawings. In addition, stake these locations in the field until such time as the replacement of the irrigation heads has been accomplished.

C. Remove the irrigation heads carefully.

D. Cap the remaining risers or swing joints tightly to prevent contamination of the remaining irrigation system.

E. Upon completion and approval of the Earthwork, coordinate the re-installation or replacement of the irrigation heads as described in Section 02810 - Irrigation Systems.

### 3.03 Irrigation Pipe:

Existing irrigation pipe shall be abandoned in the ground in locations where the pipe does not conflict with the proposed drainage and irrigation piping work. In areas where existing irrigation pipe conflicts with proposed piping, the irrigation pipe shall be cut and removed completely from the site and disposed of properly.

3.04 Dispose of all non-salvageable waste material at an approved disposal facility. All efforts should be made to recycle concrete and asphalt materials.

3.05 Protection of Facilities:

Follow all procedures in Section 02100 for protection of trees and other facilities during demolition work.

**END OF SECTION 02120**

**SECTION 02200**  
**EARTHWORK**

**PART 1- GENERAL**

**1.01 Description:**

Provide all labor, materials, and equipment to perform the following work of the Contract, including incidentals related to that work and coordination and support of other work specified elsewhere in the Contract Documents:

- A. Safety Monitoring & Response.
- B. Protection of Existing Features and Work in Progress.
- C. Survey for horizontal and vertical control of all work of the Contract.
- D. Grading and compaction as required achieving lines and grades on Drawings.
- E. Excavation and backfill of trenches for Utilities, including; Irrigation Systems, Storm/Sub-surface Drainage Systems, Sanitary and Electrical Conduit to lines and grades as shown on the Drawings.
- F. Grading & Compaction of sub-grade and base aggregates for Concrete & Concrete Masonry Unit
- G. Import and placement of Playfield and Planting Soils for Lawn Areas and Landscape Plantings.
- H. Removing materials from the site which are in excess of that which is required.
- I. Coordinate Earthwork operations for Walls, Abutments, Footings, Building Foundations and other work associated with the project.

**1.02 Related Sections:**

Coordinate related work specified in other parts of the Project Manual, including but not limited to following:

- Section 02050 - Site Preparation
- Section 02100 - Demolition
- Section 02515 - Concrete Masonry Unit Paving
- Section 02520 - Concrete Paving
- Section 02720 - Storm Sewers and Sub-surface Drainage Systems
- Section 02810 - Irrigation System
- Section 02950 - Landscape Plantings
- Section 02990 - Site Restoration

**1.03 References:**

- City of Seattle Standard Plans and Specifications for Road, Bridge and Municipal Construction (most current editions).
- City of Seattle Title 22.800: Stormwater, Grading and drainage Control Code (most recent edition)
- R.C.W. – Chapter 39.04.180 Public Works/Trench Excavations – Safety Systems Required.
- R.C.W. – Chapter 49.17 WISHA.
- WAC 296-155 – Safety Standards for Construction Work.

**1.04 Quality Assurance:**

- A. The Contractor is responsible for verifying the quality of the work and shall perform compaction and density tests on request of the Engineer to check compliance with these specifications. A copy of the test reports shall be furnished to the Engineer.
- B. The Engineer's Testing Agency may perform compaction and density tests to verify compliance with these specifications.
- C. The Engineer may require that an independent testing laboratory test imported materials at any time. If the material is found to be non-compliant with the Contract, the Contractor shall bear the cost of testing, removal of all non-compliant materials from the Project Site, and replacement of the materials with materials meeting the requirements of the Contract. If the materials tested are found to be compliant with the requirements of the Contract, the Owner will reimburse the Contractor for costs incurred by testing plus mark-ups as allowed for elsewhere in the Contract.
- D. It is the responsibility of the Contractor to verify the accuracy of all survey information provided by the Owner prior to commencing excavations or filling operations. Commencement of these operations constitutes acceptance of the survey information as appropriate to meet the intent of the Contract.
- E. Submittals:
  - 1. Health and Safety Plan:  
Prepare and submit a Worker Health and Safety Plan. Although certain requirements are identified here and elsewhere in these specifications, it is the sole responsibility of the Contractor to provide a safe work environment and adequate protection to individuals under their employ. Maintain a copy of the Health and Safety Plan in a conspicuous location on the Job Site and reinforce the requirements of the document at weekly Job Site Safety Meetings.
  - 2. Safety Products:
    - a. Submit for the Engineer's approval manufacturers product data for each worker safety product specified.
    - b. Provide current calibration certificates for each piece of mechanical monitoring equipment to be used in the work. Perform field testing of equipment for the Engineers approval prior to commencing excavation.
  - 3. Bulk Materials:  
The Engineer shall approve in principle all products used in the execution of this section prior to their importation to the Project Site. Submit a particle gradation analysis in graph and table form for each product specified. Approval of the Engineer of an analysis does not constitute approval of the actual product, which may be subject to additional testing at any time per paragraph 1.04.C above.

#### 1.05 Existing Conditions:

Documentation regarding existing conditions, in addition to the current survey supplied in the Contract Drawings, includes the following;

##### A. Project Site Record Drawings:

Complete archival documentation of previous improvements made by the Owner at the project site may be reviewed during regular business hours at the offices of the Park Engineer, located at 800 Maynard Ave. - 3<sup>rd</sup> Floor, Seattle WA. Telephone 206-233-7920

to arrange review of these documents. Copy services are available for a fee, unless other arrangements are made.

B. Soils Reports:

The Owner shall provide updated soils reports in anticipation of this project if they are available. Those reports will be attached in their entirety, for informational purposes only, following this Section.

C. Other Available Information:

Other information regarding utilities belonging to jurisdictions other than the Owner may be obtained through the City of Seattle Department of Parks and Recreation, Seattle Public Utilities (SPU) and/or King County - Metro.

1.06 Manufacturer's Qualifications:

- A. The Contractor shall cause the materials that are to be furnished under this section to be the product of firms that are regularly engaged in the manufacture of the specified materials.

**PART 2 - PRODUCTS**

2.01 General:

- A. Prior to the importation of any materials, the Contractor shall provide the Engineer with a certified test lab report of the sieve analysis of each aggregate 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 by the Engineer.
- B. During the course of importation of materials, the Contractor shall be responsible for continually checking the materials to insure that they continue to meet the Specifications.

2.02 Safety, Monitoring, & Response Equipment:

A. General:

The Contractor shall provide barricades, safety guards, temporary fencing, signage and/or other methods to secure trenches, open excavations, and other unsafe conditions resulting from this construction. Undertake work in full compliance with all applicable regulatory requirements.

2.03 Storm Drainage Backfill:

A. Perforated Drain Pipe (Non-rigid PVC Pipe):

1. Pipe Bedding & Backfill shall be Type 4 aggregate, 1½" washed drain rock. Perforated pipe bedding shall consist of well-graded mineral aggregate with no fractured surfaces, meeting a particle gradation as follows:

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2" square	100
1-1/4" square	90-100
3/4" square	0-20
3/8" square	0-2

B. Solid Pipe/Tight Line (Non-rigid PVC or HDPE Pipe):

1. Bedding in solid pipe storm drainage trenches, shall be Type 22 (5/8" crushed rock, bearing no naturally occurring or worn surfaces), meeting the following particle gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
5/8"	100
1/2"	75-100
1/4"	0-25

2. Backfill for solid piped drainage shall be of native soils occurring on-site, only if those soils meet or exceed the gradation standards per the City of Seattle Standard Specifications (most recent edition), Section 9-03.16 for Type 17 (pit run), or as approved by the Engineer.

2.05 Pavement Base Aggregate:

For use as imported base course for Concrete, Asphaltic Concrete, and Concrete Masonry Unit Pavement;

1. Shall be Type 1 mineral aggregate (5/8" minus crushed rock, bearing no naturally occurring or worn surfaces) per City of Seattle Standard Specifications (most recent edition), Section 9-03.16. Gradation of the base course shall be:

<u>Sieve Size</u>	<u>Percent Passing</u>
5/8" square sieve	100
1/4" square sieve	50 – 75
No. 40 sieve	8 – 24
No. 200 sieve	10.0 maximum

2.06 Common Fill:

Where on-site soils prove to be insufficient in quantity or quality to achieve design subgrades, import fills may be accepted upon approval of the Engineer. Common Fill shall be pit run sand available from a recognized commercial source meeting the following sieve gradation per the City of Seattle Standard Specifications (most recent edition) Section 9-03.12(5).

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8" square	100
1/4" square	90-100
#8	40-100
#50	10-60
#200	0-10

Organic content shall be no greater than 8% dry weight.

Variations to this particle gradation may be considered dependant on the application.

Submit to the Engineer a written request to import Common Fill including the total volume of import anticipated (or range) and the source including name, address, and phone number of supplier, and geographic source of the material proposed to be imported.

2.07 Utility pipe tracer tape shall be detectable below ground surface, color coded, with utility name printed on tape. Conductive warning tape required over all water, sewer, drainage, and irrigation pipe. Tape shall be manufacturer's standard permanent, bright-colored, continuous printed plastic tape, aluminum backed, intended for direct-burial service. Tape shall be not less than 6" wide x 4 mils thick.

<u>Tape Schedule:</u> Piping	Color	Wording
Sanitary Sewer	Green	Caution Sanitary Sewer
Storm Drain	Green	Caution Storm Drain
Domestic Water	Green	Caution Water

### PART 3- EXECUTION

3.01 Safety Monitoring & Response:

In addition to all current State and Local Safety Requirements;

- A. Maintain conformance to the Contractors Health and Safety Plan.
- B. When working in the presence of landfill materials (exposed refuse), the Contractor shall conform to all appropriate WAC codes and practices.

3.02 Protection of Existing Facilities:

- A. Refer to Section 01760 - Existing Facilities, for information pertinent to the protection of all existing facilities.
- B. It is understood that there will be interfering utilities, service laterals and other underground pipes, drains or structures encountered that are not shown, or areas shown incorrectly on the plans, or have not been previously discovered in the field. Contractor agrees this is a normal and usual occurrence in the construction of underground improvements. Furthermore, Contractor understands and agrees that work in some cases must be done in close proximity to said utilities and underground pipes, drains and structures not shown or shown incorrectly on the plans, which may require a change in operations and may cause sloughing of the trench, additional traffic control, additional pavement and backfill costs and time. The Contractor agrees that these occurrences are usual and ordinary, and are reflected in the bid and plan of operation.
- C. Contractor agrees to provide for these conflicts and interferences and agrees to provide for a reasonable amount of time for design changes and/or utility relocations due to said interferences.
- C. Repair and or replacement of damaged facilities to the Engineer's satisfaction, will be accomplished at the Contractor's expense.

3.03 Protection of Work In Progress:

It is the responsibility of the Contractor to protect all work in progress from damage due to extremes of cold, moisture, or drying, or mechanical damage from equipment traffic or foot traffic. Alert the Engineer to the presence or likelihood of conditions that may adversely affect the quality of the work, the physical structure of soils, or transport of site soils off-site.

- A. Do not work frozen soils.
- B. Protect soils from excessive moisture. During periods of prolonged precipitation, take aggressive steps to avoid over-saturation, erosion, or homogenization of soils by covering with protective plastic sheeting, collection and controlled dewatering, detention for sediment removal, and allowing excessively wetted soils to remain fallow until approved by the Engineer as appropriate for continued work. It shall be the Contractor's sole responsibility for soils that are contaminated by the weather and/or by his/her construction activities.
- C. Apply supplemental moisture to overly dry soils.
- D. Do not operate heavy equipment near excavations where trench wall or cut-slope failure may result.

3.04 Earthwork – General:

- A. General: Removal of materials beyond indicated sub-grade elevations or dimensions without specific direction of the Engineer is not authorized. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at the Contractor's expense.
- B. Stability of excavations:
  - 1. Sides of excavations to be vertical as shown on the Drawings. Maintain sides of excavations in a clean and safe condition until completion of back filling.
  - 2. Shoring and bracing are required at excavations deeper than 4 feet below adjacent existing grade. All shoring and bracing shall conform to the requirements of the Seattle Standard Specifications (most recent edition) and requirements of the Washington Industrial Safety and Health Act.
- C. Dewatering: Prevent surface and subsurface water from flowing into excavations and from flooding project site. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas. If required, line ditches and sumps with coarse-grained material that acts as a filter. Do not use trench excavations as temporary drainage ditches. All dewatering shall conform to the requirements of the City of Seattle Standard Specifications (most recent edition) and Title 22.80 of the City of Seattle Stormwater, Grading, and Drainage Control Code (most recent edition).
- D. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape all stockpiles for proper drainage.
- E. Locate and retain soil materials away from edge of excavations and drip lines of trees to remain.
- F. Dispose of excess soil material and waste materials as herein specified.

3.05 Grading – General:

- A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes

between points where elevations are shown, or between such points and existing grades. Finish surfaces free from irregular surface changes.

- A. Landscape planting, lawns, and other landscape repair areas finish grade to be minus 1/2 inch from adjacent paving surfaces with smooth transition to adjacent grades.

**3.06 Excavation:**

- A. Layout: All work shall be surveyed and staked by the Contractor as required to complete earthwork. Maintain all benchmarks, control monuments and stakes, whether newly established or previously existing. Protect from damage and dislocation. If necessary to disturb existing benchmarks, re-establish in a safe place. Notify Engineer a minimum of 3 days prior to excavation of work areas. Engineer shall inspect staking and layout of work.
- B. Excavation for Trenches: Provide neat trenches to the depth, slope (where appropriate) and width as indicated in the Contract Drawings. Allow for import of surfacing materials and bedding. Provide clean, smooth trench walls and trench floors.

**3.07 Excavation Safety Systems:**

- A. Provide all trench excavation in excess of 4 feet in depth with a safety system conforming to the referenced requirements.

**3.08 Compaction:**

- A. General: Control soil compaction during construction providing minimum percentage of density specified for area classification. Do not allow equipment traffic to overly compact areas beyond specified percentages. Remediate over-compaction as directed by the Engineer including ripping, regrading and re-compaction or over-excavation and in-kind replacement per plan.
- B. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages for maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D698; and not less than the following percentages of relative density; determined in accordance with ASTM 4253, for soils which will not exhibit a well defined moisture density relationship (cohesionless soils).

1. Backfill:

- a. Solid Piped Drainage Bedding under pipe- 95%
- b. Solid Piped Drainage Bedding over pipe - 75%
- c. Solid Piped Drainage Backfill - 95%
- d. Perforated Piped Drainage Bedding and Top Lift, water settle, 75%.
- e. Irrigation Pipe Bedding below pipe - 95%
- f. Irrigation Pipe Bedding over pipe - hand tamp to 75%
- g. Irrigation Pipe Backfill - 85%
- h. Over excavation Backfill of Existing Sub-grade to remain - 95%

2. Sub-grades:

- a. Sub-grade soils in lawn areas (outside Playfield) - 75%
- b. Sub-grade soils on Playfield – 90%
- c. Base Sand on Playfield – 95%
- d. Sub-grade soils in landscape planting areas – 70%

3.
  - e. Import aggregate base material in paving areas - 95%.
3. Surface Fills:
  - a. Playfield Soils - 85%
  - b. Planting Soils – 70%
  - c. Structural Soils – 90%
  - d. Fills on slopes exceeding 3:1, to prevent erosion – 90%

C. Moisture Control:

1. Where sub-grade or lift of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.
2. Before compaction, moisten or aerate each layer as necessary to provide optimum content. Compact each layer to required percentages of maximum dry density or relative dry density for each area classification.
3. Do not perform compaction operations on excessively wetted soils.

3.09 Trench Backfill:

- A. General: Place fill materials in specified lifts to required sub-grade elevations, for each area classification as described in this Section.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
  1. Inspection, testing, approval, and recording locations of underground utilities.
  2. Removal of shoring and bracing, and back filling of voids with satisfactory materials.
  3. Removal of trash and debris.
- C. Placement and Compaction: Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand operated tampers. All compaction shall be by mechanical methods. Water settling may be used for Perforated Piped Drainage aggregates only. Do not place backfill for fill material on surfaces that are overly wet or dry, frozen, or graded inconsistently.
- D. Perforated Piped Drainline Trench Backfill:
  1. Provide a single, consistent 4" lift of Perforated Piped Drainage Bedding.
  2. Coordinate installation of piping per the requirements of Section 02720 - Storm Drainage.
  2. Upon Engineers approval of installation of Perforated Piped Drainage, backfill with Perforated Piped Drainage bedding to within 12" of the design sub-grade.
  4. Place a uniform 6" settled lift of Perforated Piped Drainage Middle Lift Aggregate.
  5. Complete installation with 6" settled lift of Perforated Piped Drainage Top Lift Aggregate to design sub-grade.
  6. Where design depths of pipe do not accommodate the installation of the three specified products as described, delete the installation of middle lift aggregate following identification of the limit of the area to be modified and the approval of the Engineer.
- E. Solid Piped Drainline Trench Backfill:

1. Provide a single, consistent 4" compacted lift of Solid Piped Drainline Trench Bedding.
2. Coordinate the installation of Solid Piped Drainlines per the requirements of Section 02720 - Storm Drainage.
3. Upon approval of the Engineer of installation of Solid Piped Drainlines, install an additional single lift of Solid Piped Drainage Bedding in a thickness allowing a minimum 4" compacted cover over crown of Solid Pipe.
4. Complete installation with specified native soils or approved Common Fill compacted to design sub-grade.

3.10 Pavement Base Backfill

- A. Provide a minimum 6" compacted lift of specified Pavement Base Aggregate true to the elevations either described or implied in the Contract Drawings or as required to match adjacent existing pavements or landscapes, and a minimum of 4" beyond the horizontal layout lines of pavement or as indicated on the Contract Drawings.
- B. Pavement Bases shall be graded such that upon approval of compaction, the surface of the Base is at the correct elevation to receive pavement to design finished grade.

3.11 Backfill of Over-excavations

Backfill over-excavations with approved excess native soils or approved Common Fill true to the design elevations per the Contract Drawings unless otherwise directed. Install and compact to specified rates in lifts not exceeding 8" of loose material.

3.12 Structural Soil Base for Reinforced Turf

For all areas scheduled to receive Pre-cast Concrete Turf Reinforcement;

A. Sub-grade Preparation

On a rough native soil grade prepared to the design depth, establish a uniformly sloping sub-grade of a minimum 2" lift Type 1 Mineral Aggregate compacted to 95% max. dry density. Install geo-grid and woven geotextile per the requirements of 3.07 above.

B. Following approval of the prepared sub-grade, begin placement of Structural Aggregate to ½ of the design cross section depth. Place Structural Aggregate loosely and uniformly over the area to be covered. Incorporate a 1:1 blend of specified sand and organic material to completely fill all voids in the initial lift of Structural Aggregate. Water settles as necessary to achieve the intent. Continue with the installation of the upper ½ of the design cross-section prior to compaction. Compact to 90%, using approved methods.

3.13 Disposal of Excess and Waste Materials:

A. Remove from the Owner's property, all waste materials, including unacceptable excavated material, trash and debris, and dispose of it off site in a legal and timely manner. Provide dump receipts from an approved dumpsite if directed.



February 15, 2007

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**Barker Landscape Architects PS**

Attn: Mr. John Barker  
1514 Northwest 52<sup>nd</sup> Avenue  
Seattle, Washington 98017

**RE: LIMITED GEOTECHNICAL INVESTIGATION**

Proposed Ballard Park  
1701 Northwest 63<sup>rd</sup> Street  
Seattle, Washington

Dear Mr. Barker:

This letter report presents our findings regarding the existing site soils and estimated infiltration rates based on in place infiltration tests (in general accordance with the King County Surface Water Design Manual Section 5.4.1 General requirements for Infiltration Facilities) within the proposed community park development area, located at 1701 Northwest 63<sup>rd</sup> Street in Seattle, Washington (Figure 1). We hand excavated four exploratory test pits within the proposed development at locations discussed on site with you, and performed a Falling Head Percolation Test within two of the exploratory test pits. Please see the attached site plan (Figure 2) for the exploratory test pit locations. The exploratory test pits were excavated to depths of approximately 2.5 to 4.0 feet below the existing site grades. Krazan & Associates, Inc. performed the field investigation on February 8, 2007.

Representative subsurface samples were collected from each of the test pits and sealed in plastic bags. These samples were transported to our laboratory for further examination and 30 day storage. The soils encountered in the exploratory test pits, were continuously examined and visually classified in accordance with the Unified Soil Classification System (USCS). For information about the soils encountered, please refer to the logs of the exploratory test pits attached at the end of this report.

The exploratory test pits were checked for the presence of groundwater during and immediately following the excavation operations. Groundwater was not encountered at the date and time of the field infiltration evaluation.

It should be recognized that water table elevations may fluctuate with time. The groundwater level will be dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, water levels at the time of the field investigation may be different from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

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The soil infiltration rates at the exploratory test pit locations, based on the EPA Falling Head Percolation Test Procedure, are presented in the following table.

INFILTRATION RATE			
Test Pit Number	Test Elevation (feet)	Infiltration Rate (min/in.) No Factor of Safety	USCS Soil Classification Based on Visual Classification
TP-1	-4	<1	Silty Sand with Trace Gravel (SM)
TP-4	-2.5	>1	Poorly Graded Sand with Gravel (SP)

The Falling Head Percolation Tests indicate that the soils encountered, glacial outwash soils, at the test locations, have a rapid to very rapid rate of permeability in their current condition.

The infiltration rates presented in this report are based on field testing with clear water and do not incorporate a factor of safety. Based on the King County Surface Water Design Manual Section 5.4.1 General Requirements for Infiltration Facilities Simplified Method, the following correction factors for testing uncertainties and soil plugging should be used for determining the preliminary design infiltration rates:

- 1) For the EPA Method,  $F_{corr} = 0.30$
- 2) Plugging of soils at TP-1 location,  $F_{plugging} = 0.8$
- 3) Plugging of soils at TP-4 location,  $F_{plugging} = 1.0$

We hope that this letter report provides the information required at this time. If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,  
**KRAZAN & ASSOCIATES, INC.**

  
Chris Behrens, L.G., P.E.G.  
Senior Engineering Geologist



CB/bc

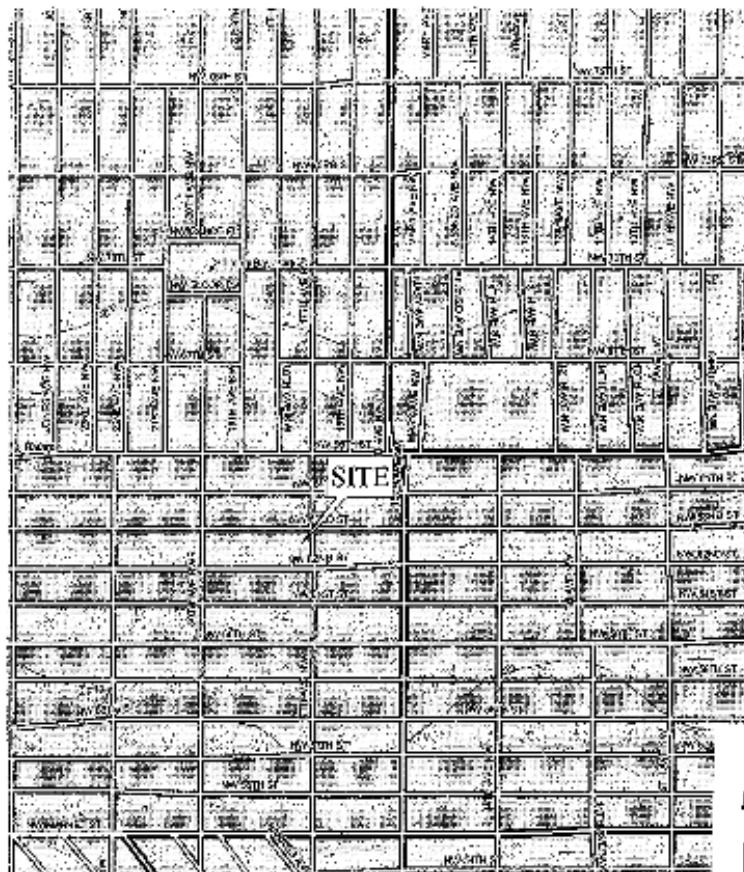
CHRIS J. BEHRENS

Attachments: Vicinity Map  
Site Plan  
Test Pit Logs (3)

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Eleven Offices Serving The Western United States  
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Ballard Corners Park  
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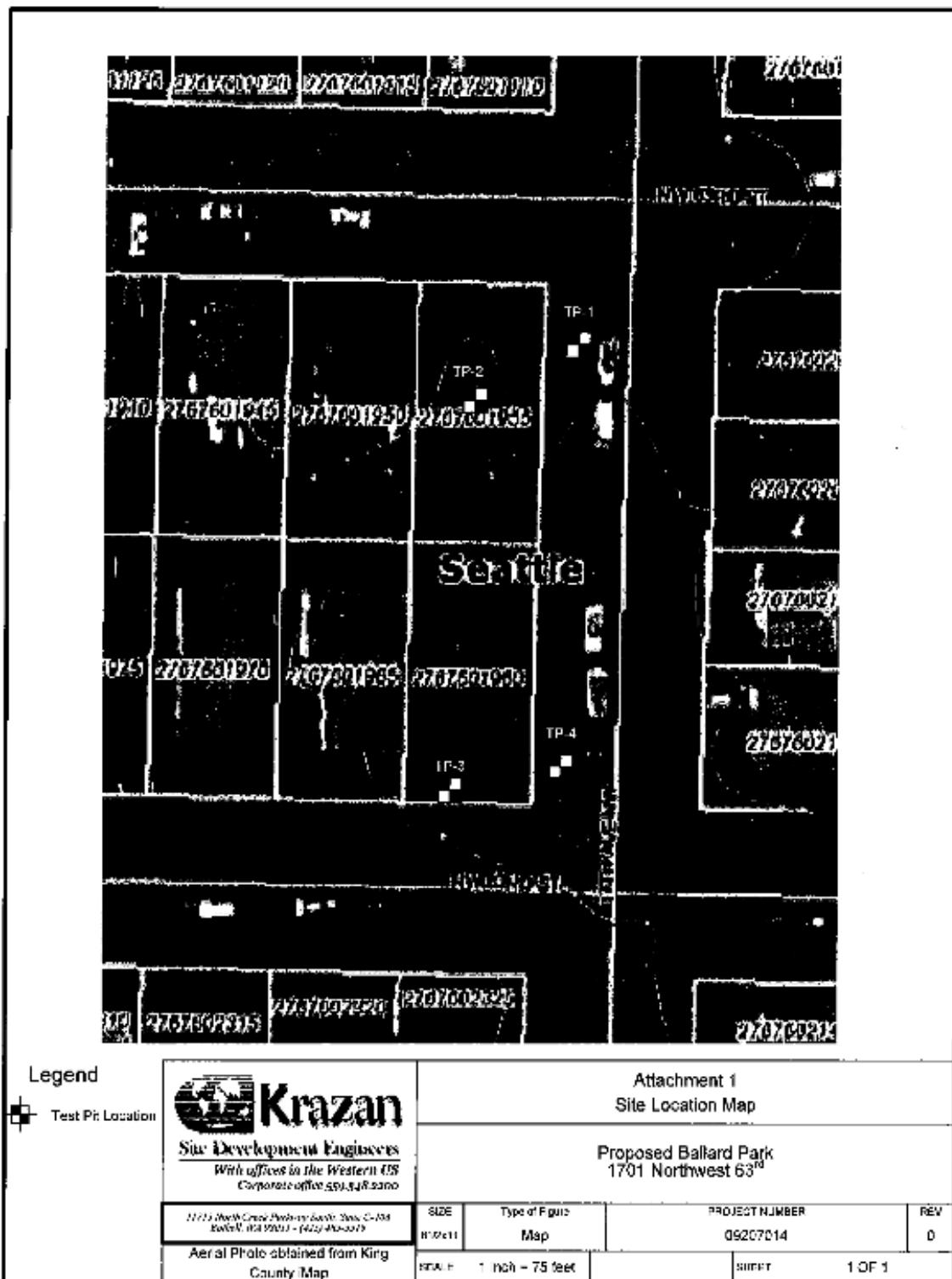


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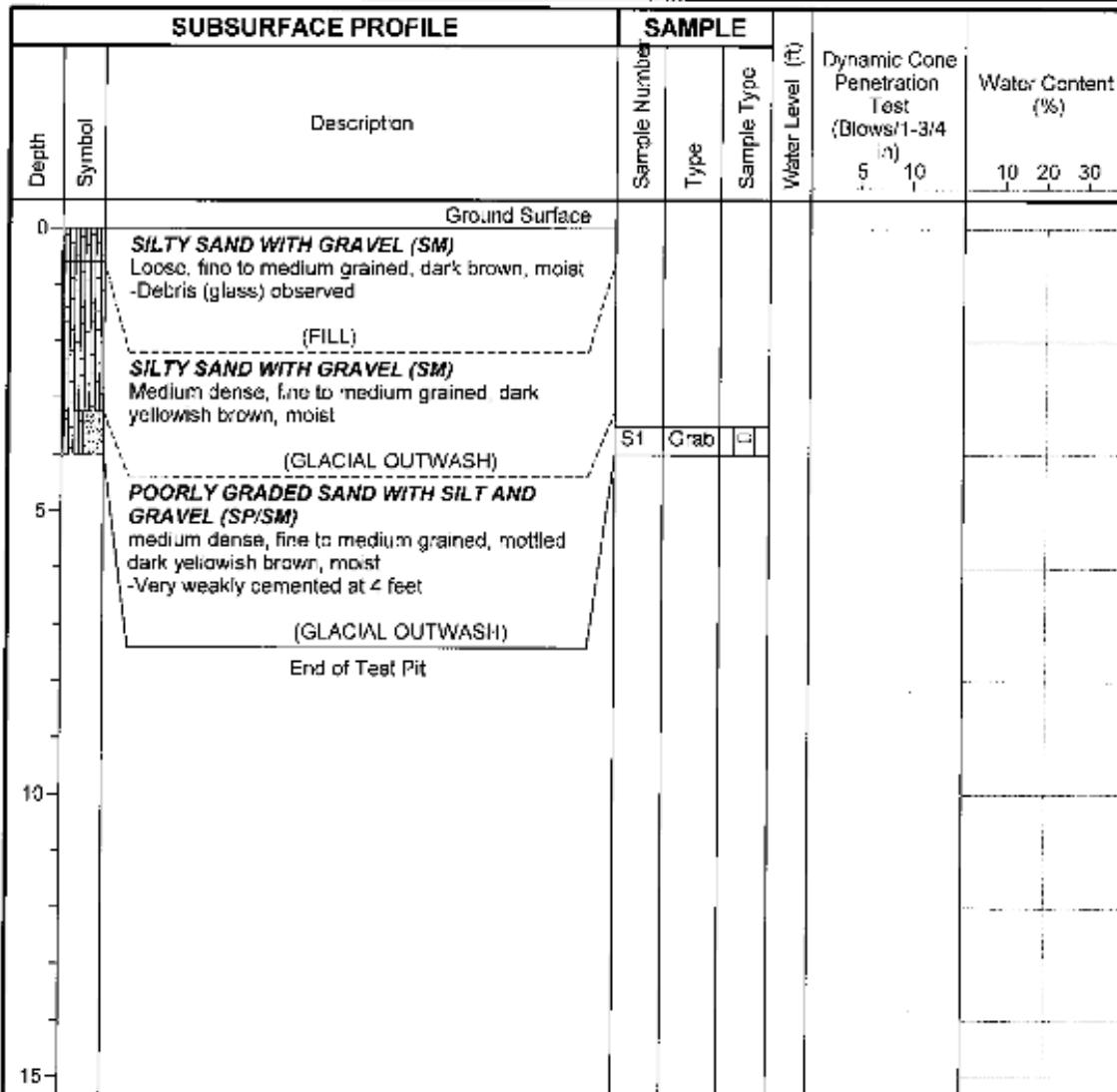
**KRAZAN & ASSOCIATES**  
11715 N. Creek Pkwy S.  
Suite C-106  
Bothell, WA 98011  
425-485-5519

**FIGURE 1 – VICINITY MAP**

Location: Seattle, Washington  
Job No.:092-07014  
Client: Barker Landscape Architects  
Date: Feb. 15, 2007



Project: Ballard Park	<b>Log of Test Pit TP-1</b>	Project No: 092-0/014
Client: Barker Landscaping	Surface Elevation: 0	Figure No: 3
Location: Seattle, WA	Datum: Local	Logged By: BBC
Depth to Water: N/A	Initial: N/A	At Completion: N/A



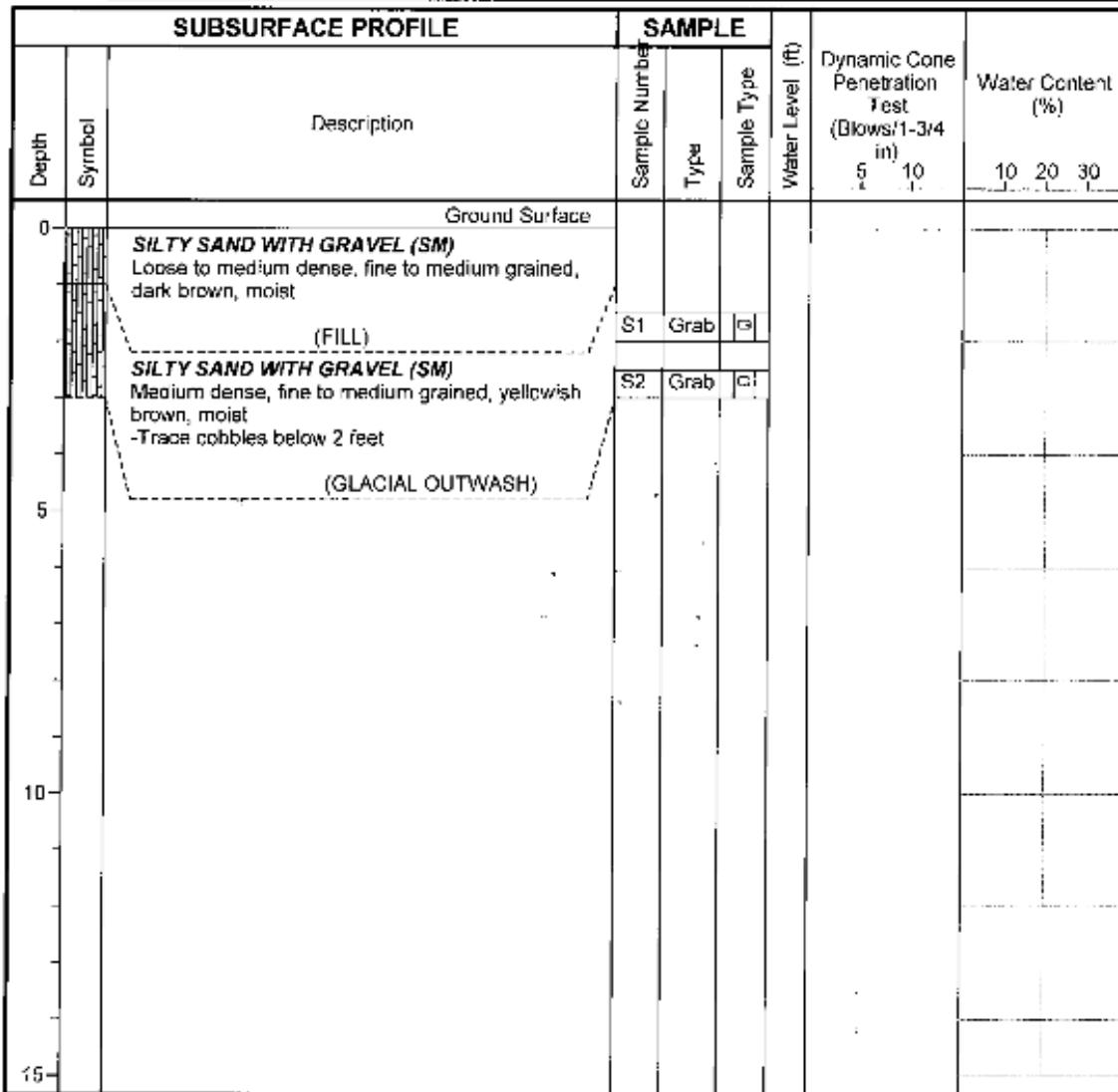
Excavation Method: Hand Auger	Krazan and Associates 11715 North Creek Parkway S., Suite C106 Bothell, WA 98011	Test Pit Date: 2/8/2007
Contractor: N/A		Sample Method: Grab Sheet: 1 of 1

Project: Ballard Park	<b>Log of Test Pit TP-2</b>	Project No: 082-07014
Client: Barker Landscaping	Surface Elevation: 0	Figure No: 4
Location: Seattle, WA	Datum: Local	Logged By: BBC
Depth to Water: N/A	Initial: N/A	At Completion: N/A

		<b>SUBSURFACE PROFILE</b>			<b>SAMPLE</b>			Water Level (ft)	Dynamic Cone Penetration Test (Blows/1-3/4 in) 5      10	Water Content (%) 10    20    30
Depth	Symbol	Description		Sample Number	Type	Sample Type				
0		Ground Surface								
		<b>SILTY SAND WITH GRAVEL (SM)</b> Loose, fine to medium grained, dark brown, moist (FILL)		S1	Grab	<input type="checkbox"/>				
		<b>SILTY SAND WITH GRAVEL (SM)</b> Medium dense, fine to medium grained, dark yellowish brown, moist -Trace cobbles at 2.5 feet		S2	Grab	<input checked="" type="checkbox"/>				
5		<b>(GLACIAL OUTWASH)</b> <b>POORLY GRADED SAND WITH SILT AND GRAVEL (SP/SM)</b> Medium dense, fine to medium grained, mottled dark yellowish, moist -Abundant gravel below 3.0 feet								
		<b>(GLACIAL OUTWASH)</b>								
		End of Test Pit								
10										
15										

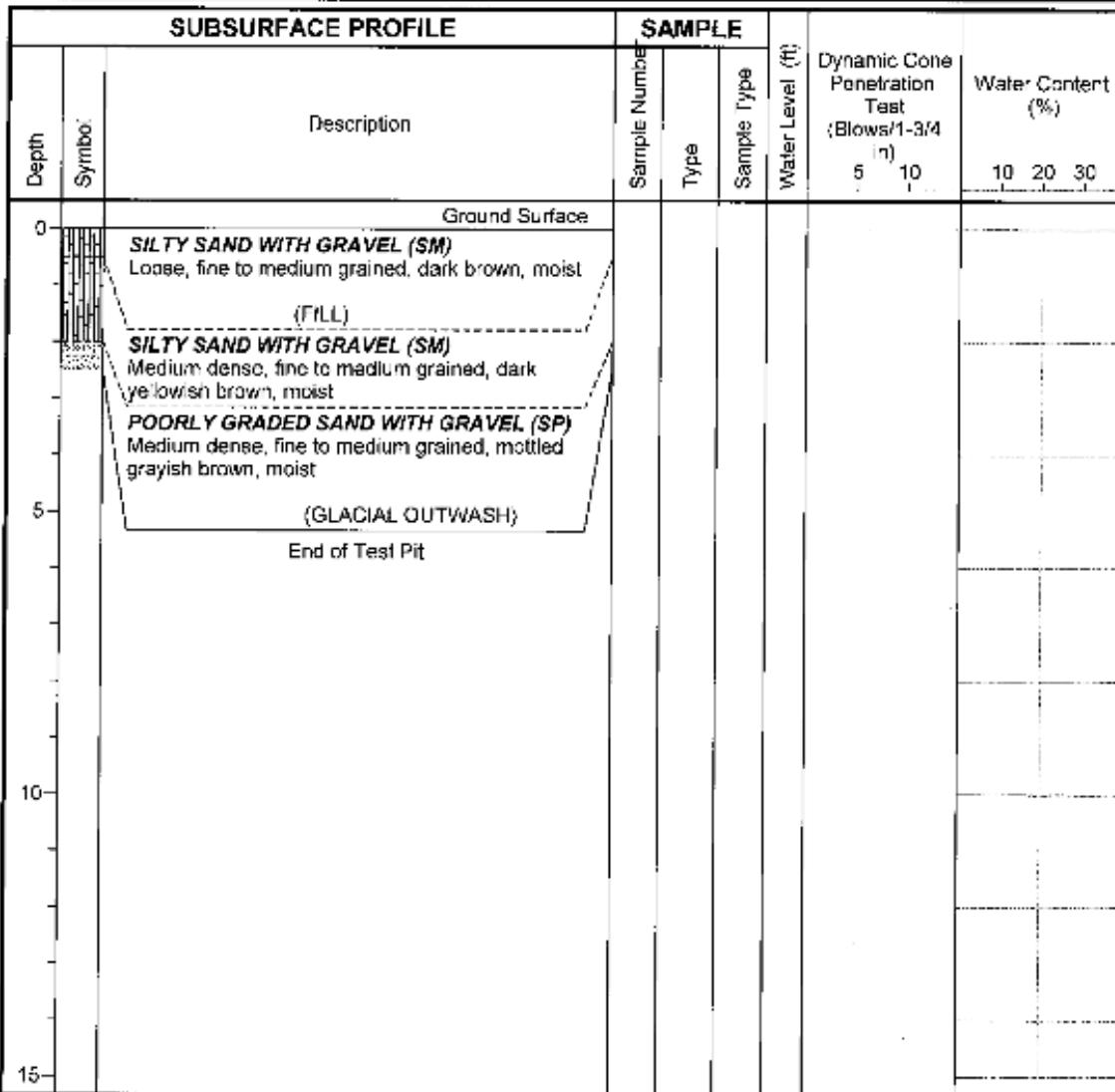
Excavation Method: Hand Auger	Krazen and Associates 11715 North Creek Parkway S., Suite C106 Bothell, WA 98011	Test Pit Date: 2/8/2007
Contractor: N/A		Sample Method: Grab Sheet: 1 of 1

Project: Ballard Park	<b>Log of Test Pit TP-3</b>	Project No: 092-07014
Client: Barker Landscaping	Surface Elevation: 0	Figure No: 5
Location: Seattle, WA	Datum: Local	Logged By: BBC
Depth to Water: N/A	Initial: N/A	At Completion: N/A



Excavation Method: Hand Auger	Krazen and Associates 11715 North Creek Parkway S., Suite C106 Bothell, WA 98011	Test Pit Date: 2/8/2007
Contractor: N/A		Sample Method: Grab Sheet: 1 of 1

Project: Ballard Park	<b>Log of Test Pit TP-4</b>	Project No: 092-07014
Client: Barker Landscaping	Surface Elevation: 0	Figure No: 8
Location: Seattle, WA	Datum: Local	Logged By: BBC
Depth to Water: N/A	Initial: N/A	At Completion: N/A



Excavation Method: Hard Auger	Krazen and Associates 11715 North Creek Parkway S., Suite C106 Bothell, WA 98011	Test Pit Date: 2/8/2007
Contractor: N/A		Sample Method: Grab Sheet: 1 of 1

END OF SECTION 02200

**SECTION 02501**  
**CRUSHED ROCK PATH**

**PART 1 – GENERAL**

**1.01 Description:**

Provide all labor, materials, and equipment to perform the following work of the Contract, including incidentals related to that work and other work specified elsewhere in the Contract Documents:

- A. Survey for horizontal and vertical control of all work of the Contract.
- B. Protection of Existing Features and Work in Progress.
- C. Construction of crushed rock path.
- D. Removing materials from the site which are in excess of that required.

**1.02 Related Sections:**

Coordinate related work specified in other parts of the Project Manual, including but not limited to the following:

- Section 02050 - Site Preparation
- Section 02100 - Demolition
- Section 02990 - Site Restoration

**1.03 References:**

The City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

**1.04 Quality Assurance:**

- A. The Contractor is responsible for verifying the quality of the work and shall perform compaction and density tests on request of the Engineer to check compliance with these specifications. A copy of the test reports shall be furnished to the Engineer.
- B. The Engineer's Testing Agency may perform compaction and density tests to check compliance with these specifications.
- C. The Engineer may require that an independent testing laboratory test imported materials at any time. If the material is found to be non-compliant with the Contract, the Contractor shall bear the cost of testing, removal of all non-compliant materials from the Project Site, and replacement of the materials with materials meeting the requirements of the Contract. If the materials tested are found to be compliant with the requirements of the Contract, the Owner will reimburse the Contractor for costs incurred by testing plus mark-ups as allowed for elsewhere in the Contract.
- D. It is the responsibility of the Contractor to verify the accuracy of all survey information provided by the Owner prior to commencing excavations or filling operations. Commencement of these operations constitutes acceptance of the survey information as appropriate to meet the intent of the Contract.
- E. Submittals:

The Engineer shall approve in principle all products used in the execution of this section prior to their importation to the Project Site. Submit a particle gradation analysis in graph and table form for each product specified. Approval of the Engineer of an analysis does not constitute approval of the actual product, which may be subject to additional testing at any time per paragraph 1.04.C above.

## PART 2 - PRODUCTS

- 2.01 General:
- A. 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.
  - B. During the course of importation of materials, the Contractor shall be responsible for continually checking the materials to insure that they continue to meet the Specifications.
- 2.03 Crushed Rock Path Base Aggregate:

For use as imported base course for Gravel Path;

Type 1 mineral aggregate (5/8" minus crushed rock, bearing no naturally occurring or worn surfaces) per City of Seattle Standard Specification (most recent edition) Section 9-03.16. Graduation of the base course shall be:

<u>Sieve Size</u>	<u>Percent Passing</u>
5/8" square sieve	100
1/4" square sieve	50 – 75
No. 40 sieve	8 – 24
No. 200 sieve	10.0 maximum

- 2.05 Crushed Rock Path Top Course, Stabilized 1/4" Minus Crushed Rock (#4 to Dust).
- A. 1/4" Minus Crushed Rock (#4 to Dust), shall consist of crushed ledge rock or talus bearing no naturally occurring or worn surfaces. Graduation of the top course shall be:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8" square sieve	100
No. 4 sieve	95 - 100
No. 8 sieve	75 - 80
No. 16 sieve	55 - 65
No. 30 sieve	40 - 50
No. 50 sieve	25 - 35
No. 100 sieve	20 - 25
No. 200 sieve	5 - 15

## PART 3 - EXECUTION

- 3.01 Protection of Existing Facilities
- A. Utilities: The Contractor shall protect from damage private and public utilities. Verify the locations of underground utilities minimum 48 hours prior to excavation.
  - B. Pavement: The Contractor shall protect from damage all pavement or paved areas including curbs and walks intended to remain. The Contractor shall be responsible for replacement if damage occurs to pavement or curbs.
  - C. It is the responsibility of the Contractor to protect all work in progress from damage due to extremes of cold, moisture, or drying, or mechanical damage from equipment traffic or foot traffic. Alert the Engineer to the presence or likelihood of conditions that may adversely affect the quality of the work, the physical structure of soils, or transport of site soils off-site.
- 3.02 Preparation:
- A. Do not work frozen soils.
  - B. Protect soils from excessive moisture.
  - C. Apply supplemental moisture to overly dry soils.
- 3.03 Grading:
- A. Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer is not authorized. Unauthorized excavation, as well as remedial work directed by the Engineer shall be at the Contractor's expense.
  - B. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified areas. Compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades. Finish surfaces free from irregular surface changes.
  - D. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
  - E. Locate and retain soil materials away from edge of excavations and drip lines of trees to remain.
  - F. Dispose of excess soil material and waste materials as herein specified.
- 3.04 Compaction:
- A. General: Control soil compaction during construction providing minimum percentage of density specified for area classification. Do not allow equipment traffic to overly compact areas beyond specified percentages. Remediate over compaction as directed by the Engineer including ripping, regrading and re-compaction or over-excavation and in-kind replacement per plan.
  - B. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages for maximum density for soils which exhibit a well-defined moisture

density relationship (cohesive soils) determined in accordance with ASTM D1557; and not less than the following percentages of relative density; determined in accordance with ASTM 2049, for soils which will not exhibit a well defined moisture density relationship (cohesionless soils).

1. Import aggregate base material for Crushed Rock Path - 95%.
2. Crushed Rock Path Top Course - 95%

C. Moisture Control:

1. Where sub-grade or lift of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.
2. Before compaction, moisten or aerate each layer as necessary to provide optimum content. Compact each layer to required percentages of maximum dry density or relative dry density for each area classification.
3. Do not perform compaction operations on excessively wetted soils.

3.05 Crushed Rock Path Base Backfill:

Provide a minimum 4" compacted lift of specified Crushed Rock Path Base Aggregate true to the elevations either described or implied in the Contract Drawings or as required to match adjacent existing pavements, and a minimum of 4" beyond the horizontal layout lines of pavement as indicated on the Contract Drawings.

3.06 Crushed Rock Path Top Course

- A. Provide a 2" compacted lift of specified Crushed Rock Path Top Course Crushed Rock true to the elevations either described or implied by the Contract Drawings or as required by the Engineer.
- B. As usual, slightly crown the surface so as to provide natural runoff and drainage.

3.07 Disposal of Excess and Waste Materials

Remove from Owner's property all waste materials, including unacceptable excavated material, trash and debris, and dispose of it off site in a legal manner. Provide dump receipts from an approved dumpsite.

**END OF SECTION 02501**

**SECTION 02515**  
**PRECAST CONCRETE MASONRY UNIT PAVING**

**PART 1 - GENERAL**

**1.01 Description:**

Furnish all material, labor, services and related items required to complete masonry unit paving work indicated on drawings and/or specifications. The items of work to be performed shall include but are not necessarily limited to the following: sub-grade preparation, base material, masonry unit paving, and edging.

**1.02 Related Sections:**

Section 02050 - Site Preparation  
Section 02200 - Earthwork for Site Work  
Section 02990 - Site Restoration

**1.03 References:**

This section references the latest revisions of the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

CPI TEK, An Information Series from the Concrete Paver Institute, a division of the National Concrete Masonry Association, (most recent edition).

City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

**1.04 Submittals:**

The Contractor shall submit to the Engineer materials containing the following information

- A. Procedures to be used in the construction under this Section with regard to the division of labor and the responsibilities of the Contractor and all sub-contractors involved.
- B. Furnish samples of unit pavers to be used, minimum one square foot sample. Submit catalog sheets and test data for approval.
- C. Qualification data for firms and persons specified in "Quality Assurance" paragraph to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of landscape architects and Owners.

**1.05 Quality Assurance:**

- A. Installer Qualifications: An experienced installer who has successfully completed unit paver installation similar in material, design, and intent to that indicated for Project.
- B. Single Source Responsibility: Obtain each color, type, and variety of unit pavers from a single source. Materials shall be available and be consistent in quality, appearance and physical properties without delaying progress of Work.

- C. Prior to commencing the work of this Section, verify the accuracy of layout and grading. Verify that all sub-grade and base course aggregate conditions are as specified. Notify the Engineer of any discrepancies and coordinate the correction of those discrepancies with other trades as necessary.
- D. Field Constructed Mock Up: Construct a mock up of paving pattern as indicated on the Drawing.

1.06 Delivery, Storage and Handling:

Protect unit pavers and aggregate during storage and construction against wetting by rain, snow, or ground water and against soilage or contamination from earth and other materials.

1.07 Extra Material:

Deliver one unbroken and shrink-wrapped pallet of unit pavers (enough pavers to cover approximately 84 square feet) to the Seattle Department of Parks and Recreation warehouse facility located at 4209 West Marginal Way SW, Seattle WA, 98106. Notify the SPR warehouse at least two working days prior to delivery at 206-615-0332.

## PART 2 - PRODUCTS

2.01 Unit Pavers:

Concrete Masonry Unit Pavers: Solid concrete interlocking paving unit, ASTM C 936, made from normal weight aggregates. Shape and style shall be:

1. Mutual Materials 16"x16"x2-3/8" **Architectural Slabs** (Natural and Charcoal) or Abbotsford **Texada Hydrapressed Slabs** concrete pavers, (or approved equal).
2. Mutual Materials 7-7/8"x7-7/8"x2-3/8" **Double Holland** concrete pavers or Abbotsford **Double Standard** concrete pavers, (or approved equal).

2.02 Aggregate:

2.02 CRUSHED STONE FILLER, BEDDING, BASE AND SUBBASE

- A. Crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883.
- B. Do not use rounded river gravel.
- C. All stone materials shall be washed with less than 1% passing the No. 200 sieve.
- D. Joint/opening filler, bedding, base and subbase: conforming to ASTM D 448 gradation as shown in Tables 1, 2 and 3 below:

Table 1  
Grading Requirements for ASTM No. 8 Bedding and Joint/Opening Filler

Sieve Size	Percent Passing
12.5 mm (1/2 in.)	100
9.5 mm (3/8 in.)	85 to 100
4.75 mm (No. 4)	10 to 30
2.36 mm (No. 8)	0 to 10

1.16 mm (No. 16)                    0 to 5

Table 2

Grading Requirements for ASTM No. 57 Base

Sieve Size	Percent Passing
37.5 mm (1½ in.)	100
25 mm (1 in.)	95 to 100
12.5 mm (1/2 in.)	25 to 60
4.75 mm (No. 4)	0 to 10
2.36 mm (No. 8)	0 to 5

Table 3

Grading Requirement for ASTM No. 2 Subbase

Sieve Size	Percent Passing
75 mm (3 in.)	100
63 mm (2½ in.)	90 to 100
50 mm (2 in.)	35 to 70
37.5 mm (1½ in.)	*0 to 15
19 mm (3/4 in.)	0 to 5

**2.03 EDGE RESTRAINT MATERIAL**

- A. Reinforced Concrete curb, see detail
- C. Joint filler for Leveling Course: Fine, sharp, washed joint filler, free of foreign material, conforming to ASTM C 33. Under no circumstances should masonry mortar joint filler limestone screenings or stone dust be used as a leveling course.
- D. Joint filler for Joints: ASTM C 144 except use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent passing the No. 16 sieve.

**2.03 Edge Restraint Material:**

- A. **Plastic Edging:** Snap-Edge LP low profile edge restraint: recycled plastic rigid tongue and groove edge restrain (or approved equal).

**PART 3 - EXECUTION**

**3.01 Examination:**

The Contractor shall examine surfaces indicated to receive paving for compliance with requirements for tolerances and other conditions affecting performance of unit pavers. Do not proceed with installation until unsatisfactory conditions have been corrected. Prior to excavation, the area to receive unit pavers shall be staked and grade elevation established to ensure proper grades.

**3.02 Preparation of Sub-grade:**

- A. The area should be inspected immediately following excavation, to be sure that no unacceptable sub-base materials are present. Remove all organic materials, roots, oversize rocks or debris that remains in the soil. Wet areas must be drained or stabilized with crushed rock.

- B. Proof roll prepared sub-grade surface to check for unstable areas and areas requiring additional compaction. Do not proceed with installation until deficient sub-grades have been corrected and are ready to receive sub-base for unit pavers. Compact the sub-grade to at least 95 percent density per ASTM D 1557.

**3.03 Sub-base Aggregate Placement:**

Place graded aggregate for sub-base over compacted sub-grade. Provide compacted thickness of sub-base material as indicated on the Drawings. Compact the sub-base to at least 100 percent density per ASTM D 1557.

**3.04 Base Aggregate Placement:**

Place graded aggregate for base over compacted sub-grade. Provide compacted thickness of base material as indicated on the Drawings. Compact the base to at least 100 percent density per ASTM D 1557.

**3.05 Edge Restraint Installation:**

Install edge restraint edging material per manufacturer's specifications and per the Drawings and Details.

**3.06 Joint filler Leveling Course Placement:**

Place joint filler for leveling course over compacted base material to a depth of 1 inch to 1-1/4 inch, taking care that the moisture content remains constant and the density is loose and constant until concrete pavers are set and compacted. Do not use frozen or saturated joint filler for leveling. Do not use joint filler to fill in irregularities in the base material; base material must be added and compacted.

Screed the joint filler with a straight, true strike board. Once joint filler has been screed, it should not be disturbed.

**3.07 Unit Paver Installation**

- A. Place pavers in pattern as shown on the Drawings, keeping lines straight with the use of string lines. Place pavers hand tight, being careful not to disturb the leveling course. The joints between pavers should be approximately 1/16 inch. Gaps more than 3/16 inch shall be filled with pieces cut from full size unit pavers.
- B. Once an area is installed, vibrate the pavers into the joint filler with a plate vibrator capable of a 3,500 to 5,000 pound compaction force. Perform at least 3 passes across paving with the vibrator. Vibrate under the following conditions:
1. After edge pavers are installed and there is a completed surface or before surface is exposed to rain.
2. Before ending each day's work, fully compact installed concrete pavers within 3 feet of the laying face. Cover the open layers with nonstaining plastic sheets overlapped 4 feet on each side of laying face to protect it from rain.
- C. For **Double Holland**: Spread dry joint filler over unit pavers and fill joints immediately after vibration. Brush or sweep joint filler over the pavers repeatedly until all joints are full. Vibrate joint filler into joints and then remove excess joint filler. Do not vibrate within

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3 feet of an unrestrained edge. All work within 3 feet of the laying face must be joint filler filled and vibrated at the end of each day of work.

For **Architectural Slabs:** Mortar set on concrete slab. See details.

- D. Final Surfacing: The final surface elevations shall not deviate more than 3/8 inch under a 10 feet long straight edge. The top surface of the pavers shall be 1/8 to 1/4 inch above the final elevations to compensate for possible minor settling. Repeat joint filling process 30 days after completion of paving.

**3.08 Clean-up and Repair:**

- A. Repair and replace defective unit pavers which are loose, chipped, broken, stained, or otherwise damaged, or as directed by Engineer. Provide new units to match adjoining units and install in the same manner as original units, with same joint treatment to eliminate evidence of replacement.
- B. Protect paving from damage until Physical Completion. Exclude traffic from pavement for at least fourteen (14) days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Sweep concrete pavement and wash free of stains, discoloration, dirt and other foreign material just prior to Physical Completion.

**END OF SECTION 02515**

**SECTION 02520  
CONCRETE PAVING**

**PART 1 – GENERAL**

**1.01 Description:**

Furnish all material, labor, services and related items required to complete concrete paving work indicated on drawings and/or specifications. The items of work to be performed shall include but are not necessarily limited to:

- A. Sidewalks, curbs, ramps, flatwork, slabs and associated work.

**1.02 Related Sections:**

Section 02050 - Site Preparation  
Section 02100 - Demolition  
Section 02200 - Earthwork for Site Work  
Section 02990 - Site Restoration  
Section 03100 - Concrete Formwork  
Section 03200 - Concrete Reinforcing  
Section 03345 - Concrete Finishing

**1.03 References:**

This section references the latest revisions of the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

American Association of State Highway and Transportation Officials (AASHTO) “Standard Specifications for Highway Materials and Methods of Sampling and Testing”

American Public Works Association (APWA), Washington State Chapter, “Standard Specifications for Municipal Public Works Construction” (most recent edition).

City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

**1.04 Submittals:**

The Contractor shall submit to the Engineer materials containing the following information:

- A. Procedures to be used in the construction under this Section with regard to the division of labor and the responsibilities of the Contractor and all sub-contractors involved.
- B. Furnish samples, manufacturer's product data, test reports, and materials certifications for Portland cement products, expansion joint materials, fillers, sealants, etc.
- C. Provide mock-up of concrete finishes, colors, and joints on a sheet of plywood, minimum 48 inches square. Concrete mock up shall be provided for the Engineer's review a minimum of 48 hours in advance of concrete delivery.

**1.05 Quality Assurance:**

- A. Contractor shall provide, at the request of the Engineer, original supplier invoices for concrete. Concrete found not to be consistent with these specifications shall be removed from the project site(s) unless otherwise approved by the Engineer. The Engineer may copy the original invoices and then return them to the Contractor in a timely manner.
- B. Prior to commencing the work of this Section, the Contractor shall verify the accuracy of layout and grading. Verify that all sub-grade and base course aggregate conditions are as specified. Notify the Engineer of any discrepancies and coordinate the correction of those discrepancies with other trades as necessary.
- C. Notify Engineer a minimum of 48 hours prior to any concrete pour for inspection of base course aggregates, forms, reinforcing steel, and placement of joint materials. Anticipate pours to provide adequate time for inspection without causing delays to other trades.
- D. Protect all finished work. Vandalized work will be rejected.

## PART 2 - PRODUCTS

### 2.01 Concrete Mix:

Concrete mix shall be Class 5 (3/4), per Seattle Standard Specifications (most recent edition), Section 8-14, Cement Concrete Sidewalks, and characteristics as follows:

28 day compressive strength	2,300 psi
94# Sacks Cement per Cubic Yard (see "Cement", below)	5
dry Fine Aggregate #2 per Sack (see "Aggregates", below)	291 lb.
dry Coarse Aggregate #5 per Sack (see "Aggregates", below)	387 lb.
Max. Water	6.5 Gal./Sack
Fibrous Reinforcing	1.5 lb/cy
Slump (per ASTM C143)	2 - 3.5 inches

### 2.02 Portland Cement:

Use only Type II Portland Cement, as specified in Seattle Standard Specifications (most recent edition), Section 9-01.2(1), and AASHTO M 85.

### 2.03 Aggregates:

#### A. Fine Aggregates:

Fine Aggregate #2 per City of Seattle Standard Specifications (most recent edition), Section 9-03.1(2) C. 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 shall be as follows:

<u>Sieve Size</u>	<u>% Passing</u>
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#4	95 - 100
#8	68 - 86
#16	47 - 65
#30	27 - 42
#50	9 - 20
#100	0 - 7
#200 (wet)	0 - 2.5

B. Coarse Aggregates:

Coarse Aggregate #5 per, City of Seattle Standard Specifications (most recent edition), Section 9-03.1(3)D. 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 #5 Particle Gradation shall be as follows:

<u>Sieve Size</u>	<u>% Passing</u>
1" Square	100
3/4" Square	80 - 100
3/8" Square	10 - 40
#4	0 - 4
#200	0 - 0.5

2.04 Forms:

Steel, wood, or other suitable material of size and strength to resist movement during concrete placement. Use straight forms, free of defects. Use flexible spring steel forms or laminated boards to form curved edges if specified.

2.05 Steel Reinforcement:

- A. Welded wire mesh to be furnished in flat sheets not rolls, unless otherwise specified or approved.
- B. Reinforcing bars to be deformed steel bars, ASTM A 615, Grade 60, sized per the Drawings.

2.06 Expansion Joint Materials:

- A. Joint Filler: Pre-formed non-extruding resilient material; ASTM D1752, Type I, 3/8 inch wide by depth required to bring top surface within 1/2 inch of slab surface.
- B. Joint Sealer: Self-leveling polyurethane; ASTM C920, Type M, Grade SL, Class 25 (color shall match concrete color).

2.07 Curing Materials:

Curing shall be per Seattle Standard Specifications (most recent edition), section 5-05.3(B), or as approved by the Engineer.

2.08 ADA Ramp Detectable Warning Strip:

The warning strip shall be a vitrified polymer composite tile with epoxy polymer composition with an ultra violet stabilized coating of aluminum oxide particles. The tactile warning tile shall be 2 feet long by 4 feet wide Armor Tile by Engineered Plastics Inc. (916) 549-9700 or approved equal. Color: Yellow. Refer to SPR Standard Detail #02520.57.

### PART 3 - EXECUTION

#### 3.01 Barriers:

The Contractor shall erect and maintain barricades, canopies, guards, lights and warning signs to the extent required by law and as is prudent for the protection of the public and protection of the work.

#### 3.02 Form Construction:

- A. Set forms to required grades and alignments rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork for grade and alignment to following tolerances:
  1. Top of forms not more than 1/8 inch in 10 feet.
  2. Vertical face, on longitudinal axis, not more than 1/4" in 10 feet.
- C. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

#### 3.03 Reinforcement:

- A. Locate and place reinforcement as indicated on the contract drawings. Support reinforcing steel or wire fabric with pre-cast concrete blocks at spacing that will ensure minimum deflection of the reinforcement.

#### 3.04 Concrete Placement:

- A. Do not place concrete until sub-base, forms, and reinforcement have been checked for line and grade. Moisten sub-base if required to provide a uniform dampened condition at time concrete is placed.
- B. The concrete shall be placed and spread uniformly between the forms and thoroughly compacted with a steel shod strike-board.
- C. After the concrete has been thoroughly compacted and leveled, it shall be floated with wood floats and finished at the proper time with a metal float.

#### 3.05 Joints:

- A. Joints shall be edged with a quarter-inch (1/4") radius edger, and sidewalk edges with a half-inch (1/2") radius edger.

- B. Expansion Joint placement shall be 10' to 15' spacing, with Control Joint spacing equal and alternating. Provide Joints as shown on the Contract Drawings.
- C. Provide Control Joints, dividing the concrete areas as indicated on the Drawings.
  - 1. Form Control Joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.
  - 2. Saw Control Joints into hardened concrete using power saws equipped with shatterproof abrasive or diamond rimmed blades. Cut joints into concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.
- C. Expansion Joints:
  - 1. Provide pre-molded 3/8" joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects as applicable or as indicated in the Contract Drawings.
  - 2. Expansion Joints shall be located and placed according to the Contract Drawings, and sufficiently supported to ensure final placement perpendicular to the finished surface of the pavement.
  - 3. 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 a metal or plastic temporary strip. Remove protection after concrete has been placed on both sides of joint before sealant is applied.

3.06 Concrete Finishing:

- A. After striking off and consolidating concrete, smooth surface by screening and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface irregularities, and refloat repaired area to provide a continuous smooth finish.
- B. After completion of floating and trowelling when excess moisture or surface sheen has disappeared, complete finishing as follows:

Broom finish, by drawing fine hair broom across concrete surface, perpendicular to line of traffic after the tooled grid is installed. The Engineer's decision will be final on acceptance of joint finishing details and surface finishes.

3.07 Curing:

Protect and cure finished concrete paving, complying with applicable requirements of the References specified in paragraph 1.03 of this Section. Use only pre-approved curing and sealing compound or moisture curing method.

3.08 Clean-up:

- A. Repair and replace broken or defective concrete as directed by Engineer.

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- B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least fourteen (14) days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Sweep concrete pavement and wash free of stains, discoloration, dirt and other foreign material just prior to final inspection.

**END OF SECTION 02520**

**SECTION 02720**  
**STORM SEWER SYSTEMS AND SUB-SURFACE DRAINAGE**

**PART 1 – GENERAL**

1.01 Description:

Furnish all material, labor, services and related items required to complete work indicated on Drawings and specified herein. The items of work to be performed shall include but may not be limited to: installation of maintenance holes, drainage pipes, catch basins and connections to existing control structures.

1.02 Related Sections:

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

***Section 02050 - Site Preparation***

***Section 02100 - Site Demolition***

***Section 02120 - Site Utility Removal***

***Section 02200 - Earthwork for Site Work***

***Section 02990 - Site Restoration***

1.03 Quality Assurance:

A. The contractor responsible for the work of this section shall be a Licensed Side Sewer Contractor registered with the City of Seattle. Prior to the commencement of the work, verify the work of Section 02200 - Earthwork for Site Work, for the accuracy of horizontal and vertical layout, and dimensions of excavations to receive the Work of this Section.

B. Inspections and Testing:

1. Inspections: 48 hours prior to the back-filling of any pipe, structures or appurtenances, notify the Engineer for approval. Anticipate inspections to allow sufficient time for inspections to take place without affecting the work of other trades.

2. Testing will consist of water flooding to verify the function of the installation. In cases where long runs of tight line or perforated interceptor drainage is to be tested to allow backfill, and that work is not connected to the terminal downstream end of the work, verification of slope will be performed by surveying the crown or invert.

1.04 References:

The City of Seattle Standard Plans and Specifications for Road, Bridge, and Municipal Construction, (most recent edition).

The City of Seattle Stormwater, Grading and Drainage Code, (most recent edition).

1.05 Submittals:

Submit the following for approval prior to delivery to the site and commencement of the work:

1. Manufacturer's product data for pipe, concrete and metal castings.
2. Manufacturer's installation instructions.

1.05 Project Record Documents:

- A. Submit documents under provisions of Section 01781 - Record Documents, for recording of all pipe runs, connections, structures, and invert elevations. Identify and describe any unexpected variations from the designed plans.
- B. Provide a record of inspection of internal conditions of existing sewers using television cameras.

## PART 2 - PRODUCTS

2.01 General:

All materials and equipment listed herein shall be new and of the type specified. Comply with Specifications and manufacturer's data. Where these may be in conflict, the more stringent requirements govern, at the direction of the Engineer.

2.02 Pipe and Fittings:

- A. Perforated Drainage Pipe shall be PVC piping which meets or exceeds ASTM 3034 SDR 35, minimum 4-inch diameter or greater as sized per the contract drawings.
- B. Solid/Tight Line Pipe shall be PVC piping which meets or exceeds ASTM 3034, minimum 6-inch diameter or greater as sized per the contract drawings.
- C. Fittings:
  1. All Fittings shall be injection molded PVC, conforming to ASTM 3034.
  2. Where connecting new work conforming to these specifications to existing work of dissimilar materials, connections shall be made of materials similar to those of the existing work, unless otherwise directed by the Engineer.

2.02 HDPE Drainage Pipe and Fittings

- A. Drainage pipe and fittings shall meet or exceed the following performance standards:

AASHTO M-252 Type S	Standard Specification for Corrugated Polyethylene Drainage Tubing; Smooth Interior Wall, Corrugated Exterior (Solid)
AASHTO M-252 Type SP	Standard Specification for Corrugated Polyethylene Drainage Tubing; Smooth Interior Wall, Corrugated Exterior (Perforated)
AASHTO M-294	Standard Specification for Corrugated Polyethylene Pipe, 300 to 1500-mm Diameter.
ASHTO Section 30	Thermoplastic Pipe
ASTM F 405	Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings.

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|------------|---|
| ASTM F 667 | Standard Specification for Large Diameter Corrugated Polyethylene Tubing and Fittings.  |
| ASTM F 477 | Elastomeric Seals (Gaskets) for Joining Plastic Pipe.   |
| WSDOT 7001 | Drains Material Specification 9-05.1(6) Sizes 3" Through 10" for Drains.<br>Material Specification 9-05.2(7) Sizes 3" Through 10" for Drains. |
- B. Slotted Drainage Pipe shall be high density polyethylene (HDPE) corrugated pipe with an integrally formed smooth waterway and be made from virgin HDPE compounds which conform to the applicable current edition of the AASHTO Material Specifications. For cell classification definition and description, reference ASTM D3350. Slotted Drainage Pipe shall be ADS N-12, minimum 4-inch internal diameter or greater as sized per the contract drawings, or approved equal.
- C. Solid/Tight Line Drainage Pipe shall be high density polyethylene (HDPE) corrugated pipe with an integrally formed smooth waterway and be made from virgin HDPE compounds which conform to the applicable current edition of the AASHTO Material Specifications. For cell classification definition and description, reference ASTM D3350. Solid/Tight Line Pipe shall be Hancor "Blue Seal", minimum 6-inch internal diameter or greater as sized per the contract drawings, or approved equal.
- D. Fittings:
1. All Fittings shall be made from injection molded HDPE resins and supplied by the same manufacturer of the pipe. Fittings shall not reduce or impair the overall integrity or function of the pipeline. Coupling mechanisms shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Fittings shall be soil tight which have leakage at the joint but inhibit soil infiltration.
  2. Where connecting new work conforming to these specifications to existing work of dissimilar materials, connections shall be made of materials similar to those of the existing work, unless otherwise directed by the Engineer.

2.03 Corrugated Metal Pipe (Detention):

- A. Corrugated steel pipe shall be galvanized helical or annular corrugated steel pipe, meeting the requirements of AASHTO Designation M36 Type 1, asphalt coated to requirements of AASHTO Designation M190 Type A with the gauge as indicated on the Drawings.
- B. The end plates and all reinforcement shall be structural steel plated of the type and thickness as designated on the contract drawings.

2.04 Filter Fabric: Non-woven polypropylene fabric.

2.05 Drainage Aggregates: Refer to the contract drawings for when and where one or more of the following aggregates shall be used and when used, shall meet or exceed the following requirements.

- A. Washed sand shall meet the following sieve gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
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No. 4	95-100
No. 6	82-98
No. 8	68-86
No. 50	9-20
No. 200	0-2.5

- B. 4/8 Gravel shall meet the following sieve gradation:

<u>Sieve</u>	<u>Percent Passing</u>
1/4 inch	100%
#4	91%
#8	15%
#16	2%

- C. Pea Gravel shall meet the following sieve gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/4" square	100
3/8" square	95-100
No. 8	0-10
No. 200	0-3

- D. 1-1/2" Washed Rock shall meet the following sieve gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2" square	100
1-1/4" square	90-100
3/4" square	0-20
3/8" square	0-2

2.06 Pipe Bedding (for Non-rigid PVC or HDPE Pipe):

Pipe bedding material shall be Class B mineral aggregate Type 22 per City of Seattle Standard Specifications, (most recent edition).

2.07 Catch Basins (CB):

Catch Basins shall as shown on the contract drawings and details. All Catch Basins that are installed on Seattle Parks and Recreation properties and are intended to be maintained by SPR, shall have outlet traps per SPR Standard Detail No. 02720.68. Catch Basins that are installed in SDOT Rights of Way or are intended to be maintained by Seattle Public Utilities shall have outlet traps as shown in the City of Seattle Standard Plan No. 267.

2.08 Maintenance Holes (MH):

- A. Maintenance Holes shall be City of Seattle Standard Type 200-A Maintenance Hole with SPR exceptions as shown on the contract drawings and details. Provide ladder, trap, frame, solid cover and all other required appurtenances per Plans and Details. Grate shall be 230L with "Drain" printed on the cover. All covers shall have cam-locks.

- B. Detention System Control Structure:

1. Maintenance Hole shall be City of Seattle Standard Type 201-A maintenance hole with SPR exceptions as shown on the Drawings and Details. Provide ladder, trap, frame, solid cover and all other required appurtenances per Plans and Details. Grate to be 230L with "Drain" printed on the cover. All covers to have cam-locks.
  2. Control device and connection shall consist of PVC pipe and cross with orifice, a pipe connection and shear gate with a steel chain. The diameters of the control device and connection shall be the same as the diameter of the outlet pipe as indicated on the Drawings. The PVC pipe used for the cross and connection shall meet the specifications of ASTM D1785 schedule 40. The PVC material used for the orifice plate and shear gate shall be plate material meeting the specifications of ASTM D1784, PVC Class 12454-B. The orifice plate material shall be 1/4 inch thick; the shear gate material shall be 1/2 inch thick. The shear gate pin shall be of the same PVC material as the shear gate. The shear gated chain shall be 12 gauge galvanized steel straight link chain.
- 2.09 Maintenance Hole Adapters for PVC Pipe Only: PVC Maintenance Hole Adapter (Sand Collar) with silica impregnated surface and sure-seal gasket, per SPR Standard Detail No. 02720.90.
- 2.10 Clean Outs: All Clean Outs (C/O) shall be stubbed to the finish grade with a cast in place concrete collar and the appropriate cover per SPR Standard Detail No. 02720.76. All Clean Outs shall also be installed with Mechanical Compression Plugs.
- 2.11 Clean Out Cover Assembly: All Clean Out Covers shall be cast-iron, sleeve-type, body and cover, sized as appropriate for the terminal pipe run, as identified in the Contract Drawings. Cover shall include a stainless steel hex-keyed lock and be cast with the letters "CO" clearly visible. Concrete collar shall be constructed per the requirements of SPR Standard Specifications Section 02520, Concrete Paving for Site Work.
- 2.12 Grout:
- Grout material for pipe penetrations and sediment trap hook installation at Pre-cast Concrete Structures shall be non-shrink cement sand grout only. "Jet Set" or equivalent products are not acceptable.
- 2.13 Identification:
- A. Utility pipe tracer tape shall be detectable below ground surface, color coded, with utility name printed on tape. Conductive warning tape required over all water, sewer, drainage, and irrigation pipe at 6" below finished grades. Underground - Type Plastic Line Markers: Permanent, bright-colored, continuous-printed plasticized aluminum tape, intended for direct-burial service; not less than 3" wide x 5 mils thick.
  - B. Provide tape with black printing reading "CAUTION STORM DRAINAGE LINE BURIED BELOW", colors as listed below. Line Tec. Inc., PO Box 67, Glen Ellyn, IL 60138 Detectable Marking Tape; Allen Systems, P.O. Box 33569, Houston, TX 77233 (713)943-7213, (800) 231-2077; Magnatec by Thor Enterprises, Inc. P.O. Box 450, Sun Prairie, WI 53590, or approved equal.

Tape Schedule:	Piping	Color	Wording
	Sanitary Sewers	Green	Caution Sanitary Sewer
	Storm Drains	Green	Caution Storm Drainage

### **PART 3 - EXECUTION**

#### **3.01 Excavation:**

Tolerance of sub-grade shall be +/- 0.05 feet. Sub-grade must be in a smooth, even condition prior to placement of any permeable material. All depths shown are to be compacted depths. The Contractor shall remove excavated material from the site. Where material is placed as fill, the Contractor shall compact the material to 90% density at optimum moisture content.

##### **A. Trenching:**

1. Trenches shall be cut with smooth sides, no less width than as shown on the Plans. All trench spoils shall be removed from the under drained areas and deposited off-site as required by these specifications. In the event that the trench has been over-excavated, the Contractor may correct cut by use of the gravel filter material, as long as the invert elevations of the drainpipe and the minimum gravel filter fabric are per Drawings. Trench bottom shall be smooth and compact and to the grade specified. Also refer to Section 02200 Earthwork for backfilling information.
2. All trenches shall be maintained with vertical sides and without loose or sloughed materials therein; care shall be taken in placement of gravel to insure no sloughing of trench sides or contamination of the gravel. The Contractor shall not drive construction vehicles across excavated or backfilled trenches but shall use alleys between trenches for travel ways. Exception will be granted only when the Contractor can show evidence that the bridging scheme he proposes will ensure conformance with the foregoing.

#### **3.02 Pipe Laying:**

- A. Pipe laying shall comply with City of Seattle Standard Specification (most recent edition), Section 7-17.3(2)B.
- B. PVC Storm Sewer (Solid/Tight-line Pipe) - Install to grades and/or slopes as shown on contract drawings. Backfill with Class B bedding to a depth of 4 inches below the pipe, around the pipe and 6 inches above pipe. Backfill the remainder of trench with native material, only if that material can be compacted to 90% density at optimum moisture content. If native material cannot be compacted to 90%, the Contractor shall provide Type 17 (Pit Run) as backfill material. Backfilling shall be done in one foot lifts maximum.
- C. Corrugated Metal Pipe (Detention) - Install to grades or slopes shown on contract drawings. Backfill with Class B bedding to a depth of 6 inches below the pipe, around the pipe and 6 inches above pipe. Backfill the remainder of trench with native material, only if that material can be compacted to 90% density at optimum moisture content. If native material cannot be compacted to 90%, the Contractor shall provide Type 17 (Pit Run) as backfill material. Backfilling shall be done in one foot lifts maximum.

#### **3.03 Sub-surface Drainage Lines:**

- A. Drainage Aggregate: 1-1/2 inch washed rock shall be placed in properly graded/approved trenches for the PVC pipe with lines and grades as shown on the contract drawings. The rock shall be carefully placed on the clean and graded trench bottom and brought to the appropriate level, no less than four (4") inches deep at any point.
- B. The perforated sub-drainage pipe shall be placed on and the balance of drainage aggregate shall be placed over the pipe and brought up to the level shown on the contract drawings. Aggregate shall be placed along the sides of the pipe and on the top of the pipe with the pipe held in place to prevent vertical or lateral displacement by the fluid effort of the aggregate. Cap the ends of pipe with PVC end caps.
- C. Backfill the remainder of the trench and compact as shown on the contract drawings avoiding any excessive mixing of drainage aggregates with surface (planting) soils.

**3.04 Filter Fabric:**

If filter fabric is called for on the contract drawings, install the fabric as shown on those drawings and per the manufacturer's recommendations. Filter fabric shall be stapled down using jute net pins or equal at 4 feet on center when laying flat over drainage trenches.

**3.05 Pipe Connections at Structures:**

- A. All new catch basins and maintenance holes shall be provided with openings or knockouts for insertion of pipe connections and with a trap for the outlet pipe. When connections are to be made to existing catch basin with no available hole or where a "knock out" of adequate size is not provided, pipe connections shall be accomplished by core drilling or line drilling. All openings must provide a minimum of 1 inch and a maximum of 2 inches clearance around the circumference of the pipe. Line drilling shall be accomplished with a small core drill or a rotary hammer. Jackhammers shall not be used.
- B. Where the designed PVC line passes through the side-wall of the structure, provide a sand collar, type specified in the Drawings.
- C. After pipes have been placed in position, they shall be grouted tightly in place in a workmanlike manner to present a smooth inside and outside surface. Grout material shall be non-shrink cement sand grout. Upstream pipes penetrating the walls of catch basins shall be placed with the bell facing out, such that the bell is placed as snug against the outside wall of the structure as the angle of penetration allows. Pipe leaving or entering catch basins shall be provided with a flexible joint within 1/2 of pipe diameter, or 12 inches, whichever is greater. Connection between PVC pipe and CMP shall have a "Romax" coupler, or approved equal.

**3.06 Detection Tape:**

Install detection tape in all pipe trenches located above the top of all pipes at 6" below finished grade.

**3.07 Tie In:**

Connect new drainage equipment to existing using "Romac" type fittings, or approved equal. Provide shoring and de-watering per the requirements of the City of Seattle Standard

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Specifications (most recent edition). Provide and install couplers as described above in Paragraph 2.02.C.2. All connections to the existing sewer lines in the street ROW shall be done per the requirements of the Seattle Public Utilities and Street Use Permit and Side Sewer Permit.

**3.08 Cleaning, Testing and Inspections:**

All new pipe and structures shall be cleaned and tested per City of Seattle Standard Specifications (most recent edition), Section 7-17.3(4) or as directed by the Engineer. Testing shall be conducted under the direction of Seattle Department of Parks and Recreation Construction Manager, **(206-684-7034)**.

**END OF SECTION 02720**

**SECTION 02810  
IRRIGATION**

**PART 1 – GENERAL**

**1.01 Description:**

Furnish and install sprinkler systems in conformance with the drawings and specifications, complete and ready for use. The work consists of furnishing all materials necessary for a complete installation, including, wire sleeves, pipe, valves, fittings, sprinklers, controller, valves, back-flow prevention device, and all appurtenances related thereto. Included shall be all labor of installation, including trenching, plumbing, back-filling, electrical work, adjustments, and all other items of labor necessary for a satisfactory operating system.

**1.02 Quality Assurance:**

Qualifications: Contractor must be a Washington State licensed landscape contractor. The irrigation system must be installed under the direct supervision of a journey irrigation mechanic or journey plumber. All potable water system components shall be installed by a licensed plumber and all testing of the backflow prevention equipment shall also be done by a licensed plumber.

**1.03 References:**

***Section 02050 - Site Preparation***  
***Section 02051 - Tree and Plant Protection***  
***Section 02100 - Demolition***  
***Section 02200 - Earthwork for Site Work***  
***Section 02990 - Site Restoration***  
***Section 16050 - Electrical - General***

**1.04 Submittals:**

- A. Submit complete materials list prior to performing any work. Submit manufacturer catalog data and full descriptive literature, including current manufacturer's price list.
- B. Equipment or materials installed or furnished without prior approval of the Engineer will be rejected and such materials will be required to be removed and replaced with approved materials at the complete expense of the Contractor.
- C. Submit shop drawings for review and approval prior to beginning work.

**1.05 Project Conditions:**

- A. Underground utilities and elements: Locate all underground utilities and elements prior to digging and/or driving stakes. Take care, to neither disturb nor damage any existing above ground or underground utilities or elements. Keep streets, sidewalks and site clean, free from debris and affected drains open and free flowing at all times. Engage the services of a private utilities locating service for location of utilities within the site. Contact the Engineer for "as-built" information for on-site irrigation and water system information.
- B. Site inspection and layout: Before proceeding with any work, the Contractor shall inspect the site, carefully check all grades and verify all dimensions and conditions affecting the

work to satisfy him/her that he/she may safely proceed. Changes or alterations to the system to meet actual conditions shall be made at the Contractor's expense. Irrigation plan is diagrammatic and is not intended to show exact locations of existing or proposed piping, valves or controllers. Locate new items as closely as possible to related curbs, walls, fences or edges of paving. Pipelines shown parallel on drawing may be placed in a common trench but separated by at least 6 inches. Sprinkler heads are shown accurately and shall be installed as indicated by center of symbol.

- C. When renovating existing Park irrigation systems, the Contractor and the Engineer shall test the existing system prior to the contractor beginning the work.
- D. All materials shall be inspected by the Engineer prior to installation of any and all materials required to complete the work. Contractor shall call the Engineer at (206) 684-7034 to make arrangements for inspections.

1.06 Guarantee:

- A. Contractor shall provide one year written guarantee as per Paragraph 3.07 of this section.
- B. Guarantee shall include restoration of planted or paved areas due to settlement of trenches.
- C. Guarantee shall include one complete winterization and one complete de-winterization of the irrigation system. (**Applies only for construction projects that carry over into the winter months or where extended maintenance/establishment periods are in place.**)

## PART 2 - PRODUCTS

2.01 Copper Pipe:

All copper piping shall be Type K copper and shall conform to industry standards and be in conformance with applicable ASTM or ANSI standards.

2.02 Brass Pipe:

Brass pipe and fittings shall conform to industry standards and be in conformance with applicable ASTM or ANSI standards.

2.03 Plastic Pipe:

- A. PVC pipe (mainline) upstream of the control valves (mainlines) shall be Schedule 40 or better and shall conform to all requirements of ASTM D1785-86.
- B. PVC pipe (zone lines) downstream of the control valves (laterals) shall be Schedule 40 or better and shall conform to all requirements of ASTM D1785-86.
- C. All PVC pipe shall be marked with the manufacturer's name, class of pipe and NSF seal. Pipe shall bear no evidence of interior or exterior extrusion marks. Pipe walls shall be uniform, smooth and glossy. Pipe may be pre-belled or with individual solvent-weld couplings.

- D. All PVC fittings shall be of the solvent weld type **except where risers, valves, etc., require threaded transition fittings.** All fittings shall conform to the requirements of ASTM D2466-78. **All threaded PVC tees, fittings, adaptors and nipples shall be Schedule 80 or better.**
- E. All PVC pipe must be delivered in at least twenty foot (20') lengths.
- F. All PVC pipes and fittings for swing joints shall conform to all requirements of ASTM D3139.
- G. Sleeves required for main and lateral lines located under paving shall be Schedule 40 PVC, with the inside diameter (I.D.) of sleeve to be twice the outside diameter (O.D.) of the insert pipe, maximum 1 insert pipe per sleeve. All wiring to be in separate sleeves from piping sleeves.
- H. Sleeves under roadways (street rights-of-way, boulevards or parkways) where heavy vehicular traffic is anticipated shall be ductile iron pipe, with the inside diameter (I.D.) of the sleeve shall be at least 1 inch greater than the outside diameter (O.D.) of the total inserted pipes. All wiring shall be in separate conduit sleeve within the iron pipe.
- I. **Use Teflon tape on all threaded fittings.**
- J. **Primer color shall be purple and glue color shall be grey.**

2.04 Automatic Irrigation Controller Assembly

- A. Hybrid type controller that combines electromechanical and microprocessor based circuitry capable of fully automatic and manual operation. Station timing: 1-120 minutes in 1-minute increments, and 2-12 hours in 10-minute increments. Input: 117 volt AC, 60HZ. Output: 26.5 Volt AC, 1.5 amps. Controller shall have an integral circuit breaker or fuse. Controller shall have two master valve/pump start circuits. Controller shall have remote operation capability.
1. Controller shall be equipped with an ESP Receiver Card with antenna and a TRC Commander transmitter as manufactured by TRC Systems.
  2. Duplex receptacle, LEV5280-W.
  3. Controller shall include terminal strip for 24 volt wires.
  4. Controller shall be Rainbird ESP-12 Controller (12 station, CABINET MOUNT).
- B. Controller - General Conditions:
1. Controller shall be hard wired in conduit. All conduits are to be UL approved electrical conduit minimum size 1 1/2-inch diameter, 18-inch deep minimum.
  2. Conduit size for irrigation control wires shall be minimum 1 1/2-inch diameter.
  3. Communication cable shall be the type recommended by the irrigation controller manufacturer. No splices in the communication cable will be allowed unless approved in writing by Engineer.
  4. All controllers and sensor decoders shall be grounded with three ground rods to a resistance of less than 10 ohms.
  5. The Contractor shall be responsible for the installation of the cellular telephone units in conjunction with the controller, except as directed by the Engineer at locations where a hard wire connection is possible.

- C. Pulse Decoder, Output Decoder and accessory control equipment shall be manufactured by Rainbird.

2.05 Controller Enclosure:

- A. Controller Enclosure for the Metered Power Drop and a single or multiple controllers shall be a ~~Skyline Electric NEMA 3R steel enclosure with concrete pedestal or a Strong Box steel enclosure with concrete pedestal~~ per manufacturer's specifications and the SPR Standard Details and shall be sized according to the control equipment required by the design and as shown on the Plans and Details.
- B. Controller Enclosures shall be constructed of 12 gauge pre-galvanized steel with interior mounting panels, double doors with three point compression latches, and special vandal proof slide bar and lock as shown on Plans and Details. The exterior of the enclosure shall be dark green baked enamel.

2.06 Pop-up Sprinkler Heads:

- A. All heads shall have a built-in pressure-regulating device. The device shall regulate nozzle pressure to the design pressure. The pressure-regulating device shall be an internal part of the pop-up stem.
- B. The heads shall have matched precipitation rate nozzles with adjusting screws.
- C. All heads shall have screens under the nozzles.
- D. The heads shall be equipped with check valves to prevent low head drainage. The check valves shall hold back pressures equivalent to 10 feet of head.
- E. The heads shall be of types, manufacture and sizes shown on the Plans and Details and/or the following:
1. Small Lawn Area and Shrub Bed Area Heads: **Rainbird 1800-SAM Series, (including strip or bubbler heads), or approved equal.**
  2. Nozzles shall be Walla Walla MP series.

2.07 Automatic Control Valves:

- A. Valves shall be of all brass construction or iron body, bronze-mounted, globe pattern. The valve pressure rating shall be 150 psi min. All connections shall be brass pipe, threaded.
- B. Valves shall be electrically operated, actuated by a solenoid utilizing AC current, 24 volts, and rated at not more than 8.5 VA with an in-rush maximum of 1.0 amp. The solenoid coil is to be sealed in an "Epoxy" material so it is completely waterproof.
- C. Operation of all valves (except the master valve) shall be normally closed solenoid control capable of operating within minimum flow requirements.

- D. Diaphragm operated of one-piece construction. The diaphragm shall be fully pressure balanced in both the open and closed positions.
- E. Solenoid shall be mounted directly on the valve or bonnet. All parts and tubing downstream of the entrance shall be of larger size to permit passage of foreign particles.
- F. A flow adjustment stem with cross handle shall be provided that limits the travel of the valve plug from full closed to full open, allowing manual closure or flow regulation. A manual control shall be provided for operation with or without the control wiring installed.
- G. Construction shall be so that all operating parts are accessible and removable from the top by removing the bonnet without having to disconnect the valve body from the pipeline. The valve shall be capable of being operated in any position.
- H. Valves shall be of types, manufacture and sizes as shown on the drawings manufactured by "Buckner" model VBDW .

2.08 Control Wire for Automatic Control Valves:

- A. Control wire shall be insulated single strand copper designed for twenty (20) to fifty (50) volts and UL approved as Type U.F. (Underground Feeder). The UL and U.F. designations shall be clearly marked or indented on the insulation jacket of the wire.
- B. Expansion curls shall be provided within three (3) feet of each wire connection to solenoid and at least every three hundred (300) feet in length of control wire length. Expansion curls are formed by wrapping at least 5 turns of control wire around a rod or pipe 1" or more in diameter. Withdraw the rod or pipe once curls are formed.
- C. White, black and orange colored wires shall be used.
- D. The master valve shall be installed with separate power and common wires which shall be different colors than the other control wires. The wire colors shall be blue (power) and yellow (common).
- E. Copper conductors must meet or exceed ASTM B-3 requirements.
- F. One spare wire (orange) for each 4 zones is required unless otherwise shown on the Drawings. For clarification; Zones 1 to 4 require one spare wire, Zones 5 to 8 require an additional spare wire, etc. The spare wire(s) shall be installed to the farthest valve(s) location(s) from the controller.

2.09 Quick Coupling Valves:

- A. Shall be one inch (1"), all brass, and one or two piece bodies, with locking brass tops and have galvanized steel swing joints as shown in the Details. Provide five (5) operating keys and hose swivels on each project.
- B. Quick coupler valve for use of compressed air for winterizing shall be 1" all brass, two piece bodies with locking brass tops. Provide one (1) operating key on each project.
- C. Shall be of the type, manufacture and size shown on the drawings and/or the following: Buckner QB44LRC-10 with 1 inch outlet, single lug 2-piece with locking lid and matching

key, or approved equal. All quick coupling valves shall be installed in a 10" diameter valve box as shown in the Details.

2.10 Manual Valves:

- A. Gate valves 2" and larger shall be flanged, iron body, brass trimmed, resilient double disc wedge, and integral taper seats with non-rising stem and square actuator. All gate valves shall be Class 150 with a minimum 150 psi - 300 WOG.
- B. Curb or Gate Valves one and one half inches (1-1/2") and smaller shall be all bronze construction with 'tee' handle, 175 psi water working pressure, Mueller Oriseal Mark II, or approved equal.
- C. Stop and Waste Valves shall be all bronze construction, 175 psi water working pressure, Mueller Oriseal Mark II, or equal.
- D. Valves shall be of types, manufacture and sizes as shown on the Plans and Details and/or the following:
  1. Gate Valves: **Kennedy, Mueller, or Hammond.**
  2. Or approved equal.

2.11 Master Valves:

- A. Master Control Valve:
  1. The master control valve shall be a normally open electric solenoid actuated valve. The valve shall have an NPT inlet and outlet. The valve shall be capable of working at pressures of up to 150 psi.
  2. The master control valve shall meet all of the requirements for Automatic Control Valves with the exception of that noted above.
  3. The master control valve shall also be of the type, manufacture and size shown on the Drawings and/or the following: Wilkins 600 or Superior No. 3100, or approved equal.
  4. The master control valve shall be installed with separate power and common wires as described in 2.08 (D) above.
- B. Flow Sensor: NOT USED
  1. The thermoplastic flow sensor shall have a six bladed impeller with a proprietary, non-magnetic sensing mechanism. The transmitted signal shall be a low impedance 8 VDC square wave signal. The maximum transmitted signal distance shall be 2000 feet.
  2. The flow sensor shall include a PVC schedule 80 tee fitted with a removable sensor alert.
  3. The flow sensor shall be of the type, manufacture and size as shown on the Drawings and shall be Rainbird FS-200P.
    - a. The Flow Sensor (Maxi) Wire shall only be PE-89 Communication Cable, as manufactured by Regency. The cable shall have 6 wire pairs. The conductors shall be 22 awg solid copper, insulated, filled and metal shielded. The outside diameter of the cable shall be 0.40 inch. No splices in the cable are acceptable.

- b. The Output Transmitter shall be Rainbird PT-1502 (included in controller assembly).

2.12 Valve Boxes:

- A. Automatic control valves shall be enclosed in valve boxes of HDPE or polyolefin and fibrous material (preferably recycled material) with locking lids. The bottom section is to be slotted so as to extend below the pipe. Extensions shall be added as required to meet grades per the Details. Automatic control valves shall read ACV, master valve boxes shall read MV, gate valves shall read GV, etc.
- B. Drain valves and individual gate valves shall be enclosed in a Cast Iron Roadway Box, as manufactured by **Olympic Foundry, Tyler, or approved equal**, with bottom, top, and lid, sized and extensions, as required. Lid shall have the word "water" printed on it.
- C. Provide two (2) sets of all keys required for valves, valve box covers, and protective sleeve covers unless otherwise noted.
- D. **Occasionally, valves may need to be installed in athletic field areas of play. In those cases valve boxes shall be installed underground with the box cover 6" below finished grade and shall have covers with a 4 inch by 4 inch by 1/8 inch thick steel locator plate attached to the top of the cover.**
- E. Valve boxes shall be of the type, manufacture and size shown on the Plans and Details and/or the following:
  1. Ametek or Carson 10 inch diameter round box (for drain valves, quick couplers and gate valves), green color.
  2. Ametek Jumbo Box with Pentagon Lock or Carson 1220-12 with bolt down locking lid and extensions as required (for single valve only) green color.
  3. Ametek Extra Large Utility Box or Carson 1730-18 with bolt down locking lid and extensions as required (use for two valves), green color.
  4. Backflow preventers and pressure reducing valves 1-1/2 inch size and larger shall be installed in a **Fogtite #25-TA Concrete Vault** as shown on the Plans and Details. For backflow preventers and pressure reducing valves 1-1/4 inch size and smaller, use **Fogtite #2 Concrete Meter Box** with metal lid and extensions or bricks as required.
  5. Or, approved equals.

2.13 Backflow Prevention Devices:

The backflow prevention device shall meet the requirements specified in Section 9-30.16 of The Standard Specifications for Road, Bridge, and Municipal Construction, (most recent edition). Proper drainage shall be provided at all backflow prevention devices. Drainage problems shall be brought to the attention of the Engineer at the time of system layout.

- A. Manufacturer must be on the "Approved Cross Connection Control Devices" list of the Washington State Department of Social and Health Services for that size device.
- B. Shall be type and size as shown on the Plans and Details and/or the following: **Febco Master Series Model 850 (2-1/2" to 10") double check assembly, Febco Master Series**

***Model 850U (1/2" to 2") double check valve assembly; or Febco Model 825Y (3/4" to 2") reduced pressure assembly, or approved equal.***

2.14 Irrigation Pump: NOT USED

Shall be ***Grundfos EP-150-3030 (size varies)***, End Suction Centrifugal Pump, and Single Phase Power; or approved equal.

2.15 Pressure Reducing Valve (PRV): NOT USED

- A. PRV shall be capable of a minimum 150 psi working pressure as specified. Pressure fall off through the PRV shall not exceed designer's specified limit. PRV shall be same size as mainline where installed.
- B. PRV shall be of the type, manufacture and size shown on the Plans and Details and/or the following: ***Wilkens 600 Series PRV (1/2" to 2"), Wilkins 500 Series PRV with Wye Strainer: Watts No. 777S (2" and larger)***, or approved equal.

2.16 Swing Joints:

- A. Swing joints for quick couplers shall be triple swing joints using schedule 40 galvanized metal with threaded fittings. Swing joints shall consist of street ells, ells, and nipples for full adjustability. Galvanized swing joint, quick coupler assemblies shall be installed in valve boxes, per the Details.
- B. Pre-fabricated swing joints, for irrigation heads, shall be triple swing joints, using minimum PVC Class 315 threaded fittings. Swing shall consist of street ells, ells, and nipples for full adjustability. Fittings shall have "O" ring seals. Lasco, or approved equal.

2.17 Other Supplies:

- A. Electrical tape shall be black plastic, three-quarters inch (3/4") wide and a minimum of 0.007 inches thick and the all-weather type.
- B. Teflon tape shall be used for all threaded connections. Tape shall be set back a minimum of one quarter inch (1/4") into the pipe threading.
- C. Pressure gages for the pressure reducing valve assembly shall be liquid-filled Ashcroft 1009 AL with one quarter inch (1/4") gage cock attached or approved equal.
- D. Encapsulate all splices with approved splice kit with sealant. The SPR approved Wire Splice Kit is the 3M-DBY splice kit, or approved equal.

2.18 Identification:

- A. Underground - Type Plastic Line Markers (Detect-a-Tape): Permanent, bright-colored, continuous-printed plasticized aluminum tape, intended for direct-burial service; not less than 3" wide x 5 mils thick and shall be placed directly over the pipes at 6" below finished grades. Provide blue tape with black printing reading "CAUTION IRRIGATION LINE BURIED BELOW". Line Tec. Inc., PO Box 67, Glen Ellyn, IL 60138. Detectable Marking Tape; Allen Systems, P.O. Box 33569, Houston, TX 77233 (713)943-7213, (800) 231-2077; or Magnatec by Thor Enterprises, Inc. P.O. Box 450, Sun Prairie, WI 53590.

B. Christy's identification tags manufactured from polyurethane Behr Desopan, incorporating an integral attachment neck and reinforced attachment hole and will be capable of withstanding 180 pounds pull force. Tag shall be 2 1/4" x 2 3/4" in size. All lettering shall be hot stamped in black and capable of withstanding outdoor use. Tag color shall be yellow. Marking tag shall be double side stamp with zone valve number.

2.19 Backfill Material

- A. Sand for backfill around all irrigation heads use: common builder's sand.
- B. Suitable bedding material for use around all pipes and equipment as shown on the Details, use: native topsoil with no rocks or other debris more than 1 inch diameter or common builder's sand.

**PART 3 - EXECUTION**

3.01 Layout of Irrigation System:

- A. Stake the sprinkler irrigation system following design shown on the Plans before the construction begins. Alterations and changes in the layout may be expected in order to conform to the ground conditions and to obtain full and adequate coverage of water. It is understood that corrective measures in the system may become necessary, but no changes or alterations in the system as planned shall be made without the prior authorization of the Engineer.
- B. Before starting work, determine that work may proceed without disruption of activities of other trades.
- C. The Contractor shall carefully check grades to ensure that area is ready to begin work.
- D. Contractor is responsible for taking all reasonable investigative actions and precautions when working around all utility systems.

3.02 Trenching:

- A. The contractor will save and maintain any sod from the ditches and replace it after sprinkler installation. Sod shall not be displaced for more than 48 hours. Survival of the sod shall be warranted as specified in the City of Seattle Standard Specifications (most recent edition).
- B. Exercise care when excavating trenches near existing trees per SPR Standard Specification Section 02051 - Tree and Plant Protection. Where roots are two inches (2") and greater in diameter hand excavate and tunnel. When large roots are exposed, wrap with heavy burlap for protection and prevent excessive drying. Trenches dug by machines adjacent to trees having roots two inches (2") and less in diameter shall have the sides hand trimmed making a clean cut of the roots. Trenches having exposed tree roots shall be back-filled within twenty-four (24) hours unless adequately protected with moist burlap or canvas.
- C. The top six inches (6") of soil shall be kept separate from subsoil and shall be replaced as the top layer when backfill is made.

- D. Trenches shall be excavated for all pipe to provide the minimum depth of cover below finish grade of 24" for live lines (mains), and 18" for laterals and all others, no wider at any point than is necessary to lay the pipe or install equipment. Trenches shall be excavated with vertical sides. Locate outside of paved areas wherever possible.
- E. Materials unsuitable for bedding of pipe to be removed to a depth 4" below trench bottom, and replaced with suitable bedding material as directed by the Engineer. Suitable bedding material shall be: excavated trench material, free from rocks, roots, sticks, debris or other sharp objects over one inch in diameter; or sand, as required.
- F. All trenches must be straight, with appropriate pipe-fittings used to allow pipe to be laid without undue bending and not have abrupt changes in grade.
- G. The trench bottom must be free of rocks or sharp-edged objects.
- H. The use of an underground vibratory plow or similar device to pull pipe will not be permitted.

3.03 Installation:

- A. PVC Pipe and Fittings:
  - 1. The Contractor shall exercise care in handling, loading, unloading and storing to avoid damage. The pipe and fittings shall be stored under cover, and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat, so as not to be subject to undue bending or concentrated external load at any point. Any pipe that has been dented or damaged shall be discarded until such damage has been cut out and the pipe is rejoined with a coupling.
  - 2. PVC pipe ends shall be cut to ninety (90) degrees to the pipe length and cleaned of all cutting burrs prior to cementing. Use approved reaming tool. Pipe ends shall be wiped clean with a rag and lightly wetted with PVC primer. Cement shall be applied with a light coat on the inside of the fitting and heavier coat on the outside of the pipe. Pipe shall be inserted into the fitting and given a quarter turn to seat the cement. Excess cement shall be wiped from the outside of the pipe. Pipe will be tested as indicated elsewhere in these specifications. No back filling will be permitted other than at the centers of pipe lengths until the pressure test is completed.
  - 3. Appropriate primer shall be used with solvent glue. Solvent welded joints shall be given at least fifteen (15) minutes set-up time before moving or handling. Pipe shall be partially center loaded to prevent arching and slipping. No water shall be permitted in pipe until a period of at least ten (10) hours has elapsed for solvent weld setting and curing.
  - 4. Before pressure testing, soluble weld joints shall be given at least twenty-four (24) hours curing time.
  - 5. No PVC pipe may be threaded or connected to a threaded fitting without an adapter. Use Teflon tape on all male threads.
  - 6. Great care must be taken to insure that the inside of the pipe is absolutely clean. Any pipe ends not being worked on must be protected and not left open.
- B. Brass Pipe and Fittings:
  - 1. Brass pipe shall be installed in accordance with the local Plumbing Code and as shown on the Plans and Details.

2. Teflon tape all male threads to prevent leaks and corrosion.
  3. Wrap all brass pipes with black PVC tape where they pass through grouted openings in concrete vaults.
- C. Control Wiring:
1. Control wires shall be taped together at five (5) foot intervals with black electrical tape; then this bundle shall be taped to the bottom of the supply lines at ten foot (10') intervals with at least three (3) wraps of electrical tape. A bare copper wire (#14 or greater), shall be installed on top of the PVC supply line for future detection with the wire ends clearly exposed in the valve boxes.
  2. Tie a loose 24 inches long loop in all wiring at changes of direction greater than 30 degrees. Untie all loops after all connections have been made.
  3. Splices shall be permitted only at junction boxes, valve boxes, or at control equipment and never between valves or valve and controller. A minimum of 24 inches of excess conductor shall be left at all splices, terminal and control valves to facilitate inspection and future splicing. All splices must be encapsulated with sealant in approved splice kit. Splice kit shall be 3M-DBY type water-proof wire splice.
  4. One unconnected spare orange control wire (one spare wire for each 5 valves) is to be run from the controller through each intermediate control valve box. Provide a twenty-four inch (24") long, tight loop in each box. Where control valves run in opposite directions from the controller, run a separate spare wire in each direction.
  5. A schedule diagram shall be posted in the controller to facilitate the selection of the valves to be operated.
  6. Location and type of monitoring of controllers shall be directed by the Engineer or as shown on the Plans.
  7. Minimum size of wire is to be determined strictly by the following chart:  

No. of Valves	Maximum Length of Common Wire			
	500'	1000'	2000'	3000'
1	14	14	14	14
2	14	14	14	10
3	14	14	10	8
4	14	14	10	8
5	14	10	8	6
6	14	10	6	6
7	14	8	6	4
8	14	8	6	4
9	14	8	4	4
10	10	6	4	2
11	10	6	4	-
  8. The control wires shall be color coded as follows:  
Neutral or common wire - White.  
Lead-in wire - Black.  
Extra wire – Orange
  9. Control wires shall be installed in 1 1/2 inch minimum PVC schedule 40 sleeve under all paved areas.
  10. Flow sensor wire shall be computer interface (Maxi) wire between flow sensor and controller. Install computer-interface wire on the underside of the mainline irrigation pipe and attached in the same manner as for controller wires. The computer interface wire shall be continuous with no splices.

D. Sleeves:

Trenches located under areas of existing or new paving shall have sleeves installed. Sleeves shall extend 12" beyond the pavement on each side. Trenches shall be back-filled with sand (6 inches above and 4 inches below the pipe) and compacted in layers to 95% compaction, using manual or mechanical tamping devices. Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in firm unyielding condition. All trenches shall be left flush with the adjoining grade. The Contractor shall set in place; cap and pressure test all piping under paving prior to paving work.

E. Risers and Swing Joints:

1. All pop-up sprinkler heads and quick coupler swing joints must be constructed according to the Details.
2. Minimum riser size shall be the pipe size of the sprinkler head.
3. All threaded joints are to have Teflon tape or pipe dope (approved for PVC pipe) applied to male threads only.
4. Risers are to be capped after installation in preparation for pressure testing.
5. All pop-up sprinkler heads and quick couplers shall have swing joints that allow the head to be set perpendicular and flush with finish grades.

F. Pop-up Sprinkler Heads:

1. Install heads as designated on the Plans and Details.
2. Spacing of heads shall not exceed spacing shown on the Plans for any reason.
3. Heads along curbs, walks, paving, etc. shall be placed 1/2 inch above finish grade and no closer than 4 inches from paving edge.
4. All impact sprinkler heads located in athletic turf areas shall be equipped with rubber covers.
5. All heads shall be set perpendicular to finish grade unless otherwise designated on the Plans.
6. Backfill around heads with sand per the Details.

G. Automatic controllers:

1. Install irrigation controllers per manufacturer's specifications and shop drawings.
2. Electrical wiring (120 V.A.C.) shall be installed according to local code. A licensed electrician must perform hard wiring of controller, and the work must be permitted per City of Seattle requirements. The cost of all electrical work necessary to make the automatic equipment operate properly shall be included in this contract.
3. Conduit for power supply wires shall be installed as shown on Plans and Details and controller manufacturers shop drawings. The ends of all conduits, whether shop cut or field cut, shall be reamed to remove burrs and rough edges. Cuts shall be made square and true. Conduit bends, except factory bends, shall have a radius of not less than six times the inside diameter of the conduit. A 3/16-inch polyethylene pull rope shall be installed in all conduits with two feet of pull rope extended beyond the conduit openings and then secured. All conduit shall be free of debris. All conduit openings shall be sealed with duct tape to prevent fouling.
4. The Engineer shall direct final location and type of mounting of controllers.

5. A diagram of schedule shall be posted in the controller to facilitate the selection of the valves to be operated.
6. Install decoders, transmitter and all control equipment in controller housing per manufacturer's specifications.

H. Double Check Valve Back-flow Prevention Device:

1. A Water Service Line shall be installed from the meter or the union at the property line to the Double Check Valve Assembly. The Water Service Line installation shall be inspected prior to backfilling by **Seattle Public Utilities Water Department Water Service Inspectors @ (206) 684-5803 (8:00-9:00AM) or (206) 684-5800 (9:00-12:00noon - with same day inspection if before 12:00)**.
2. Install the Double Check Valve Assembly in accordance with local plumbing code, and as shown on the Details.
3. For proper maintenance, the Double Check Valve Assembly shall be located with sufficient clearance from other site features and away from traffic patterns.
4. The Double Check Valve Assembly shall be installed in a specified and approved vault.
5. Drain valves shall be installed in accordance with current local plumbing codes and as shown on the Details.
6. Once installed, the DCVA must be tested by Seattle Public Utilities Water Department Cross Connection Control Office @ (206) 233-2635.
7. The device shall also be inspected by SPR's Plumbing Shop. To arrange for that inspection the Contractor shall call the SPR Inspection Hot Line @ 206-684-7034 at least 48 hours before hand.

I. Irrigation Pump:

1. Install per manufacturer's recommendations and as shown on the Details.
2. Coordinate pump installation with electrical work.

J. Quick Couplers:

All quick coupling valves shall be installed in a 10" diameter valve box as shown in the Details.

K. Automatic Control Valves:

1. Install as shown on the Plans and Details.
2. Before installation of any automatic valves, the supply line must be thoroughly flushed.
3. All automatic valves shall be enclosed in valve boxes with valve box extensions as required.

L. Master Valve/Flow Sensors:

1. Install per manufacturer's specifications.
2. Coordinate wiring with control equipment.

M. Thrust Blocking:

Thrust blocking shall be installed on main lines 3 inches in size and larger according to City of Seattle Standard Specifications (most recent edition), Section 7-11.3 (13), or as otherwise indicated on the Plans.

N. Back-filling:

1. Back-filling shall be done when pipe is not in an expanded condition due to heat or pressure. Cooling of the pipe can be accomplished by operating the system for a short time before back-fill, or by back-filling in the early part of the morning before the heat of the day.

2. In refilling the trenches, the fill around, 4 inches below, and 6 inches above the pipe and fittings shall be suitable bedding material or sand, as required, and tamped. The remainder of the backfill shall contain no lumps or rocks larger than three inches. A six inch separation is required between all pipes when more than one pipe occupies the trench. If no sodding is required, the top 6 inch of backfill shall be replaced by topsoil where it exists (free of rocks over one inch, subsoil or trash) or selected fill soil or sand if soil conditions are rocky.

3. All roots, rocks and surplus excavation shall be removed from the site unless otherwise directed. Any turf areas buried under ditch excavation shall be raked clean of any excavated material.

4. Trenches under roads or paved areas shall be back-filled and tamped with a mechanical tamper in successive six inch (6") lifts. Paving shall be replaced to the satisfaction of the Engineer.

5. Prior to completing backfill, place detection tape 6 inches below finished grades and directly above the installed lateral and supply mains for future line detection. Provide extra length to clearly expose ends in the valve boxes.

6. Before complete back-filling, all underground appurtenances including risers, valves, double check valve assembly, drain valves, and joints must remain exposed so that they can be viewed during testing and located "as-built" by the Engineer. It is suggested that the Contractor partially backfill the pipe as it is laid, leaving all joints exposed; then complete back-filling later after flushing, pressure testing, inspection and "record drawing" location. The location, inspecting and testing provisions of these specifications will be strictly adhered to. If, for any reason, any part of the sprinkler system is back-filled before approved location, testing, or inspection is authorized, it must be completely uncovered and exposed until approved for back-filling by the Engineer.

3.04 Clean-Up:

Upon completion of operations and prior to watering, clean all adjoining areas such as paving, curbs, and lawns of debris caused by the work on this project, or any part of this project. All hard surfaced areas shall be washed clean. Daily clean up shall be required on all areas used for circulation, parking, or other daily use.

3.05 Testing and Inspections:

A. Pressure Testing:

1. Make hydrostatic tests only in the presence of the Engineer. No pipe shall be backfilled until it has been inspected, tested and approved.

2. Furnish necessary pump, gauges and all other test equipment.

3. All PVC main lines with gate (isolation) valves installed and closed shall be flushed and pressure tested with all joints exposed to one hundred fifty (150) psi until watertight. Maximum psi loss in a thirty (30) minute test period shall be five (5) PSI.

4. Similarly, all PVC lateral lines with risers installed and capped shall be flushed and pressure tested with all joints exposed to service line pressure required for design for 30 minutes. Maximum PSI loss allowed shall be five (5) PSI. The Engineer shall visually inspect all lateral lines, joints, and swing joints for leakage.

5. To be valid, all tests must be witnessed and approved by the Engineer. The contractor must give the Engineer forty eight (48) hours notice prior to the anticipated date of inspection.

6. All gauges used in the testing of water pressures shall be certified correct by an independent testing laboratory immediately prior to use on the project. Gauges shall be re-tested when directed by the Engineer.

7. All testing shall be approved prior to installation of automatic control valves or irrigation heads.

B. Equipment Surveying:

Upon the Engineer's approval of the Pressure Test, the Engineer will locate main lines and lateral lines. If surveying is not required, backfilling of trenches can be completed.

C. Coverage Test:

1. Before the irrigation system will be accepted, the Contractor, in the presence of the Engineer, shall perform a water coverage test for each zone of the system. Contractor to be responsible to change nozzles, etc. at discretion of Engineer in order to obtain full coverage with minimum over spray. Contractor will be required to adjust and/or replace nozzles, etc. to meet this requirement. Prior to arrival of Engineer, the Contractor shall accomplish the following: complete all work including balancing, adjusting the system (pressure reducing valves, flow adjustment keys, nozzles, etc.) to provide optimum coverage without fogging.

2. Notify the Engineer at least forty eight (48) hours in advance of coverage test.

D. Complete System Inspection (Punch List):

1. Upon approved completion of the Coverage Test, trenching and installation of all equipment, the Contractor shall request a Complete System Inspection of the entire irrigation system including: backfilling, irrigation heads, valves, valve boxes, controller and all other equipment.
2. From this inspection, a punch list shall be prepared by the Engineer and presented to the Contractor for completion. The Engineer shall give a date for completion of the punch list, not to exceed two weeks.
3. Notify the Engineer at least forty-eight (48) hours in advance of Complete System Inspection. The Contractor shall be responsible for having a two-way communication system or sufficient personnel so that directions from the inspection areas to the controller of the system can be readily accomplished.

C. Substantial Completion:

1. Contractor shall write a letter to the Engineer requesting substantial completion of the irrigation system.
2. Refer to Section 01770 of these specifications for information about how the irrigation system shall be determined to be substantially complete.

F. System Operations Orientation:

1. System Operation Training Session:
  - a. **A training and orientation session shall be required. The Contractor, the irrigation subcontractor, the Consultant and the Engineer shall be present.** The date and time of the session shall be subject to approval of the Engineer.
  - b. The "As-Built" plans shall be reviewed and all features explained. The "As-Built" plans shall consist of red-lined corrections, notes, comments, etc. on a clean bond copy print. Any major deviations from the original design as previously approved shall be documented on the As-Builts and explained at the session. All critical dimensions shall be shown. The Consultant shall review and approve the "As-Built" plans submitted and prepare "As-Built" Drawings on Mylar for archive storage.
  - c. A complete maintenance and operations manual shall be prepared by the Contractor and three copies of the manual shall be turned over to the Engineer at the final inspection. The manuals shall consist of three ring binders containing: (1) catalogs of all materials used, (2) a complete parts list of all materials, (3) a written summary of all operations data including spring start-up and winterization techniques, controller programming, valve cleaning, irrigation adjustments, backflow preventer operation and any other information required to operate and maintain system, (4) two local distributors.
  - d. The controller station timing shall be set by the Engineer.
2. Controller Charts:
  - a. As-Built drawings shall be approved by the Engineer before charts are prepared. The chart shall be a reduction of the actual As-Built Drawing prepared by the Consultant.
  - b. Provide one controller chart per controller. Controller chart shall fit in behind controller door.
  - c. Chart shall be a bond copy print with a different pastel transparent color to show each separate zone. Verify that the zone number as shown on the Controller Chart matches the number on the actual control valve identification tag.
  - d. When completed and approved, hermetically seal (lamine) the chart between two pieces of plastic.
  - e. The charts shall be completed before the project can be considered Physically Complete.
3. The contractor shall provide the Engineer with the necessary keys and/or other tools necessary to operate/drain/activate the system and spend sufficient time with the Engineer to insure that the system operation/maintenance/winterizing can continue after departure of the Contractor. The Contractor shall provide two (2) TRC Remotes to the Engineer. The Contractor shall be liable for all damage or loss resulting from failure to comply with the provisions of this paragraph.

G. Functional Test:

1. Functional test of the control system shall be performed and demonstrate that all parts of the control system function as specified or intended. The functional test for each new system shall consist of not less than 30 days of continuous, satisfactory operation.
2. Any materials determined to be faulty as part of the installation shall be replaced or corrected by the Contractor at his expense in a manner respective to the Plans, Details and other sections of this Specification. In the event of a system failure due to faulty installation or workmanship, the 30 day period will be repeated until testing is complete.

3.06 Physical Completion:

- A. Upon completion and approval of all tests, inspections, training, manuals, as-built drawings, and other requirements of this Section, the Engineer shall write a letter to the Contractor transferring the project to the Owner's Maintenance and Operation personnel.
- B. Physical Completion of the system will be contingent upon Contractor providing signed and approved irrigation/plumbing/health/electrical permits as may be applicable.

3.07 Guarantee:

- A. Contractor shall submit a written guarantee, in approved form, stating that all work showing defects in materials or workmanship will be repaired or replaced at no cost to the Engineer for a period of one year from date of Substantial Completion.
- B. A final site meeting shall take place eleven months after the date of Substantial Completion. The system shall be examined by the Engineer to determine if the system requires alterations or replacements covered in the Guarantee.
- C. The sample Guarantee Form following this section may be re-typed on Contractor's letterhead and contain the following information:

**END OF SECTION 02810**

***Guarantee for Irrigation System***  
***Ballard Corners Park***

We hereby guarantee that the irrigation system we have furnished and installed for (project name) is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted.

We agree to repair or replace any defects in materials or workmanship, which may develop during the period of one year from date of Substantial Completion. We also agree to correct any damage resulting from the repairing or replacing of such defects at no additional cost to the Owner. We shall make such repairs or replacements within a reasonable time, as determined by the Engineer, after receipt of written notice. In the event of our failure to make such repair or replacements within a reasonable time after receipt of written notice, we authorize the Owner to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

Project Name: ***Ballard Corners Park***

Designer of Work: Jeff Mumma, Irrigation Designer, Barker Landscape Architects PS

Project Location: 6201 17th Ave NW, Seattle, WA 98107

**Authorized Contractor Representative**

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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

Approved by: \_\_\_\_\_  
(Project Engineer)

**Effective Dates of Guarantee**

Start (Approved Date of Physical Completion): \_\_\_\_\_

Warranty Testing Date / Completion of Guarantee Period: \_\_\_\_\_

**SECTION 02870  
SITE FURNISHINGS**

**PART 1 – GENERAL**

1.01 Description:

Work Included: Provide all labor, materials and equipment necessary to supply and install the following:

- A. Bike Racks
- B. Park Benches
- C. Trash Receptacles

1.02 Related Sections:

Section 02510 – Asphalt Paving  
Section 02520 - Concrete Paving  
Section 02990 - Site Restoration  
Section 16050 - Electrical - General

1.03 Quality Assurance:

- A. Manufacturer's Instructions: Adhere to manufacturer's instructions for product handling, assembly, installation, and maintenance.
- B. Manufacturer's original factory finish must be intact for the installation to be considered satisfactory. On-site touch-up will not be accepted.
- C. For Lighting Fixtures, the installer must be a licensed electrical contractor experienced in lighting fixture installations.

1.04 Submittals: For each Product Specified, submit the following for approval prior to delivery:

- A. Manufacturer's product data.
- B. Manufacturer's installation instructions.
- C. Submit Shop Drawings for approval, of all electrical lighting fixtures and associated hardware

**PART 2 - PRODUCTS**

2.01 General:

- A. Comply with SPR Standard Specifications and Manufacturer's recommendations at all times. Where these may be in conflict, the more stringent requirements shall prevail.
- B. All products shall be supplied as specified, or approved equal. Refer to Section 01630 for Product Substitution requirements.

2.07 Bike Racks:

A. The SPR Standard for Bicycle Racks shall be:

1. “The Expo Rack”, ‘W’ Series Rack, by Cora Bike Rack, Inc., Distributed by: Jack Towse, P.O. Box 9844, Seattle, WA, 98109, Phone: 206-937-8345. This rack comes in various sizes for from between 4 and 10 bicycles, is made of heavy gauge steel pipe, powder coated steel in black. Bolt down model only shall be used.

2.08 Park Benches:

A. SPR’s Standard for the Park Bench shall be:

Central Park Settee, Model No. 6735, color, Drylak RAL color 6012 (touch up is Benjamin Moore standard color Black Forest Green), supplied by Kenneth Lynch & Sons, Wilton, CT, Ph. 203-762-8363, Fax: 203-762-2999, or approved equal.

2.11 Trash Receptacles:

A. SPR Standard Generic Receptacle:

1. Pilot Rock Federal-Duty (Model CN/G-9738C), hot-dipped galvanized 32 gallon can with Pilot Rock (Model CN/G-9768 Dome Hatch Lid). These receptacles shall generally be painted dark green after galvanizing. The painting process required shall include: a copper sulfate wash of the galvanized surfaces, then application one coat of a galvanize primer and two coats of Dark Green paint. (Note: SPR purchases this can via vendor contract and will usually provide it to the project).

**PART 3 - EXECUTION**

3.01 Examination:

Verify installation conditions as satisfactory to receive work of this Section. Do not install until unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions as satisfactory.

3.02 Direct Burial Installations:

- A. All below-grade steel components scheduled for direct burial installation shall be coated in an approved manner prior to installation, typically either factory powder coating or hot-dipped galvanized.
- B. Provide footing excavations sized per measured plans provided with the Contract Drawings, manufacturers printed assembly and installation instructions, or as directed by the Engineer, typically 12" diameter x 18" depth for most installations under 100 lbs/footing.

C. Coring and Saw-cutting:

1. All products scheduled for direct burial installation within new paved areas are to be installed prior to paving.
  2. In the event that paving is installed prior to site furnishings scheduled for direct burial installation, saw-cutting will not be approved as a means of penetrating pavements. Coring, to the specified size of the footing, is the only method that may be considered.
  3. Do not core completed work of the Contract to accomplish product installation without prior approval of the Engineer.
  4. Where site furnishings are scheduled for installation in existing pavement of any type or where the Engineer has approved coring of pavement installed as part of the work of the Contract, the Contractor shall insure an adequate supply of clean water and continuously flush and clean cuttings from pavement surfaces to remain.
- D. Concrete footings shall be neatly and evenly crowned slightly above adjacent finished grade where adjacent finished grade is generally level, matching adjacent finished grade where adjacent finished grade is sloped, or level to the bottom of base aggregate where installation in paved areas is scheduled.
- E. Remove all concrete slurry from surrounding surfaces and site furnishings prior to request for inspection.

3.03 Surface Installations:

- A. Surface installations shall be made only upon approved concrete surfaces.
- B. Use only manufactured approved anchoring devices.
- C. Where the manufacturer does not provide a specification for anchoring, use only approved stainless steel wedge anchors as follows:
  1. Do not proceed with anchor installation until concrete pavement has had a minimum of 14 days cure time under normal conditions. Where weather conditions are beyond the range of normal, do not proceed with anchor installation without the approval of the Engineer.
  2. Size to the largest standard diameter that the manufacturer's pre-made hole will accommodate without force, typically 5/8".
  3. Size for embedment of 3/4 of the actual depth of concrete to support the installation, in no case less than 2 1/2". Allow for depth of nut plus 3-5 threads protrusion above finished installation.
  4. Do not over drill beyond 1/8" the depth necessary to accommodate the anchor.
  5. Torque to 80-85% of the anchor manufacturers recommended maximum.
  6. Provide at least one anchor for every bolt location hole for any site furnishing.

3.04 Installation of Manufactured Items:

Install all equipment in accordance with Specifications, Drawings and manufacturer's directions. Where these may be in conflict, the more stringent requirements govern.

3.05 Installation of Fabricated Items:

All fabricated items shall be installed consistent with the measured plans provided in the Contract Drawings utilizing materials

3.06 Installation of Lighting Fixtures

- A. Fixtures shall be neatly and firmly mounted, using mounting hardware as directed in manufacturer's specifications and the Plans and Details.
- B. Exterior lighting fixtures shall be constructed and gasketed to prevent entry of dirt and insects and damp or wet labeled as required.
- C. Provide reinforced concrete pole bases as indicated. Coordinate with concrete work. Verify exact location of light poles with the Engineer prior to placement.
- D. Adjust photoelectric controls and time switches as directed by the Engineer.

3.06 Cleanup:

Remove all metal, wood, and concrete debris, protective wrappings and coverings, and shipping materials from the project site. Remove all residues, repair all stains, scuffs, abrasions, and marks from the finished product prior to requesting inspection. Fully restore all areas of the site that were impacted by the installation activities per SPR Standard Specifications Section 02990 - Site Restoration.

**END OF SECTION 02870**

## SECTION 02920 SOIL PREPARATION

### PART 1 – GENERAL

#### 1.01 Description:

The work includes furnishing and installation of soil and/or amendments for lawn areas, athletic fields, or landscape planting areas.

#### 1.02 Quality Assurance:

All products supplied shall comply with applicable state and local codes.

#### 1.03 Reference Sections:

*Section 02921 - Playfield Soil for Lawn Areas  
Section 02922 - Planting Soil for Landscape Plantings  
Section 02924 - Organic Amendment  
Section 02937 - Grass Seed Mix for Lawn Areas  
Section 02950 - Landscape Planting  
Section 02972 - Fertilizer for Lawn Installation  
Section 02974 - Fertilizer for Landscape Plantings*

#### 1.04 Submittals:

Submit the following samples to the Engineer for approval:

- A. Playfield Soils (5-pound bag) with soil analysis test.
- B. Planting Soils (5-pound bag) with soil analysis test.
- C. Organic Amendment (5-pound bag) with soil analysis test.

#### 1.05 Project Conditions:

- A. The site soils shall be amended with both Playfield Soil Amendment (for Lawn Areas) and Planting Soil Amendment (for Landscape Planting Areas) as shown on the plans.
- B. Keep streets, sidewalks and site clean, free from debris and affected drains open and free flowing at all times. Protect drains with filter fabric covers during construction. Appropriate erosion control measures shall be employed.

### PART 2 - PRODUCTS

#### 2.01 Materials:

##### A. Playfield Soil Mix (Imported - for Lawn Areas):

The Playfield Soil Mix shall consist of **60%** Sand and **40%** Organic Amendment by volume, and shall meet or exceed the following specifications:

The Sand Component shall meet the following specifications within reasonable variations:

<u>Screen Size</u>	<u>Percent Retained</u>	<u>Percent Passing</u>
6.35mm	5%	95%
#10	15	85
#30	50	50
#60	60	40
#100	80	20
#200	90	10

The Organic Amendment component shall consist of composted yard debris or organic waste material, and shall consist of 100% recycled materials. In addition, the organic material shall have the following physical characteristics:

1. Shall have maximum carbon to nitrogen ration of 40:1. If C/N ratio is greater than 40:1, a lab recommended rate of Nitroform (38-0-0), be followed at the time of soil preparation.
2. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by the United States Environmental Protection Agency.
3. Shall be fully mature and stable before usage.
4. Shall be screened using a sieve no finer than ¼-inch and no greater than ½-inch.  
Based on dry weight of total organic amendment sample: Must comply with the following percent by weight passing:

<u>Sieve Size</u>	<u>Maximum %</u>	<u>Minimum %</u>
12.7mm (1/2")	0	100
6.35mm (1/4")	100	95
4.76mm	100	90
2.38mm	100	75
1.00mm	45	70
500micron	30	0

5. Shall have heavy metal concentrations below the WSDA per year load limits as follows:

<u>Metal</u>	<u>WA State – Max. lb./ac./yr.</u>
<u>ARSENIC</u>	0.297
<u>CADMIUM</u>	0.079
<u>COBALT</u>	0.594
<u>LEAD</u>	1.981
<u>MERCURY</u>	0.019
<u>MOLYBDENUM</u>	0.079
<u>NICKEL</u>	0.713
<u>SELENIUM</u>	0.055
<u>ZINC</u>	7.329

B. Planting Soil Mix (Imported - for Landscape Planting Areas):

The Planting Soil Mix shall consist of 67% sandy loam and 33% composted organic material.

The Sandy loam or loamy sand component shall consist largely of sand, but with enough silt and clay present to give it a small amount of stability. Individual sand grains can 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.

The mixed loam shall meet the following:

<u>Screen Size</u>	<u>Percent Retained</u>	<u>Percent Passing</u>
3/8 inch	0	100
#4	5	95
#10	15	85
#30	30	70
#60	50	50
#100	70	30
#270	85	15

Shall have pH range of 5.5 - 7.5 with dolomite lime or other amendments, added as necessary to attain this range. The Organic Amendment component shall consist of composted organic material as described above.

### PART 3 - EXECUTION

#### 3.01 Preparation of Sub-grade:

- A. Rip, disc, or scarify sub-grade soils to a minimum depth of 12 inches. Sub-grade elevations shall be as follows:
  1. For Lawn Areas - Sub-grade elevation **4 inches** below finished grade.
  2. For Landscape Planting Areas - Sub-grade elevation **6 inches** below finished grade.

#### 3.02 Placing Amendments:

- A. Lawns Areas: Place **4 inches** of planting soil and rototill soil thoroughly into top **6 inches** of prepared sub-grade.
- B. Landscape Planting Areas: Place 6 inches of planting soil and thoroughly rototill soil into top 8 inches of prepared sub-grade.

#### 3.03 Fine Grading:

- A. Perform fine grading to attain finish grades as shown on the Plans.
- B. Rake out all rocks, roots, sticks and other debris larger than 1-inch diameter or sticks longer than 3 inches long. Leave surface even and readily able to accommodate lawn or planting installation. Compaction level shall be between 85 to 95 percent density.

#### 3.04 Inspection:

The Contractor shall notify the Engineer least 48 hours in advance of the time of inspection required for completion of soil preparation before seeding of lawn and planting of shrubs and groundcover can occur.

### END OF SECTION 02920

**SECTION 02922**  
**PLANTING SOIL FOR LANDSCAPE AREA**

**PART 1 – GENERAL**

**1.01 Description**

Construct or restore Landscape Planting (shrub bed) Areas using approved, pre-mixed and imported Planting Soil Mix that meets or exceeds the following requirements.

**1.02 Quality Assurance**

All construction shall be in accordance with the City of Seattle Standard Specifications and Plans (most recent edition) and all other pertinent Seattle Parks and Recreation Standard Specifications and Details.

- 1.03** The Planting Soil Mix is intended for use in Landscape Planting (shrub bed) Areas and shall consist of 67% Sandy/Loam Mix component and 33% Decomposed Organic Amendment by volume (refer to SPR Standard Specifications, Section 02924 - Organic Amendment for specific information about this component) and shall meet or exceed the following requirements:

- A. The Sandy/Loam Mix component of the Planting Soil Mix shall be soil, based on USDA standards and shall have the following characteristics:

<u>Class</u>	<u>Particle Size Range</u>
Coarse sand	0.5 - 2.0 mm
All sands	0.05 - 2.0 mm
Silt	0.002 - 0.05 mm
Clay	<0.002 mm

- B. The Sandy/Loam component shall also meet or exceed the following specifications:

<u>Screen Size</u>	<u>Percent Retained</u>	<u>Percent Passing</u>
6.35mm	5%	95%
#10	15	85
#30	50	50
#60	60	40
#100	80	20
#200	90	10

- C. The Organic Amendment component shall consist of composted yard debris or organic waste material, and shall consist of 100% recycled materials. In addition, the organic material shall have the following physical characteristics:

1. Shall have maximum carbon to nitrogen ration of 40:1. If C/N ratio is greater than 40:1, a lab recommended rate of Nitroform (38-0-0), be followed at the time of soil preparation.
2. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by the United States Environmental Protection Agency.
3. Shall be fully mature and stable before usage.
4. Shall be screened using a sieve no finer than ¼-inch and no greater than ½-inch.

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Based on dry weight of total organic amendment sample: Must comply with the following percent by weight passing:

Sieve Size	Maximum %	Minimum %
12.7mm (1/2")	0	100
6.35mm (1/4")	100	95
4.76mm	100	90
2.38mm	100	75
1.00mm	45	70
500micron	30	0

5. Shall have heavy metal concentrations below the WSDA per year load limits as follows:

Metal	<u>WA State - Maximum lb./ac./yr.</u>
<b><u>ARSENIC</u></b>	0.297
<b><u>CADMIUM</u></b>	0.079
<b><u>COBALT</u></b>	0.594
<b><u>LEAD</u></b>	1.981
<b><u>MERCURY</u></b>	0.019
<b><u>MOLYBDENUM</u></b>	0.079
<b><u>NICKEL</u></b>	0.713
<b><u>SELENIUM</u></b>	0.055
<b><u>ZINC</u></b>	7.329

6. Shall be certified by a Process to Reduce Pathogens (PFRP) guidelines for composting as established by the United States Environmental Agency.
- D. The Planting Soil Mix shall have a Saturation Extract Conductivity of less than 4.0 dS/m @ 25 degrees C. as determined in a saturation extract. Use the following table to determine the maximum allowable ECe (dS/m of saturation extract) of compost at the desired use rate.

Desired Use Rate		Salinity (ECe) of On-Site Soil		
		3 dS/m	2 dS/m	1 dS/m
<b>Maximum ECe of Compost</b>				
1	5	14	28	42
2	11	7	14	21
3	16	5	9.5	14
4	22	3.5	7	10.5
5	27	3	5.5	8.5
6	32	2.5	4.5	7

- E. The Planting Soil Mix shall also have the following characteristics:

1. The pH range shall be from 5.5 to 7.5.
2. The Sodium Adsorption Ratio shall be less than 6.0.

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3. The saturation extract concentration of Boron shall be less than 1.0ppm.
  4. The water percolation/infiltration rate of the disturbed soil sample shall be a minimum of 0.4 inches per hour.
  5. The soil structure shall be loose, friable, and not subject to consolidation or compaction.
  6. The soil shall contain less than 100 plant parasitic nematodes per 100 cc of soil.
  7. The soil shall be relatively free of soil-borne plant pathogens.
  8. Minimal weed seed shall be present, based on germination testing of a representative sample.
  9. Non-soil components shall be less than 1% by volume (i.e. plastic, sticks, glass, etc.).
- F. The Planting Soil Mix shall contain sufficient quantities of available nitrogen, potassium, phosphorus, calcium, magnesium, sulfate, copper, zinc, manganese, iron and boron to support normal plant growth. In the event of nutrient inadequacies, provisions shall be made to add required materials prior to planting.
- G. The Contractor shall submit soil analysis from a soils testing laboratory to the Engineer. Indicate source and obtain the Engineer's approval before hauling to the site an (analysis test with a 5 pound bag sample is required).
- H. Acceptable Sources:
1. Astec, LLC, Bellevue, WA
  2. Cedar Grove Compost Company, Maple Valley, WA
  3. Northwest Cascade, Puyallup, WA
  4. Pacific Topsoils, Inc., Everett, WA
  5. Other approved equal.  
(For other available sources refer to the current edition of "Directory of Recycled Content Building and Construction Products" as published by the Clean Washington Center, Department of Trade and Economic Development, 2001 Sixth Avenue, Suite 2700, Seattle, Washington 98121 - Phone Number (206) 464-7040).

**PART 2 - PRODUCTS *Not Used***

**PART 3 - EXECUTION *Not Used***

**END OF SECTION 02922**

**SECTION 02923  
BIORETENTION SOIL**

**PART 1 – GENERAL**

**1.01 Description:**

Work includes, but is not limited to the following:

The installation of Bioretention Soil in landscape areas intended to receive surface runoff for infiltration.

**1.02 Related Sections:**

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

Section 02200 - Earthwork

Section 02920 – Soil Preparation

Section 02950 – Landscape Planting

**1.03 Submittals:**

**A) At least 10 Working Days in advance of construction, the Contractor must submit to the Engineer for approval:**

1. A 10-pound minimum sample of mineral aggregate
2. A 100 pound sample of mixed Bioretention Soil
3. A 10 pound minimum sample of compost
4. Grain size analysis results of mineral aggregate performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils;
5. Quality analysis results for compost performed in accordance with STA standards, as specified in Section 2-02(E)
6. Organic content test results of mixed Bioretention Soil. Organic content test shall be performed in accordance with by TMECC 05.07A, “Loss-On-Ignition Organic Matter Method”.
7. Modified Proctor compaction testing of mixed Bioretention Soil, performed in accordance with ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort;
8. A description of the equipment and methods proposed to mix the mineral aggregate and compost to produce Bioretention Soil;
9. Provide the following information about the testing laboratory(ies):
  - A. name of laboratory(ies) including contact person(s),
  - B. address(es),
  - C. phone contact(s),
  - D. e-mail address(es);
  - E. qualifications of laboratory and personnel including date of current certification by STA, ASTM, AASHTO, or approved equal.

**PART 2 – MATERIALS**

2.01 Mineral Aggregate for Turf and Landscape Bioretention Soils

- A) Mineral aggregate for Landscape Bioretention Soils shall be analyzed by an accredited lab using #200, #100, #60, #40 and #20. #10, #4, 3/8 inch and 1 inch sieves, and meet the following gradation:

Sieve Size	Percent Passing
1 inch	100
No. 4	60 - 100
No.10	40 - 100
No. 40	15 - 50
No. 200	0 - 5

- B) Mineral aggregate for Turf and Landscape Bioretention Soils shall meet the following gradation coefficients: Coefficient of Uniformity ( $C_u = D_{60}/D_{10}$ ) equal to or greater than 6; and Coefficient of Curve ( $C_c = D_{30}/D_{60}D_{10}$ ) greater than or equal to 1 and less than or equal to 3.

2.02 Compost

- A) Compost products shall be the result of the biological degradation and transformation of Type I, II or III Feedstocks under controlled conditions designed to promote aerobic decomposition, per WAC 173-350. Compost shall be stable with regard to oxygen consumption and carbon dioxide generation. Compost shall be mature with regard to its suitability for serving as a soil amendment or an erosion control BMP as defined below. The compost shall have a moisture content that has no visible free water or dust produced when handling the material.

- B) Compost production and quality shall comply with Chapter 173-350 WAC, and meet the following physical criteria:

1. Compost material shall be tested in accordance with Testing Methods for the Examination of Compost and Composting (TMECC) Test Method 02.02-B, "Sample Sieving for Aggregate Size Classification".

Fine Compost shall meet the following:

	<u>Min.</u>	<u>Max.</u>
Percent passing 1"	99%	100%
Percent passing 5/8"	90%	100%
Percent passing 1/4"	40%	90%

2. The pH shall be between 5.5 and 8.0 when tested in accordance with TMECC 04.11-A, "1:5 Slurry pH".
3. Manufactured inert material (plastic, concrete, ceramics, metal, etc.) shall be less than 1.0 percent by weight as determined by TMECC 03.08-A "percent dry weight basis".
4. Organic matter content should be between 45 and 65 percent dry weight basis as determined by TMECC 05.07A, "Loss-On-Ignition Organic Matter Method".
5. Soluble salt contents shall be less than 6.0 mmhos/cm tested in accordance with

- 6. TMECC 04.10-A, "1:5 Slurry Method, Mass Basis".
  - 6. Maturity shall be greater than 80% in accordance with TMECC 05.05-A, "Germination and Vigor".
  - 7. Stability shall be 7 or below in accordance with TMECC 05.08-B, Carbon Dioxide Evolution Rate"
  - 8. The compost product must originate a minimum of 65 percent by volume from recycled plant waste as defined in WAC 173-350 as "Type 1 Feedstocks." A maximum of 35 percent by volume of other approved organic waste as defined in WAC 173-350 as "Type II" or "Type III" may be substituted for recycled plant waste. The supplier shall provide written verification of feedstock sources.
  - 9. Carbon to nitrogen ratio shall be less than 25:1 as determined using TMECC 04.01 "Total Carbon" and TMECC 04.02D "Total Kjeldhal Nitrogen"
  - 10. The Engineer may also evaluate compost for maturity using the Solvita Compost Maturity Test at time of delivery. Compost shall score a number 6 or above on the Solvita Compost Maturity Test.
- C) The compost supplier will test all compost products within 90 calendar days prior to application. Samples will be taken using the Seal of Testing Assurance (STA) sample collection protocol. (The sample collection protocol can be obtained from the U.S. Composting Council, 4250 Veterans Memorial Highway, Suite 275, Holbrook, NY 11741 Phone: 631-737-4931, [www.compostingcouncil.org](http://www.compostingcouncil.org)). The sample shall be sent to an independent STA Program approved lab. The compost supplier will pay for the test. A copy of the approved independent STA Program laboratory test report shall be submitted to the Contracting Agency prior to initial application of the compost. Seven days prior to application, the Contractor shall submit a sample of each type of compost to be used on the project to the Engineer.
- D) Compost not conforming to the above requirements or taken from a source other than those tested and accepted shall be immediately removed from the project and replaced at no cost to the Contracting Agency.
- E) The Contractor shall either select a compost supplier from the Qualified Products List, or submit the following information to the Engineer for approval:
  - 1. A Request for Approval of Material Source.
  - 2. A copy of the Solid Waste Handling Permit issued to the supplier by the Jurisdictional Health Department as per WAC 173-350 (Minimum Functional Standards for Solid Waste Handling).
  - 3. The supplier shall verify in writing, and provide lab analyses that the material complies with the processes, testing, and standards specified in WAC 173-350 and these specifications. An independent STA Program certified laboratory shall perform the analysis.
  - 4. A list of the feedstock by percentage present in the final compost product.
  - 5. A copy of the producer's Seal of Testing Assurance certification as issued by the U.S. Composting Council.
- F) Acceptance will be based upon a satisfactory Test Report from an independent STA program certified laboratory and the sample(s) submitted to the Engineer.

2-03 Landscape Bioretention Soils

- A) Landscape Bioretention Soil shall consist of 30 to 40% compost meeting the requirements of

Section 9-14.4(9) and 60 to 70% mineral aggregate meeting the requirements of Section 9-03.2(3); and have an organic matter content of 4 to 8 percent dry weight basis as determined by TMECC 05.07A, "Loss-On-Ignition Organic Matter Method". The mixture shall be well blended to produce a homogeneous mix. Efforts should be made to attain organic matter content as close to 8 percent as possible

### PART 3 – EXECUTION

#### 3.01 General

- A) Bioretention soil shall be protected from all sources of additional moisture at the Supplier, in covered conveyance, and at the Project Site until incorporated into the Work. Soil placement and compaction will not be allowed when the ground is frozen or excessively wet, or when the weather is too wet as determined by the Engineer.
- B) When the Contract specifies testing by a Contractor provided testing laboratory, the laboratory must be an STA, AASHTO or ASTM or other designated recognized standards organization accredited laboratory with certification maintained current. The laboratory must be capable of performing all tests to the designated recognized standards specified, and will provide test results with an accompanying Manufacturer's Certificate of Compliance.

#### 3.02 Placement

- A) At the locations shown on the Drawings, excavate, grade, and shape to the contours indicated to accommodate placing of Bioretention Soil to the thicknesses required. Dispose of excavated soil or reuse elsewhere as the Contract or Engineer will allow. Scarify the subgrade soil a minimum of 2 inches deep where slopes allow, as determined by the Engineer prior to placing Bioretention Soil.
- B) Mixing or placing Bioretention Soil will not be allowed if the area receiving bioretention soil is wet or saturated or has been subjected to more than ½-inch of precipitation within 48-hours prior to mixing or placement. Engineer shall have final authority to determine if wet or saturated conditions exist.
- C) Place Landscape Bioretention Soil in loose lifts not exceeding 8 inches.
- D) Compact Landscape Bioretention Soil to a relative compaction of 85 percent of Modified maximum dry density (ASTM D 1557), where slopes allow, as determined by the Engineer.

**END OF SECTION 02923**

**SECTION 02924  
ORGANIC AMENDMENT**

**PART 1 – GENERAL**

**1.01      Organic Amendment (Compost):**

The Organic Amendment shall consist of 100% decomposed organic mulch material, and shall consist of yard waste debris or other organic waste materials that have been sorted, ground up, aerated and aged and shall be fully composted, stable and mature (non-aerobic). The composting process shall be for at least six months time and the organic amendment shall have a uniform dark, soil-like appearance and consist of 100% recycled content. In addition, the organic amendment shall have the following physical characteristics:

- A. Shall be screened using a sieve no finer than  $\frac{1}{4}$  inch and no greater than  $\frac{1}{2}$  inch.

Based on dry weight of total organic amendment sample: Must comply with the following percent by weight passing:

<u>Sieve Size</u>	<u>Maximum %</u>	<u>Minimum %</u>
12.7mm (1/2")	0	100
6.35mm (1/4")	100	95
4.76mm	100	90
2.38mm	100	75
1.00mm	45	70
500micron	30	0

- B. Shall have a Saturation Extract Conductivity of less than 4.0 dS/m @ 25 degrees C. as determined in a saturation extract. Use the following table to determine the maximum allowable ECe (dS/m of saturation extract) of compost at the desired use rate.

Desired Use Rate		Salinity (ECe) of On-Site Soil		
Cu. Yds. of Amendment per 1000 sq. ft. for incorporation to 6" soil depth	Volume Percentage of Amendment	3 dS/m	2 dS/m	1 dS/m
		Maximum ECe of Compost		
1	5	14	28	42
2	11	7	14	21
3	16	5	9.5	14
4	22	3.5	7	10.5
5	27	3	5.5	8.5
6	32	2.5	4.5	7

- B. Shall have minimal weed seed present based on germination testing of representative samples.
- C. Shall have less than 100 plant parasitic nematodes per 100cc of organic matter.
- D. Shall be relatively free of soil borne plant pathogens.
- E. Shall have a pH range of from 5.5 to 7.5.

- F. Shall have a Sodium Extract concentration less than 6.0.
- G. Shall have a Saturation Extract concentration of Boron less than 1.0 PPM.
- H. Shall have a minimum of 0.08% dilute acid extractable iron based on dry weight.
- I. Shall have a maximum carbon to nitrogen ratio of 40:1.
- J. Shall have heavy metal concentrations below the WSDA per year load limits as follows:

<u>Metal</u>	<u>WA State - Maximum lb./ac./yr.</u>
ARSENIC	0.297
CADMIUM	0.079
COBALT	0.594
LEAD	1.981
MERCURY	0.019
MOLYBDENUM	0.079
NICKEL	0.713
SELENIUM	0.055
ZINC	7.329

- K. Shall be certified by the Process to Reduce Pathogens (PFRP) guidelines for composting as established by the United States Environmental Agency.
- L. Submittals: The Contractor shall notify the Engineer of the source of supply and provide a two (@) pound sample for review and approval, before installation.

M. Recommended Sources:

1. Astec, Inc., Bellevue, WA
  2. Cedar Grove Compost Company, Maple Valley, WA
  3. Northwest Cascade, Puyallup, WA
  4. Pacific Topsoils, Everett, WA
  5. Other approved equal
- For other available sources, refer to the current edition of the "Directory of Recycled Content Building and Construction Products", as published by the Clean Washington Center, Department of Trade and Economic Development, 2001 Sixth Avenue, Suite 2700, Seattle, WA 98121. Phone (206) 464-7040.

**PART 2 – PRODUCTS *Not Used***

**PART 3 – EXECUTION *Not Used***

**END OF SECTION 02924**

**SECTION 02937**  
**GRASS SEED FOR LAWN AND ECOLOGY AREAS**

**PART 1 – GENERAL**

**1.01 Description:**

- A. Grass Seed Mix shall be composed of the following, by weight:

50% Turf-type Perennial Ryegrasses  
25% Creeping Red Fescue  
25% Chewings Fescue

- B. The Grass Seed Mix shall also meet or exceed the following:

1. Minimum pure seed percent - 98%
2. Minimum germination percent - 90%
3. Maximum weed seed percent - 0.5%

- C. Seed shall be packed in clean, sound containers of uniform weight.

**1.02 Approved Varieties:**

- A. Turf-Type Perennial Ryegrass Blend:

Grass Seed Blend must consist of at least two varieties listed below and mixed in equal portions, by weight:

Brightstar SLT	Hawkeye	Nighthawk	Catalina II
Brightstar II	SR 4420	Elfin	Pizzazz
Admire	SR 4220	All Star II	Amazing
Charger II	Pentum	Manhattan 4	Inspire
Promise	Gator 3	Applaud	Repell III
Seville II	Grand Slam	Line Drive	Cathedral II
Kokomo	Mach I	Pennant II	Pennant II
Terradyne	or, approved equals.		

- B. Creeping Red Fescue:

A single variety must be selected from the following list:

Salsa	Flyer	Cindy	Salem
Jasper	or, approved equal.		

- C. Chewings Fescue:

A single variety must be selected from the following list:

Longfellow	Proformer	Victory	Weekend
Tiffany	Bridgeport	Bargreen	Shadow II
Tamara	Shadow w/Endo	Jamestown II	Treasure E
Enjoy	Southport	or, approved equals.	

**PART 2 – PRODUCTS *Not Used***

**PART 3 – EXECUTION *Not Used***

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**END OF SECTION 02937**

**SECTION 02950**  
**LANDSCAPE PLANTING**

**PART 1 – GENERAL**

**1.01 Description:**

Provide planted trees, shrubs and ground covers as shown and specified. The work includes but is not limited to:

- A. Plant Materials and Planting.
- B. Soil Preparation and/or Installing Specified Planting Soils.
- C. Fertilizing and Mulching.
- D. Tree Staking.
- E. Maintenance Procedures.

**1.02 Quality Assurance:**

- A. Comply with sizing and grading standards of the 2000 edition of "American Standard for Nursery Stock."
- B. Nomenclature shall conform to 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 (2) measurements so that only a maximum of twenty-five percent (25%) are of the minimum size indicated and seventy-five percent (75%) are of the maximum size indicated.

**1.03 References:**

In addition to the Sections listed below, all work of the Contract shall be performed in compliance with the requirements of this Section.

***Section 02050 - Demolition***

***Section 02100 - Site Preparation***

***Section 02200 – Earthwork for Site Work***

***Section 02920 - Soil Preparation***

***Section 02922 - Planting Soil***

***Section 02924 - Organic Amendment***

***Section 02990 - Site Restoration***

**1.04 Submittals:**

A. Submit the following material samples:

- 1. Mulch submittal in accordance with SPR Standard Specifications, Section 02961.

2. Topsoil submittals in accordance with SPR Standard Specifications, Section 02922.
3. Fertilizer for planting submittal in accordance with SPR Standard Specifications, section 02974.

B. Submit the following material certification:

1. Planting fertilizer.
2. Plant material sources.

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 such a manner as to prevent wetting and deterioration of the fertilizer.
- 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 Engineer. 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 the Engineer at least five (5) working days prior to the 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<sup>0</sup>F or above 80<sup>0</sup>F.
- D. Do not install plants when wind velocity exceeds thirty (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.

1.07 Warranty:

- A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of one (1) year after the date of Physical Completion. Inspection of plants will be made by the Engineer at the completion of planting.
- B. 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 (1) year after Physical Completion, 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 seventy-five (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:

- A. 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.
  - 1. 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.
  - 2. 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.
  - 3. 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.
    - a. No plants shall be loose in the container.
    - b. Container stock shall not be pot bound.
  - 4. No pruning wounds shall be present with a diameter of more than one (1) inch and such wounds must show vigorous callous on all edges. Trees shall not be pruned within six (6) months prior to delivery.

### 2.02 Soils:

- A. All planting shall be done with a mix of 50% native soil and 50% specified Planting Soil or Organic Amendment when the existing native soil is determined to require mixing per Sections 02920 and/or 02924.

2.03 Fertilizers:

Fertilizers shall be according to SPR Standard Specifications, Section 02974.

2.04 Mulches:

- B. 2" Medium to fine arborists chips around all trees, shrubs, and perennials.

### PART 3 - EXECUTION

3.01 Inspection:

- A. Finish grading shall be inspected and approved by the Engineer prior to planting.
- B. Plant material shall be inspected and approved by the Consultant and 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. Plants brought to the planting site shall be bare root, balled and burlapped, or in containers, depending on how specified in the planting schedule in the Contract for the particular type of planting Material. Plants shall not be planted during freezing weather or when the ground is frozen. Plants shall not be planted during excessively wet conditions. Plants shall not be placed on any day in which temperatures are forecast to exceed 80 degrees unless the Engineer approves otherwise. Plants shall not be placed in areas that are below finished grade.
- B. Dates to plant: Planting trees, shrubs, and groundcovers within an SPR project site shall be performed during the period between **October 1 and April 30**. **Planting at other times shall only be done by written permission by the Engineer and only if an automatic irrigation system is available at the site at the time of planting.**
- C. Plants shall be removed from containers in a manner that prevents damage to the root system. Containers may require vertical cuts down the full depth of the container to

accommodate removal. All circling roots shall be loosened to ensure natural directional growth after planting.

- D. 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. If groundwater is encountered upon excavation of planting holes, the Contractor shall promptly notify the Engineer.
- E. Place specified planting soil for use around the balls and roots of the plants.
- F. Broadcast fertilizer at a rate of one-half pound (1/2#) of nitrogen per 1,000 square feet after completion of planting around shrubs and ground covers only.
- G. 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 planting pit with specified soil or amendment. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.
- H. 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.
- I. 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 eighteen inches (18") of the trunks of trees and shrubs within planting bed and to within twelve inches (12") of edge of bed.
- J. 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.
- K. Mulching:
  - 1. Mulch tree and shrub planting pits and shrub beds with required mulching material two inches (2") 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 and one-half inches (1-1/2") deep immediately after planting.
- L. Staking: Stake all deciduous and coniferous trees immediately after planting.
- M. 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.

3.05 Maintenance:

- A. Maintain plantings for a period of at least ***thirty (30) days*** after substantial 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 regular (at least twice weekly) cultivating, weeding, watering, pruning (only as directed), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
  - 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 twenty-four (24) hours of initial planting, and not less than twice per week (including rain) until Physical Completion.

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 ten (10) working days before requested inspection date.
  - 1. Planted areas will be accepted 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 02952**  
**TREE AND PLANT TRANSPLANTATION**

**PART 1 – GENERAL**

**1.01 Description:**

Provide spading, burlap & basketing, and storage of existing trees, soil preparation, planting, and staking of same. TREES TO BE TRANSPLANTED HAVE BEEN ROOTPRUNED AND BARE-ROOT TRANSPLANTING WILL BE CONSIDERED AS A LESS DISRUPTIVE AND LESS EXPENSIVE OPTION.

**1.02 Related Sections:**

Section 02200 - Earthwork

Section 02920 - Soil Preparation

**1.03 Quality Assurance:**

Tree spading shall be accomplished with mechanical equipment designed specifically for the task, operated by trained personnel.

**1.04 Submittals:**

Prior to mobilizing for the work, submit for approval a list of equipment to be used including owners name and address, and personnel who will operate the equipment and oversee the digging, moving, and planting operation described herein.

**1.06 Project Conditions:**

- A. Work notification: Notify Engineer at least seven (7) days prior to digging of plant material.
- B. Protect existing vegetation, utilities, paving, and other facilities from damage caused by digging operations.
- C. Do not install plant material when ambient temperatures may drop below 35<sup>0</sup>F or above 80<sup>0</sup>F.
- D. Do not install plants when wind velocity exceeds thirty (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.

**1.07 Warranty:**

- A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of one (1) year after the project's Physical Completion Date. Inspection of plants

will be made by the Engineer at completion of planting and at the termination of the warranty period.

B. 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 (1) 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 seventy-five (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 applies to existing trees that are to be removed and healed-in for later replanting on-site.

## PART 2 - PRODUCTS

### 2.01 Plant Materials:

Trees located on the Project Site for re-use. Rootpruning has been performed, and these trees can be bareroot transplanted with the requirement that contractor carefully dig and preserve as many roots as possible. A minimum of 48" radius from tree trunk shall be dug, roots carefully separated from soil and tree and roots protected while moving. Tree and roots shall be planted in hole dug 8 feet diameter and 18" deep in new planting areas. Roots shall be spread throughout hole in depth that they grew, and orientation of tree shall exactly match orientation where it grew. Tree shall be planted within 1 hour of transplanting. Trees shall not be transplanted if temperatures are below 35 degree F.

### 2.02 Burlap and Basket:

Biodegradable burlap and galvanized wire tree basket sized appropriately.

### 2.03 Soils:

Section 02920 - Soil Preparation  
Section 02921 - Planting Soil

### 2.04 Fertilizer:

A. Walt's Organic Fertilizer Rainyside Blend.  
Available at Walt's Organic Fertilizer,

Located at 1528 NW Leary Way, Seattle WA, 98107  
(206) 783-6685 [waltsorganicfertilizer@yahoo.com](mailto:waltsorganicfertilizer@yahoo.com)

2.05 Mulching:

2" Medium to fine arborists chips around all trees, shrubs, and perennials.

2.06 Tree Staking:

Staking shall be per SPR Standard Details No. 02950.51, 02950.52 and/or 02950.54, whichever applies to the type of trees being transplanted.

**PART 3 - EXECUTION**

3.01 Inspection:

- A. Finish grading shall be inspected and approved by the Engineer prior to planting.
- B. Plant material shall be inspected and approved by the Engineer prior to digging, upon arrival at storage location, following installation, and periodically during the warranty period.

3.02 Transplanting

Trees located on the Project Site for re-use. Rootpruning has been performed, and these trees can be bareroot transplanted with the requirement that contractor carefully dig and preserve as many roots as possible. A minimum of 48" radius from tree trunk shall be dug, roots carefully separated from soil and tree and roots protected while moving. Tree and roots shall be planted in hole dug 8 feet diameter and 18" deep in new planting areas. Roots shall be spread throughout hole in depth that they grew, and orientation of tree shall exactly match orientation where it grew. Tree shall be planted within 1 hour of transplanting. Trees shall not be transplanted if temperatures are below 35 degree F.

Spading:

Minimum diameter of tree spade to be used for this work is 42" and maximum is 96". Size shall be determined by the Engineer. Setup spading equipment to center cut around base of tree. Following removal, burlap and basket with appropriately sized materials.

3.03 Healing In:

Heal basketed trees in sufficient organic soil amendment to retain the trees in a plumb condition. Organic material shall be full depth from base of basket to top of basket to ensure consistent moisture retention. Alternatively, provide a base of up to 12" of sand for stability.

3.04 Planting Location:

Contractor shall locate trees by staking with stakes or 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 alternate tree locations have been selected by Engineer.

3.05 Installation:

A. Excavation:

Following acceptance of the final planting location by the Engineer, excavate tree planting pits 1.5x the diameter of the tree basket and to a depth that will allow planting with the base of the tree trunk approximately 2" above surrounding finished grade (averaged if irregular). Scarify sides and bottom of tree pit to allow positive interface of planting soil with surrounding undisturbed native soils.

B. Placement:

Handle basketed trees mechanically with a sling or rigging, using the basket only to support the weight of the tree. While the tree is still mechanically supported, center within the tree pit and verify that the depth of the pit is appropriate. Use native soil to brace the base of the basket to stabilize the tree while removing the rigging.

C. Backfilling:

Using a 50-50 mixture of native soil and planting soil as specified in Section 02920, amended with ½ cup of fertilizer (above), backfill a single 12" loose lift. Flood the remaining exposed excavation with 6-9" of water. Following percolation of the water into the initial lifts of planting soil, backfill approximately ½ of the remaining excavation and begin compacting by foot. Repeat watering procedure, using enough to top remaining excavation. Unwrap burlap from root collar and cut back to current fill limit using a sharp knife or utility blade without disturbing current fill. Following percolation of water into backfill, place remaining soil beginning 1" below the base of the root collar and sloping to a consistent point 1-2" below the top of the excavation cut-line.

D. Mulching:

Apply 2-3" of approved chipped brush in a 4' diameter circle centered on the tree base, forming a lip approximately 4-6" deep around the outer 6-9".

E. Staking: Stake all trees immediately after planting.

F. Pruning: Prune as directed by the Engineer following acceptance of planting and staking operations.

3.06 Maintenance:

- A. Maintain planting for a period of at least sixty (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, pruning (only as directed), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
  1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.

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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 within the first twenty-four (24) hours of initial planting, and not less than twice per week (including rain) until final acceptance.

3.07 Physical Completion:

- A. Inspection to determine acceptance of trees will be made by the Engineer, upon Contractor's request. Provide notification at least ten (10) working days before requested inspection date.

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

- B. Upon completion of maintenance period, inspections and corrections, the Engineer shall write a letter to the Contractor establishing the Date of Physical Completion and transferring the project to the Department of Parks and Recreation maintenance and operations personnel.

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 02952**

**SECTION 02960  
FERTILE MULCH**

**PART 1 - GENERAL**

1.01 Description:

- A. Mulch shall be a mix of 1/3-composted biosolids and 2/3 composted organic material or manure.
- B. Mulch shall be free of weed seed, sticks, roots, trash, and other foreign material.

1.02 Quality Assurance:

- A. Biosolids shall be fully composted at an approved facility. Biosolid composting shall meet the requirements of the United States Environmental Protection Agency, Washington State Department of Ecology, and state and local health departments.
- B. Compost shall consist of composted yard debris or organic waste material and shall consist of 100%-recycled content. In addition, the organic material shall have the following physical characteristics:

1. Shall be screened using a sieve no finer than 5/16-inch and no greater than 7/16-inch.
2. Shall pass a standard cress test for seed germination (90% germination compared to standard).
3. Shall have a pH from 5.5 to 7.5.
4. Shall have a maximum electrical conductivity of 3.0 ohms/cm.
5. Shall have a maximum carbon to nitrogen ratio of 40:1.
6. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guidelines for hot composting as established by the United States Environmental Protection Agency.

1.03 Acceptable Sources:

- A. Fertile Mulch can be purchased under three different names which include:
  1. “Steerco”
  2. “Growco”
  3. “Fertil-Mulch”
- B. Recommended source for purchase of Fertile Mulch is Sawdust Supply Company, Seattle, WA

**PART 2 - PRODUCTS *Not Used***

**PART 3 – EXECUTION *Not Used***

**END OF SECTION 02960**

**SECTION 02974  
FERTILIZER FOR LANDSCAPE PLANTINGS**

**PART 1 – GENERAL**

1.01 Description: (16-16-16)

Planting Fertilizer shall be as supplied by  
Walt's Organic Fertilizer

1.02 Quality Assurance:

Analysis:

Total Nitrogen (N)	16.0%
8.5% Ammoniacal Nitrogen	
7.5% Urea Nitrogen	
Available Phosphate (P205)	16.0%
Soluble Potash (K20)	16.0%
Sulfur (S)	7.6%

Derived from: Ammonium Sulfate, Potassium Chloride, Monoammonium Phosphate, and Urea.

**PART 2 – PRODUCTS**

2.01 Recommended Sources:

Walt's Organic Fertilizer Rainyside Blend.  
Available at Walt's Organic Fertilizer,  
Located at 1528 NW Leary Way, Seattle Wa, 98107  
(206) 783-6685    waltsorganicfertilizer@yahoo.com

**PART 3 – EXECUTION**

3.01 Recommended Application Rates:

1. Apply as recommended in Section 02950 – Landscape Plantings.

**END OF SECTION 02974**

**SECTION 02990  
SITE RESTORATION**

**PART 1 – GENERAL**

- 1.01 Description: The work described in this section includes restoration of areas damaged during the course of the execution of the contract. The work may include such repairs as turf and landscape renovation or replacement, and soil preparation such as may be necessary to return the site to an “as good as” or “better than” existing conditions.
- 1.02 Quality Assurance:
- A. All products supplied shall comply with applicable state and local codes.
  - B. Inspections and Approvals:

During the course of the repair work, coordinate the following inspections and secure approvals prior to continuing on to the next work component, as applicable.

    1. For turf repair and replacement, the Engineer shall inspect and approve sub-grade preparation, soil placement and preparation, and seeding or sodding.
- 1.03 Submittals: Submittals shall consist of the following, as applicable to the work to be performed;
- A. For turf repair or replacement: Soil placement and preparation, Seeding or Sodding and Liming and Fertilizing, as required.

**PART 2 - PRODUCTS**

- 2.01 Turf Area Topsoil:

Description: Turf Area Topsoil mix shall consist of **75%** sand and **25%** composted organic material by volume. Turf Area Topsoil shall be thoroughly mixed off site and delivered to the project site in loose, blended, well-graded mix.

- A. Sand shall meet the following particle gradation, with an allowable accumulated variance of up to 10% provided no single screen varies by more than 2.5%:

<u>Screen Size</u>	<u>Percent Retained</u>	<u>Percent Passing</u>
1/4 inch	0%	100%
#4	.3	99.7
#10	14	86
#16	29	71
#30	57.9	42.1
#60	88.7	11.3
#100	95.7	4.3
#200	98.5	1.5

- B. Organic material shall consist of composted yard debris or organic waste material composted for a minimum of 3 months. Compost shall consist of 100% recycled content.

In addition, the organic material shall have the following physical characteristics:

1. Shall be screened using a sieve no finer than 5/16 inch and no greater than 7/16-inch.
  2. Shall pass a standard cress test for seed germination (90% germination compared to standard).
  3. Shall have a pH from 5.5 to 7.5.
  4. Shall have a maximum electrical conductivity of 3.0 ohms/cm.
  5. Shall have a maximum carbon to nitrogen ratio of 40:1.
  6. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by the United States Environmental Protection Agency.
- C. Turf Area Topsoil shall have ph range of 5.0 - 6.5 with dolomite limestone added as necessary to attain this range.
- D. Submit soils analysis from a soil testing laboratory to the Engineer. Indicate source and obtain the Engineer's approval before hauling to site (analysis test with a 5 pound bag sample is required).
- E. Recommended Sources:
1. Astec, LLC, Bellevue, WA
  2. Cedar Grove Compost Company, Maple Valley, WA
  3. Iddings, Inc.
  4. Pacific Topsoils, Inc.
  5. Other approved equal - For other available sources, refer to the current edition of the "Directory of Recycled Content Building and Construction Products" as published by the Clean Washington Center, Department of Trade and Economic Development, 2001 Sixth Avenue, Suite 2700, Seattle, Washington 98121.

**2.02 Grass Seed Mix:**

A. Description: 100 percent Perennial Ryegrass Seed.

1. Minimum pure seed percent - 98.
2. Minimum germination percent - 80.
3. Maximum weed seed percent - 0.5.

All seed varieties shall be certified seed, in separate packages, to be approved prior to mixing. Seed shall be packed in clean, sound containers of uniform weight.

B. Turf-Type Perennial Ryegrass Blend: Grass Seed Blend must consist of at least three varieties listed below and mixed in equal portions, by weight:

Brightstar SLT	Hawkeye	Nighthawk	Catalina II
Brightstar II	SR 4420	Elfin	Pizzazz
Admire	SR 4220	All Star II	Amazing
Charger II	Pentum	Manhattan 4	Inspire
Promise	Gator 3	Applaud	Repell III
Seville II	Grand Slam	Line Drive	Cathedral II

- |                     |                                |            |            |
|---------------------|--------------------------------|------------|------------|
| Kokomo<br>Terradyne | Mach I<br>or, approved equals. | Pennant II | Pennant II |
|---------------------|--------------------------------|------------|------------|
- 2.03 Fertilizers:
- A. Description: Lawn Installation / Starter Fertilizer (10-20-20)  
Fertilizer shall be as supplied by PROSOURCE ONE, (or approved equal).
- B. Description: Lawn Maintenance / Follow up Fertilizer (16-16-16)  
Fertilizer shall be as supplied by PROSOURCE ONE, (or approved equal).
- C. Recommended Sources:
1. PROSOURCE ONE, 2920 - 142<sup>nd</sup> Avenue East, Suite 105, Sumner, WA 98390, Ph. 253-826-9100, Fax # 253-826-9110 (Contact: Shane Riley 425-327-0489 or [sriley@prosourceone.com](mailto:sriley@prosourceone.com) ).
2. Or approved equal. (Provide manufacturer's written analysis for approval prior to delivery).
- 2.04 Lime:
- A. Description: Fine ground Dolomite Limestone (Lime)
1. Quality Assurance:  
Shall be retained by Taylor Standard Sieves as follows:  
No. 20 sieve - retains 0%  
No. 100 sieve - retains 25%
- 2.05 Other Materials: Other Materials to be replaced, which are not covered elsewhere in these Specifications, shall be replaced in-kind or with an equal or better grade as approved by the Engineer prior to delivery to the site.

### PART 3 - EXECUTION

- 3.01 Turf Area Restoration: The Engineer shall determine the level of restoration necessary depending on the amount of damage to the existing turf and soils. Areas that have been driven on extensively and are compacted or bare will require replacement, whereas areas where turf is thinned or dead but still present will require reseeding only.
- A. Sub-grade Preparation:
1. For Replacement: Excavate to remove homogenized soils to 4 inches below a finished grade, which will provide adequate surface runoff. Hand-loosen small areas and roto-till larger areas to a depth of 8 inches.
2. For Repair: Aerate existing soils to a depth of 6 inches using hand aerating equipment or deep-tine aerifier.

- B. Turf Area Topsoil Placement:
    - 1. For Replacement: Fill excavated areas to finished grade, which will provide adequate surface runoff, generally 4 inches when compacted to 75% maximum density at optimum moisture. Lightly scarify the surface to provide a smooth, loosened seedbed.
    - 2. For Repair: Loosely distribute a 1/2-inch top dressing of topsoil over areas to be repaired.
  - C. Seeding:
    - 1. For Replacement: Larger areas to be replaced shall be hydroseeded at a rate of 8 lb. per 1,000 sf. Incorporate hydromulch at a rate of 35 lbs. per 1000 sf (minimum) into the slurry to produce an even cover over the area being seeded.
    - 2. For Repair: Areas to be repaired shall be hand-seeded at a rate of 5 lbs. per 1000 sf. Rake seed into soil with broom rake. Overlap new seeding into areas of existing turf.
  - D. Fertilizing:
    - 1. Apply at 2lbs. of (N)/1000s.f. (20lbs./1000 s.f. of blended material) for Hydroseeding.
    - 2. Apply at 1lb. of (N)/1000s.f. (10lbs. blended material/1000 s.f.) in broadcast application.
- 3.02 Other Site Features: All other site features either damaged or destroyed during the execution of this contract shall be repaired to the satisfaction of the Engineer or to the installation specifications of the manufacturer of the approved replacement item. These include but are not limited to walls, sidewalks, curbs, stairways, driveways, etc.
- 3.03 Approvals: Upon completion of the work and all inspections are completed, coordinate a final walk-through of the site restoration with the Engineer for final approval of the work of this Section.

**END OF SECTION 02990**

**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 Regulations:**

Conform to requirements of Seattle Building Code for concrete, as supplemented and modified herein.

**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 Related Sections:**

Section 02870 - Site Furnishings

**1.05 Quality Assurance:**

A. Special Inspection: Notify the Engineer at least 48 hours before inspection of forms will be required.

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.

**1.06 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; 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:

A. As required by Manufacturer's specifications.

### 2.03 Form Release Agents:

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 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.

### 3.02 Form Treatments:

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.

### 3.03 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

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conditions prevailing for any portion of the work represented, or as approved by the Engineer.

**END OF SECTION 03100**

**SECTION 03200**  
**CONCRETE REINFORCEMENT**

**PART 1 – GENERAL**

1.01    Regulations:

Conform to requirement of Seattle Building Code for concrete reinforcement, as supplemented and modified on drawings or herein.

1.02    Reference Standards:

Conform to 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.

1.03    Quality Assurance:

Special Inspection: Notify the Engineer at least 48 hours before placing any concrete.

1.04    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; types, sizes and grades as indicated and noted on drawings; all bars free from rust and loose scale at time of delivery.
- 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 to requirements of ACI 318. Make bends cold around pin with

diameter at least 6 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, except for Grade 40 dowels.

- 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. Splice overlap shall be at least 50 times the diameter of the bars or per ACI 318 02 Code.

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 the Engineer's 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.

**END OF SECTION 03200**

**SECTION 03300  
CAST-IN-PLACE CONCRETE**

**PART 1 – GENERAL**

**1.01 Related Work:**

- Section 02870 - Site Furnishings
- Section 03100 - Concrete Formwork
- Section 03200 - Concrete Reinforcing
- Section 03345 - Concrete Finishing

**1.02 Regulations:**

Conform to requirements of the IBC and the Seattle Building Code as it pertains to structural cast-in-place concrete, except as supplemented and modified herein.

**1.03 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.

**1.04 Quality Assurance:**

- A. Special Inspection: Notify the Engineer at least 48 hours before inspection. 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.

**1.05 Submittals:**

- A. Submit, for approval, all layout drawings for all cast-in-place concrete work. Show joint locations and other pertinent information. Refer to section 03100 for additional requirements.
- B. 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.

- C. Certificates: Submit certification of previously tested mix designs.

## PART 2 - PRODUCTS

2.01 Concrete Materials:

- A. Aggregates: Standard: ASTM C33-86
- 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 C150-86; uses type I or type III.
- C. Cementitious Materials: Fly ash, ASTM C618 type F, except that the maximum allowable loss on ignition shall be 0.75%. 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 to requirements of ASTM C494-86, Type A.
  - 3. Retarder-Densifying Admixture: Master Builders Retarding Pozzolith, or approved; ASTM C494-86, Type B.
  - 4. Accelerator: Chemical admixture designed to accelerate set on concrete but not corrode reinforcing steel; ASTM C494-86, Type C.
  - 5. Air Entraining Agent: Conform to requirements of ASTM C260-86.
  - 6. Color additive: 2 pounds/sack Lampblack to darken concrete
- E. Other Ingredients: Provide other ingredients as indicated or as required by Code or Reference Standards.

2.02 Concrete Mix:

Concrete mix shall be Class 5 (3/4), per City of Seattle Standard Specifications (most recent edition), Section 8-14, Cement Concrete Sidewalks, characteristics as follows:

28 day compressive strength	2,300, psi
Sacks Cement	(5) per Cubic Yard - (see "Cement", below)
Fine Aggregate #2	(291 lbs.) per Sack. - (see "Aggregates", below)
Coarse Aggregate #5	(387 lbs.) per Sack, - (see "Aggregates", below)
Max. Water, Gal./Sack	6.5
Fibrous Reinforcing	(1.5 lbs.) per CY
Slump (inches)	(2 - 3.5) per ASTM C143-78

2.03 Portland Cement: Use only Type II Portland Cement, as specified in City of Seattle Standard Specifications (most recent edition), Section 9-01.2(1), and AASHTO M 85.

2.04 Aggregates:

A. Fine Aggregates:

Fine Aggregate #2 per City of Seattle Standard Specifications (most recent edition), Section 9-03.1(2) C. 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 #1 Particle Gradation is as follows:

<u>Sieve Size</u>	<u>% Passing</u>
#4	95 - 100
#8	68 - 86
#16	47 - 65
#30	27 - 42
#50	9 - 20
#100	0 - 7
#200 (wet)	0 - 2

B. Coarse Aggregates:

Course Aggregate #5 per City of Seattle Standard Specifications (most recent edition), Section 9-03.1(3)D. 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 #5 Particle Gradation is as follows:

<u>Sieve Size</u>	<u>% Passing</u>
1-1/2" Square	100
3/4" Square	80 - 100
3/8" Square	10 - 40
#4	0 - 4
#200	0 - 0.5

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 in Slabs:

A. Joint Filler: Pre-formed, non-extruding asphalt impregnated resilient material; ASTM D1752, Type I, 3/8" wide by depth required to bring top surface within 1/2" of slab surface.

B. Joint Sealer: Self-leveling polyurethane; ASTM C920, Type M, Grade SL, Class 25. Color: gray.

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 7% by weight of the total cementitious 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 degrees F.
  - 3. If approved, accelerator may be used when temperature of concrete is less than 40 degrees 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 degrees 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 the IBC.
  - 7. Use Lampblack for colored concrete per Section 02520 and where noted on the Drawings.

D. Mix Design:

- 1. Determine mixes as noted on the drawings.
- 2. If the Contractor elects not to use the approved design mix, Contractor shall pay for special batch plant inspection costs.

2.08 Mixing Concrete:

Standard Concrete: Ready-Mixed Concrete: Mix and transport in accordance with ASTM C94-86.

**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 6 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 degrees F (4 degrees C), uniformly heat water and aggregates before mixing, to obtain a concrete mixture temperature of not less than 50 degrees F (10 degrees C) and not more than 80 degrees F (27 degrees 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 degrees F (32 deg 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 Control Joints: In slabs on grade, tool or saw-cut control joints to true, straight lines, maximum variance from true line of 1/4 inch in 10 feet and no irregularities across joint in excess of 1/8 inch; extend reinforcing steel through and lap beyond joints.
- 3.04 Expansion Joints:
- A. Provide pre-molded 3/8" 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 a metal or plastic temporary strip. Remove protection after concrete has been placed on both sides of joint 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 not more than 30 feet apart in footings. Run no reinforcement or other metal trim continuous through joints, unless otherwise indicated.

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- 3.05 Non-Shrinking Grout: Apply in accordance with manufacturer's direction; protect adjacent finished surfaces from defacement. Provide for sleeves, and where indicated.
- 3.06 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 to requirements of the following Reference Standards or as modified and supplemented hereinafter.

1. ACI Specifications for Structural Concrete for Buildings, ACI 301
2. ACI Recommended Practice for Cold Weather Concreting, ACI 306
3. 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 and inspect all surfaces for defects. Repair or patch defects only after defects are inspected by the Engineer and then only with the Engineer's 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; must match the 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. Tie holes shall not be filled.
- 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 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. Provide for face surface of walls adjacent to plaza, walks and stairs.

### 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 rescued; in no case use cement and sand sprinkling to absorb moisture. Carefully finish all joints and edges with proper tools, unless otherwise specified.
- B. Rough Screed Finish: Consolidate, level, and screed all surfaces to obtain evenness and uniformity; remove all surplus concrete after consolidation by striking off with sawing motion against guide strips. Provide for top horizontal surfaces of non-exposed footings. Provide for concrete slab under synthetic safety surfacing.
- C. Float Finish: Apply float finish to monolithic slabs to receive trowel or other finishes. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155. Cut

down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, re-float surface to a uniform, smooth, granular texture.

- D. 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.
- E. Defective Work: Remove and replace when directed by the Engineer, surfaces which show excessive shrinkage cracks.

3.05 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 the initial overnight curing, continue final curing operations until the cumulative number of days or fractions thereof (not necessarily consecutive) occurs, during which time the temperature of the air in contact with the concrete is above 50 degrees F, equals 7 days. If high-early strength concrete has been used, continue final curing operation for 3 days total time, 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 City of Seattle Standards Specifications (most recent edition), Section 9-23 and continue curing for the remainder of the required curing period.

3.06 Inspection

Contractor shall notify Engineer that they are starting concrete finish repair work at least 48 hours prior to the beginning of work.

3.07 Cleaning

Leave premises clean and free of residue from work in this section.

**END OF SECTION 03345**

## **SECTION 05100 ENGINEERED METAL STRUCTURES**

### **PART 1 - GENERAL**

#### **1.01 Description:**

Provide and install all metal components necessary for construction of **Corner Entry** structure including: Columns, beams, trusses, plates, metal screen, fasteners, welding, and associated hardware.

#### **1.02 Related Sections:**

Section 03200 - Concrete Reinforcement

Section 03300 - Cast in Place Concrete

Section 09910 - Metal Finishes For Site Work

#### **1.03 Quality Assurance:**

A. Conform to requirements of the following Reference Standards or as modified and supplemented hereinafter.

1. International Building Code (IBC) (latest edition)
2. All Applicable City of Seattle building codes and regulations
3. American Institute of Steel Construction (AISC)
4. American Iron and Steel Institute (AISI)
5. American Welding Society (AWS)

B. Steel fabricator to be experienced in steel fabrication including: cutting, bending, fastening, and finishing.

C. Welders to be certified by Washington Association of Building Officials (WABO) for structural welding.

#### **1.04 Submittals:**

A. Shop Drawings: Submit for approval shop drawings, details of fabrication with dimensions and connections shown. Product Data: Submit any manufacturer's published literature for specified products and accessories as applicable including manufacturer's specifications, performance calculations, and physical characteristics.

B. Color samples: Submit sample colors for owner's review.

#### **1.05 Delivery, Storage and Handling:**

Ship, store, and handle all items so as to protect metal components from damage on site. Store in a safe location, out of pedestrian and vehicular traffic and protected from weather. Repair or replace any damaged components before installation.

### **PART 2 - PRODUCTS**

2.01 Corner Entry Structure:

- A. Structural Framing: Square Steel tubing shall conform to ASTM A500, Grade B. Steel tubing shall have end plates welded on all exposed ends. All structural members shall be galvanized and painted.
- B. Steel woven wire : 1" grid woven wire, type 1-c intercrimp, galvanized after weaving, 0.312" wire diameter; painted after galvanizing. Available from Grating Pacific, 1-800-243-3939.
- D. All welding shall be shop welds, or as shown on approved contract drawings.

2.02 Paint:

- A. Kynar 500 Paint system, or approved equal. Color to be selected by Engineer after submittal of color samples.

**PART 3 - EXECUTION**

3.01 Surface Mounting to Concrete Footing:

- A. Connect structural steel members to concrete using anchor bolts in accordance with all governing building codes.
- B. Coordinate anchor bolt placement with concrete contractor.

3.02 Installation:

- A. Structural Steel columns and trusses to be connected using bolts per Engineer's approved shop drawings.
- B. Steel woven wire shall be connected to frame with welding per Engineers, building dept and manufacturer's specifications.

3.03 Finishes:

- A. General: Cut and form components to have sharp, clean edges. Mill machine joints to a close fit.
- B. Welding: Perform welding by use of an electric arc welding process. In making welded joints and joining components conform to referenced standards (AWS-D1.1). Grind exposed welds flush and smooth.
- C. Galvanizing: Comply with ASTM A123 for zinc coatings applied on products fabricated from rolled or pressed steel shapes, plates, bars, and strips. ASTM A386 for zinc coatings on assembled steel products. Weight of coatings per Table I for class and thickness of material to be coated. Except for bolts and nuts, do galvanizing after fabrication. Galvanize all steel members.

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D. Painting: All galvanized steel members shall be painted. Painting finishes shall be factory applied in the manufacturer's facility.

**END OF SECTION 05100**

**SECTION 09900**  
**PAINTING FOR SITE WORK**

**PART 1 - GENERAL**

- 1.01 Work Included:
- A. Surface preparation of Corner Entry Structure, see section 05100
  - B. Shop applied finishes to structure, prior to delivery to site
- 1.02 Reference Standards:
- A. Conform to requirements of the following Reference Standards or as modified and supplemented hereinafter.
    1. ANSI/ASTM D16 - Definitions of Terms in Relation to Paint, Varnish, Lacquer, and Related Products.
    2. Master Painters Institute Architectural Painting Specification Manual (MPI)
    3. Structural Steel Painting Council, Surface Preparations Specifications (SSPC)
    4. Section 6-07 Painting, City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).
    5. Section 8-22, Pavement Marking, City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).
    6. Section 9-08, Paints, City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).
- 1.03 Definitions:
- Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.
- 1.04 Quality Assurance:
- A. Product Manufacturer: Company specializing in manufacturing quality paints and finish products with five years experience.
  - B. Applicator: Company specializing in commercial painting and finishing with five years documented experience.
- 1.05 Submittals:
- A. Provide product data on all finishing products for approval of Engineer.
  - B. Submit two samples 12" x 12" in size illustrating each of the colors selected for the work.
- 1.06 Field Samples:
- A. Provide field samples where directed.
- 1.07 Delivery, Storage and Handling:
- A. Deliver, store and protect products following manufacturer's directions.

- B. Deliver products to site in sealed and labeled containers, then inspect to verify.
- C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- D. Take precautionary measures to prevent fire hazards and spontaneous combustion.
- E. Provide Material Safety Data Sheet (MSDS) for all products used on site.

**1.08 Environmental Requirements:**

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

**1.09 Extra Stock:**

- A. Provide Engineer with a written list of paint manufacturer, product name, color, number, sheen, and the area in which the paint was used.
- B. At the Close Out of the Project provide following:
  - 1. Unopened one gallon can of every component (paints, urethanes, and catalyzed coatings), color (latex, alkyd enamel) and sheens.
  - 2. Product information, including MSDS per Operation and Maintenance Manual, see Std. # 01730
- C. Label each container with color, texture, and project locations, and date, in addition to the manufacturer's label.

**PART 2 - PRODUCTS**

**2.01 Acceptable Manufacturers - Paint and Other Coating Products:**

Parker, Kelly-Moore/Preservative Paints, Sherwin Williams, Miller, Daly's; use only professional quality paint systems.

**2.02 Materials:**

- A. Coatings: Ready mixed, except field-catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Coatings: Good flow and brushing properties, capable of drying or curing free of streaks or sags.
- C. Materials to be lead free.

- D. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified or commercial quality.

2.03 Finishes:

- A. Pavement Markings: Per Section 8-22 PAVEMENT MARKING, WSDOT/APWA.  
Thermoplastic marking for parking striping.

B. Black Metal:

1. Touch up rust proofing.
2. One coat primer.
3. Two coats alkyd enamel, finish to match existing.

B. Galvanized Metal:

1. Touch up galvanizing or rust proofing.
2. One coat zinc chromate primer.
3. Two coats alkyd enamel, finish to match existing.

### PART 3 - EXECUTION

3.01 Inspections:

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Beginning of application means approval of substrate.

3.02 Preparation:

- A. Remove cover plates, hardware, trim and fittings prior to preparing surfaces for finishing
- B. Correct minor defects then clean surfaces, which affect work of this Section
- C. Shellac and seal marks which may bleed through surface finishes
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate TSP substitute and bleach. Rinse with clean water and allow surface to dry.
- E. Asphalt, Creosote or Bituminous Surfaces scheduled for paint finish: Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.
- F. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt and rust. Where heavy coatings of scale are evident, remove them by wire brushing or sandblasting; then clean them by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

- G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces 3 mils dry. Prime metal items including shop primed items.

3.03 Protection:

- A. Protect elements that surround the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

3.04 Application:

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.

3.05 Cleaning:

- A. As work proceeds, promptly remove paint where spilled, splashed or spattered.
- B. During progress of work, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths and material, which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.06 Schedule - Exterior Surfaces:

- A. Pavement Markings:
  - 1. Two lead free pavement latex paint.
- B. Steel - Shop Primed:
  - 1. Touch-up with primer.
  - 2. Two coats alkyd enamel, gloss.
- C. Galvanized Steel - Shop Primed:

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1. Touch-up with zinc rich primer.
2. Two coats alkyd enamel, semi-gloss.

**END OF SECTION 09900**

**SECTION 09910**  
**METAL FINISHES FOR SITE WORK**

**PART 1 - GENERAL**

**1.01 Description:**

Prepare metal surfaces and apply finishes as specified. Protect all existing work from damage and perform complete cleanup of residue of the operations of this Section

**1.02 Related Sections:**

Section 05515 - Engineered steel structure

**1.03 Quality Assurance:**

- A. Conform to requirements of the following Reference Standards or as modified and supplemented hereinafter.
  1. ANSI/ASTM D16 - Definitions of Terms in Relation to Paint, Varnish, Lacquer, and Related Products.
  2. Master Painters Institute Architectural Painting Specification Manual (MPI)
  3. Structural Steel Painting Council, Surface Preparations Specifications (SSPC)
  4. Section 6-07 Painting, City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).
  5. Section 9-08, Paints, City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).
- B. Product Manufacturer: Company specializing in manufacturing quality paints and finish products with five years experience.
- C. Applicator: Company specializing in commercial painting and finishing with five years documented experience.

**1.04 Submittals:**

A. Documentation:

Prior to preparation, delivery of product, or shop application, submit complete documentation of materials to be used including manufacturers commercial literature and MSDS. Provide color charts or samples of available colors where no color is specified.

B. Samples:

Submit for approval two samples 12" x 12" in size illustrating each of the colors specified or selected for the work.

**1.05 Delivery, Storage and Handling:**

Ship, store, and handle all items so as to protect from damage on site. Store in a safe location, out of pedestrian and vehicular traffic and protected from weather and extremes of temperature. Repair or replace any damaged components before installation.

## PART 2 - PRODUCTS

### 2.01 Primer

Tnemec Primer 10-99, or approved equal.

### 2.02 Paint

Kelly Moore 6700-100 Plasti-Namel Alkyd Rust Inhibitive Enamel, or approved equal.

## PART 3- EXECUTION

### 3.01 Shop Applied Primer:

#### A. Surface Preparation:

All metal surfaces to receive paint finishes shall be prepared to Structural Steel Painting Council, Surface Preparations Specifications SSPC-SP3-82 Surface Prep. (Power Tool), and where appropriate or necessary, components of SSPC-SP6-85 Surface Prep. (Compressed Air, Centrifugal Wheel).

#### B. Primer Application:

Following complete preparation of the piece or assembly, apply a 2.0 mil to 3.5 mil film thickness (dry) using commercial electrostatic, airless, or pressurized air-delivery system. Coat all surfaces.

### 3.02 Paint Finish:

#### A. All exposed surfaces of each piece or assembly shall receive two coats of Alkyd Enamel Paint totaling 6 to 8 mils dry film thickness.

#### B. At the Contractors option, the finish system may applied in either of two sequences;

1. Field apply both coats.
2. Shop application of the first coat, field application of the final coat following completion of assembly of the metal structures or components.
3. Contractor may not apply both coats in shop, unless a third, final coat is applied in the field following completion of assembly of the metal structures or components.

#### C. Apply finishes using commercial electrostatic, airless, or pressurized air-delivery system. Coat all exposed surfaces.

### 3.03 Cleanup:

Remove over-spray from all surfaces not scheduled to receive paint using methods appropriate to the material. Completely remove all masking materials, including adhesive residues. Dispose of all materials and containers in an approved manner.

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**END OF SECTION 09910**

**SECTION 19230**  
**"LIVING ROOM" MASONRY SITE FURNITURE**

**PART 1 - GENERAL**

1.01 GENERAL CONDITIONS:

- A. As specified in Section 00700

1.02 RELATED SECTIONS: None

1.03 SCOPE OF WORK:

- A. This work includes the furnishing of all labor, materials, and equipment necessary for the proper and complete fabrication and installation for exhibit quality concrete indicated or specified herein. The following areas of work are specified in this work:

1. Ballard Corner Park Living Room seating area (Additive Bid Item)

- B. **Exhibit Concrete Quality Standard:** Special attention to the concrete rockwork quality. This project finish shall match in color, texture and contour, the sample photographs.

- C. Contractor will provide a sketch of the concrete reinforced concrete structural lattice work showing material and placement sufficient to prevent the temperature and shrinkage crack incidence as it relates to this exhibit and this ambient temperature regime within 5 days after award of bid. This sketch will be reviewed, approved and or amended to the satisfaction of the Owner's Project Manager and the Parks Engineer.

**D. All Surfaces shall be coated with graffiti resistant coating**

Anti-Graffiti Coating as available from Puget Sound Coatings. Address: 9220 8th Ave. South Seattle, WA Seattle.  
Phone: 206 767 3800 .or approved equal

1.04 DEFINITION:

- A. The Contractor may only use application processes defined below.

- 1. Wet Mix Process shall consist of premixed fine aggregate, cement, and water pneumatically applied by suitable mechanism. Mix percentages shall be adjusted to reflect workability and provide for structural standards. See 1.07.

1.05 OWNER'S PROJECT MANAGER'S DIRECTION:

- A. It is intended that the finished products of Work in this Section simulate natural formations and replicate the treatment of the adjacent exhibits in color, texture and formation. Reference adjacent exhibit rock work, Construction Photos, Owner's Project Manager's directions and aesthetics intentions as specified herein.
- B. To achieve these simulations the Contractor will coordinate and cooperate fully with the Owner's Project Manager.
- C. All Work in this Section will be performed under the direction of the Owner's Project Manager.

- D. The Owner's Project Manager explicitly reserves the right to continuously monitor the work for aesthetic quality and to assume control of the work through direction of the Contractor's Job Superintendent until specified effects are achieved.

**1.06 PHOTOGRAPHS:**

- A. Color photographs displaying color, form and texture to be replicated will be provided to the Contractor by the Owner's Project Managers Project Manager. These Photographs shall form the basis for concrete work. See attached.

**1.07 STANDARDS:**

- A. Comply with the provisions of the following codes, specifications and standards. However, in case of conflict these Specifications and Construction Drawings shall take precedence.
1. ASTM-618-73 "Standard Specification for Fly Ash..."
  2. ACI 318 "Building Code Requirements for Reinforced Concrete"
  3. ACI 347 "Recommended Practice for Concrete Formwork"
  4. ACI 506 "Recommended Practice for Shotcreting"
  5. ACI 614 "Recommended Practice for Measuring, Mixing and Placing Concrete".

**1.08 PROTECTION OF PROPERTY:**

- A. In addition to normal precautions for the protection of the public, workers and property, take special precautions to prevent contamination of soil with cement, paint, dye and other chemical materials.
- B. Limit the area for working and storing chemical materials to areas within (10) ten horizontal feet of concrete structures and other areas specifically approved by the Owner's Project Manager.
- C. Control runoff from mixing and placing operations. Channel runoff directly to an approved drainage system, or pond in an on-site location approved by the Owner's Project Manager.
- D. Dispose of waste material, rebound and cement and chemical containers off-site except as specifically allowed by these Specifications.
- E. Cleanup is required, with tracking, spatter, and overspray and debris accumulation unacceptable. Contractor must clean up "as you go", with at minimum a twice daily effort to render the work and staging space, the path between them and all equipment and materials stored neatly and all surfaces spotless. If additional staff act as laborers cleaning constantly to meet these very high standards are required, it is the Contractor's responsibility to provide them and include that cost as well as all additional cost for equipment and disposal in the bid.

**1.09 SUBMITTALS:**

- A. General: (1) One days prior to beginning work, submit description of planning, equipment and methods for Engineer's approval, including the following:
1. Source for materials
  2. Proposed mix proportions
  3. Furnish representative samples of materials for materials testing, mix proportion testing, and preparation of pre-construction sample and test panels.
- B. Samples:

1. The Contractor shall submit prior to beginning work 4' x 4' sample panels of the different basalt rock heavily encrusted with saltwater invertebrate textures as listed below to the Owner's Project Manager for approval.
  - a. No concrete shaping or texturing shall begin prior to Owner's Project Manager's approval of sample panels.
2. Sample panels shall represent the finished surfaces, texturing, coloring, etching, etc.
3. Panel shall not be removed until the completion of work.
4. Rejected sample panels shall be re-submitted for approval at no additional cost to the Owner's Project Manager.

1.10 QUALITY ASSURANCE:

**A. To be awarded this project, the Bidder shall satisfy the following qualification requirements and submit documentation indicating compliance with the requirements within three days of the Engineer' request:**

1. The Bidder shall have been in business for a minimum of 5 years constructing high quality and high visibility exhibit or public projects which include concrete masonry or rockwork. In addition, the Bidder shall have a minimum of 5 years of experience in managing, administering, scheduling, and coordinating projects of a scale and complexity similar to this Project,  
OR
2. The job superintendent who will be assigned to this Project shall have a minimum of 5 years of experience performing and/or supervising concrete rockwork. In addition, the job superintendent shall have a minimum of 5 years of experience in managing, administering, scheduling, and coordinating projects of a scale and complexity similar to this project.

Information to be submitted to satisfy the requirements of paragraph 1 and 2 above shall include:

Bidder Information:

A list of projects performed by the Bidder demonstrating that the Bidder meets the 5 years of experience requirement for both the concrete rock work and managing, administering, scheduling, and coordinating such projects of a scale and complexity similar to this Project. For each project listed, include the name of the owner, the telephone number and name of the owner's representative who can verify the work performed by the Bidder, and a brief technical summary of the work including any pertinent details which are similar to this project, OR,

Superintendent Information:

- a) A copy of the resume of the job superintendent who will be assigned to this Project, demonstrating that the superintendent has the required 5 years of experience performing and/or supervising concrete rock work and 5 years of experience in managing, administering, scheduling, and coordinating projects of a scale and complexity similar to this Project, and
- b) A list of projects that the job superintendent performed and/or supervised. For each project listed, include the telephone number and name of the owner, the name of the owner's representative who can verify the work performed by the job superintendent, and a brief technical summary of the work including any pertinent details which are similar to this Project.

The information described above shall be delivered and or sent to the following person:

John F. Barker, Landscape Architect  
Barker Landscape Architects, and  
Seattle Parks and Recreation Department, Planning and Development  
Jon Jainga, Project Manager  
800 Maynard Ave S, 3<sup>rd</sup> Floor  
Seattle, WA 98134  
Phone#: 206-684-7054; Fax #: 206-233-3949

- B. Responsibility for Testing: Routing testing services will be performed by a testing agency designated by the Seattle Parks Engineer. These testing services will be performed at the expense of the Seattle Parks Engineer.
- C. The designated testing agency will:
  - 1. Test the proposed materials, for compliance with Specifications.
  - 2. Review and check proposed mix proportions.
  - 3. Test pre-construction test specimens.
  - 4. Secure production samples of materials at plants or stockpiles during construction and test for compliance with Specifications.
  - 5. Test strength of the concrete as work progresses.
- D. Construction Testing: NOT USED

**1.11 GUARANTEE:**

- A. Guarantee work listed in this Section for one year from date of Physical Completion.
- B. Provide two copies of written statement of guarantee, satisfactory to the Seattle Parks Engineer prior to Physical Completion.

**1.12 PRODUCT DELIVERY AND STORAGE:**

- A. Take special care to avoid contamination of soils with spilled or discarded cement materials or other chemicals.
- B. Properly deliver and handle materials to prevent contamination, segregation, or damage to materials.
- C. Store cement in weather-tight enclosures to protect against dampness and contamination.
- D. Prevent segregation and contamination of aggregates by proper arrangement and use of stockpiles.
- E. Store admixtures properly to prevent contamination, evaporation, freezing, or other damage.

**PART 2 - PRODUCTS**

**2.01 MATERIALS, GENERALS:**

- A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.

**2.02 REINFORCING MATERIALS:**

- A. Plastic Reinforcing Mesh: Expanded, polypropylene, plastic, bi-oriented netting, 3/4" x 1" mesh size, Tenax Cintoflex "M", as manufactured by Tenax Corp., Phone (301) 725-5910.
- B. Backer Mesh (for regulating concrete thickness): Polypropylene, medium warp, medium fill, plain weave, "Leno" mesh as supplied by Great Western Bag Company, Phone (800-331-2445) or approved equal.
- C. Supporters for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing supporting, and fastening reinforcing bars. All supporters located under water within the tanks shall be fabricated from fiberglass reinforced plastics, no metallic or steel supporters are allowed within the tank. All supporters located within the concrete rockwork one foot above the high water level may be metallic, but must be epoxy coated.

**2.03 CONCRETE MATERIALS:**

- A. Portland Cement: ASTM C 150, Type II. Use only one brand of cement throughout the project.

**2.04 AGGREGATES:**

A. General:

1. Use normal weight aggregates conforming to ASTM C33 and as herein specified.
2. Aggregates shall be manufactured from natural rock or stone, washed gravel either natural or crushed, clean, and free of deleterious substances.

B. Structural Substrate

Aggregate conforming to the following:

Sieve Size U.S. Standard <u>Square Mesh</u>	Percent by weight passing <u>individual sieves</u>
3/4 in.	100
1/2 in.	80-95
3/8 in.	70-90
No. 4	50-70
No. 8	35-55
No. 16	20-40
No. 30	10-30
No. 50	5-17
No. 100	2-10

C. Texture Coat

Aggregate conforming to the following:

Sieve Size U.S. Standard <u>Square Mesh</u>	Percent by weight passing <u>individual sieves</u>
3/4 in.	-

1/2 in.	-
3/8 in.	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10

**2.05 WATER:**

- A. Use fresh, clean, and potable mixing water free from oil, acid, organic matter or other deleterious substances.

**2.06 ADMIXTURES:**

- A. Use accepted admixtures meeting the requirements listed below. Except as otherwise accepted, dissolve soluble admixtures in water before introduction into the mixture. Agitate liquid admixtures which settle.
- B. Air-entraining admixtures conforming to ASTM C 260.
- C. Calcium chloride conforming to ASTM D 98, in pre-dissolved flake or pellet form. Use only upon written authorization of the Seattle Parks Engineer.
- D. Fly ash and pozzolanic material conforming to ASTM C 618.
- E. Color Additives: Pure Mineral Oxides, Frank B. Davis Company, Williams Co., L.M. Scofield., or equal.

**2.07 MOISTURE RETAINING COVER:**

- A. Burlap: Cloth made from jute and weighing approximately 9 oz. per sq. yd. For moist curing and conforming to AASHTO M 182.
- B. Membrane Forming Curing Compound: ASTM C 309

**2.08 PROPORTIONING CONCRETE:**

- A. Submit for acceptance proportioning and test data from prior experience if available. If data from prior experience are not available or accepted, make and have tested specimens from three or more different mix proportions in accordance with 1.11 Quality assurance. Submit recommended mix proportions and test results for acceptance.
- B. Concrete shall have a compressive strength at 28 days of  $fc' = 4000$  psi. Proportions shall be selected on the basis of compressive strength tests of specimens continuously moist cured until testing at 28 days. These specimens shall be cut from the concrete test panels not earlier than 5 days after concrete application. For mix acceptance purposes, average core strengths shall be at least equal to  $fc'$  for cores with L/D of 2.0. For cores with L/D between 1.0 and 2.0, use the correction factors given in ASTM C 42. For cube specimens, average strength shall be at least equal to  $fc'/0.85$ .

**2.09 GRAFFITI PROTECTION**

A. Anti-Graffiti Coatings

Anti-Graffiti Coatings directory. Puget Sound **Coatings**. Address: 9220 8th Ave. South **Seattle, WA Seattle**. Phone: 206 767 3800 ...  
[www.254search.com/Coatings/Anti-Graffiti\\_Coatings.htm](http://www.254search.com/Coatings/Anti-Graffiti_Coatings.htm)

## PART 3 - EXECUTION

### 3.01 GENERAL:

- A. Concrete shall be placed in two separate applications.
  1. Structural Substrate: The first application shall be a structural substrate, capable of maintaining the intended shape and supporting live and dead loads as specified or required by codes.
  2. Texture coat: The second application shall produce the intended color and texture, and shall be placed only after bonding agent has been applied. Where applicable, surface conditions must comply with specification requirements.

### 3.02 PREPARATION OF SURFACES FOR STRUCTURAL SUBSTRATE:

- A. Concrete Masonry Units: Concrete Masonry Units (CMU) for structural substrate MAY be laid-up and trimmed to line and grade before placing concrete. Dampen surfaces to receive concrete. All CMU shall be solidly grouted.

### 3.03 FORMING CONCRETE STRUCTURES:

- A. General Backforming: No extra will be paid for concrete backforming which is required because of misunderstandings of existing understructure that is integrated into the building structure. The Contractor is responsible for familiarizing himself/herself with the existing habitats and the integral structure furnished for concrete backforming by pre-bid field visits and reviewing the Exhibit Construction Documents. Backforming cost shall be included in the Contract Price.

### 3.04 PROVISIONS FOR OTHER TRADES:

#### A. General:

1. Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, vents, weepholes, recesses, and chases from trades providing such items.
2. All non-sleeved piping shall be set by the appropriate contractor.
3. Sleeves shall be provided by the appropriate contractor and installed by the Contractor.
4. Accurately place and securely support items built into forms.

### 3.05 STEEL REINFORCEMENT: (At all concrete surfaces twelve (12) inches above high-water level).

- A. Alternate Reinforcing Sizing: All concrete structural steel reinforcement is shown on the Exhibit Construction Drawings and supplemented in these Specifications. The Exhibit Concrete Sub-

Contractor may, at his/her option, develop alternate reinforcement sizing and placement to facilitate his/her work provided;

1. Obtain written approval of the Seattle Parks Engineer.
2. All structural calculations for alternate reinforcement are fully and clearly documented by a registered Structural Engineer, licensed in Washington.
3. Obtain required permits and approvals for such alternate sizing and placement, in a timely manner, without delaying the progress of the work, and at no additional expense to the Seattle Parks Engineer.

B. General:

1. Clean reinforcement of all loose rust, mill scale, earth, ice, and other materials, which reduce or destroy bond with concrete.
  2. Accurately position, support and secure reinforcement against displacement by construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
  3. Notify Seattle Parks Engineer upon completion of reinforcing and prior to placing concrete.
- C. Minimum Standards: The following minimum steel placement standards are supplemental to steel reinforcement schedules and notes on the Drawings.
1. Place No. 3 bar as a key rod at intersections of plane surfaces.
  2. Tack wire bars where they contact or cross each other. The bars must form a very rigid framework which workers can climb on in fastening other materials to the reinforcing.
  3. Lap bars thirty (30) diameters at splices. However, a lap of four (4) inches will be allowed if one continuous fillet weld of three (3) inches in length is used to join bars at the splice.
  4. Place and bend bars around circle and curves, openings, corners and angles to conform with the model. Bends are to be permanently shaped, not sprung into place. Follow the outline of the rock formations to eliminate excess non-reinforced concrete outcroppings.
  5. The tie bars and tie anchors which are exposed to air and which DO NOT come in contact with any backfill material shall be given a protective covering of asphalt coating or Rustoleum, or equal.
  6. Tie bars and tie anchors which come in contact with backfill material shall be encased with a coating of concrete. Steel shall be covered by a minimum of 1" of concrete.
  7. Use additional #3 bars diagonally across corners of openings and wherever concrete formations act as beams. Place additional #3 bars at points of maximum stress, i.e. one in top and one in bottom extending 12" into supports.
  8. Place mesh on steel reinforcing on side opposite the backup material and wire securely to the reinforcing bars at not less than twenty (20) inch intervals in both directions. Lap mesh minimum two (2) inches at adjacent ends.
  9. Reinforcing bars placed over backer mesh shall be supported by slab bar bolsters, high chairs, etc. Spacing shall be No. 3 at 10" o.c. Place pieces of truss loop below bar supports.
  10. Place welded wire reinforcing mesh uniformly 1-1/2 to 2" from the bottom of concrete slabs.

3.06 BATCHING AND MIXING CONCRETE:

- A. Mixing Proportions: Control by weight batching, or by volume batching meeting the requirements of ASTM C 685.
- B. Batching and Mixing Equipment: Use batching and mixing equipment capable of proportioning and mixing ingredients (except water in the case of dry-mix equipment) at a rate that will provide adequate production and with an accuracy that will insure uniformity of batches. Weighing

equipment shall be capable of batching with the accuracy specified in ASTM C94. Volumetric equipment shall be capable of batching with the accuracy specified in ASTM C685.

- C. Ready Mixed Concrete: Ready-mixed concrete shall comply with ASTM C94, except that it may be delivered to the concrete equipment in the dry state if that equipment is capable of adding the water and mixing it satisfactorily with the dry ingredients, or with ASTM C 685, in which case the ingredients are delivered dry and proportioned and mixed at the site.

**3.07 PLACING CONCRETE:**

- A. General: Place concrete using suitable delivery equipment and procedures that will result in concrete in place meeting the requirements of this Specification.
- B. Placement Techniques:
1. Control thickness, method of support, air pressure, and/or water content of concrete to preclude sagging or sloughing off. Discontinue guniting or provide suitable means to screen the nozzle stream if wind or air currents cause separation of the nozzle stream during placement.
  2. Dampen absorptive substrate surfaces prior to placement of concrete to facilitate bond and to reduce the possibility of shrinkage cracking developing from premature loss of the mixing water.
  3. Broom or scarify the surface of freshly placed concrete to which, after hardening, additional layers of concrete are to be bonded. Dampen surface just prior to application of succeeding layers.
  4. First, fill with sound material corners and any area where rebound cannot escape or be blown free. Complete the corners between the web and the flanges of structural steel before application to the flat areas.
  5. Provide a supply of clean, dry air adequate for maintaining sufficient nozzle velocity for all parts of the work and, if required, for simultaneous operation of a suitable blow pipe for clearing away rebound.
- C. Placement Around Reinforcement:
1. Hold the nozzle at such distance and angle to place material behind reinforcement before any material is allowed to accumulate on its face. In the dry-mix process additional waste may be added to the mix when encasing reinforcement to facilitate a smooth flow of material behind the bars.
  2. Do not place concrete through more than one layer of reinforcing steel rods or mesh in one application unless demonstrated by preconstruction tests that steel is properly encased. Test to ascertain if any voids or sand pockets have developed around or behind reinforcement by probing with an awl or other pointed tool; by removal of randomly selected bars; or by coring or other suitable means.
- D. Cover of Reinforcement:
1. Place concrete to provide the following minimum cover over reinforcement:
    - a. For concrete used as linings or coatings: 1-1/2 in. for fine aggregate concrete and 3 in. for coarse aggregate concrete.
  2. Minus tolerance on cover shall be 3/4 in., except that it shall not be greater than one-third of the specified cover.

E. Line and Thickness Control: Use adequate ground wires or other accepted means to establish the thickness, surface planes, and finish lines of the concrete. Maintain specified tolerances by keeping ground wires secure and taut.

F. Placement Precautions:

1. Do not place concrete if drying or stiffening of the mix takes place at any time prior to delivery to the nozzle. Do not use rebound or previously expended material in the concrete mix.
2. Remove overspray or rebound prior to final set and before placement of concrete material on such adjacent surfaces.
3. Rebound may be reused if it conforms to requirements for aggregate, but not in excess of 25% of the total aggregate in any batch.

**3.08 REPAIR OF SURFACE DEFECTS:**

- A. Remove and replace concrete which lacks uniformity, exhibits segregation, honeycombing, or lamination, or which contains any dry patches, slugs, voids, or sand pockets. Remove and replace damaged in-place concrete.
- B. Repair defective areas in accordance with procedure specified in 3.02 and 3.03.
- C. Repair core holes in accordance with Chapter 9 of ACI 301. Do not fill core holes with shotcrete.
- D. Replace any concrete which subsides after placement.

**3.09 JOINTS:**

- A. Construction Joints:
  1. Taper construction joints to a shallow edge form, about 1 in. thick, except where the joint will be subjected to compressive stress. In this case, use non-tapered joints and take special care to avoid or remove trapped rebound at the joint.
  2. The entire joint shall be thoroughly cleaned and wetted prior to the application of additional concrete.
  3. Submit Shop Drawings of all construction joints located in each habitat for the Seattle Parks Engineer approval.
  4. Make joints perpendicular to the main reinforcement. Continue reinforcement across joints.
- B. Control Joints: Install control joints in accordance with the Shop Drawings. Do not extend reinforcement or other embedded metal items, which are bonded to the concrete, continuously through control joints.
- C. Aesthetic Joint Placement: Position construction and control joints to conform to the locations of natural occurring cracks and joints in the simulated rock and earth forms as shown in Drawings and Photographs.

**3.10 FINISHES:**

- A. Structural Layer:
  1. Provide natural gun finish on structural layers except those designated to receive cementitious waterproofing. Provide broom finish on areas to be waterproofed.
  2. Do not scrape or cut to remove high spots until the concrete has become stiff enough to withstand pull of the cutting device.

B. Texture Coat:

1. The Contractor will provide approved artisan(s) to perform texturing, shaping and coloring of the texture coat (Section 1.10, A., Quality Assurance, Referring to Qualification of Contractor, this Section).
2. The Texture Artists will be approved by the Seattle Parks Engineer prior to beginning any work.
3. Finished product of the Texture coat shall simulate natural formations of basalt rock and mudbanks as described in the Exhibit Construction Drawings and Photographs.
4. Extend texture coat minimum 12 inches below finish grades.

C. Coloring:

1. Surface Applied Color:
  - a. Color of finish shall match the color (in general and in detail) of materials displayed in the photographic samples.
  - b. Color texture coat with integral color agents and by painting after final texturing. Staining and etching may be used in specific circumstances approved by the Seattle Parks Engineer. Color shall be approved by the Seattle Parks Engineer without exception otherwise.
  - c. Paint shall be flat finish.
  - d. Color mixes and application processes shall be approved by the Seattle Parks Engineer prior to beginning of work.
  - e. Samples: Submittals of rockwork panels will allow review of color.
  - f. The Contractor shall be responsible for the blending of the coloration of the rockery with all adjacent surfaces, as directed by the Seattle Parks Engineer.

**3.11 CURING AND PROTECTION:**

- A. Initial Curing: Immediately after finishing, keep concrete continuously moist for at least 24 hours. Use one of the following materials or methods.
  1. Ponding or continuous sprinkling.
  2. Absorptive mat or burlap fabric, sand, or other covering kept continuously wet.
  3. Continuous steam (not exceed 150 F) or vapor mist bath
  4. Curing compounds and application. Comply with ASTM C 309. On natural gun or flash finishes, use twice the normal application rate recommended by the manufacturer, or 100 sq. ft. per gal., whichever is less.
  5. Do not use curing compounds on texture coat, structural layer which is to receive texture coat, or any surface against which additional concrete or other cementitious finishing materials are to be bonded.
  6. Employ positive measures, such as sandblasting, to remove over-sprayed curing compounds completely prior to the application of such additional materials.
- A. Final Curing: Provide additional curing immediately following the initial curing and before the concrete has dried. Continue the method used in initial curing retaining coverings as accepted.

**PART 4 - EXAMPLES**

**4.01 PHOTO EXAMPLES:**

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- A. Photos of actual features provided by the Landscape Architect or Seattle Parks Engineer illustrate the form and texturing of concrete simulated leather for this project. The Photographs are a part of the Exhibit Construction Documents. Shapes, forms, colors and textures shown in the Photographs take precedence over references made to these items in the Exhibit Construction Drawings and models.
- B. A MANDATORY pre-construction meeting will be scheduled to discuss the Seattle Parks Engineer intent for the "living room" appearance and finish and to outline the scope and schedule for this project.

**END OF SECTION 19230**

**SECTION 19240**  
**"LIVING ROOM" MASONRY SITE FURNITURE REIMFORCEMENT**

**PART 1 - GENERAL**

**1.01 GENERAL CONDITIONS**

- A. As specified in Section 00700

**1.02 RELATED SECTIONS**

- A. Section 19230 – Exhibit Concrete

**1.03 DESCRIPTION OF WORK**

- A. Work Included: provide complete, in place, all steel required for reinforcement of cast-in-place and gunite concrete for the following areas of work, as shown on the Construction Drawings and specified herein:
  1. Ballard Corner Park Living Room seating area (Additive Bid Item)

**1.04 QUALITY ASSURANCE**

- A. Comply with pertinent provisions of following standards except as herein modified:
  1. CRSI "manual of Standard Practice";
  2. ACI 315, latest edition, "Manual of Standard Practice for Detailing Reinforcing Bars".
  3. "Uniform Building Code": 1976 Edition, Chapter 26, Concrete.
  4. American Society for Testing and Materials (ASTM): The specifications and standards hereinafter referred to, latest edition.
- B. Mill Affidavits: Mill affidavits, stating the grades and physical and chemical properties of the reinforcing steel, and conformance with ASTRM Specifications, shall be submitted to the Exhibit Architect before delivery of the steel to the job site.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.
- B. Reinforcing Bars:
  1. At Gunite Concrete: Comply with ASTM A 615, Grade 40, unless otherwise noted. All epoxy coating shall be according to ASTM A775/A77M.
- C. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place:

1. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, and other unacceptable materials.
2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with either hot-dip galvanized or plastic protected legs.

## 2.02 FABRICATION

- A. General: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI Manual. In case of fabrication errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.
- B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the Work:
  1. Bar lengths, depths, and bends exceeding specified fabrication tolerances.
  2. Bend or kinks not indicated on Drawings or final Shop Drawings.
  3. Bars with reduced cross-section due to excessive rusting or other cause.

## 2.03 RE-USE OF EXISTING CONCRETE REINFORCEMENT

- A. All exposed, existing concrete reinforcement to remain for reuse in new, cast-in-place or gunite concrete to be cleaned and coated with epoxy primer.

# PART 3 – EXECUTION

## 3.01 INSPECTION

- A. Examine the substrate, and the conditions under which concrete reinforcement is to be placed, and correct conditions which would prevent proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

## 3.02 FABRICATION

- A. Installation of reinforcing to be complete in every way by the end of working day prior to placement of concrete.
- B. Comply with specified standards for details and methods of reinforcement placement and supports, and as herein specified.
- C. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.
- D. Position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
- E. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

- F. Provide sufficient numbers of supports and of strength to carry reinforcement. Do not place reinforcing bars more than 5 cm (2 inches) beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
- G. Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying.
- H. Protection: Protect all adjacent surfaces from reinforcement and bolsters with pvc sheet as specified in Section 19230.

**END OF SECTION 19240**