



People. Partnership. Performance.

P.O. Box 1837  
Tacoma, WA 98401-1837  
www.portoftacoma.com

May 23, 2018

TO: PLANHOLDERS

SUBJECT: PARCEL 77 AUTO IMPORT TERMINAL  
PROJECT NO. ~~201020.01~~101247.01  
CONTRACT NO. 070770

### **ADDENDUM NUMBER 02**

This addendum is issued to amend the following:

#### **SECTION 00 - PROCUREMENT & CONTRACTING REQUIREMENTS**

##### **A. SECTION 00 01 10 – Table of Contents**

1. **DELETE AND REPLACE** the issued SECTION 00 01 10 – Table of Contents with the attached SECTION 00 01 10 – Table of Contents (Attachment A).

#### **SECTION 01 – SPECIFICATIONS**

##### **A. SECTION 01 64 00 - User-Owner Furnished Products**

1. **INSERT** SECTION 01 64 00 – User-Owner Furnished Products (Attachment B).

##### **B. SECTION 32 80 00 – Irrigation System**

1. **INSERT** SECTION 32 80 00 – Irrigation System (Attachment C).

##### **C. SECTION 32 90 00 - Planting**

1. **INSERT** SECTION 32 90 00 – Planting (Attachment D).

#### **APPENDIX**

##### **A. Appendix E - Permits**

1. **DELETE AND REPLACE** the issued APPENDIX E – Permits with the attached APPENDIX E - Permits (Attachment E).

**B. APPENDIX G – Construction Stormwater General Permit**

1. **INSERT** APPENDIX G – Construction Stormwater General Permit (Attachment F).

**C. Appendix H – Inadvertent Discovery Plan**

1. **INSERT** APPENDIX H – Inadvertent Discovery Plan (Attachment G).

**Attachments:**

Attachment A – SECTION 00 01 10 – Table of Contents

Attachment B – SECTION 01 64 00 – User-Owner Furnished Products

Attachment C – SECTION 32 80 00 – Irrigation System

Attachment D - SECTION 32 90 00 – Planting

Attachment E – APPENDIX E – Permits

Attachment F - APPENDIX G – Construction Stormwater General Permit

Attachment G - APPENDIX H – Inadvertent Discovery Plan

**Receipt for this addendum shall be indicated in the space provided in Section 00 41 00, Bid Form.**

**END OF SECTION**

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## **PROCUREMENT AND CONTRACTING REQUIREMENTS**

### **DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS**

- 00 01 01 - Project Title Page
- 00 01 07 - Seals Page
- 00 01 10 - Table of Contents
- 00 01 15 - List of Drawing Sheets
- 00 11 13 - Advertisement for Bids
- 00 21 00 - Instructions to Bidders
- 00 26 00 - Substitution Procedures During Bidding
- 00 31 00 - Available Project Information
- 00 31 26 - Existing Hazardous Material Information
- 00 41 00 - Bid Form
- 00 43 13 - Bid Security Form
- 00 43 25 - Substitution Request Form During Bidding
- 00 45 13 – Responsibility Criteria
- 00 52 00 - Agreement Form
- 00 61 13.13 - Performance Bond
- 00 61 13.16 - Payment Bond
- 00 61 23 - Retainage Bond
- 00 72 00 - General Conditions
- 00 73 16 - Insurance Requirements
- 00 73 46 - Washington State Prevailing Wage Rates
- 00 73 63 - Security Requirements

## **SPECIFICATIONS**

### **DIVISION 01 -- GENERAL REQUIREMENTS**

- 01 10 00 - Summary
- 01 14 00 - Work Restrictions
- 01 20 00 - Price and Payment Procedures
- 01 25 00 - Substitution Procedures During Construction
- 01 26 00 - Change Management Procedures
- 01 29 73 - Schedule of Values
- 01 30 00 - Administrative Requirements
- 01 31 23 - Web Based Construction Management
- 01 32 16 - Construction Progress Schedule

01 33 00 - Submittal Procedures  
01 35 29 - Health, Safety, and Emergency Response Procedures  
01 35 43.13 - Hazardous Materials Handling Procedure  
01 35 43.19 - Export Soil Management  
01 35 47 - Air and Noise Control Procedures  
01 35 91 - Historic/Cultural Treatment Resources  
01 41 00 - Regulatory Requirements  
01 42 19 - Reference Standards  
01 45 00 - Quality Control  
01 50 00 - Temporary Facilities and Controls  
01 55 00 - Vehicular Access and Parking  
01 57 13 - Temporary Erosion and Sediment Control  
01 60 00 - Product Requirements  
01 64 00 - Owner-furnished Products  
01 71 00 - Examination and Preparation  
01 71 23 - Field Engineering  
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01 74 19 - Construction Waste Management and Disposal  
01 77 00 - Closeout Procedures  
01 78 23 - Operation and Maintenance Manuals

DIVISION 02 -- SITEWORK

02 41 13 – Selective Site Demolition

DIVISION 03 – CAST-IN-PLACE CONCRETE

03 11 00 – Concrete Forming  
03 20 00 – Concrete Reinforcing  
03 30 00 – Cast in Place Concrete

DIVISION 32 – LANDSCAPING

32 80 00 – Irrigation

32 90 00 - Planting

DIVISION 26 – ELECTRICAL

26 05 00 - General Electrical Provisions  
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26 05 02 - Testing  
26 05 17 - Mini Power Zones

- 26 05 19 - Wire and Cables, Secondary Voltages
- 26 05 26 - Grounding
- 26 05 33 - Raceways
- 26 05 43 - Underground Ducts and Handholes
- 26 05 48 - Seismic Controls for Electrical Work
- 26 05 73 - Overcurrent Protective Device Coordination Study
- 26 09 23 - Lighting Controls
- 26 24 13 - Switchboards
- 26 24 16 - Panelboards
- 26 27 13 - Electrical Service and Metering
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- 26 28 16 - Disconnects and Fused Switches
- 26 56 00 - Exterior Lighting

DIVISION 31 -- EARTHWORK

- 31 00 00 – Earthwork
- 31 23 19 – Dewatering
- 31 23 33 – Trenching and Backfilling
- 31 41 00 – Shoring and Underpinning

DIVISION 32 – EXTERIOR IMPROVEMENTS

- 32 11 23 – Crushed Surfacing
- 32 12 16 – Asphalt Paving
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- 32 31 13 – Chain Link Fence and Gates

DIVISION 33 -- UTILITIES

- 33 10 00 – Water Utilities
- 33 30 00 – Sanitary Sewer Utilities
- 33 32 13 – Sewage Lift Station
- 33 40 00 – Storm Drainage Utilities
- 33 40 19 – Bioretention Systems
- 33 44 19 – Stormwater Treatment
- 33 44 19.19 – Utility Oil Water Separators

APPENDICES

- Appendix A – Consent Decree and associated Environmental documentation
- Appendix B – Hazardous Materials Assessment

Appendix C – Materials Management Plan

Appendix D – Stormwater Pollution Prevention Plan

Appendix E – Permits

Appendix F – Water Quality Monitoring and Protection Plan

Appendix G – Construction Stormwater General Permit

Appendix H – Inadvertent Discovery Plan

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 SCOPE**

- A. The purpose of this section is to provide the framework for transferring Port provided equipment and materials to the Contractor in a safe, timely and effective manner.

### **1.02 SUBMITTALS**

- A. Submit an inspection report or log to the Engineer of the inspection performed on the equipment and materials before acceptance by the Contractor. Flag any equipment or materials identified as being in unsatisfactory condition before moving or relocating it from the Location Area described below. Document unsatisfactory condition of equipment photographically, using digital media.

### **1.03 COORDINATION**

- A. The stormwater treatment concrete vaults materials will be available by August 1, 2018.
- B. The outdoor lighting equipment including poles and fixtures will be available by September 12, 2018, anchor bolts will be available July 16, 2018.

### **1.04 LOCATION**

- A. All Port furnished materials are to be unloaded, stored and protected by the Contractor to the project site.

## **PART 2 - PRODUCTS**

### **2.01 ITEMS**

- A. For outdoor lighting equipment including poles and fixtures see Section 01 64 00 - Graybar material list attached to this section.
- B. Stormwater treatment concrete vaults

NO.	DESCRIPTION	QUANTITY	MANUFACTURER/SUPPLIER
1	TYPE 1 VAULTS	18	TBD
2	TYPE 2 VAULTS	8	TBD
3	TYPE 3 VAULTS	4	TBD

## **PART 3 - EXECUTION**

### **3.01 RECEIPT OF MATERIAL**

- A. Contractor shall conduct an immediate inspection of all received materials as they arrive, inventory the content of boxes and packages and notify the Engineer of any discrepancies and/or damaged materials.
- B. Protect, transport and install where indicated within the Contract Documents.

### **3.02 PROTECTION**

- A. Equipment
  - 1. Contractor shall be fully responsible for the protection of Owner Furnished materials from their times of arrival until their incorporation into the Work, including unloading, inspection, inventory control and secure storage.

2. Tightly cover and protect equipment against dirt, moisture or impact, mechanical and chemical damage.
3. Repair
  - a. Repair or replace Port provided property damaged by the Contractor.

### 3.03 INSTALLATION

- A. Install in accordance with the Contract Documents.

### 3.04 FIELD QUALITY CONTROL

- A. Equipment Inspection
  1. Examine each piece or component for visual defects.
- B. Tests
  1. Test each piece or component to ensure that it is operational in conformance with the Contract Documents.

**END OF SECTION**





1414 CENTER ST  
TACOMA WA 98409-8211

To: TACOMA PORT OF  
802 PORT CENTER ROAD  
TACOMA WA 98421  
Attn: Sharon Rothwell  
Phone: 000-597-7573  
Fax:  
Email:

Date: 05/22/2018

**Proj Name:**  
**GB Project Qte#:**  
Purchase Order Nbr:  
Additional Ref#

Valid From: 04/04/2018

Valid To: 05/25/2018

Contact:

Email:

## Proposal

We Appreciate Your Request and Take Pleasure in Responding As Follows

Item	Item/Type	Quantity	Supplier	Catalog Nbr	Description	Price	Unit	Ext.Price
100	2 EA HOLOPHANE			HMLED3PK450K HVOLTGAWPSC P7 100HMGV6SP- LAB				
***Item Note:*** HMLED3PK450KHVOLTGAWPSCP7 100HMGV6SP-LAB ABSET-1.50 RFD259416								
HMLED3, 85,000 lumens, 5000K, Autosensing 347-480V, Greay Super Durable, Area wide. 100ft galvanized steel pole with 6-fixture fixed spoke ring, set of 1.50" anchor bolts, sized for 90mph AASHTO 2009 FCIII Includes L7 receptacle socket and shorting cap								
200	11 EA HOLOPHANE			HMLED3PK450K HVOLTGAWPSC P7 100HMGV8SP				
***Item Note:*** HMLED3PK450KHVOLTGAWPSCP7 100HMGV8SP-LAB ABSET-1.50 RFD25941								
HMLED3, 85000 lumens, 5000K, Autosensing 347-480V, Greay Super Durable, Area wide. 100ft galvanized steel pole with 8-fixture fixed spoke ring, set of 1.5" anchor bolts, sizedd for 90mph AASHTO 2009 FCIII Includes L7 Receptacle and shorting cap.								
300	99 EA AMR ELEC LGHT			ATB2 60BLEDE10 480 R4 5K P7 SH				
***Item Note:*** Autobahn LED Roadway - Large ATB2, 60B Chips, 1050mA Driver, 480V, Roadway Type IV, 5000K Includes P7 Receptacle and shorting cap								

This equipment and associated installation charges may be financed for a low monthly payment through Graybar Financial Services (subject to credit approval). For more information call 1-800-241-7408 to speak with a leasing specialist.

To learn more about Graybar, visit our website at [www.graybar.com](http://www.graybar.com)

24-Hour Emergency Phone#: 1-800-GRAYBAR

Subject to the standard terms and conditions set forth in this document. Unless otherwise noted, freight terms are F.O.B. shipping point prepaid and bill.  
Unless noted the estimated ship date will be determined at the time of order placement.

To: TACOMA PORT OF  
802 PORT CENTER ROAD  
TACOMA WA 98421  
Attn: Sharon Rothwell

Date: 05/22/2018  
**Proj Name:**  
**GB Project Qte#:**

## Proposal

We Appreciate Your Request and Take Pleasure in Responding As Follows

400	<b>38 EA LITHONIA LTG SSS3966G P2 ND GR</b>	<b>1</b>		
***Item Note:***	<b>Square Straight Steel Pole 39FT, 6.0 Square x y Gauge Wall: SSS3966G 6.0 Square, Tenon, 2.3.D. X 4inch LG, No Drill Pattern, Gray Paint, Anchor Bolts</b>			
500	<b>22 EA UTILITY MTLS SB-390-24-2G</b>	<b>1</b>		
***Item Note:***	<b>24" - 3 Arm @ 90 Degrees Spoke Bracket Finish: Hot Dip Galvanize</b>			
600	<b>1 EA UTILITY MTLS SB-218-24-2G</b>	<b>1</b>		
***Item Note:***	<b>24" - 3 Arm @ 120 Degrees Spoke Bracket Finish: Hot Dip</b>			
700	<b>5 EA UTILITY MTLS SB-218-24-2G</b>	<b>1</b>		<b>\$</b>
***Item Note:***	<b>24" - 2 Arm Spoke Bracket Finish: Hot Dip Galvanize</b>			
800	<b>10 EA UTILITY MTLS SB-290-24-2G</b>		<b>\$</b>	<b>1 \$</b>
***Item Note:***	<b>24" - 2 Arm @ 90 Degrees Spoke Bracket Finish: Hot Dip Galvanized</b>			

**Total in USD (Tax not included):**

This equipment and associated installation charges may be financed for a low monthly payment through Graybar Financial Services (subject to credit approval). For more information call 1-800-241-7408 to speak with a leasing specialist.

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**24-Hour Emergency Phone#: 1-800-GRAYBAR**

Subject to the standard terms and conditions set forth in this document. Unless otherwise noted, freight terms are F.O.B. shipping point prepaid and bill.  
Unless noted the estimated ship date will be determined at the time of order placement.

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## **PART 1 - GENERAL**

### **1.01 WORK DESCRIPTION:**

- A. The work of this Section includes, but is not limited to the following: furnishing and installing automatic irrigation system, including trenching and backfill; furnishing and installing all labor, equipment and items noted on drawings and specified herein; balancing and testing of system and extended maintenance and warranty.

### **1.02 EXAMINATION OF SITE AND DOCUMENTS:**

Before submitting a proposal, the bidder shall:

- A. Carefully examine and acquaint themselves with all portions of the drawings and specifications.
- B. Visit the site of the work.
- C. The Contractors shall fully inform themselves of existing conditions and limitations.
- D. The Contractor(s) shall include in their bid, sums sufficient to cover all items required by the contract and the conditions of the site and shall rely entirely upon their own examination in making the proposal.

### **1.03 ADJUSTMENTS:**

- A. Any required removal, repair or replacement of work caused by unsuitable conditions shall be done by Contractor at no additional cost to the Owner. Any adjustments to irrigation based on actual built conditions shall be made as directed at no additional cost to the Owner.

### **1.04 INTERPRETATIONS:**

- A. Should bidder find discrepancies in or omissions from the drawings or specifications or be in doubt as to their meaning, they should at once notify the Landscape Architect who will send written instructions or addenda to all bidders. Neither Owner, Irrigation Engineer or Landscape Architect will be responsible for oral interpretations. All addenda issued during the time of bidding shall become part of the contract documents.

### **1.05 LABOR AND MATERIALS:**

- A. The Contractor shall provide and pay for all labor and materials and all equipment and transportation required by such labor and materials for the complete and efficient construction and finishing of the project work as shown on the drawings and herein specified.

### **1.06 NUMBER OF ITEMS:**

- A. Whenever an item is referred to in a singular number or where the number of items required is listed, the Contractor shall supply all the items necessary to make the installation complete. The number of items, when given, is for assistance only.

### **1.07 PERMITS AND INSPECTIONS:**

- A. Any permits which are required for the installation shall be obtained and paid for by the Contractor. Open trench inspections will be required of the main line and all zones installed. The Contractor shall notify the authorized representative of the time when such inspection is required. Any necessary re-excavation or alterations to the system needed because of failure or lack of inspection shall be performed at the Contractor's own expense. Submit approved forms to Owner as part of Operations and Maintenance Manual.

1.08 CODES, RULES AND SAFETY ORDERS:

- A. Work and Materials: All work and materials to be in full accordance with latest rules, regulations and safety orders of Division of Industrial Safety; the Uniform Plumbing Code published by the Western Plumbing Officials Association; the State and local Electrical Code and other applicable laws or regulations. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes. Should the Construction Documents or instructions be at variance with these rules and regulations, notify Landscape Architect for instructions before proceeding with the work affected.

When the specifications and/or drawings call for or describe materials, workmanship or construction of a better quality, higher standard or larger size, these specifications and/or drawings shall take precedence over the above rules, regulations or codes.

Furnish and maintain all warning signs, shoring, barricades, red lanterns, etc., as required by the Safety Orders of the Division of Industrial Safety and local ordinances. Take care to protect open trenches and pits.

- B. Ordinances and Regulations: All local, municipal and state laws governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications and shall be carried out by the Contractor.
- C. Protection of Owner's Property: The Contractor shall maintain adequate protection of all their work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract.
- D. Protection of Existing Utilities: The exact locations of all existing utilities not indicated on the drawings shall be determined by the Contractor and the work shall be conducted so as to prevent interruption of service or damage to them. It is the Contractor's responsibility to coordinate with the underground utility companies.
- E. Protection of Existing Trees: Contractor shall take due care to protect existing trees from limb or root damage.
- F. Guarantee: It shall be the Contractor's responsibility to insure and guarantee complete coverage of the areas shown on the drawings to be irrigated. He shall also guarantee the satisfactory operation of the entire system in every detail for a period of one year from the date of its acceptance.
- G. System Protection: As part of the warranty under this contract, the Contractor shall be responsible for deactivating and draining of the system prior to the onset of the freezing season and for reactivating the system at the onset of the spring growing season. Each event must be accomplished once during the one-year warranty. In the event the system is complete in a season when the system will not be used, the Contractor will winterize the system upon the completion of testing and reactivate the system in the spring. The Contractor shall, upon completion of the winterizing phase, submit a letter to the Owner certifying that the system is protected from freezing. The Contractor will be liable for any damage resulting from failure to comply.
- H. Substitutions: No substitutions will be permitted which have not been submitted for prior approval to the Landscape Architect. Sufficient literature must be furnished for any materials submitted as equal substitutes. If standardization of products is requested by the Owner, no substitutions will be permitted.
- I. Submittals: The Contractor is to furnish manufacturer's literature and, at least 30 days prior to beginning work, submit the following data for products not specified by the manufacturer (i.e., piping, wire, etc.,) and products submitted for approval as equal:

Manufacturer's descriptive data including operating characteristics, operating pressures, pressure losses, materials used in products, test certificates, special features, guarantees and other data required to completely describe the product.

Samples of the proposed substitution when required by Irrigation Engineer or Landscape Architect will be returned to Contractor whether or not approval is given.

- J. Qualifications: The Contractor must have previous experience in sprinkler installation. All electric work must conform to current state laws.
- K. Distribution of Water: Distribution of water in planting areas shall be in a manner as shown on the drawings and care shall be taken to provide minimum or no water distribution on buildings, walks and dry areas so designated. The Contractor is responsible to provide adequate precipitation in all planting areas.

#### 1.09 JOB CONDITIONS:

- A. Water Source: Use existing supply line as shown on drawings. Verify size and condition in the field and report findings to the Landscape Architect or Irrigation Engineer.
- B. Electrical: Refer to Drawings. All work shall be completed per State of Washington codes.
- C. Sleeving: All sleeving required for the execution of the work is to be provided under this section.
- D. As Built Drawings: Contractor shall procure transparency or transparencies (ozalid) of the irrigation system and mark on them the exact "as built" arrangement of all piping, sprinkler heads, remote control valves, controller location and low voltage wire routing. This drawing shall be to scale and shall be titled "as built drawings" with installer's name, address, phone number and date installed. The drawing shall contain a legend listing all equipment and components installed, including symbol for each item, manufacturer, model numbers and description of equipment/component. After final inspection and prior to final payment, the transparency shall be delivered to the Irrigation Engineer who will forward it to the Owner. Any changes made shall have the approval of the Irrigation Engineer prior to being changed.
- E. Guarantee: All materials, installation, equipment and operation shall be guaranteed for a minimum period of one (1) year from final acceptance. All repairs, replacement, alterations, relocations and adjustments shall be made at the installing Contractor's expense during guarantee period.

#### 1.10 OPERATIONS AND MAINTENANCE MANUALS:

- A. Three manuals, bound in hard back covers, shall be submitted to the Landscape Architect or Irrigation Engineer for review at/or before the provisional review. They shall include, as a minimum, the following information for all items used on the system.
  - 1. List of local authorized distributors and service representatives for each item of irrigation equipment, including names, addresses and phone numbers.
  - 2. Guarantee/warranty certificates for all equipment used and Contractors written one-year warranty.
  - 3. Instruction manuals for all equipment used.
  - 4. Parts list for each item with exploded views showing part numbers.
  - 5. Complete trouble shooting guide to common irrigation problems.
  - 6. Winterization and spring start up procedures specific to this job.

7. Chart of approximate items for programming controller zones for watering in spring, summer and fall.
8. A pocket containing blueline prints of the approved sepi record drawing. Prints shall be added at time of final review.
9. Eight and one half by eleven-inch copies of all irrigation construction details for the irrigation installation.
10. The controller box keys.

#### 1.11 SITE REVIEWS AND TESTS:

- A. Submit verbal requests for Site Reviews to Landscape Architect or Irrigation Engineer at least 48 hours prior to anticipated review. Do not request testing until satisfied that work will pass testing. The following are the required check offs with the Irrigation Engineer:
  1. Preconstruction Meeting.
  2. Irrigation mainline installation to include point of connection details, pressure testing, bedding depth, valve detailing and wiring.
  3. Lateral line pressure test which involves proper sizing, depth, head detailing and trench check.
  4. Fine tuning equipment, such as the irrigation coverage tests, making sure all heads are performing properly, installed correctly and the system is balanced.

#### 1.12 CLEANUP:

- A. Keep all areas of work clean, neat and orderly at all times. Keep paved areas clean during installation by sweeping daily. Clean up and remove all debris from entire work area prior to Final Acceptance to satisfaction of Landscape Architect.

#### 1.13 PROVISIONS REVIEW (PUNCH LIST):

- A. Upon completion of irrigation and other work required under this contract, if any, the Contractor shall request a provisional review. No other partial approvals will be given.

#### 1.14 FINAL REVIEW/ACCEPTANCE:

- A. The Contractor shall request a final review upon satisfactory completion of all punch list items and any other work required under this contract. Final review and acceptance of the project shall establish the beginning of the warranty period.

## **PART 2 - PRODUCTS**

### 2.01 MATERIALS:

- A. General: All materials to be incorporated in this system shall be new and without flaws or defects and of quality and performance as specified herein. All material coverages at the completion of the installation are the property of the Contractor and are to be removed from the site.
- B. Pipe and Fittings: All pipe shall be new, of standard weight for its class and of virgin components. All pipe shall be continuously and permanently marked with the manufacturers name or trademark, size, schedule and type of pipe, working pressure at 73 degrees F and National Sanitation Foundation (NSF) approved.

- C. Galvanized Steel Pipe and Fittings: Galvanized steel pipe and fittings shall not be used within the project unless approved by the Irrigation Engineer. Schedule 80 PVC or brass fittings and nipples are approved for use.
- D. PVC Pipe: All plastic pipe shall be suitable for solvent weld. Pipe shall be homogenous throughout and free from visible cracks, holes, foreign materials, blisters, deleterious wrinkles and dents. Pipe shall be handled with care as specified by manufacturer from truck unloading through backfill completion. Do not reuse any abandoned piping. No substitutions of smaller pipe sizes will be permitted, but substitutions of larger sizes of same type at no extra cost with approval are acceptable. Each length of PVC pipe is to be coded with an identifying extrusion “run” number and the manufacturers name or trade name, the pipe size and schedule or class.
  - 1. Main Line Piping: Use solvent weld Polyvinyl Chloride Pipe (PVC) 1120, 1220, SDR 21.0, and Schedule 40. Pipe shall conform to ASTM D 1784 and ASTM D 2241.
  - 2. Lateral Piping: Use solvent weld Polyvinyl Chloride Pipe (PVC) 1120, 1220, SDR 21.0, Class 200, solvent weld. Pipe shall conform to ASTM D 1141.
  - 3. Threaded Pipe and Nipples: PVC 1120 or 1220, Schedule 80, conforming to ASTM D 1785.
  - 4. There shall be no galvanized pipe used on this project.
  - 5. For connections of mains to automatic control valves and to quick coupling valves, fittings shall be Schedule 40 or 80, PVC solvent weld socket fittings which conform to ASTM D 2466.
  - 6. Fittings shall be specifically made for the type of pipe used. All plastic fittings shall be Schedule 40 Polyvinyl Chloride (PVC) and shall meet selected pipe tolerances.
  - 7. Plastic Pipe and Fittings shall be joined with the solvent in the detail manner manufacturer specifies, including cleaning and uniformity of coating. Pipe shall be installed in a manner to provide for expansion and contraction as recommended by manufacturer. When connection is plastic to metal, male adapters shall be used. Male adapters shall be hand tightened plus one turn with strap wrench. Joint compound shall be Permatix Type II or equivalent.
  - 8. Polyvinyl Chloride primer shall be applied to all fitting connections prior to solvent welding pipe and fittings.

## 2.02 EQUIPMENT AND COMPONENTS:

- A. Rotary Sprinklers: Pop up bodies to be made as specified on the drawing. The body is to be made of CYCOLAC material. Each body to have matching nozzle threads, nozzle screens and positive seal feature.
- B. Automatic Control Valves: All automatic control valves to be as specified on drawings. Each valve shall have flow control adjustment feature, manual bleed operation, 24-volt water proof coil and a molded one piece diaphragm. Install valves as per detail.
- C. Control Valve Boxes: Model number of valve boxes to be as called out and as specified on drawings. Use proper size extensions as required. Valve box cover to be marked “Irrigation Control Valve”.
- D. Double Check Vault: Provide as specified on drawings. To be approved by WSHD requirements.



- E. Manual Drain Valves: Manual drain valves to be as called for on drawings. Install at all low points on main line. All valves to be installed inside valve boxes. Provide gravel sump for proper drainage.
- F. Irrigation Main Line Piping: The irrigation supply main pipe shall meet ASTM D 2241 specifications for PVC Schedule 40 solvent weld. PVC Schedule 40 fittings shall be used.
- G. Lateral Piping: Lateral lines PVC pipe shall meet ASTM Specifications D 2241 for PVC 1220 Class 200.
- H. Sleeving: All sleeving shall be PVC Schedule 40, size as shown on drawings.
- I. Quick Coupling Valves: Quick coupling valves shall be as specified on the drawings. Units shall be of two-piece construction with locking vinyl covers made of red brass.
- J. Control Cable: All electric underground control cables shall be of size as shown on the drawings. Wire to be placed in the trench to one side of the pipe. Where it is necessary to run wire in a separate trench, the wire shall have a minimum cover of 18 inches. All wire connectors at remote control valve or splice connections to be left with sufficient slack so that, in case of repair, the splice may be brought to the surface without disconnecting the wires. No splices permitted between controller and valve on hot wire. All splices to be made with a King splice connector.
- K. Swing Joints: Provide swing joints for all heads using triple SCH-80 PVC 90-degree ells thread by thread. The outlet tee or ell to be threaded and installed on its side, as per detail. For sprinkler heads and quick coupling valves, do not use PVC or Marlex Street 90-degree ells.
- L. Water Source: As called out a specified on drawings.
- M. Backflow Preventer/Double Check Assembly: Install new assembly as indicated on drawings.
- N. Automatic Controller: Install new controller as shown on drawing.
- O. Rain Sensor: Install new rain sensor at each controller location.
- P. Deduct Water Meters: Install new water meter at locations shown on drawings. Meter must be approved by City of Tacoma and reading in cubic feet. Installation shall include valve box with reader lid.
- Q. Miscellaneous Equipment and Components: Miscellaneous equipment and components not specifically indicated, but normally included in the work performed, shall be furnished and installed by the Contractor.

### **PART 3 - EXECUTION**

#### **3.01 EXCAVATIONS:**

- A. Shall be open vertical construction sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and tamping. Trenches for pipe shall be cut to required grade lines and compacted to provide accurate grade and grade lines and compacted to provided uniform bearing for the full length of the line. When two pipes are to be placed in the same trench, it is required to maintain a four-inch space between pipes as a minimum. Pipes under paved areas shall be bedded in six inches of clean sand all around pipe(s). The Contractor shall be responsible to coordinate with the General Contractor the locations of the sprinkler heads and sleeving in all paved areas. The Contractor will have to work with other contractors to clearly locate and stake those areas where the asphalt will be cut and removed.



### 3.02 THRUST BLOCKING:

- A. Thrust blocks shall be installed where the irrigation main is two and a half inches and larger. Blocks shall be placed at each location where the main changes direction, as at ells, trees and where the main terminates. Main line pressure test shall not be made for a period of 48 hours following the completed pouring. Concrete thrust blocks for the supply mains shall be sized and placed in strict accordance with the pipe manufacturers specifications and shall be of adequate size, shape and so placed as to handle all thrust pressures and pipe movement created by the maximum internal water pressures. Minimum size for the thrust block shall be 12 inches by 12 inches, plus the amount of concrete required to fill the excavation pit fully without gaps.

### 3.03 COMPONENT INSTALLATION:

- A. Plastic Pipe Lines: PVC pipe, indicated herein, shall be installed for all pressure supply lines including quick coupling valves. Plastic pipe shall be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer. Plastic pipe shall be cut with a hand saw or hack saw in a manner so as to insure square ends. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.
- B. Solvent Weld Joints: Contractor shall use only the solvent supplied and recommended by the manufacturer to make plastic pipe joints. All connections shall be made as per manufacturer's recommendations for solvent welding pipe. All solvent weld joints shall first be primed with P-70 (purple) PVC primer or approved equal. The pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent.
- C. Pipe Connections: The Contractor is cautioned to exercise care in handling, loading, unloading and storing plastic pipe and fittings. All plastic pipe and fittings will be stored under cover before using and will be transported in a vehicle with a bed long enough to allow the length of the pipe to lay flat so as not be subject to undue bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded until said section of pipe is cut out and rejoined with a coupling. All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into position in the trench and it shall be kept clean by approved means during and after laying of the pipe.
- D. Main Line Piping: Main line piping shall be installed to a depth of 24 inches below finish grade and shall have all rocks and debris removed from the trenches. No rocks larger than one half inch diameter will be permitted in the trenches. Sand bedding material shall be used for fill around the pipe to a depth of two inches below the pipe and to at least four inches above the pipe. Allow a two-inch minimum separation between pipes laid in common trench.
- E. Lateral Line Piping: Installation of lateral line piping shall conform with the requirements of paragraph 3.3 above and installation details.

### 3.04 SPRINKLER HEADS:

- A. Locate all heads shown adjacent to paving, two inches to three inches from edge.

### 3.05 SLEEVING:

- A. Install sleeves under all paved and surfaced areas, through walls and as required to facilitate a smooth construction sequence. Extend sleeves as shown on drawings. Coordinate with other trades as required.
- B. Sleeves to be minimum twice the IPS diameter of insert pipe and shall extend a minimum of 12 inches beyond edge of walls, walks and paving. Plug ends of pipe to prevent soil from entering ends if backfill is required prior to use.

- C. Sleeve at depths which provide 24 inches of cover at vehicular parking areas and driveways. Sleeve at depths which provide 18 inches of cover at paved pedestrian areas.
- D. Cut paving where existing sleeves are not available or where piping is shown crossing paving. Patch to match existing conditions.

### 3.06 AUTOMATIC CONTROLLER, VALVE WIRING AND VALVE BOXES:

- A. The automatic controller shall be securely installed where shown on drawings. Furnish and install conduit of a size to accommodate properly the number of 24-volt wire required to pass through it, from the controller unit to a point 24 inches from the controller and 24 inches below grade. Junction boxes shall be furnished and installed as required to allow pulling of wires to controller. The complete controller installation shall be level, neat, sturdy and to the complete satisfaction of the Owner. Label all zones on chart inside controller door as to area locations with plastic label tape. The remote-control valves shall be installed as shown. Conductors may be installed in the same trench as the water pipe. Sharp bends or kinks in the conductors shall not be permitted. Conductors shall be unreeled and pulled into the trench from one end. Where two or more cables are laid parallel in the same trench, they shall be taped together not less than every 25 feet. Splices shall be limited to the areas within the valve boxes. Neatly coil two feet of cable slack at each remote-control valve solenoid connection within access boxes. Not less than one foot of cable slack shall be left on each side of all splices. The slack cable shall be placed in the trench in a series of "S" curves. Installation of control valves shall be as detailed.
- B. Irrigation contractor to lay wires in trench with irrigation supply main. Contractor must lay wires so that they are not damaged during backfilling. Arrange auto valves as shown on the drawings. Leave 12 inches of slack wire at all bends and connection points. Seal all wire connections underground with 3M-DBY wire connectors.
- C. Valve Boxes shall be flush level with grade, brick supported with washed crushed rock 6 inches beyond all sides as per detail.
- D. Rain Sensors shall be installed at each controller location on the controller, free from all overhangs. Wire sensor to controller.

### 3.07 BACKFILLING AND FLUSHING:

- A. The procedure for backfilling shall be the same for trenches with pipe only, conductor only or pipe and conductor. Because of the expansion and contraction of the plastic pipe, backfilling shall be done in the cool part of the day. All lumber, rubbish and rocks over one half inch in size shall be removed from the entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. After the pipe and/or conductor has been installed, the trench shall be backfilled with clean sand. Trenches shall not be excessively wet and shall not contain pools of water during backfilling operations. Extreme care shall be exercised by the Contractor while backfilling. Any materials or equipment damaged or destroyed while backfilling shall be repaired or replaced by the Contractor as directed by the Irrigation Engineer at no cost to the Owner. Contractor shall correct any subsequent settlement of trench to the satisfaction of and at no cost to the Owner. After the trench has been backfilled, all water pipe installed shall be flushed clear and clean of all dirt and foreign material.

### 3.08 MAIN LINE TESTING

- A. Testing: The irrigation main line shall be hydrostatically tested by the Contractor for one hour and proven tight under a pressure of 150 psi at the highest point. The maximum drop during the testing shall be three (3) psi in 60 minutes. If system is tested in sections, the connection to the previously tested section shall be included. Lateral piping shall be inspected under normal static

pressure upon installation of all sprinkler heads. All of these tests shall be made before backfill of any nature is placed over the pipe except for that which is required to hold the pipe in place and such will not be permitted to conceal any joint or fitting. Defective material and leakage shall be eliminated by the Contractor at their expense.

- B. Covering of Uninspected Work: The Contractor shall not allow or cause any of the work installed by them under the specifications to be covered before it has been inspected, tested and approved by the Irrigation Engineer or representative. Should any of the work be covered before it has been approved, the Contractor shall, at their own expense, uncover the work.

### 3.09 GRAVEL SUMPS:

- A. Contractor shall provide at each drain valve, a sump consisting of two cubic feet of one half inch minus washed gravel, or as shown on plans.

### 3.10 ADJUSTMENT:

- A. Contractor to adjust all heads so that maximum coverage can be obtained.

### 3.11 CLEANUP:

- A. All sidewalks, paved areas and graveled areas shall be cleaned of top soil and any other debris related to the installation of the sprinkler system. Do on a daily basis.

### 3.12 FINAL INSPECTION:

- A. Thoroughly clean, adjust and balance system. Demonstrate the entire system to the Irrigation Engineer and Owner's representative, proving that all heads are properly adjusted for radius and arc of coverage, that all remote-control valves are properly balanced and that the installed system is workable, clean and efficient.

### 3.13 SYSTEM OPERATION:

- A. The irrigation system shall be completely installed, tested and operable prior to planting in a unit area except where otherwise approved by the Architect or the Irrigation Engineer. The Contractor shall be fully responsible for all maintenance, repair and operation of the entire system until all work is considered complete and accepted by the Irrigation Engineer or Owner.

### 3.14 TEMPORARY REPAIRS:

- A. The Owner reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operational condition. The exercise of this right by the Owner shall not relieve the Contractor of their responsibilities under the terms of the guarantee as herein specified.

**END OF SECTION**

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## **PART 1 – GENERAL**

### **1.01 WORK DESCRIPTION**

- A. Materials, equipment and labor for subgrade preparation, top soiling, planting of trees, shrubs and groundcover plantings; re-establishing finish grading of planting areas following planting; mulching, protection and immediate maintenance; guarantee and replacement; and related items necessary to complete the work indicated.

### **1.02 QUALITY ASSURANCE**

- A. Supplier, installer qualifications: A specialist having no less than five years experience with commercial landscape installation, bonded and insured.

### **1.03 REFERENCED STANDARDS**

1. WSDA Washington State Department of Agriculture - Ornamental Evergreen and Deciduous Plants, Nursery Stock Standards (Order Number 1229, 1230, 1320, 1321, 1322).
2. American Standard for Nursery Stock, 1980
3. Sunset Western Garden Book, 1967 Third Edition
4. Hortus Third, Cornell University

### **1.04 SUBMITTALS**

- A. Notification: Within 30 days after the award of Contract, submit documentation that plant materials have been ordered.
- B. Submit Maintenance Data as specified in Section 01 78 33 – Operation and Maintenance Data. Include special directions essential for Owner's maintenance program after guarantee / warranty period expires. Include duplicate copies for landscaping maintenance personnel use during maintenance period.

### **1.05 DELIVERY, STORAGE AND HANDLING**

- A. Deliver as required. Protect plants from harm. Deliver fertilizers in original unopened containers, each bearing manufacturer's guaranteed analysis.
- B. Acceptance at site: Verify undamaged conditions.
- C. Protection prior to installation: Protect from sun and drying winds from beginning of digging, during transporting and onsite.
- D. Handle and protect plants, roots, rootballs and tips to prevent plant injuries.
- E. Immediately remove unsatisfactory materials from site.

### **1.06 PROJECT SITE CONDITIONS**

- A. Environmental requirements: Plant during periods normal for optimum growth, as determined by season, weather conditions and accepted practice. You may conduct planting operations under unseasonable conditions, without additional compensation, by accepting full responsibility for subsequent resulting losses.
- B. Underground condition:
  1. Locate utility lines and underground obstructions to avoid damage during excavation.
  2. Repair and replace damaged buildings, equipment, underground utilities, irrigation equipment, paving, surfacing, stairs and other work damaged as a result of Contractors

operations.

#### 1.07 SEQUENCING AND SCHEDULING

- A. Coordinate ordering of materials immediately following General Contract award. Ensure that specified sizes and quantities are furnished.

#### 1.08 WARRANTY

- A. Warranty Period for this work is as stated in General Conditions and begins at Owner acceptance.
  - 1. Guarantee replacement:
    - a. Trees and other plant materials: Warrant to be healthy and thriving.
    - b. Remove and replace immediately during the Guarantee Period: Dead, diseased, dying, broken or missing plant materials (except as noted below). Use specified plant and plant as specified; guarantee until acceptable, active, healthy growth is evident.
    - c. Contractor's responsibility: During Guarantee Period, you are not held responsible for replacing plants destroyed or damaged by vandalism, accidents caused by vehicle (other than yours) or Acts of God, provided that you have exercised due care to protect the work.
    - d. When required replacement time falls during non-planting season, you may request Owner's permission to defer planting until proper season. If granted, immediately remove dead plants, including roots, from site.
    - e. Backfill pits properly with planting mix. Finish grade and leave in acceptable condition until proper planting season occurs. Replace with plants of same kind and size as those originally planted. Plant as originally specified.

### PART 2 - PRODUCTS

#### 2.01 MATERIAL - GENERAL

- A. Comply with Quality Assurance provisions, References, specifications and manufacturer's data.
  - 1. Plant materials: Meet or exceed following reference standards for quality, size and condition:
    - a. Washington State Standards for Nursery Stock: Order Number 1627.
    - b. ANSI Z60.1-1980: Nursery Stock.
    - c. American Joint Committee of Horticultural Nomenclature: Standardized Plant Names.
  - 2. Fertilizer: Conform to referenced FS O-F-24D, Commercial Fertilizers and WSDA Laws.
- B. Topsoil: Furnish uniform mixture of half coarse washed sand, half compost, free of noxious weeds, deleterious materials and rock or debris that will not pass through a ¾ Inch screen. Cedar Grove Topsoil or approved equal.
- C. Upland Mulch: Provide decomposed yard waste (Cedar Grove compost) or approved. Submit sample to the Construction Manager for approval. Ground bark is not acceptable mulch.
- D. Wetland Buffer Mulch: See Plan requirements.
- E. Fertilizer:

1. Plant

- a. Osmocote 14-14-14 in planting pit and as top dressing for plant material.
- b. Agro Transplanter in planting pit for plant material.
- c. Kronde 20-10-15 plant tablets (agriform) for trees and shrubs.

F. Tree staking materials: Stake as shown on details.

G. Tree repair materials: Tree wound compound Tree Heal, or approved, and common rubbing alcohol.

H. Plant abbreviations (see Drawings for plant list):

B&B	Balled and burlapped	S	Small
BR	Bare root	M	Medium
br	Branches	L	Large
cal	Caliper	EXL	Extra large
cont	Container	NCN	No common name
dia	Diameter	oc	On center
gal	Gallon	tri-spaced	Triangular spaced

2.02 PLANTS

A. Provide quantities, species, and varieties, size and condition: As shown on planting plan, plant list and as follows:

- 1. Washington Grade Number 1.
- 2. Fresh, well foliated, in prime condition when in leaf and exhibiting normal growth habits with buds intact.
- 3. Free of disease, injury, insects, insect eggs, larvae and indication of strawberry root weevil.
- 4. Free of seeds, weed roots and other such contaminants.

B. Stock acclimate plants to project site environmental conditions. They are also required to have been consistently cultivated and grown in these conditions. No cold storage plants are permitted. Graft trees at ground level as required.

C. Ensure B&B stock has natural ball sufficient for survival and healthy growth.

D. Ensure BR materials have sufficient root system for survival and healthy growth.

E. Substitutions: Propose ONLY at the time of submitting documentation or ordered plant material. Proposed substitutions must be accompanied by written proof from at least five sources (major plant suppliers) that the specified plant is not available.

**PART 3 - EXECUTION**

3.01 INSPECTIONS

A. Verify installation conditions as satisfactory to receive work of this section. Do not install until

unsatisfactory conditions are corrected.

### 3.02 PREPARATION

- A. Field measurements: Verify actual layout in relation to Drawings: Make adjustments as required by Construction Manager and Landscape Architect. In grouped planting areas, follow specified distances on center rather than estimated number of plants, be it a larger or smaller quantity.
- B. Plant locations: After placement of topsoil, stake tree locations for acceptance by Construction Manager and Landscape Architect. Make required field adjustments as directed. Avoid obstructions such as irrigation equipment. Large blocks of planting may be staked out by boundary rather than individual plants.
- C. Protect the public, adjacent properties, surfaces and surrounding areas to prevent harm during work of this section.

### 3.03 INSTALLATION

- A. Install the work in accordance with References and specifications.

### 3.04 PLANTING AREAS

- A. Bring grades to within two inches of finish grades shown on Drawings except special areas further noted on Drawings. Then review grades to determine extent of further rough grading necessary to accomplish finish grading as required. Notify Construction Manager of discrepancies and, if necessary, request Landscape Architect's inspection of grade.

### 3.05 SOIL CONDITIONS

- A. Verify existing soil conditions for contaminants that may have been discarded by other trades, such as thinner and plaster. Report findings immediately to Construction Manager before placing topsoil.

### 3.06 NOTIFICATION OF ADVERSE CONDITIONS

- A. Notify Construction Manager of adverse drainage conditions affecting plant growth.

### 3.07 SOIL PREPARATION

- A. Rotovate as follows:
  - 1. Planting areas: 12-inch depth.

### 3.08 FINISH GRADING

- A. Finish grading before you start planting. Grade areas so that finish grades will be flush with finish grade of adjacent areas, one half inch lower than walks, curbs and surface edges, except as noted on Drawings. Allow for added topsoil and mulch in individual planting pits as specified.

### 3.09 POSITIVE DRAINING

- A. Crown planting areas in the center at one quarter inch per foot from edge (unless otherwise noted). Make grades flow smoothly into each other. Produce positive drainage away from structures.

### 3.10 PLANTING

- A. Plant trees in pits:
  - 1. Dig pits according to details, rough NOT smooth.



2. If you encounter clay soil or unusual conditions likely to be detrimental to new plantings, notify Construction Manager immediately.
  3. Remove excess or unsuitable material excavated from plant holes and dispose of it legally off project site.
  4. Install plants with POSITIVE drainage away from rootballs, unless otherwise noted.
- B. Backfill for plantings: Topsoil, as specified.
- C. Hold plant in center of hole, approximately two inches above normal growing position and backfill with specified topsoil approximately halfway.
1. Place ½ inch Osmocote evenly around rootball.
  2. Backfill to within five inches of finish grade; fill hole with water and allow to settle.
  3. Backfill to subgrade depth (if mulch is to be applied) or to nursery grown depth. Apply remaining ½ inch Osmocote to surface around periphery of rootball.
  4. Before planting, soak dry rootballs.
  5. Prune broken roots ½ inch or greater in diameter. Make clean cuts.
  6. Plant when plant materials are available and weather conditions are consistent with good horticultural practice.
  7. If container stock is rootbound, slash roots vertically with a sharp knife along outside of ball in three places before planting.
  8. Remove string ties or straps holding rootball of balled and burlapped plants. See tree planting detail.
  9. After planting and allowing for settlement, perform finish grading to afford positive drainage away from crown, at no greater than ½ inch per foot, unless otherwise indicated.

### 3.11 PLANT PROTECTION

- A. Protect plantings against harm from wind and unusual weather. Special planting techniques, defoliating, wiltproofing or spray misting may be required by the Construction Manager for unseasonal planting, prolonged drought or other unfavorable conditions. Perform no work in, over or adjacent to planting areas without proper protection and safeguards.
1. Plant materials immediately following delivery and acceptance. Heel in plants that cannot be planted within one day after arrival, in accordance with accepted good horticultural practice. Protect rootballs of balled and burlapped plants with moist earth, sawdust or other acceptable material.
  2. Provide planting safeguards required until Early Possession or for such time as required to ensure establishment and vigorous growth of the plant material.
  3. Protect unfinished work at end of day.

### 3.12 TREE PRUNING

- A. Do not prune before delivery.
- B. Do NOT prune without direct supervision of the Construction Manager and Landscape Architect. This applies to native plant materials existing at the site (as applicable) and new



plant materials installed.

### 3.13 TREE STAKING

- A. See Drawing details for requirements.

### 3.14 MULCHING

- A. Before installing mulch, require Construction Manager to perform semifinal inspection of planting areas, grades, soil depths and plant locations.
- B. Provide uniform three-inch mulch layer material over cleaned and graded subsurface.

### 3.15 PLANT ESTABLISHMENT

- A. Apply second Osmocote application to trees and groundcover not sooner than 12 weeks or later than 24 weeks after initial planting.
- B. Verify actual application timing with Construction Manager and Landscape Architect, as seasonal changes may require delay. Where planting conditions or rootball sizes warrant, apply Liquinox or approved root stimulant.

### 3.16 FINAL CLEANUP

- A. Before final inspection, remove deleterious material and debris, rake planting areas neatly and to even, fine grades. Wash hard surfaces clean.

### 3.17 CLEANING

- A. Sweep paving clean. Leave installations properly planted, clean, and orderly; premises free from scatterings and other residue of work of this section. Leave site neat and clean at end of each working day.
  - 1. Remove and legally dispose offsite such items as excess earth, clippings, trimmings, leaves, litter and debris resulting from work of this section.
  - 2. Rake planting areas to an even, fine grade. Wash hard surfaces clean.
  - 3. Remove flag labels from plantings.

### 3.18 PROTECTION OF COMPLETED WORK

- A. Install barriers as necessary and required to protect the work during Guarantee Period or for shorter period as directed.

**END OF SECTION**