PROJECT MANUAL

MONTLAKE PLAYFIELD
SYNTHETIC TURF REPLACEMENT

OWNER:
City of Seattle, Department of Finance and Administrative Services

ADMINISTERING DEPARTMENT:
Seattle Parks and Recreation
Planning and Development Division
300 Elliott Avenue West, Suite 100
Seattle, WA 98119

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Ordinance# 126237, 126490

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MONTLAKE PLAYFIELD
SYNTHETIC TURF REPLACEMENT
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DIVISION 01

General Requirements

PART 1 - GENERAL

1.01 Section Includes:

A. This Section covers the Scope of Work describing the construction activities that must take place at the project site as specified in the Contract Documents.

1.02 RELATED SECTIONS: Related sections include but are not limited to:

Section 01 35 29 - Health & Safety

Section 01 74 19 - Construction Waste Material & Disposal

Section 01 76 00 - Protection of Existing Facilities

Section 01 78 39 - Record Documents

1.03 SCOPE OF WORK:

A. The Contract Work is summarized below. The summary descriptions may not include specific reference to all incidental work elements required to complete the Contract. Include all labor, materials, equipment and incidentals required for completion of the Work as shown on the Drawings and specified in the Project Manual.

B. The work occurs at Montlake Playfield, 1618 E Calhoun St, Seattle, WA 98112.

C. The following scope elements are part of the Base Contract:
1. Administrative & General Conditions, including various Submittals and Permitting requirements potentially associated with each playfield/park site.
2. Site Preparation elements, including Construction Sediment Controls, Temporary Security & Sanitary Facilities, Turf Removal & Disposal, and Remediation of various field-specific deficiencies as directed.
3. Synthetic Turf Systems, including manufacture, shipping & handling, installation, and warranty of approved synthetic turf surfacing systems including supplemental resilient pad, turf product, infill materials, and field markings.
4. Close Out & Post Installation Service, including demobilization, site restoration, surplus materials, and scheduled maintenance services

D. The work may include specific Permit requirements, generally limited to those related to the use of adjacent Rights-of-Way, such as Seattle Department of Transportation (SDOT) Street Use, Right of Way, or Sidewalk Crossing Permits.

Any additional permits and/or permissions that may be required for the Work must be provided by the Contractor. The Contractor must comply with all applicable requirements and regulations.

1.04 CONTRACT:

A. There is one Contract for the Project, which includes the Work described in or implied by the Project Manual and Drawings.

B. The Contractor must provide all items, articles, materials, operations or methods listed, noted or scheduled in the Drawings and/or Project Manual, including all labor, equipment and incidentals necessary and required for proper and timely completion of the Work. The Contractor must use new materials unless specifically noted or directed.

C. Required Work not specifically described in the Project Manual and/or Drawings must be performed in accordance with the current City of Seattle Standard Specifications and Plans or City, County, State or National reference standards.

1.05 USE OF DOCUMENTS:

A. Technical Specifications are enumerated in the Table of Contents of the Project Manual. The numbering of Sections is for identification only and may not be consecutive. The Contractor must cross check the Project Manual contents against the Table of Contents to verify that they are consistent with each other. The Contractor must notify the Engineer of any inconsistencies and request clarification if needed.

1.06 RESERVED:

1.07 RESERVED

1.08 RESERVED

1.09 WORK SEQUENCE AND SCHEDULE CONSTRAINTS:

A. The Contract Duration will be 40 working days from Notice-to-Proceed date.

B. Generally, Removal and Replacement must be performed sequentially.
   1. Notice to Proceed will be issued with sufficient time for scheduling verification, administrative and product submittals, and manufacturing & shipping lead times.
   2. Contractor's project scheduling within the specified Contract Duration will consider common variables such as size, complexity, site conditions, reasonably anticipated weather, etc.

C. The Contractor shall complete each of the following specific work elements in sequence prior to commencing the work of the next element unless otherwise approved.
   1. Pre-Construction Requirements
   2. Removal of Existing Surfacing
   3. Inspection and testing of the existing Base, and Remediation per Allowance and as Required
   4. Installation of all embedded elements, i.e., goals, anchors, etc.
   5.

6. Synthetic Turf Panel Layout and Seaming; Panelized Supplemental Resilient Pad systems, as approved, installed sequentially with individual synthetic turf panels.
7. Field Marking Inlays
8. Field Surface Infill
9. Final Grooming

D. Park Sites generally remain open to public access except the immediate work and staging areas. Site-specific plans indicate those limits.

1.10 ORDERING LONG LEAD EQUIPMENT/MATERIAL ITEMS:

A. The Contractor must schedule and prioritize the ordering and delivery of material as required to ensure that the Work will be completed within the Contract Time.

1.11 RESERVED

1.12 RECORD OF EXISTING IMPROVEMENTS:

A. The Contractor must provide to the Engineer a digital recording that thoroughly documents the existing conditions of the entire project site and immediate vicinity, specifically including but not limited to all perimeter edge conditions; driveways, sidewalks, and roads adjacent to the site; all landscape elements and features; utility structures; and structures and surfaces on the site not designated for removal or repair. The Contractor must have a responsible representative perform the recording or hire a digital recording production consultant that specializes in this function. The Contractor must notify the Engineer at least two Working Days in advance of the scheduled time and date of the recording. The Engineer may choose to be present for the recording, and may request supplemental or additional recording of site elements without additional cost to the Owner. One copy of the completed digital record must be submitted to the Engineer prior to beginning work. One copy of the digital record must be kept on file with the Contractor.

B. The Contractor must utilize digital media for the record, as approved by the Engineer. Either voice-over moderated digital video or digital still photos with captions are acceptable format options. Digital formats requiring proprietary software will not be accepted. Digital media must be submitted to the Engineer on a DVD or USB flash drive, visibly labeled to identify the Contract Number, Project Name, and date of recording.

C. During inspection and electronic documentation, the Contractor must specifically identify existing improvements/features to remain that, in the opinion of the Contractor, exhibit damage prior to physical Work beginning. The recording must clearly show such pre-existing damage. If the Contractor anticipates additional damage may occur as a result of Contract Work, the Contractor must inform the Engineer in advance of

performing any Work that would result in additional damage to the item. The Engineer will decide whether such an item must be protected, repaired, or may be removed under the Contract.

D. Unless previously documented per Paragraph 1.12.C above, damage to existing improvements/features to remain that occurs as a result of the execution of the Contract must be repaired or replaced by the Contractor at no additional expense to the Owner. Repair or replacement must be in accordance with the Seattle Department of Parks and Recreation Design Standards and/or the City of Seattle Standard Plans and Specifications (most recent edition), regardless of the condition of the improvement prior to the Contract.

1.13 RESERVED

1.14 CONTRACTOR'S USE OF PREMISES:

A. Hours of Work:

Unless specifically allowed by the Contract, the Contractor must limit site work to between the hours of 7:00 AM and 7:00 PM, Monday through Friday, and must not work on City Holidays. The Contractor must plan and schedule Work activities to conform to and allow time for notifications, approvals, reviews and other conditions of the Contract. In facilities that are occupied during Work, the Contractor must notify the Project Manager and facility users of Work activities that may inhibit access or impact regular facility use. Any other times of Work are subject to advance written approval by the Engineer. Such permission may be requested by submitting a completed "Off-Hours Work Authorization" form, which follows at the end of this section and is available electronically in the Contractor Forms Workbook.

C. Keys:

1. The Contractor will provide their own chain and lock for all temporary fence gates. Chain and lock must be used such that the Engineer can pair a Parks Department lock to enable equal access by the Contractor and the Engineer.

2. Where existing locks inhibit the Contractors access, such as gates or removable bollards, those obstacles will generally be removed for the duration of the work and replaced by the Contractors temporary security fence.

D. Access:

1. The Contractor and their subcontractors will be allowed on site only during the established working periods. The Contractor must use only the designated location for site access.

2. The Contractor must also address and accommodate issues such as SPR normal maintenance activities, service truck routes, special events, and other adjacent work that may be taking place.

D. Parking:

1. The Contractor may use available street parking or facility parking.
2. Keep all fire lanes clear and store no materials in facility parking areas unless specifically identified for such use on the Contract Drawings.

E. Staging:

1. The Contractor must prepare a staging plan to show locations of materials, trailers, and fencing layouts. The staging plan is subject to approval by the Engineer, and the approved plan must be followed by the Contractor. Any deviation from the approved plan must be approved by the Engineer.

F. Existing Facilities: Refer to Section 01 76 00 - Protection of Existing Facilities.

G. Contractor's additional responsibilities while using the premises include:

1. Maintaining 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 the premises.
4. Obtaining and paying for use of additional storage or work areas needed for operation.
5. Patching any existing paving on adjacent properties that gets damaged as a result of Work activities.
6. Keeping roads and other areas clean of dirt and other debris.
7. In an occupied facility, coordinating with facility users to minimize Work impacts to users.

1.15 STORAGE AND PROTECTION:

A. Store products in accordance with manufacturer's instruction, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weather-tight enclosures.
2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
3. Storage of hazardous materials and wastes must be in accordance with local, State and Federal fire codes and regulations.

4. Comply with requirements on Safety Data Sheets (SDS).

B. Exterior Storage:

1. Store fabricated products above ground. Position on blocking or skids; prevent soiling or staining. Protect 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.

C. Do not store materials for other projects on Project site unless specifically approved by the Engineer.

D. Waste Material Disposal: Refer to Section 01 74 19 - Construction Waste Material and Disposal.

1.16 SALVAGED MATERIALS:

A. Salvage only those items that are noted in the Contract Documents or designated by the Engineer. The Engineer retains first right of refusal to all salvaged materials, equipment, and or products identified or not identified in the Contract Documents that are affected as part of the Contract Work.

1.17 DISPOSAL OF DEBRIS:

A. All disposal of debris resulting from the Contract Work, unless specifically allocated to another scope of Work, is the responsibility of the Contractor. This includes scheduling and coordinating the use of trash collection services, containers, trucks, etc., and payment of all related costs and fees. The Contractor is responsible for awareness of, understanding of, and compliance with all local, state and federal regulations regarding the disposal of any hazardous and non-hazardous wastes.

1.18 SAFETY AND ENVIRONMENTAL CONCERNS:

A. Safety Data Sheets (SDS) for all chemicals (including paints) used in the performance of the Contractor's duties must be identified in advance to the Engineer, posted on a specified bulletin board at least 10 working days before first using the material, and utilized in compliance with SDS recommendations and requirements.

B. Every chemical used must be considered from the perspective of its possible effect on our living collection, staff, and visitor. All possible protective devices, safeguards, shields, containment, and disposal methods must be initiated and continued throughout the period of Contract Occupancy to protect the living collection, staff and visitors. The Contractor shall identify on all schedules and notify the Engineer 1 week in advance of the use of products that may generate odors that are atypical to the immediate

surroundings for example liquid polyurethane binders, adhesives, or paints, to allow the Engineer adequate time to notify adjacent businesses and residents.

C. The Contractor must provide barricades, safety guards, temporary fencing, signage and/or other methods to secure trenches, open excavations, and other unsafe conditions resulting from this construction. In occupied facilities with children, the Contractor must provide additional barriers and signage to the Work and storage areas. Contractor must comply with all applicable safety regulations.

1.19 WORK QUALITY STANDARDS: (Reserved).

PART 2 - PRODUCTS: (Not Used).

PART 3 - EXECUTION: (Not Used).

END OF SECTION

Off-Hours Work Authorization form follows:

Project No. _____

OFF-HOURS WORK AUTHORIZATION

Submit completed form to request approval for working non-normal working hours as defined by the Contract, such as legal holidays, weekends, before or after specified working hours, etc. Such work may not be performed without advance approval.

Project Name	PW Contract No.
Contractor Name	Contractor Phone

The above-named Contractor hereby requests permission to perform work on the above-named project during a contract holiday, weekend, or other non-normal working hours as described below:

Date(s)	Time(s)

	Name (Printed)	Signature	Date
Contractor's Representative			
Project Manager's Recommendation			

Pursuant to the above request to work on the above listed day(s), permission is hereby given and work shall be done in accordance with Section 1-07.5(4) and 1-08.1(4) of the City Standard Specifications.

This includes reference that the Contractor shall conduct the work consistent with the applicable noise control levels set forth in Seattle Municipal Code Chapter 25.08, or if outside the City limits and in King County, King County Ordinance No. 3139.

	Name (Printed)	Signature	Date
Construction Manager's Approval			

cc:
PM, Project Manager, Seattle Parks and Recreation
District Crew Chief, Seattle Parks and Recreation
Project File

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The Contractor must furnish and install all products specified herein. The Engineer will review the substitution request as stated in this Section. Samples of the required forms for submitting substitution requests are attached to the end of this section. These are available electronically within the automated Contractor Forms Workbook, a MS Excel application developed by the Owner that integrates most of the forms utilized during the life of the Contract. The Contractor Forms Workbooks is available to the Contractor upon request.

1.02 RELATED SECTIONS:

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

1.03 PRODUCTS:

A. Where specified only by reference standards and/or performance criteria, select any product meeting the standards and/or criteria, by any Manufacturer.

B. Where specified by naming one or more products, whether or not indicating "or approved equal" after specified listing, the Contractor may submit any request for another product substitution on a form provided by the Engineer.

C. Occasionally, certain products or items will not be considered for substitution or may be designated as sole source items. In such case, these items will be clearly indicated as “sole source” and/or “no substitution” within the applicable specification subsection. Otherwise the Contractor may request substitution as described elsewhere in this section.

1.04 SUBSTITUTIONS:

A. Within fourteen (14) days after the Award of Contract, submit written Substitution Requests (on forms provided) to the Engineer. Submit two copies of the Substitution Request forms for each product substitution being proposed.

B. Each Substitution Request must be accompanied by the following two (2) forms:

1. RAMS – Request for Approval of Material Sources and Substitutions
2. SISR – Supplemental Information for Substitution Request

C. 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.

D. In making a request for Substitution, the Contractor represents:

1. Contractor has personally investigated proposed product, and in their opinion, it is equal or superior in all respects to that specified.
2. Contractor must coordinate installation of accepted substitution and guarantees to complete it in all respects. Contractor has outlined any changes required in accordance with form.
3. Contractor must provide an equal or greater guarantee for Substitution as for specified product.
4. Contractor waives all claims for additional costs related to Substitution, which consequently become apparent.
5. Cost data is complete and includes all related costs under this Contract.
6. Contractor must identify any related costs that the Substitution may incur with respect to other contracts or future operations/maintenance costs (describe impact on Item 3 of Supplemental Information for Substitution Request Form).

E. 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.

F. Approval Process:

1. Upon receipt of a Substitution Request, the Engineer will determine within ten (10) working days if the request is acceptable. The Engineer will approve or disapprove the request at his/her sole discretion.
2. If the Substitution request is approved by the Engineer and 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 Work under the Contract changes due to the approved substitution, the Engineer will describe the change via a no-cost Modification Proposal (MP) and incorporate the MP in a subsequent Change Order, as appropriate to officially document the change.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

END OF SECTION

The following sample forms are available in the Contractor Forms Workbook:

- RAMS (Request for Approval of Material Sources and Substitutions)
- SISR (Supplemental Information for Substitution Request)

REQUEST FOR APPROVAL OF MATERIAL SOURCES AND SUBSTITUTIONS

PROJECT NAME		PW CONTRACT NO.
CONTRACTOR	PROJECT NO.	DATE

MATERIAL SOURCES

Bid Item #	Description of Material	Sources of Supply		Approval Action *
		Local Supplier	Manufacturer or Pit #	

Each substitution listed below must be accompanied by a "Supplemental Information for Substitution Request" form

Bid Item #	Specified Material or Component		Proposed Substitution		Approval Action *
	Manufacturer	Part No. or Make	Manufacturer	Part No. or Make	

SUBMITTED BY	SIGNATURE & DATE

1. Source Approved
1A. Source Approved: Acceptance based upon 'Satisfactory' test report for samples of materials incorporated into project
2. Source Approved: Submit manufacturer certificate of compliance for 'Approval' prior to use of material
3. Source Approved: Submit millcerts prior to use of material
4. Source Approved: Submit catalog cuts and/or shop drawings for 'Approval' prior to use or fabrication of material
5. Source Approved: Only stamped 'SPR Inspected' material shall be used
6. Source Approved: Request supplier to provide SPR Pipe Acceptance Report (PAR) with pipe upon delivery
7. Source Approved: Submit mix design for 'Approval' prior to incorporation of material into project
8. Approval Withheld: Submit samples for preliminary evaluation
9. Approval Withheld: Submit brand name, name of manufacturer, treating plant, or WSDOT Pit number
10. Approval Withheld: Submit catalog cuts and/or shop drawings for approval
11. Approval Withheld: Submit bid item number
12. Approval Withheld (see explanation below)
13. Conditionally Approved (see explanation below)
14. Rejected (see explanation below)

NOTE: Forms not filled in completely will not be processed. Append supplemental information (catalog cut sheets, shop drawings, etc.) as appropriate. Use multiple forms if more space needed.

Seattle Parks and Recreation Department Use Only

REVIEWED BY (DESIGNER NAME)	SIGNATURE & DATE
EXPLANATION(S) FOR ANY ITEM CODED WITH 12, 13, OR 14	
APPROVED BY Parks Senior Civil Engineer	SIGNATURE & DATE

SUPPLEMENTAL INFORMATION FOR SUBSTITUTION REQUEST

DATE	PW CONTRACT NO.	PROJECT NAME	
CONTRACTOR	CONTACT NAME	E-MAIL ADDRESS	PHONE NUMBER

SPECIFIED COMPONENT/ITEM/MATERIAL

SPEC. SECTION	PARAGRAPH	DESCRIPTION

DESCRIPTION OF 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.

RESPOND TO THE FOLLOWING:

1	Does the substitution affect dimensions shown on the Drawings, including details? *If yes, clearly describe changes (attach drawings as necessary to show all changes).*	○ YES	◉ NO
2	Will the Contractor pay for changes to the building design (including engineering and detailing costs) caused by the requested substitution?	○ YES	◉ NO NEED
3	Does this proposal have potential to impact other trades, other contracts, and/or the Contract completion date? *If yes, describe below.*	○ YES	◉ NO
4	Are there any implications with regard to permit or code requirements associated with this substitution? *If yes, describe below.*	○ YES	◉ NO
5	In the space below, describe the differences between the proposed substitution and specified item.		
6	Does the manufacturer's guarantee(s) for the proposed substitution differ from the guarantee(s) for specified items? *If yes, describe any differences below.*	○ YES	◉ NO

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR PERFORMANCE SHORTCOMINGS

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

NAME & TITLE (PRINTED)	SIGNATURE	DATE
FIRM NAME	E-MAIL ADDRESS	TELEPHONE

CONCURRENCE BY		APPROVAL BY	
CONSULTANT SIGNATURE	DATE	PARK ENGINEER SIGNATURE	DATE

PART 1 - GENERAL

1.01 RESERVED

1.02 PRE-CONSTRUCTION CONFERENCE:

A. The Engineer will establish the date, time and place for the pre-construction conference. The Engineer will conduct the meeting to review responsibilities, procedures, personnel assignments and to exchange preliminary submittals. The Consultant will prepare meeting minutes using a format to be provided by the Engineer. Copies of the minutes will be distributed by the Consultant at the first progress meeting.

B. Attendees: The Engineer, the Consultant, the Contractor and his/her superintendent, major subcontractors, manufacturers, suppliers and other concerned parties.

C. Submittals: The Contractor must provide the Submittals indicated in paragraph 1.02.D below, as applicable.

D. Agenda: The following items will be reviewed at the meeting using a format provided by the Engineer.

1. Lines and methods of communication between the Engineer, Consultant and Contractor.
2. Contract Compliance.
3. Coordination of Project.
    a. Engineer's inspections.
    b. Construction Inspection Plan.
    c. Special inspections/testing.
    d. Working hours.
    e. Date, time and location for weekly construction meetings.
    f. Safety.
    g. Traffic control.
    h. Sound restrictions – (SMC) 25.08.
    i. Verification of schedule compliance and remaining construction days.
4. Engineer-provided control surveys.
5. Submittals and information to be provided by Contractor at meeting:
    a. Identification of Contractor's Personnel: Project Manager, Superintendent, other key personnel;
    b. Traffic Control Plan;
    c. Temporary Vegetation, Soil, and Tree Protection Plan;

d. Subcontractor Applications;

e. Critical Path Schedule (preliminary);

f. Schedule of Values.

g. List of required submittals and Shop Drawings for long-lead items and Work subcomponents, as detailed in Specifications;

h. List of Subcontractors List;

i. List of Material Suppliers;

j. Prevailing Wage Reports;

k. Mark-up Agreement Form

l. Preliminary data and information.

6. Procedures and sample Pay Estimate form, including prevailing wage certification and "Summary of Waste Generated by Project" form.
7. Procedures and examples of Design Clarification, Field Directives, Modification Proposals (MP), and Change Orders.
8. Procedures for submitting submittals/shop drawings and requesting substitutions.
9. Responsibility of contractor to maintain record documents.
10. Emergency Telephone List.
11. Special Items:
    a. Safety Data Sheets (SDS) for chemicals and materials to be used during construction or incorporated into the Work.
    b. Work Limits/Security and safety-first aid procedures and confined spaces procedure.
    c. Adjoining Work (if any) in progress.
    d. Permits.
    e. Staging, deliveries, and contractor/employee parking.
    f. Initiation of the 360° Review process; see Section 00 72 00 Part 1.03.M.2.
12. Verification of Drawings and Project Manual by Contractor.
13. Notice to Proceed date.
14. Other.

1.03 PROGRESS MEETINGS:

A. The Engineer will conduct the weekly progress meetings on a day, time and location determined at the pre-construction conference. The Consultant will take and prepare weekly project minutes using a format provided by the Engineer. Copies of the minutes

will be distributed to attendees at least four calendar days prior to the next meeting. A copy of the minutes will be provided to the Engineer.

B. Attendees: Engineer, Consultant, Contractor, Facility Operator, and other concerned parties such as contractor's superintendent, subcontractors, and material suppliers.

C. Agenda: The following items will be reviewed and discussed at each progress meeting, using a format provided by the Engineer:

1. Review and approve minutes of the previous meeting.
2. Review status, progress, issues related to compliance with construction schedule and identify Working Days used and remaining under the Contract and any request for time extensions.
3. Review Critical Path schedule and three-week look-ahead schedule. Determine if schedule needs to be updated to reflect any changes. Develop and maintain a work item schedule status report using a format provided by the Engineer.
4. Review status/issues/problems of work in progress and action items. Create new action items as needed.
5. Review new Work that has started prior to the last meeting and/or will be started before the next meeting and identify any issues, concerns, or problems requiring action.
6. Establish and maintain a submittal/shop drawing log showing status for all such items/needs identified in the Specifications, using a format provided by the Engineer. Review status of long-lead time items that may require expedited review.
7. Establish and maintain log and status of Design Clarifications, Field Directives, MP, and Change Orders, using a format provided by the Engineer. Review status of pending actions, degree of completion, and the need for processing change orders.
8. Review status of special testing if required and implementation of inspection schedule.
9. Review changes to record documents.
10. Review status of Work in progress or completed, and pending pay estimates.
11. Review other issues affecting implementation of project.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION: *Not Used*

END OF SECTION

PART 1 - CRITICAL PATH SCHEDULE AND SCHEDULE CONSTRAINTS

1.01 CRITICAL PATH SCHEDULE

A. GENERAL REQUIREMENTS: The scheduling of the Work is the responsibility of the Contractor. The construction of this project must be planned and tracked by use of a conventional Critical Path Method (CPM) schedule, which must be prepared, maintained, and regularly updated by the Contractor.

The Engineer's review and acceptance of any critical path schedule does not transfer any of the Contractor's responsibilities to the Owner or to the Engineer. Acceptance implies only that the Engineer has determined that the Critical Path Schedule submittal with any noted exceptions is within reasonable conformity to the requirements of the Contract. Acceptance of any schedule does not relieve the Contractor of responsibility to complete the Work within the required Contract Time.

All schedules shall must the requirements outlined in this Section. If the Engineer deems that the CPM Schedule is not within reasonable conformity to these specifications, it will be returned to the Contractor for correction and re-submittal.

1. Terminology:
    a. *Critical Path:* The series of sequentially-linked activities in a project schedule that will take the longest total amount of time to complete. Therefore, at any point in time, the critical path will be the path with the least amount of total float. The critical path does not have to follow the same logic path from start to finish and need not have zero total float.
    b. *Critical Task*: A discrete work activity within a critical path.
    c. "*Float:* The number of days that a scheduled activity can be delayed without affecting a given intermediate milestone or Physical Completion Date.
    d. *Milestone:* A zero-duration task marking the completion of a significant body of work or important date/event associated with the Contract.
    e. *"Summary Task":* A general name/descriptor that encompasses multiple linked, related subtasks. A summary task may be a broad category of work (e.g. electrical, grading, plumbing, etc.), phasing designation, or a locational reference (e.g. north site, playfield area, etc.).
2. Scheduling Guidelines: The baseline CPM Schedule and each Critical Path Schedule update must conform to the following guidelines:
    a. Schedules must be prepared, viewed, and printed utilizing standard Gantt-chart format.
    b. Show all activities necessary to complete the Work.
    c. Each task must be named/described in sufficient detail to understand the scope of work encompassed by that task. Overly-broad descriptors (e.g. "grading",

"electrical", "plumbing", etc.) may be rejected by the Engineer, especially when in conjunction with long durations.

d. Broad descriptions (e.g. "grading, "electrical", "plumbing", etc.) are generally only acceptable when they are used as Summary Tasks.

e. Activities must be assigned durations consistent with the activity's scope of Work, presuming that Work will be done continuously over the entire task duration. Float time must not be represented as a part of the task duration. Excluding the Preliminary CPM Schedule, the maximum duration for any one task/activity must be ten (10) Working Days unless otherwise accepted by the Engineer.

f. Sequential work activities must be linked logically by precedent/successor activities.

g. Display the Critical Path as a red-colored sequence within the project schedule. Multiple parallel critical paths will not be allowed unless the Contractor can demonstrate that each of the parallel paths has minimal total float time.

h. Comply with all order of Work requirements included in the Contract.

i. Show durations in Working Days.

j. Show Contract milestones including the following:

- Notice to Proceed Date,
- Substantial Completion Date,
- Physical Completion Date,
- Any milestones defined in the Special Provisions of this Contract,
- Other milestones at the discretion of the Contractor

k. Show required submittals for significant activities. Establish discrete work activities for provision and review of submittals, ensuring durations conform to the time allowed by the Contract.

l. Identify special labor or equipment needs that may constrain or limit the Contractor's ability to perform project tasks simultaneously. These may be shown as "Resources" within the CPM schedule, or described separately in narrative format.

m. Show procurement, manufacture and delivery activities for significant material items of Work that affect the schedule.

n. Show significant Owner activities and/or delivery of Owner-supplied materials that may impact the schedule.

o. Show significant elements of the Construction Stormwater and Pollution Prevention Plans. These elements may include but are not limited to the installation and removal of erosion/sedimentation controls, and stormwater control.

p. Include project close-out items such as punch-list items, provision of O&M manuals and as-built drawings.

3. Engineer's Time: Unless otherwise specified in the Contract, the Contractor must allow the Engineer sufficient time to perform inspections, reviews, administrative tasks, and other such activities. If not defined elsewhere in the Contract "sufficient" time will be construed as "customary or normal" for the type of work involved.

4. Float Time: Float available in the CPM Schedule, at any time, shall not be considered for the exclusive use of either the Contractor or the Engineer. However, any float used by the Owner that is later needed by the Contractor and results in delay to the critical path may be considered an excusable non-compensable delay.

B. SCHEDULE TYPES

1. PRELIMINARY CPM SCHEDULE: The Contractor must prepare and submit a preliminary critical path schedule at the preconstruction conference. The preliminary schedule must show the first 30 Days of Work in reasonable conformity to these Specifications. The remaining schedule may show the critical path schedule using broad Work activities, and major milestones and durations for the purpose of review and discussion at the preconstruction conference.

2. BASELINE CPM SCHEDULE: The Contractor must submit for Engineer's review and acceptance a baseline CPM Schedule no later than five (5) Working Days after receipt of the Notice to Proceed. The baseline schedule will not be accepted unless it satisfies this Section as well as any additional requirements that may be described in Section 1-08.3(1)A of the *City of Seattle Standard Specifications*.

   Within five (5) Working Days of the Engineer receiving the submittal, the Engineer and the Contractor must meet for joint review, correction, and adjustment of the initial baseline CPM schedule. Within five (5) Working Days after that, the baseline schedule must be resubmitted to the Engineer showing the agreed upon adjustments. Adjusted baseline CPM schedules submitted by the Contractor will be reviewed by the Engineer and returned to the Contractor within five (5) Working Days of the Engineer's receiving the submittal. If necessary, the joint review and adjusted schedule submittal process may be repeated. However, the Baseline CPM Schedule must be finalized within 25 Working Days after Notice to Proceed.

3. CPM SCHEDULE UPDATES: The Contractor must submit CPM Schedule updates:

   - Monthly;
   - Whenever changes occur that have potential to delay substantial or physical completion by 5 or more Working Days;
   - Within 5 Working Days of request by the Engineer
   - Within 5 Working Days of achieving Substantial Completion.

a. Progress Meetings: At the discretion of the Engineer, progress meetings may be held monthly for the purpose of updating the CPM schedule. Progress will be reviewed to verify actual start and finish dates, remaining duration and percent complete of uncompleted activities, and any proposed revisions to the schedule. The Contractor must provide the Engineer with the status of activities at such meetings and prepare schedule updates based on this information once it has been verified and agreed upon. If the work is in accordance with the last accepted CPM schedule, the Engineer may waive the monthly update or the final as-built CPM schedule.

   The updated CPM schedule must accurately convey Work progress and the schedule for future work as discussed in the progress meetings or it will be rejected by the Engineer and returned to the Contractor for correction and resubmission.

b. Presentation of Updated Schedules: CPM Schedule updates must conform to the following additional requirements:

   1) Schedule updates must be presented in a "Tracking Gantt" format, showing two sets of Gantt-style progress bars consisting of 1) the latest approved Baseline CPM versus 2) a combination of the actual start/finish progress of completed tasks and projected start/finish dates of uncompleted tasks.

   2) Include columns showing actual or projected start and finish dates of all activities. Identify changes to activity precedents, successors, and/or constraints that have altered the critical path.

   3) Highlight any new activities or additional activities resulting from the restructuring/splitting of existing baseline activity(ies).

   4) Identify the current critical path, which could vary from the baseline critical path due to actual Work progress, additional work, or changed conditions.

   5) Unresolved issues or disputes with asserted time effects may be reflected in a schedule update by comparing the Baseline critical path to the revised critical path shown in an updated schedule.

   6) If Work cannot be completed within the Contract Time, the updated schedule must reflect the earliest completion date practicable, and a narrative must be provided by the Contractor addressing the reason(s) behind the delay. Acceptance of late completion schedules will be at the discretion of the Engineer and does not relieve the Contractor from Liquidated Damages.

   7) When requested by the Engineer, a written narrative describing the project schedule status, the critical path and any revisions to the schedule must be included with the updates.

4. 3-WEEK LOOK-AHEAD SCHEDULE: At each regular (weekly) construction progress meeting, the Contractor must submit a look-ahead schedule showing the anticipated Contractor Work activities, Subcontractor Work activities, any Owner/Engineer activities impacting the Work, and/or major Material deliveries for the next 3 weeks. Include the description, duration and sequence of Work, and highlight any deviations between planned and regular hours of Work.

   The 3-week look-ahead may be reduced to a 2-week look-ahead with the approval of the Engineer.

   Unless otherwise specified in the Contract, the Contractor must notify the Engineer at least 2 Working Days in advance of changing Work as shown in the look-ahead schedule; an updated look-ahead schedule must be submitted with such notification.

C. SUBMITTALS: The Contractor must submit one (1) paper copy of the CPM schedule (in Gantt chart format, with columns displayed to show predecessors and successors of each activity) and any accompanying narrative; and one (1) full electronic copy in selected CPM software format. Unless approved otherwise by the Engineer, the CPM Schedule must be printed on 24" x 36" paper or larger. The CPM Schedule and any narrative must also be submitted in PDF format.

   The Gantt chart format is a standard method of presenting schedule information. The following standard requirements apply:

   1. The schedule must include a horizontal time scale consistent with the project calendar.
   2. Each activity/task/milestone must be listed in order of start date in a tabular grid to the left of the time scale. The tabular grid must include the task number, description, start date, finish date, predecessors, successors, and float time. Baseline schedules must show the baseline-planned start and finish dates. Update schedules must show the actual/projected start and finish dates.
   3. Each activity must be provided with a corresponding task bar in the horizontal time scale, with a plotted length conforming to its duration and dates.
   4. Linked activities must be indicated by logic arrows in the timescale portion of the Gantt chart, as needed to clearly show the sequence and interdependence of all activities required for complete performance of all items of Work under the Contract.
   5. Activities on the critical path must be highlighted using red task bars.

   The electronic copy of the Critical Path Schedule must be compatible with Microsoft Project or other Engineer approved software. The Contractor shall submit a functional and complete CPM schedule electronically via email, on compact disk (CD), or other medium accepted by the Engineer.

D. SCHEDULE DEVIATIONS: The Contractor, or its Subcontractor(s), must not deviate from the projected start and completion times for major phase(s) of the Work shown on the accepted CPM Schedule without providing at least fourteen (14) Days advance notice to the Engineer. Failure to notify the Engineer of a deviation from projected start and completion times for a major phase of the Work shown on the schedule may impact costs to the Owner, including the cost of additional community outreach to communicate changes in schedule to the public. Resulting costs due to this "failure to notify" are the responsibility of the Contractor. The Owner will deduct these costs from any payment due or to become due to the Contractor.

E. EARLY COMPLETION: The Engineer has established the number of Working Days allowed for Substantial Completion and Physical Completion within Section 3 of the Division 00 52 00 Agreement Form submitted with the Bid, and these timeframes may only be amended by subsequent change order(s). The Engineer allocates resources to a Contract based on the Contract Time. The Engineer will review and accept a Critical Path Schedule indicating an early Substantial and/or Physical Completion Date but cannot guarantee the accuracy of the Contractor's accelerated schedule, nor that Owner resources will be available to meet the accelerated schedule. No additional compensation or time will be allowed if the Contractor is not able to meet its accelerated schedule due to the unavailability of Owner resources, for unforeseen conditions, or for other reasons beyond the Engineer's control.

F. PAYMENT: Compensation for the cost necessary to complete the Work described in this section is considered incidental to and included in all Bid items of Work. No separate payment will be made for the work required in this section.

1.02 SCHEDULED WORK ITEMS:

A. *(None at this time - Edit).*

1.03 SCHEDULE CONSTRAINTS

The Contractor's CPM schedule must reflect constraints imposed by applicable laws and regulations, and those specified in the Contract. Constraints include but are not limited to the following:

1. Submittal Requirements and Review Durations per Section 01 33 10 - Submittals.
2. Holiday Construction Moratorium per Section 01 11 00 - Summary of Work.
3. Safety Restrictions per Section 01 35 29 - Health & Safety.
4. Traffic Control Restrictions per Section 01 55 80 - Public Convenience & Safety-Temporary Traffic Control
5. Environmental Restrictions per Section 01 57 19 - Temporary Environmental Pollution Control.

PART 2 - PRODUCTS: *(Not Used)*

PART 3 - EXECUTION*: (Not Used)*

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION: This Section describes administrative and procedural requirements for Submittal of Shop Drawings, Product Data, Samples, the Submittal Schedule, and other miscellaneous administrative and quality control Submittals.

1.02 RELATED SECTIONS: Other Sections containing requirements related to this Section include, but are not limited to:

- Section 01 32 13 - Progress Schedules
- Section 01 78 39 - Record Documents

1.03 SUMMARY:

A. Submittal Schedule: The Work requires that all product data, samples, and shop drawings be approved prior to the start of the work.

B. Shop Drawings include, but are not limited to, the following: (Note: standard product information prepared without specific reference to the Project does not constitute a Shop Drawing).
1. Fabrication drawings
2. Installation drawings
3. Setting diagrams
4. Shopwork manufacturing instructions
5. Templates and patterns
6. Schedules

C. Product Data include, but are not limited to, the following:
1. Manufacturer's product data
2. Manufacturer's standard installation instructions
3. Standard color charts
4. Catalog cut sheets
5. Roughing-in diagrams and templates
6. Standard wiring diagrams
7. Printed performance curves
8. Operational range diagrams
9. Mill reports
10. Standard product operating and maintenance manuals

D. Samples include, but are not limited to, the following:
1. Partial sections of manufactured or fabricated components
2. Small cuts or containers of materials

3. Complete units of repetitively used materials
4. Swatches showing color, texture, and/or pattern
5. Color range sets
6. Components used for independent inspection and testing

E. Quality control Submittals include, but are not limited to, the following:
1. Design data
2. Certifications
3. Manufacturer's instructions
4. Manufacturer's field reports

F. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative Submittals. Such Submittals include, but are not limited to, the following:
1. Permits
2. Insurance certificates
3. Warranties
4. Listing of subcontractors

1.04 DEFINITIONS:

A. *Field Samples:* Full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.

B. *Intermediate Submittals*: Submittals specifically intended to convey a portion of the overall information needed for the related Work. Such Submittals may identify long-lead items/material that are acceptable for advance ordering, initial/preliminary information requiring preapproval for subsequent development, and other such intermediate items as may be appropriate or convenient for expediting overall Work progress and/or schedule needs. Intermediate Submittals may be specifically identified in the Contract Documents or identified by mutual agreement between the Contractor and Owner during the course of Work.

C. *Mock-ups:* Full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

D. *Submittal Schedule:* See Paragraph 1.05 below.

1.05 RESERVED

1.06 SUBMITTAL PROCEDURES:

A. Coordination: Coordinate preparation and processing of Submittals with performance of construction activities. Transmit each Submittal to the Consultant sufficiently in advance of schedule performance of related construction activities to avoid delay.

1. Coordinate each Submittal with other Submittals and related activities that require sequential activity including:
   a) Testing
   b) Purchasing
   c) Fabrication
   d) Delivery
   e) Other Submittals and related activities that require sequential activity.
2. Coordinate transmittal of multiple related Submittals to avoid delay in processing because of the Consultant's need to review Submittals concurrently for coordination.
   a) The Consultant reserves the right to withhold action on a Submittal requiring coordination with other Submittals until related Submittals are received.
3. Processing: The Contractor must provide Submittals in advance of related Work activities to ensure the minimum required Working Days are provided for the Submittal review and approval process. Minimum review times are as follows:
   a) Ten (10) Working Days for the Consultant's initial review of each Submittal,
   b) Fifteen (15) Working Days if both the Engineer's and the Consultant's review is required.
   c) Allow additional time if the Consultant must delay processing to permit coordination with subsequent Submittals. The Consultant will advise the Contractor when a Submittal being processed must be delayed for coordination.
   d) When Intermediate Submittals are required, each Intermediate Submittal must be treated in the same manner as an initial Submittal.
   e) If a Submittal is rejected or otherwise not approved and requires resubmission, five (5) Working Days are required for each resubmittal that may be required until approval is achieved.
   f) No extension of Contract time will be authorized because of the Contractor's failure to transmit Submittals to the Consultant sufficiently in advance of the Work to allow the minimum required review time.
   g) No extension of Contract time will be authorized for Submittal items that are rejected or otherwise require resubmission due to need for revision.

A. Submittal Preparation: The Contracting Forms Workbook (a Microsoft Excel workbook containing many of the forms commonly used by the Seattle Parks and Recreation Department for Public Works contract administration, and available upon request from the Engineer) contains a form that the Contractor may use for the identification and

transmission of Contract Submittals. If the Contractor elects to utilize their own methods of Submittal processing, the following minimum requirements apply:

1. Place a permanent label or title block on each Submittal for identification.
2. Indicate name of the firm or entity that prepared each Submittal on the label or title block.
3. Provide a space approximately 4 by 5 inches (100 x 125 mm) on the label or beside the title block to record the review and approval status markings and the action taken by the Consultant.
4. Include the following information on the label for processing and recording action taken:
   a) Project name
   b) Date
   c) Name and address of the Consultant
   d) Name and address of the Contractor
   e) Name and address of the subcontractor
   f) Name and address of the supplier
   g) Name of the manufacturer
   h) Number and title of appropriate Specification Section
   i) Drawing number and detail references, as appropriate
   j) Similar definitive information as necessary

C. Submittal Transmittal: Package each Submittal appropriately for transmittal and handling. Transmit each Submittal from the Contractor to the Consultant and to other destinations by use of a transmittal form. The Consultant will return Submittals received from sources other than the Contractor.

   1. Record relevant information and requests for data on the transmittal form. On the form, or an attached separate sheet, record deviations from the requirements of the Contract Documents, including minor variations and limitations.
   2. Include the Contractor's certification stating that information submitted complies with requirements of the Contract Documents.

D. Ordering Materials or Components Requiring Submittal Review: Unless specifically authorized by the Engineer, do not order or procure materials or components before all related Submittals have been reviewed and approved in accordance with the Contract requirements. The Owner will not pay for any unauthorized component or material incorporated in the Work until and unless all related Submittals have been reviewed and approved per Contract requirements. Furthermore, any such Work that does not achieve related Submittal approval will be construed as Defective or Unauthorized Work per Section 00 72 00 paragraph 1.03.G.

1.07 SHOP DRAWINGS:

A. Submit newly prepared information, drawn accurately to scale. Do not reproduce Contract Documents or copy standard printed information as the basis of Shop Drawings.

1. Include the following information on Shop Drawings:
   a) Identification of products and materials included
   b) Compliance with specified standards
   c) Notation of coordination requirements
   d) Notation of dimensions established by field measurement taken by the Contractor
   e) Correlation of Shop Drawings to Contract Documents by reference to sheet number, details, schedule and/or room number.
2. Specifically note and bring to the Consultant's attention any deviations from the Contract Documents that appear on the Shop Drawings.
3. Shop Drawing copies used for Work must bear the appropriate final stamp or other marking indicating approval for Construction by the Consultant. Any Work done based on Shop Drawings that have not been reviewed and approved by the Consultant will be treated as Defective or Unauthorized Work per Section 00 72 00 paragraph 1.03.G.
4. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1050 mm).
5. Copies: Unless the Consultant allows less, submit 5 black-line prints or bond copies for the Consultant's review. The Consultant will return one marked up copy after review. If the Contractor desires more than one copy back, submit additional copies at initial Submittal.

1.08 PRODUCT DATA:

A. Collect Product Data into a single Submittal for each element of construction or system. Mark each copy to show which choices and options are applicable to the project.

1. Where Product Data includes information on several similar products, some of which are not required for use on the Project, mark copies clearly to indicate which products are applicable.
2. Where Product Data must be specially prepared for required products, materials, or systems because standard printed data are not suitable for use, submit as Shop Drawings, not Product Data.
3. Include the following information in Product Data:
   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

4. 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 Submittal.

B. Submittals: Unless the Engineer allows less, submit 5 copies of each required Product Data Submittal. One copy will be returned to the Contractor. If the Contractor desires more than one copy back, submit additional copies. Unless the Consultant or Engineer observes noncompliance with Contract requirements, the Submittal may serve as the final Submittal.

C. Distribution: Furnish copies of final Product Data Submittal to the manufacturers, subcontractors, suppliers, fabricators, installers, governing authorities and others as required for performance of the construction activities. Show distribution on transmittal forms.

1. Do not proceed with installation of materials, products, and/or systems until a copy of reviewed and accepted Product Data applicable to the installation is in the Installer's possession.
2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.09 SAMPLES:

A. Samples must be submitted for all paints, floorings, surfacing materials, paving, and other such materials/products incorporated in the Work, and as additionally described or required elsewhere in the Contract Documents. Submit full-size, fully fabricated Samples, cured and finished in the manner specified, and physically identical with the material or product proposed for use.

1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Consultant's instructions where so indicated. Include the following information:
a) Generic description of the Sample
b) Size limitations
c) Sample source
d) Product name or name of manufacturer
e) Compliance with recognized standards
f) Compliance with governing regulations
g) Availability

h) Delivery time

2. Submit Samples for review of kind, color, pattern, and/or 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.
   a) Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented by a Sample, submit at least 3 multiple units that show approximate limits of the variations.
   b) Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, and details of assembly, connections, operation, and similar construction characteristics.
   c) Samples not incorporated into the Work or otherwise designated as the Engineer's property belong to the Contractor and must be removed from the site prior to Substantial Completion.

B. Intermediate Submittals: Where Samples are provided for selection of color, pattern, texture, or similar characteristics from a manufacturer's range of standard choices, submit a single, full set of available choices for the material or product.
   1. Intermediate Submittals will be reviewed and returned with the Consultant's marking indicating selection (if approved) and action taken.

C. Submittals: Except for Samples intended to illustrate assembly details, workmanship, fabrication techniques, connections, operation, and other characteristics, submit 3 sets of Samples. The Consultant will return one set to the Contractor marked with the action taken, retain one set, and transmit one set to the Engineer.
   1. Maintain sets of Samples, as returned by the Consultant, at the project site, available for quality-control comparisons throughout the course of construction activity.
   2. Unless the Consultant or Engineer observes noncompliance with the Contract requirements, the Submittal may serve as the final Submittal.
   3. Samples and sample sets may be used for quality control comparisons related to acceptance of the Work associated with each Sample. If the finished Work does not match the Sample in any respect (including, but not limited to, color, finish, pattern, texture, consistency, material properties, etc.), the Work will be treated as Defective or Unauthorized per Section 00 72 00 paragraph 1.03.G.

D. Distribution of Samples: Distribute additional sets of Samples to the subcontractors, suppliers, fabricators, manufacturers, installers, governing authorities, and others as required for performance of the Work. Show distribution on transmittal forms.

E. Field Samples specified in individual Specification Sections are special types of Samples. Comply with Sample Submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 QUALITY ASSURANCE SUBMITTALS:

A. Submit quality-control Submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control Submittals as additionally described or required elsewhere in the Contract Documents.

B. Certifications: When the Contract requires certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with the specified requirements. Such Certification must be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

C. Inspection and Test Reports: Requirements for Submittal of inspection and test reports from independent testing agencies are specified in Section 01 45 00 - Quality Control.

1.11 CONSULTANT'S ACTION:

A. Unless specifically stated otherwise, every Submittal must be reviewed by the Consultant, and the Consultant will take appropriate action to accept, reject, or return the Submittal for subsequent revision/correction by the Contractor based on that review. The Consultant will respond consistent within the timeframes described in Section 1.06.A.3 above and per the approved Submittal Schedule described in Section 1.05 above.

1. Compliance with Contract requirements is the Contractor's responsibility. Review, acceptance, and any other action related to any Submittal, regardless of whether such action is taken by the Consultant or the Engineer, is intended primarily as a quality control measure, and shall not relieve the Contractor of the responsibility to comply with Contract Requirements.

2. If the Submittal involves changes to the Drawings and/or Specification requirements, or contains information not reviewed and approved by the Engineer as part of the Contract Documents, the Engineer shall also review and approve the Submittal. Additional time is required for such review per Paragraph 1.06.A.3 above.

B. Action Stamp: The Consultant will stamp each Submittal with a uniform action stamp. The Consultant will mark the stamp appropriately to indicate the action taken, as follows:

1. Final Unrestricted Release: Where Submittals are marked "No Exceptions Taken," the Work covered by the Submittal may proceed, provided it complies with the requirements of the Contract Documents. Final acceptance will depend on that compliance.

2. Final-but-Restricted Release: Where Submittals are marked "Make Corrections Noted," the Work covered by the Submittal may proceed provided it complies with both the Consultant's notations and corrections on the Submittal and requirements of the Contract Documents. Final acceptance will depend on that compliance.

3. Returned for Resubmittal: When a Submittal is marked "Revise and Resubmit," do not proceed with the Work covered by the Submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new Submittal according to the Consultant's directions. Resubmit without delay. Repeat if necessary to obtain an action mark that will allow the Work to Proceed.
    a) Do not permit Submittals marked "Revise and Resubmit" or "Rejected" to be used at the project site or elsewhere where construction is in progress.
4. Other Actions: When a Submittal is primarily for informational or record purposes or for special processing or other activity, the Submittal will be returned, marked "Action Not Required," or "Not Reviewed."

PART 2 - PRODUCTS: (Not Used)

PART 3 - EXECUTION: (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY: This section includes administrative and procedural requirements for cutting and patching existing structures and paved areas. This work is typically only as directed by the Engineer and is not included in the Summary of Work. This work, if directed, is compensated by Modification Proposal and Change Order only.

1.02 RELATED SECTIONS: This Section relates to construction that is incidental to the overall Project and/or is not addressed elsewhere in the Contract Documents. Refer to other sections for specific requirements and limitations applicable to cutting and patching individual elements of the Work.

A. If work involves cutting, patching, and restoration of areas of the Site outside the boundaries of unlimited Contractor access, such activities must be completed in accordance with applicable City of Seattle standard requirements 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.

1.03 SUBMITTALS:

A. Cutting and Patching Proposal: When the Engineer's approval of cutting and patching procedures is required per Section 01 33 10 paragraph 1.11.A.2, submit a proposal for the Engineer's review at least 15 Working Days in advance of when cutting and patching is anticipated. The proposal must be approved by the Engineer prior to proceeding with the Work. Include the following information in the proposal, as applicable:

1. Describe the extent of cutting and patching required. Describe 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 are planned to be performed.
5. Describe methods that will be used to ensure proper prevention, containment, and/or disposal of dust, debris, sediments, chemicals, slurries, hazardous materials, and other construction byproducts. Such methods must comply with all applicable City, County, State, and Federal health and environmental codes. Submit Safety Data Sheets (SDSs) for any chemical products used during cutting and patching.
6. 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.
7. When cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

B. The Cutting and Patching Proposal must be treated as a Submittal requiring the Engineer's review, in full accordance with Section 01 33 10 "Submittals". The Work described by this proposal must not commence until the Submittal has been reviewed and approved in accordance with the Contract requirements. Any such Work that does not achieve related Submittal approval will be construed as Defective or Unauthorized Work per Section 00 72 00 paragraph 1.03.G.

C. Approval by the Engineer to proceed with cutting and patching does not waive the Contractor from the responsibility to perform the Work in accordance with all applicable local, state, and federal regulations and pertinent Contract requirements.

1.04 RETAIN ORIGINAL DESIGN FUNCTION:

A. Identify Structural Elements: All affected structural elements must be specifically identified in and addressed by the Cutting and Patching proposal. Structural elements include, but are not limited to, the following:

1. Foundation construction.
2. Bearing and retaining walls.
3. Structural concrete.
4. Structural steel.
5. Lintels.
6. Timber and primary wood framing.
7. Structural decking.
8. Stair systems.
9. Miscellaneous structural metals.
10. Equipment supports.
11. Piping, ductwork, vessels, and equipment

B. 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.

C. Identify Operational Elements/Systems: All affected operational systems or elements must be specifically identified in and addressed by the Cutting and Patching proposal. Such elements include, but are not limited to, the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Water, moisture, or vapor barriers.
4. Membranes and flashings.

5. Fire protection systems.
6. Noise and vibration control elements and systems.
7. Control systems.
8. Communication systems.
9. Conveying systems.
10. Electrical wiring systems.

D. Requirements for Operational Elements/Systems: Do not cut and patch operating elements, systems, or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements, systems, or related components in a manner that would result in increased maintenance or decreased operational life or safety.

E. Visual/Aesthetic 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 pre-existing aesthetic qualities. Do not cut and patch construction in a manner that would result in visible 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/or repair materials and surfaces modified or damaged by construction activities in such a manner as to maintain any existing warranties currently in effect. The Contractor must request from the Engineer information about existing warranties in effect before associated work commences.

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. Prior to cutting, examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

B. Prior to cutting, meet at the Project Site with parties involved in cutting and patching and the structures/surfaces being cut, including mechanical and electrical trades and utility representatives if/as applicable. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION: The following preparatory measures must be fully described in the Cutting and Patching Proposal and incorporated in the Work in accordance with the approved Proposal.

A. Temporary Support: Provide temporary support of work to be cut.

B. Temporary Erosion and Sediment Control: Provide TESC measures in accordance with the Contract and applicable regulations.

C. Safety: Utilize safety equipment, methods, and personnel as required by the Contract and applicable regulations.

D. 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.

E. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

F. Avoid cutting existing pipe, conduit, or ductwork serving the Project unless absolutely necessary. If so, provide temporary or permanent alternative services prior to beginning the Work.

3.03 PERFORMANCE:

A. Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

B. Cut existing construction only to the extent necessary to accommodate execution of the related Contract Work, and as may be needed for subsequent fitting and patching required to restore surfaces to their original condition.

C. Cutting Methods: Cut existing construction using methods least likely to damage retained elements 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 required size, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut 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 when cutting and patching requires excavating and backfilling.
5. When 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.

D. 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 as necessary to achieve uniform color and appearance.
4. 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.
5. 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

PART 1 - GENERAL

1.01 DESCRIPTION: This Section covers the requirements for compliance with health and safety precautions and controls for projects without hazardous waste operations.

1.02 RELATED SECTIONS:

A. Section 01 33 10 - Submittals

1.03 HEALTH AND SAFETY PLAN:

A. Within five (5) days after receipt of Notice to Proceed, the Contractor must submit a site-specific Health and Safety Plan addressing health and safety management methods specific to the project *and that meets all federal, state and local health and safety regulations and policies.* The Plan must include the following, at minimum:

1. The name of the individual at the jobsite responsible for implementation and compliance with this Plan.
    a. The Plan must include a "Competent Person Evaluation" (see Section 00 60 00) if the project involves excavations covered by WAC 296-155.
    b. If applicable, the Plan must include the name and qualifications of any electrical safety observer to be provided by the Contractor.
2. Protection of the public.
3. A description of tasks to be undertaken, and equipment mobilized for this project.
4. A list of all known safety or health hazards, problems, and proposed control mechanisms.
5. Safety Data Sheets (SDS) of and procedures for use, disposal, and storage of all chemicals, products, or materials regulated by WAC 296-62 to be used by the Contractor.
6. A list of personal protective equipment, monitoring devices, and hazard-specific plans or permits as appropriate and required by State and Federal regulations.
7. A description of emergency response measures and equipment available for emergency response to address accidents and releases of materials, including but not limited to first aid, eye wash/showers, and fire extinguishing equipment. Include location of this equipment at the jobsite.
8. Emergency phone numbers contacts, and location of the nearest medical facility.
9. A monitoring and inspection plan and record keeping measures to ensure that equipment and work practices comply with this Plan.
10. Personnel names, training and notification procedures as appropriate to ensure that all jobsite personnel are familiar with the Plan elements. Include copies of training certificates.

11. Procedures for safe storage and handling of flammable liquids, in accordance with WAC 296-24-330.
12. If applicable, the Contractor must include procedures for safe storage and handling of compressed gasses in accordance with WAC 296-24-295, Compressed Gas General Requirement.
13. Other issues which the Contractor determines are appropriate and necessary to protect worker safety and health.

1.04 ACCIDENT REPORTING:

A. Serious accidents such as those resulting in treatment of an injury at a medical facility, response to the site by emergency medical personnel or damage to property other than that of the Contractor must be reported to the Engineer within twenty-four (24) hours of the occurrence.

B. A copy of each accident report which the Contractor or subcontractors have submitted to their insurance carriers must be forwarded to the Engineer as soon as possible, but in no event later than seven (7) calendar days after the accident occurred.

1.05 HEALTH AND SAFETY REPRESENTATIVE:

A. The Contractor must designate a Health and Safety Representative and must ensure that each Subcontractor designates a Subcontractor's Health and Safety Representative. The Health and Safety Representative must be capable of identifying all hazards and have the authority to stop work and take immediate action to correct the hazard.

B. The Contractor must authorize each such Health and Safety Representative to resolve safety-related issues raised by the Owner or any of its employees, including the Seattle City Light Safety Observer if applicable.

C. The Contractor must ensure that such Health and Safety Representative is present on the Project Site whenever the Owner Safety Observer is present on the Project Site.

D. Each Contractor's or Subcontractor's Health and Safety Representative must identify himself or herself to the Engineer and the Owner Safety Observer at the briefing/tailgate conference.

E. The Health and Safety Representative must verify that all work is performed in accordance with the Health and Safety Plan.

F. At the daily job briefing and/or tailgate conference, Contractor must provide the Owner's representative in attendance at the meeting all relevant information on the Work to be performed, its location, and the equipment to be used.

G. The Contractor must provide all safety equipment required for the Work.

H. At minimum, Contractor and Subcontractor personnel directly involved in the Work must have training in:

1. First aid, for each Contractor's and Subcontractor's Health and Safety Representative;
2. Confined space work, if the employees will be working in or around confined spaces;
3. Shoring and trenching, if work will be in excavations; and
4. The Contractor's procedures for confined space rescues.

I. Nothing in this Contract shall be construed as imposing any duty upon the Owner or any of its employees with regard to, or as constituting any express or implied assumption of control or responsibility over, Project Site safety, nor over any other safety conditions relating to employees or agents of Contractor, its Subcontractors, or the public.

1.06 CITY LIGHT SAFETY OBSERVER:

A. Specified in Section 00 72 00 - General Conditions, subparagraph 1.03.B.2.

PART 2 – PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY OF WORK:

A. All workmanship and materials are subject 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 must be promptly removed by the Contractor from the premises and adjacent surroundings.

C. All rejected Work or materials must be promptly replaced by the Contractor to the satisfaction of the Engineer.

D. The Engineer reserves the right to inspect any component of the Work at any time. Such inspections are intended to verify conformance with the design intent as well as workmanship and quality of materials. The Contractor must cooperate with the Engineer's inspections.

E. Inspection requirements are generally identified in the Specification sections pertinent to the Work. The Contractor must provide notification of readiness for inspection to the Engineer a minimum of two (2) full Working Days in advance.

PART 2 - PRODUCTS: (Not Used)

PART 3 - EXECUTION

3.01 INSPECTION AND TESTING:

A. Upon request by the Engineer, the Contractor must furnish test samples of materials at no additional cost. Tests by the Engineer will be conducted in accordance with commonly recognized standards of national materials testing organizations and other test methods as deemed necessary by the Engineer.

B. Any and all materials necessary for the construction of any part of the Work and associated improvements but not otherwise specified in the Contract must be of high quality, sourced from reputable supplier(s) with minimum five years experience in the applicable industry, specifically identified to the Engineer, and are subject to the Engineer's approval.

3.02 SAMPLES:

A. The Contractor must prepare and submit samples required by the Contract sufficiently in advance to allow for retesting or modification of the Work, which may be required at the Engineer's discretion based on the results of the Engineer's evaluation of the samples, as necessary to avoid delaying the Contract's Critical Path Schedule.

3.03 FINAL INSPECTION:

A. The Engineer will conduct a final inspection after all requirements for Substantial Completion have been completed, including all punch list items identified during the Substantial Completion inspection and any other concluding Work elements identified in the Contract. 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.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. This work includes furnishing, installing, operating, maintaining, and removal of temporary construction facilities.

1.02 TEMPORARY FACILITIES:

A. All costs associated with utilities and services required by the Contractor to execute the Contract Work must be borne by the Contractor.

B. Meals, Travel, and Lodging: The Owner will not provide meals, travel, or lodging facilities for the Contractor's personnel.

C. 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 must remove all temporary buildings. All costs associated with temporary buildings and related facilities, including site restoration, must be borne by the Contractor.

D. Toilet Facilities:

1. The Contractor must provide and maintain adequate chemical toilet facilities for all individuals connected with the Work, with separate facilities for men and women.
2. The Contractor must keep the toilet facilities in sanitary condition in accordance with the King County Health Department.
3. The Contractor must remove the toilet facilities at completion of the Contract and must disinfect the premises.

E. The Contractor must make all arrangements for temporary water, electrical, telephone and fire hydrant services. The Contractor must obtain required hydrant use permits from the Seattle Public Utilities, Water Department.

F. The Contractor must maintain the construction area in a neat and orderly condition throughout the Contract. Food and garbage must be stored properly to prevent attracting animals and insects. Remove food and garbage from the site during non-work hours. Use appropriate controls to prevent rodent infestation of temporary facilities and the job site.

G. Staging and stockpiling areas must be as shown on Plan dans/or determined during the pre-construction conference.

H. After completion of Work, the Contractor must remove all temporary facilities and must restore the temporary facilities area(s) to original state or as may be required by the Contract.

1.03 MATERIAL DELIVERY AND STORAGE:

A. Delivery of materials must be made only during the Contractor's working hours and at such times as the Contractor has a representative available to accept delivery.

B. The Contractor must store materials within the work site area at location(s) determined during the pre-construction conference or designated by the Engineer.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. This section consolidates certain requirements from the City of Seattle (COS) Standard Specifications Sections 1-07.23 "PUBLIC CONVENIENCE AND SAFETY", 1-07.28 "NOTIFICATIONS RELATIVE TO CONTRACTOR'S ACTIVITIES", and Section 1-10 "TEMPORARY TRAFFIC CONTROL". In the event of conflict between the COS standards and Section 01 55 80, the stricter requirement prevails.

B. Contract work is expected to require temporary disruptions to pedestrian, bicycle, and vehicular traffic in and around the Park property, specifically but not limited to the Montlake Bike Path and portions of E. Calhoun St. The Contractor shall provide appropriate signage and certified flaggers whenever such disruptions occur.

1.02 CONSTRUCTION UNDER TRAFFIC:

A. The Contractor is responsible for the safety, efficiency, and adequacy of the Contractor's plant, equipment, operation of equipment, and methods of construction; and for any damage or injury resulting from the failure, improper maintenance, use or operation of such plant, equipment or method. See COS Standard Specifications (most recent edition).

B. Notifications Relative to Contractor's Activities:

1. The Contractor must plan and schedule Work activities to conform to and allow time for notifications, approvals, reviews, and other conditions of the Contract Documents. The Contractor must comply with COS Standard Specification Section 1-07.28 regarding required notifications for any of the following Work activities:

   a. For Work that partially or completely restricts any arterial, street, sidewalk, or alley;

   b. Disruptions to, or service modification requests for, METRO transit service

   c. Property access restrictions;

   d. Emergency work involving Pavement, Street Right-of-Way, Sidewalks

C. The Contractor must:

1. Conduct all operations with the least possible obstruction and inconvenience to the public.

2. Limit construction access restrictions to areas wherein the Work can be continuously, vigorously, correctly, and safely prosecuted, with due regard to the access rights of the public.

3. To the extent possible, finish each section before beginning work on the next.

4. Minimize the disruption of public traffic by:

a. Permitting traffic to pass through the Work with the least possible inconvenience or delay except in those areas where safety and lack of space requires detouring the traffic elsewhere.

b. Maintaining existing roads, streets, sidewalks, bikeways, and paths that lie next to or inside the Project open and in good, clean, and safe condition at all times. Deficiencies caused by the Contractor's operation must be repaired at the Contractor's expense. Deficiencies not caused by the Contractor's operations will be repaired by Owner forces at the Owner's expense. The Contractor must also maintain roads, streets, sidewalks, bikeways, and paths adjacent to the Project Site when they are affected by the Contractor's operations. Snow and ice-control debris (such as sand) on the Roadway will be cleaned up by Owner forces at no expense to the Contractor.

c. Removing or repairing any condition resulting from the Work or Contractor's operations that might impede traffic or create a hazard, including the removal of deposits and debris that accumulate on the Roadway surface. At minimum, removal of deposits and debris must occur on a daily basis. If daily removal is insufficient to keep the traffic surfaces clean, the Contractor must perform removal operations on a more frequent basis. If the Engineer determines that more frequent cleaning is impractical or if the Contractor fails to keep the streets free from deposits and debris resulting from the Work, the Contractor must, upon order of the Engineer, remove all clay or other deposits from the tires or between wheels before trucks or other Equipment are allowed to travel over paved streets.

    1) If the Contractor fails or refuses to clean the streets, trucks, or equipment as required by the Engineer, the Engineer may order the Work suspended at the Contractor's risk until compliance with the Contractor's obligation is assured. Alternately, the Engineer may order the streets in question cleaned by others and such costs incurred by the Owner in achieving compliance with these Contract requirements, including cleaning of the streets, will be deducted from monies due or to become due the Contractor on progress payments. The Contractor shall have no claim for delay or additional costs if the Engineer chooses to suspend the Contractor's Work until compliance is achieved.

d. Maintaining existing, permanent signs and not relocating or removing traffic control and street name signs that interfere with construction unless and until absolutely necessary.

e. Installing and maintaining temporary pavement markings and striping on the Roadway using temporary pressure sensitive tape when necessary. The Contractor is responsible for scheduling when to renew striping and pavement marking, subject to the Engineer's approval.

f. Providing access at all times to emergency vehicles such as police, fire, and disaster units.

g. Coordinating construction operations with all disposal firms and transit bus service that may be operating within the Project Site.

1) If METRO operates in the area of Work, the Contractor must maintain the Project Site in such a manner that transit bus service, including access to bus zones, is safe and convenient.

2) Whenever it is necessary to modify METRO Transit Bus or Trolley Service, the Contractor must provide notification in accordance with COS Standard Specifications (most recent edition)

3) Provide safe and convenient access to transit bus zones affected by the Work at all times and maintain the Project Site such that transit bus service is uninterrupted.

4) The Contractor is liable for any damages that may result from failure to provide reasonable access or coordination with affected transit authorities.

h. Keeping existing traffic signal and lighting systems in operation as the Work proceeds. (The Owner will continue the routine maintenance on such systems.)

5. Protect the rights of abutting property owners by:

a. Planning and conducting construction operations so as to minimize the inconvenience caused to abutting property owners;

b. Maintaining ready and convenient access to driveways, houses, buildings, vehicle traffic, and pedestrian traffic along the line of Work, except

1) During those urgent stages of construction when it is impractical to carry on the construction and maintain vehicular and pedestrian traffic simultaneously, or

2) When street closure is required because construction will prohibit safe vehicular traffic.

c. The Contractor must post signs and barricades advising Street closure at the nearest intersections away from the closed portion of the Street and on all cross-Streets. Street closings must not exceed 2 blocks in length at any one time unless approved otherwise by the Engineer.

d. When Street or alley closure is required in the preparation of the Roadway for placement of asphalt pavement, concrete pavement, sewer excavation, or other construction that prohibits safe vehicular traffic, abutting property owners and tenants must be notified per COS Standard Specifications (most recent edition), of any restrictions that might affect access to their property. Notification must be at least 24 hours in advance for residential property, and at least 48 hours in advance for commercial property.

e. Providing temporary approaches to crossing or intersecting roads and keeping those approaches in good condition.

f. Providing an alternative access before closing an existing one whenever the Contract calls for removing and replacing an abutting owner's access. The existing access must not be closed until the replacement access facility is available.

6. When traffic must pass through grading areas, the Contractor must:
   a. Make cuts and fills that provide a smooth, even Roadbed;
   b. Place, in advance of other grading work, enough fill at all culverts and bridges to permit traffic to cross;
   c. If ordered by the Engineer, make roadway cuts and fills in partial-width lifts, alternating lifts from side to side to permit traffic to pass on the side opposite the Work;
   d. Install culverts on half the width of the Traveled Way, keeping the other half open to traffic and unobstructed until the first half is ready for use;
7. After rough grading or placing any subsequent layers:
   a. Prepare the final Roadbed to a smooth, even surface (free of humps and dips) suitable for use by public traffic; and
   b. Settle dust with water, or other dust palliative, as the Engineer may order.
8. If grading work is on or next to a Roadway in use, the Contractor must finish the grade immediately after rough grading and place surfacing Materials as the Work proceeds.
9. Conduct all operations to minimize any drop-offs ("drop-off" is defined as abrupt changes in Roadway elevation) left exposed to traffic during non-working hours. Unless otherwise directed in the Traffic Control Plan, the Contractor must also protect drop-offs left exposed to traffic during non-working hours as follows:
   a. Drop-offs up to 0.20 foot may remain exposed with appropriate warning signs alerting motorists of the condition.
   b. Drop-offs more than 0.20 foot that are in the Traveled Way or Auxiliary Lane will not be allowed unless motorists are informed about the danger of a drop-off immediately ahead of them with appropriate warning signs and protection is provided as indicated in subparagraph 9.c below.
   c. Drop-offs with depths more than 0.20 foot, but no more than 0.50 foot, that are not within the Traveled Way are not allowed unless motorists are informed about the danger of a drop-off immediately ahead of them with appropriate warning signs and further protected by having one of the following:
      1) Channeling devices (Type I barricades, plastic safety drums, or other devices 36 inches or more in height) placed along the traffic side of the drop-off and a new edge of pavement stripes placed a minimum of 3 feet from the drop-off on the traffic side. The maximum spacing, in linear feet, between the devices must not exceed the posted speed limit (miles per hour) at that location.

Signs warning of pavement drop-off, must be placed in advance of and throughout the drop-off treatment.

2) Temporary concrete barrier or other approved barrier installed on the traffic side of the drop-off (with 1 foot between the drop-off and the drop-off side of the barrier) and a new edge of pavement stripe a minimum of 2 feet from the face of the traffic side of the barrier. An approved terminal, flare, or impact attenuator will be required at the beginning of the barrier facing oncoming traffic. For night use, the barrier must have standard delineation such as paint, reflective tape, lane markers, or warning lights.

d. Drop-offs more than 0.50 foot not within the Traveled Way or Auxiliary Lane are only allowed if all of the following conditions are met, and must be marked with appropriate warning signs and further protected as indicated in subparagraph 9.c above:

1) The drop-off is less than 2 feet;

2) The total length throughout the Project is less than 1 mile;

3) The drop-off does not remain for more than three Working Days;

4) The drop-off is not present on any City of Seattle Holiday;

5) The drop-off is only on one side of the Roadway.

e. Drop-offs more than 0.50 foot that are not within the Traveled Way or Auxiliary Lane and are not otherwise covered by the subparagraph 9.d above must be marked with appropriate warning signs and further protected as indicated in subparagraph 9.c.2).

10. Open trenches within the Traveled Way or Auxiliary Lane must have a steel-plate cover placed and anchored over them. A wedge of suitable material, if required, must be placed for a smooth transition between the Pavement Structure and the steel plate. Warning signs must be used to alert motorists of the presence of the steel plates.

D. The Contractor is responsible for providing adequate safeguards, safety devices, and protective Equipment, for taking any other needed actions to protect the life, health, and safety of the public, and to protect property in connection with the performance of the Work covered by the Contract. The Contractor must perform any measures or actions the Engineer may deem necessary to protect the public and property. The responsibility and expense to provide this protection shall be the Contractor's except that which is to be furnished by the Owner as may be specified elsewhere in these Specifications.

E. Nothing contained in this Contract is intended to create any third-party beneficiary rights in favor of any person utilizing the Highway facilities being constructed or improved under this Contract.

1.03 PEDESTRIAN CONTROL AND PROTECTION:

A. When the Work area encroaches upon a sidewalk, walkway or crosswalk area, special consideration must be given to pedestrian safety. Maximum effort must be made to separate pedestrians from the Work area.

B. Protective barricades, fencing, and bridges, together with warning and guidance devices and signs, must be utilized so that the passageway for pedestrians is safe and well defined. Whenever pedestrian walkways are provided across excavations, they must be provided with suitable handrails. Footbridges must be safe, strong, and free of bounce and sway, have a slip resistant coating, and be free of cracks, holes, and irregularities that could cause tripping. ADA-compliant ramps must be provided at the entrance and exit of all raised footbridges to prevent tripping. Adequate illumination and reflectorization must be provided during hours of darkness. All walkways must be maintained at least 4 feet clear width except in areas of unusually heavy pedestrian traffic such as business districts, where the minimum clear width must be 8 feet.

C. Where walks are closed by construction, an alternate walkway must be provided, preferably within the planting strip. Where it is necessary to divert pedestrians into the roadway, barricading or channeling devices must be provided to separate the pedestrian walkway from the adjacent vehicular traffic lane. At no time shall pedestrians be diverted into a portion of a Street used concurrently by moving vehicular traffic.

D. At locations where adjacent alternate walkways cannot be provided, appropriate signs must be posted at the limits of construction and in advance of the closure at the nearest crosswalk or intersection to divert pedestrians across the Street.

E. Physical barricades must be installed to prevent visually impaired people from inadvertently entering a closed area. Pedestrian walkways must be wheelchair accessible at all times. Pedestrian access must be maintained to all properties adjacent to the construction site.

1.04 TEMPORARY TRAFFIC CONTROL:

A. General:

1. Installation and maintenance of temporary traffic control for pedestrian and vehicular traffic within the public Right of Way must be performed in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD) as supplemented by the current edition of The City of Seattle "Traffic Control Manual for In-Street Work" (hereinafter referred to as the "Seattle Traffic Control Manual") and such additional requirements as may be included in the Contract. The Manual on Uniform Traffic Control Devices for Streets and Highways" may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402. The City of Seattle "Traffic Control Manual for In-Street Work" may be obtained from the office of the SDOT, at 206-684-5087.

2. The Contractor must:
    a. Provide flaggers, signs, and other traffic control devices not otherwise specified as being furnished by the Engineer;
    b. Not work on or adjacent to any traveled way until all necessary signs and traffic control devices are in place;
    c. Unless the section of Street is to be completely closed to vehicular traffic, schedule and plan the Work to permit:
        1) The maximum number of traffic lanes normally available to be opened in the direction of the heaviest flow of traffic during the peak hours;
        2) Maintain 2-way traffic at all times except on "one-way" Streets. Additional width for facilitating traffic flow may be obtained by requesting on-Street parking to be prohibited adjacent to the work area;
        3) Maintain traffic on a paved surface whenever possible. In the event that a graveled or dirt surface must be used as a detour, maintain a smooth surface and control dust;
    d. Maintain safe conditions adjacent to the Job Site:
        1) Clean up spillage from trucks on the pedestrian or driving surface adjacent to the work area. See COS Standard Specifications (most recent edition), and Paragraph 1.02 of this Section.
        2) Provide safe and protected pedestrian ways. See Paragraph 1.02 of this Section.
        3) Not park or place construction equipment to create an unnecessary sight distance obstruction or other safety issue for vehicular or pedestrian traffic.
        4) Maintain work area traffic control devices in a proper condition on an "around the clock" basis regardless of whether work is actively being done. In addition, the Contractor must assure that tools and equipment are properly stored and excavation bridging is secure and adequately covering excavation.
    e. Erect and maintain all construction signs, warning signs, detour signs, and other traffic control devices necessary to warn and protect the public at all times from injury or damage resulting from the Contractor’s operations.
    f. Be liable for injuries and damages to persons and property suffered by reason of the Contractor’s operations or any negligence in connection therewith.
    g. Construct, maintain in a safe condition, keep open to traffic, and remove when no longer needed detours and temporary approaches that will accommodate traffic diverted from the Roadway, walkway or bridge during construction. On-site or off-site detours required or necessitated by the Work, including side Street crossings, temporary bridges, utilization of one or more lanes of the construction area for maintenance of through traffic, and related traffic control is the responsibility of the Contractor.

B. Traffic Control Management:

1. General:

   a. All Projects in Street areas will be inspected with regard to type and placement of pedestrian and vehicular traffic control devices. Traffic control devices not meeting the requirements of the Seattle Traffic Control Manual are considered non-standard. Non-standard traffic control devices must not be used unless specifically approved for use, in writing, by the Engineer.

   b. The Contractor must patrol the traffic control area as often as necessary, but at least daily, and reset all disturbed signs and traffic control devices. Signs and other traffic control devices must be removed or covered during periods when they are not necessary.

   c. Before beginning Work, the Contractor must designate an individual or individuals to perform the duties of Traffic Control Manager (TCM) and Traffic Control Supervisor (TCS). These individuals must be in continuous responsible charge of traffic control. A TCM and TCS are required on all Projects that require traffic control. The TCM may also perform the duties of the TCS. The Contractor may identify no more than six alternate employees that can assume the duties of the assigned or primary TCM and TCS in case of the primary person's inability to perform. Such alternates must be adequately trained and certified to the same degree as the primary TCM and TCS.

   d. The Contractor must maintain 24-hour telephone numbers at which the TCM and TCS can be contacted and be available upon the Engineer's request at other than normal working hours. The TCM and TCS must have the appropriate personnel, equipment, and material available at all times to correct any deficiency in the traffic control system.

2. Traffic Control Manager (TCM) - The duties of the TCM include:

   a. Discussing proposed traffic control measures and coordinating implementation of the Contractor-adopted traffic control plan(s) with the Engineer;

   b. Coordinating all traffic control operations, including those of Subcontractors, Suppliers, and any adjacent construction or maintenance operations;

   c. Coordinating the Project's activities (such as ramp closures, Road closures, and lane closures) with appropriate police, fire control agencies, city or county engineering, medical emergency agencies, school districts, disposal companies, and transit companies;

   d. Overseeing all requirements of the Contract that contribute to the convenience, safety, and orderly movement of vehicular and pedestrian traffic;

   e. Having the latest adopted edition of the Seattle Traffic Control Manual and applicable standards and Contract available at all times on the Project Site;

   f. Attending all Project meetings where traffic management is discussed;

g. Review TCS's diaries daily and be responsible for knowing "field" traffic control operations.

3. Traffic Control Supervisor (TCS):

   a. A TCS must be on the Project whenever traffic control labor is required or as authorized by the Engineer.

   b. The TCS must personally perform all the duties of the TCS. During non-work periods, the TCS must be able to be on the Job Site within a 45-minute period after notification by the Engineer.

   c. The TCS's duties include:

      1) Inspecting traffic control devices and nighttime lighting for proper location, installation, message, cleanliness, and effect on the traveling public. Traffic control devices must be inspected each work shift except that Class A signs and nighttime lighting need to be checked only once a week. Traffic control devices left in place for 24 hours or more must also be inspected once during the non-working hours when they are initially set up (during daylight or darkness, whichever is opposite of the working hours).

      2) Preparing a daily traffic control diary, which must be submitted to the Engineer no later than the end of the next Working Day to become a part of the Project records. The Contractor may use WSDOT Forms 421-040A and 421-040B or the Contractor's own form if it is approved by the Engineer. The TCS must include in the diary such items as:

         a) When signs and traffic control devices are installed and removed
         b) Location and condition of signs and traffic control devices
         c) Revisions to the traffic control plan
         d) Lighting utilized at night
         e) Observations of traffic conditions.

      3) Ensuring that corrections are made if traffic control devices are not functioning as required. The TCS may make minor revisions to the traffic control plan to accommodate site conditions as long as the original intent of the traffic control plan is maintained and the revision has concurrence of the Engineer.

      4) Attending traffic control coordinating meetings or coordination activities as authorized by the Engineer.

   d. Possession of a current flagging card by the TCS is mandatory.

   e. A reflective vest and a hard hat must be worn by the TCS.

4. Contractor's Refusal or Failure to Act:

   a. Upon failure or refusal of the Contractor to comply with the Engineer's Written Notice to:

      1) Provide adequate flaggers,

2) Provide, erect, maintain, and remove, as applicable, barricades, signs, lights, on-site or off-site detours or detour bridges, or

3) Provide any Work required by Paragraph 1.02 or Paragraph 1.03 of this section.

4) Follow the Engineer's order to do 1), 2), or 3), the Engineer shall have the option to do one or any combination of the following:

a) Suspend the Work without further notice to the Contractor or the Contractor's Surety until the Contractor complies with the Engineer's order (see Section 00 72 00, Paragraph 1.08.G),

b) Provide an off-duty uniformed police officer at no additional cost to the Owner, or

c) Provide, erect, maintain and remove barricades, signs and lights at no additional cost to the Owner, by the Owner's forces or by others, and

d) Deduct all costs related to the above items from any progress payments due or coming due the Contractor.

b. The above options shall not bar the Owner from exercising other remedies because of the Contractor's failure or refusal to comply with a contractual obligation.

5. Traffic Control Plans:

a. Content and Submittal Requirements

1) Based on the Contractor's intended method of performing the Work, the Contractor must develop, adopt, and submit to the Engineer a specific Traffic Control Plan (TCP) or plans for protecting and controlling pedestrian and vehicle traffic during construction operations. A separate TCP is required for each work location within the Street Right of Way. Typical plans may be submitted for areas with identical traffic requirements. Typical plans must be clearly labeled to indicate all locations the plan is to represent. TCPs must address any street or lane closure or other restrictions that may be specified in the Contract.

2) TCP submittal must be made at least 10 Working Days before planned implementation to allow for Engineer evaluation of the proposed vehicular and pedestrian routing, flagging, and placement of signage and other traffic control devices. The Contractor must not begin Work in the Street Right of Way until an approved TCP for the specific location has been returned by the Engineer. Submittals must be in accordance with Section 01 33 10. A minimum of two copies must be provided for each TCP.

3) Traffic Control Plans (TCPs) must indicate:

a) Vehicular and pedestrian traffic routing

b) Proposed location of flaggers, barricades, lighting, signing, and other traffic control devices in relation to existing Roadway edges and lane markings

c) Proposed number of working hours;
d) Arrangements for access to buildings within and immediately adjacent to construction site;
e) Arrangements for emergency exiting from buildings within and immediately adjacent to the Project Site;
f) Anticipated driveway blockage resulting from construction operations;
g) Restrictions to on-street parking within immediate vicinity of site, including arrangements for hooding parking meters as necessary;
h) Arrangements for temporary passenger and commercial loading and unloading zones, and temporary bus stop zones;
i) Identification and description of temporary lateral relocations of trolley overhead wire system if necessary to maintain trolley service;
j) Routing of construction trucks;
k) Coordination in sequencing traffic control with scheduling of Work and work locations.

4) When the signing of a particular area will be provided as detailed on one or more of the figures included in the Seattle Traffic Control Manual without modification, the Contractor may reference the applicable figure number, shown in the manual, at the appropriate location on the Drawings. When this procedure is used, variable distances such as minimum length of taper must be specified by the Contractor. The spacing proposed for barricades and cones must also be specified.

5) If the Contractor's proposed pedestrian or traffic control measures differ from the traffic control requirements in the Seattle Traffic Control Manual, the Contractor's alternate traffic control plan must detail the specific location of each construction sign, flagger, and other traffic control device. The Contractor's alternate method for traffic and pedestrian control must be developed in accordance with the same established standards for plan development demonstrated by the figures in the Seattle Traffic Control Manual. Acceptance of alternative traffic control measures is entirely at the discretion of the Engineer. The Contractor shall have no claim for an equitable adjustment:
   a) For using alternative measures;
   b) If the proposed alternate measures are rejected or modified;
   c) If requests to use non-standard traffic control devices are rejected or modified.

6) The Contractor must plan and schedule Contractor work activities to conform to and allow time for notifications, reviews, approvals, and acceptance of Submittals as specified in the Project Manual and COS Standard Specifications (most recent edition).

b. Conformance to Established Standards:

1) The condition of signs and traffic control devices must be new or "acceptable" as defined in the book Quality Standards for Work Zone Traffic Control Devices, and may be accepted based on a visual inspection by the Engineer. The Engineer's decision on the condition of a sign or traffic control device shall be final. When a sign or traffic control device becomes classified as "unacceptable" it must be removed from the Project and replaced with 12 hours.

2) The book, Quality Standards for Work Zone Traffic Control Devices, is available by writing to the American Traffic Safety Service Association, 5440 Jefferson Davis Highway, Fredericksburg, VA 22407, at (540)-898-5400, and Fax (540) 898-5510.

3) Requests to use non-standard traffic control devices must be submitted with the TCP or by submitting a modification to the TCP.

c. ***Traffic Control Restrictions***

1) Project-Specific Street and Lane Closure Restrictions, if applicable, are specified in subparagraph 1.04.B.5.c.1 of this section OR Reserved

2) ***In addition to the project-specific street and lane closure restrictions specified in subparagraph 1.04.B.5.c.1 above, the*** Arterial approaches to the Streets being paved must remain open to vehicular traffic for their full Roadway widths except when paving across Arterial crossings. During such periods, the cross Streets may be closed for a minimum amount of time as approved by the Engineer. Prior to the closure of any Arterial cross street, the Contractor must submit to the Engineer a TCP for the location detailing the traffic controls to be used to reroute traffic. Traffic must not be rerouted without approval of the TCP by the Engineer.

3) The Contractor shall have no claim due to a TCP being rejected or modified by the Engineer.

d. Time of Work:

1) Except as itemized in subparagraph 1.04.B.5.c of this section, no work shall be scheduled in the traveled way on arterial streets during "peak traffic hours" without written authorization from the Engineer. Unless otherwise specified "Peak Traffic Hours" are from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM with the following exceptions:

(a) For the Central Business District peak hours are from 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM

(b) For Aurora Avenue peak hours are from 6:00 AM to 9:00 AM and 3:00 PM to 7:00 PM.

2) The Contractor must discontinue Work if conflict exists with special events such as parades, sporting events, miscellaneous rallies, and large public

meetings or with seasonal conditions, such as Christmas. Information concerning such events can usually be obtained from 206-684-5098.

3) No construction activities will be allowed on any portion of a Project that lies within the Central Business District or the Pioneer Square area during the Christmas season, Thanksgiving Day through New Year's Day inclusive.

(a) The Central Business District is that area within the boundaries of Interstate 5 on the east, Seneca Street on the south, 1st Avenue on the west, Virginia Street and Denny Way (east of Fairview Avenue) on the north.

(b) The Pioneer Square Area is that area within the boundaries of Alaskan Way on the west, 2nd Avenue and 2nd Avenue South on the east, Columbia Street on the north and King Street on the south.

e) Parking:

1) Where parking restricts traffic flow or is a hazard to through traffic or to the construction work, parking may be restricted either entirely or during the time when it creates a hazard. Parking restrictions within construction and maintenance areas may be requested by the Contractor and must be approved by the Engineer. In areas where parking meters are present, the Contractor must apply to SDOT for installation of meter covers restricting such parking. Where no meters are present, the Contractor must contact SDOT so that the Contractor may install "NO PARKING" (T-39) easel signs. Signs must be inspected by a parking enforcement officer or uniformed peace officer 24 hours prior to enforcement. See COS Standard Specifications (most recent edition) for notification requirements.

2) "NO PARKING" signs must conform in message, dimension and color as indicated in Part V of the "Seattle Traffic Control Manual". Spacing of signs must be in accordance with pertinent Project Site requirements.

3) "NO PARKING" (T-39) easel signs must be installed at an approximate interval of 50 feet to 75 feet, with a minimum of four units, per each full block. For partial block parking prohibition, R-101's or T-39's should be installed at approximately 50-foot intervals with R-160 signs at the terminus as shown in Figure V-1 of the "Seattle Traffic Control Manual".

4) The employees of the Contractor must not park their private vehicles on the Street, at the Job Site, or in commercial areas where general parking has been prohibited for construction or safety purposes.

C. Flagging, Signs, and Other Traffic Control Devices:

1. Flagging:

a. General

1) Flaggers must have a current certification (flagging card) from the State Department of Labor and Industries (WAC 296-155-305), except where the flagging job requires a uniformed off-duty peace officer. The Contractor must furnish all personnel for flagging and for the setup and removal of all

temporary traffic control devices and construction signs necessary to control traffic during construction operations. Prior to performing any traffic control work on the Project, these personnel must be trained with the video, "Safety in the Work Zone" produced jointly by WSDOT and Laborers' International Union of North America. The video is available from WSDOT's Engineering Publications Office, Transportation Building.

2) Pursuant to WAC 296-155-305, flaggers and spotters must possess a current flagging card issued by the State of Washington Department of Labor and Industries. Current flagging cards from Oregon and Idaho are also acceptable. The flagging card must be immediately available and shown to the Engineer upon request.

3) Workers engaged in flagging or traffic control must wear reflective vests and hard hats. During hours of darkness, white coveralls or white or yellow rain gear must also be worn. The vests and other apparel must be in conformance with subparagraph 1.04.C.1.b below. During hours of darkness flagger stations must be illuminated to ensure that flaggers can easily be seen without causing glare to the traveling public. The Contractor must furnish the MUTCD standard Stop/Slow paddles (18 inches wide, letters 6 inches high and reflectorized) for the flagging operations.

b. High Visibility Apparel and Equipment:

1) Flaggers must wear reflective vests and hard hats for the flagging and control of traffic. This equipment must be used by the flaggers while flagging traffic. The Contractor must also provide any such equipment that is necessary or desirable to protect personnel engaged in all Work activities.

2) The Contractor must require all personnel at the work site under their control (including Subcontractors and lower tier Subcontractors) to comply with the following:

a) To wear reflective vests, except that during daylight hours, orange clothing equivalent to "Ten Mile Cloth" or hunter orange may be worn in lieu of reflective vests.

b) To wear white coveralls at night

c) Whenever rain gear is worn during hours of darkness, it must be white or yellow.

d) The reflective vests must always be the outermost garment.

3) Exceptions to the above requirements are:

a) When personnel are out of view of or not exposed to traffic.

b) When personnel are inside a vehicle.

c) Where it is obvious that such apparel is not needed for the employee's safety from traffic.

4) Reflective vests must have a minimum of 100 square inches of reflective surface distributed 30 percent on the front and 70 percent on the back. The

retro-reflection value at an entrance angle of -4 degrees and an observation angle of 0.2 degrees must be a minimum 500 candle power for the reflective surface of the vest. Reflective vests, hard hats, white coveralls, rain gear, and other apparel must be furnished and maintained in a neat, clean, and presentable condition at no additional cost to the Owner.

2. Traffic Control Vehicles:

   a. The traffic control vehicle must be equipped with a roof or post-mount flashing amber light visible for 360 degrees. Truck and construction equipment that encroaches onto the traveled roadway for any reason must also be equipped with flashing yellow warning lights. Unless one or more flaggers are present to control traffic, supplementary traffic control devices must be placed to warn, slow down, and if necessary divert traffic around such Equipment.

3. Construction Signs:

   a. General

      1) The Contractor must furnish, install and maintain all traffic control signs required by the Contract or a Contractor's approved TCP. These include:
         a) Temporary traffic control signs referenced in the Seattle Traffic Control Manual
         b) Any permanent signs located in the construction area that are temporarily relocated, damaged or destroyed by the Contractor or a third party prior to the Physical Completion Date

      2) When all or some of the necessary signs or traffic control devices are to be furnished by the Engineer, it will be so specified in the Contract.

      3) The Contractor must:
         a) Provide the posts or supports.
         b) Erect and maintain signs in a clean, neat, and presentable condition until the Engineer approves their removal.
         c) Take signs, posts, or supports down when the need for such signs has ceased. All posts and supports must be removed from the Project and shall remain the property of the Contractor.
         d) Remove all non-applicable signs, or completely cover with metal or plywood, during periods when they are not needed.
         e) Return to the Engineer in good condition any Engineer-furnished signs. All such signs lost, stolen, damaged, or destroyed must be replaced by the Contractor in kind at the Contractor's expense or their value will be deducted from the Contractor's payments.

      4) All control signs necessary for nighttime traffic control must be fully reflectorized.

      5) Existing traffic control and Street name signs that interfere with construction must be relocated or removed by the Contractor and temporarily stored in a

safe place. Any "STOP", "YIELD", and "ONE-WAY" signs may be removed or relocated only upon specific approval by the Engineer. Existing signs must not be removed until the Contractor has provided temporary measures sufficient to safeguard and direct traffic after the existing signs have been removed. Except as otherwise provided in the Contract, preservation and maintenance of traffic control and street name signs is the sole responsibility of the Contractor.

6) As Work progresses and as conditions permit, temporarily relocated or removed traffic and Street name signs must be reset in their permanent location by the Contractor (see 600 series applicable Standard Plans regarding sign and post installation). Signs and other traffic control devices damaged or lost by the Contractor must be replaced or repaired by the Contractor at no additional cost to the Owner. The decision as to whether a sign must be repaired or replaced shall be the Engineer's, and such decision is final and binding on the Contractor.

7) Traffic control signs, other than parking prohibition signs, which are required to be installed ahead of construction activities, must be installed immediately before the construction activity begins. The Contractor may elect, as a matter of convenience in advance of the scheduled construction activity, to install and effectively cover the signs until the construction activity begins.

8) Each construction sign is designated as one of two classes – Class A and Class B. In case of disputes, the Engineer will determine if a construction sign is considered as a Class A or B construction sign.

9) When Class A or B construction signs are required, the work to provide these signs includes:
   a) Furnishing, removing, and disposing of the posts or supports for the signs.
   b) Initial acquisition from the Engineer and ultimate return to the Engineer of the required Engineer-furnished signs
   c) Initial installation and subsequent removal of both Class A and B construction signs
   d) All other incidentals necessary for providing Class A or B construction signs must be in accordance with the approved TCPs.

b. Class A Signs:

1) Class A construction signs are those signs that remain in service throughout the construction or during a major phase of the Work. Class A construction signs must be installed as required by the Contract. They are mounted on posts, existing fixed structures, or substantial supports of a semi-permanent nature. Sign and support installation for Class A signs must be in accordance with the Contract Drawings or the applicable standard plans.

c. Class B Signs:

1) Class B construction signs are those signs that are placed and removed daily, or are used for short durations that may extend for one or more days. They are mounted on portable or temporary mountings. If it is necessary to add weight to the signs for stability, a bag of sand that will rupture on impact must be used. The bag of sand must:
   a) Be furnished by the Contractor.
   b) Have a maximum weight of 40 pounds.
   c) Be suspended no more than 1 foot from the ground.
2) No separate Bid item will be provided in the Bid Form for Class B construction signs. Signs, posts, or supports that are lost, stolen, damaged, destroyed, or that the Engineer deems to be unacceptable while their use is required on the Project, must be replaced by the Contractor at no additional cost to the Owner.
3) Sign materials must conform to the requirements of the City of Seattle Standard Specifications for Signing Materials and Fabrication.
4) Signs used during the hours of darkness must be properly reflectorized (see the COS Standard Specifications for Signing Materials and Fabrication) except for parking and pedestrian prohibition signs. Paint impregnated with glass beads is not allowed. Where reflectorization is rendered ineffective due to extraneous light sources, the sign must be illuminated either externally or internally. Where external illumination is used, the source must be properly shielded to reduce glare. Street or highway lighting is not considered adequate for illuminating signs. All reflectorized or illuminated signs must be checked by the Contractor during the hours of darkness to ensure that they are functioning properly.
5) Signs must be constructed from material that will not deteriorate abnormally under normal weather conditions. Sign blanks must be weatherproof plywood or non-corrosive metal. Roll-up signs fabricated from vinyl-coated nylon or vinyl-coated nylon mesh may also be used. Only reflectorized signs may be used at night.

4. Temporary Traffic Control Devices:
   a. General:
      1) Traffic control devices must be installed such that they are readily visible to approaching traffic. Traffic control devices must be placed such that they allow the driver to see from one device to the next and are in the same position on successive days unless changes in construction work dictate otherwise.
      2) When the Bid Form includes the Bid item "Maintenance and Protection of Traffic Control", then this work must include furnishing, installing, maintaining, relocating, and removing barricades, flashers, cones, traffic

safety drums, and other temporary traffic control devices and work as specified in this subparagraph 1.04.C.4.

b. High Level Warning Device:

1) A "High Level Warning Device" is required for each separate work area in the Roadway. Device materials and usage must conform to the Seattle Traffic Control Manual. A high level warning device must be installed for all temporary work in the roadway and as a supplement to warning signs. Depending on the situation, high level flags may be attached to a service vehicle or placed directly on the roadway in advance of the obstruction. The device must be placed in the middle of the closed lane and must always be placed behind appropriate channeling devices. Normally, one unit should be used for each lane closed; however, additional units may be used if appropriate. A high level warning device should always be the first traffic control equipment to be placed as it will provide a degree of protection during the positioning of other devices.

c. Paint Lines and Legends:

1) When paint lines are obliterated due to construction activities or pavement restoration, temporary pressure-sensitive pavement marking tape, traffic buttons, or delineators must be installed where designated by the Engineer. These temporary features must remain intact and in place until installation of permanent traffic channelization.

2) Temporary centerline striping must consist of placing strips of pressure- sensitive pavement marking tape at 10-15 foot intervals along the centerline. Temporary marking tape must be placed in sets of two 12-inch strips of yellow 4-inch wide marking tape set 4 inches apart and parallel to the center line with each set of 1-foot double line spaced 10 to 15 feet along the center line of the Roadway. Additional temporary striping must be installed wherever designated by the Engineer.

3) Temporary stop bars must consist of a 12-inch wide stop bar made up of three parallel 4-inch strips of temporary pavement marking tape placed at locations designated by the Engineer. All other temporary pavement markings utilizing pavement-marking tape must be as designated by the Engineer.

4) Pressure-sensitive pavement marking tape used on the wearing course prior to installation of permanent lane markers, traffic buttons, or permanent paint striping must be removed from the pavement concurrent with, or immediately subsequent to, the installation of permanent pavement markings.

5) Temporary pavement markings must be maintained in serviceable condition by the Contractor for the duration of time it is in use. Layout and marking in preparation for application and the application and removal of the temporary striping is the Contractor's responsibility. The Engineer will provide the

layout for permanent lane markings as specified in the City of Seattle Standard Specifications for Preliminary Spotting.

6) Temporary pavement marking tape must meet the requirements of the COS Standard Specifications for Pressure Sensitive Tape.

d. Barricades and Channelization Devices:

1) The Contractor must place and maintain necessary barricades, vertical barricades, drums, cones or other channeling devices as are needed to warn and alert drivers and pedestrians on or near the Traveled Way or construction area, and to guide and direct them safely past the construction area.

e. Lighting Devices:

1) Roadway and pedestrian illumination systems must be maintained in operation for all Traveled Ways open to traffic. See the COS Standard Specifications for Illumination and Lighting Devices, Construction Requirements.

2) Barricades or drums used at night must be equipped with approved yellow warning lights. The Contractor must keep existing traffic signal systems and pedestrian and Street lighting systems in operation for the benefit and safety of the traveling public during progress of the Work, unless otherwise directed by the Engineer. The Owner will continue the routine maintenance of traffic signal, pedestrian and Street lighting systems. The Contractor is responsible for replacing missing or damaged signs and posts.

f. Speed and Parking Control:

1) In those areas where construction operations have changed Road conditions, such additional hazards as reduced lane width, open trenches, temporary Roadway, etc., may be considered as evidence of need for an alteration of the legal (or posted) speed limit. Requests for alteration of the legal speed limits on City Streets must be submitted to the Engineer. Costs related to speed limit revisions and parking control must be borne by the Contractor and at no additional cost to the Owner.

5. Construction and Maintenance of Detours:

a. Unless otherwise approved, the Contractor must maintain two-way traffic during construction. The Contractor must build, maintain in a safe condition, keep open to traffic, and remove when no longer needed:

1) Detours and detour bridges that will accommodate traffic diverted from the Roadway or bridge during construction

2) Detour crossings of intersecting Streets

3) Temporary approaches

b. All on-site or off-site detours required or necessitated by the Work, including side Street crossings, temporary bridges over freshly placed concrete, utilization

of one or more lanes of the construction area for maintenance of through traffic, and related traffic control is the responsibility of the Contractor.

c. Any detour proposed by the Contractor must not be built until the Engineer approves. Surfacing and paving must be consistent with traffic requirements.

D. Measurement:

1. Unless a Bid Item is specifically provided on the Bid Form for the purpose of providing a separate cost, the cost for all labor, equipment, materials, tools, clothing and other items necessary to meet the requirements of this section must be incorporated in the Lump Sum Base Bid price.

E. Payment:

1. Compensation for the costs necessary to complete the Work described in this Section 01 55 80 may be considered a component of the Mobilization cost, as described in Section 01 29 73 paragraph 1.01, prorated across other items included in the Schedule of Values, or identified as a separate item within the Schedule of Values, at the discretion of the Contractor. The Schedule of Values and payment for items included in the Schedule of Values must be in accordance with Section 01 29 73 of the Project Manual.

PART 2 - PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION 01 55 80

PART 1 - GENERAL

1.01 Description:

A. This Section describes temporary fencing Work as required by the Contract. Work includes but is not limited to the following:

1. Provision of all materials required for temporary security fencing.
2. 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 must be performed in compliance with the requirements of this Section.

Section 01 56 39 - Temporary Tree & Plant Protection
Section 01 57 13 - Construction Stormwater Control
Section 02 10 00 – Site Preparation

1.03 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).

1.04 Submittals:

A. Submit the following product information for approval prior to delivery or installation;

1. Shop drawing of portable temporary fencing panels and connection hardware.

PART 2 - PRODUCTS

2.01 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, as approved.

A. Prefabricated portable fence panels must be minimum 6 feet high by maximum 10 feet wide. Post bases must be minimum 16 inches by 8 inches by 8 inches high concrete pier with sleeve for post, or as approved by the Engineer. Prefabricated portable temporary fence panels must be constructed to industry standards for fixed chain link fencing.

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

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

C. Driven Post Fencing:

1. Posts – minimum 1-1/2" 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 must be 20 feet wide (two prefabricated panels) with double padlocks to allow Contractor and Owner vehicle entry. Hinged sides of each operating panel must include double bracketing. The Owner will provide one (1) lock keyed for City personnel at each entry. The Contractor must provide a lock keyed for Contractor and Subcontractor use at each entry.

E. Signage: Provide warning signage every 50' of running fence line. Signage must be a minimum of 18" square, brightly colored with contrasting lettering. Text must read as follows, or as otherwise approved by the Engineer:

WARNING
CONSTRUCTION
KEEP OUT

F. Barbed wire is not allowed.

2.02 Temporary PVC Fencing:

A. 4' wide rolls Orange PVC Web Fencing may be utilized for low security and tree protection applications when approved by the Engineer.

B. Supporting posts must be formed of 6' lengths of #5 steel reinforcing bar (5/8" nominal diameter).

C. Supporting post protruding ends must be fitted with OSHA-approved safety caps for #5 steel reinforcing bar.

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 may 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 Temporary Security Fence: Secure the project site from trespass or unintentional entrance by unauthorized personnel.

A. Temporary chain link fence panels:

1. Panels must be connected mechanically by means of pre-fabricated, bolted brackets manufactured specifically for the purpose. Fencing must not be wired together.
2. Where long straight runs result in an unstable condition, sufficient out-rigging must be incorporated to maintain fencing upright. Use only pre-manufactured outriggers or additional fence panels. Outriggers must be placed on the interior side of the fence unless approved otherwise by the Engineer. Alternatively, and where appropriate, a "zig-zag" arrangement of panels may be used for stability.

B. Uneven Terrain:

1. Where uneven terrain will not allow the use of pre-manufactured portable fence panels, or where otherwise directed or approved by the Engineer, drive posts directly into the earth plumb and 8' on center along the approved alignment.
2. The Contractor is responsible for performing complete locates for underground utilities in any area to receive driven posts.
3. Drive posts to sufficient depth to assure stability and durability for the life of the installation. Maintain a minimum of 6' above grade.
4. Reset loose posts at the direction of the Engineer.
5. 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.
6. 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.

C. Where approved for short-term, low security applications, use 4' high orange PVC web fencing wired to #5 reinforcing bar "posts" set 5' maximum on center. Cap each bar with an OSHA-approved safety cap manufactured specifically for #5 reinforcing steel.

3.03 Removal: All materials and debris associated with the Work of this Section must be removed at the appropriate time as follows;

A. When the Engineer has accepted the Work as Substantially Complete, the Contractor must disassemble and remove from the premises all temporary fencing.

B. All removal must include complete site restoration by the Contractor as required by the Contract or directed by the Engineer.

END OF SECTION

PART 1 - GENERAL

1.01 Summary:

A. This section describes administrative and procedural requirements for the temporary protection of trees, shrubs, grass, vegetation, plant materials and soils not designated for removal. Such trees, shrubs, grass, vegetation, plant materials and soils must be left in place and protected from damage or injury by the Contractor during construction, using full and adequate methods of protection as described herein or as directed by the Engineer. This section also includes provisions for restoration or replacement of trees, vegetation (including grass and turf), and soils that are damaged as a result of construction activities, and establishes related Warranty requirements. Work of this section may include, but not be limited to:

1. Ensure required protection of all existing trees, vegetation, and soils that may be affected by the Work of the Project.
2. Furnish all labor, materials, equipment, supplies, and operations necessary to install and maintain temporary tree and plant protection as required.
3. Maintain newly installed tree protection elements, including, but not limited to: fencing, woodchip mulch, landscape fabric, cabling, and signs.
4. Restore areas damaged by construction activities. The work may include such repairs as turf and landscape renovation or replacement, and soil replacement and preparation, and other activities needed to return construction-damaged areas of the site to “as good as” or “better than” pre-existing conditions.
5. Compliance with Contract Warranty requirements related to trees, vegetation, and soils.

1.02 References:

A. This Section incorporates by reference the following documents:

1. City of Seattle Standard Specifications for Road, Bridge and Municipal Construction.
2. City of Seattle Standard Plans Nos. 132A, 132B, 133 and 142.
3. Council of Tree and Landscape Appraisers: *Guide for Establishing Values of Trees and Other Plants*
4. American National Standards Institute Standards (ANSI) A300 - Pruning Standards.

1.03 Related Sections:

Section 01 57 13 - Construction Stormwater Control

Section 01 76 00 – Protection of Existing Facilities

Section 02 10 00 - Site Preparation

Section 32 91 13 - Soil Preparation

Section 32 92 19 - Hand Seeding1.04Definitions and Terminology:

A. *Consultant:* Individual(s) and firm(s) responsible for preparation of the Project design and related Contract documents, as well as design guidance during construction. Used interchangeably with "Designer" and "Design Consultant".

B. *Consulting Arborist:* An ISA Certified Arborist Contracted to the Owner.

C. *COS:* City of Seattle.

D. *Critical Root Zone (CRZ):* Defined as an area surrounding the tree trunk as described on the City of Seattle Standard Plan No. 133 and the City of Seattle Standard Specifications Section 1-07.16(2) and Section 8-01.3(2)B for Tree, Vegetation and Soil Protection techniques within COS-owned properties.

E. *DBH:* Diameter of a tree at Breast Height, as measured 4-1/2 feet above root crown.

F. *Dripline:* Defined as the area on the ground beneath the outer edge of the tree's canopy.

G. *Engineer:* SPR's project personnel including, but not limited to; the SPR Engineering Manager, the SPR Construction Manager, the SPR Project Inspector, the SPR Urban Forester, and/or their designees.

H. *Hand Excavation:* Defined as excavation by the use of hand tools only without the use of motorized equipment.

I. *ISA:* International Society of Arboriculture.

J. *Landscape Requiring Protection:* All Trees, vegetation & soils which are located within the work site or may be impacted by access including those along haul routes and rights-of-way, including all existing trees, vegetation and soils to remain, which may be affected by the Work.

K. *Project Arborist:* An ISA Certified Arborist who is paid by the Contractor and has been approved by the Engineer.

L. *SPR:* Seattle Department of Parks and Recreation.

M. *Tree Protection Area:* All portions of the project site within the dripline of existing trees, all areas identified on the plans as a tree protection area, and all areas within or behind tree protection fencing.

1.05 Tree, Vegetation and Soil Protection:

A. The Contractor must provide protection of existing trees, vegetation, and soils as required by the Contract. Such protection measures may include but not be limited to the following:

1. Final landscape protection fencing locations and phasing information.
2. Landscape maintenance activities/practices required during construction.
3. Tree labels and/or identification numbers.
4. Watering instructions and schedule for temporary watering.
5. An inventory of pre-construction existing soil conditions.
6. Work methods for work within landscape protection areas.
7. Plant pruning measures.
8. Clearing & grubbing, excavation and earthwork techniques.
9. Tree and root avoidance techniques.
10. Radial trenching and/or root re-invigoration/soil amending measures.
11. Identification of Landscape Protection Areas.

B. Documentation of Pre-Construction Conditions: The Contractor must take photos and/or video recordings, provide tagging, and prepare other documentation as necessary to describe the pre-construction conditions of all trees, vegetation, and landscape elements on or adjacent to the Work site. This documentation must be performed prior to any construction activities:

1. Photograph all Landscape Requiring Protection prior to commencement of construction and again after plants produce a full canopy of leaves if initial photographs are taken when trees are bare of leaves.
2. Photograph all Landscape Requiring Protection from the cardinal directions (north, south, east, and west). Label all photographs with:
    a. Tree tag number, unique for each tree.
    b. Direction from which the photograph was taken.
    c. Date photograph was taken.
3. Reserved
4. The Engineer and the SPR Urban Forester must be notified no later than 3 Working Days in advance of the date that photo or video documentation will be taken, so that they may attend and request additional documentation at their discretion. The Contractor must cooperate with such requests.

5. Provide 2 hard copies and 2 electronic copies of pre-construction conditions documentation inventory to the Engineer and SPR Urban Forester within 5 Working Days after Notice to Proceed and prior to construction commencing on site.

1.06 Reserved

1.07 Additional Conditions:

A. The Engineer may order the Work stopped if:

1. Landscape protection measures are not completed prior to start of the Work;
2. Unauthorized uses of protected areas are occurring; or
3. Tree protection fencing is not restored within 24 hours of notice to do so.

B. Tree Identification: In all correspondence regarding Landscape Requiring Protection and tree protection systems, refer to the specific tree number on the Contract Documents, or as listed herein.

1.08 Replacement Plant Warranty:

A. The Contractor must replace any trees and plants which, in the opinion of the Engineer, are in unhealthy or unsightly condition or that have lost their natural shape due to dead branches, excessive pruning, excessive defoliation, or other damage caused by the Contractor.

B. The Contractor is responsible for maintenance of all replacement trees, plants, grass, and any other vegetation during the Warranty Period. The Contractor must periodically inspect the plant materials to ensure that they are receiving proper care. The Engineer may conduct periodic reviews and notify the Contractor of any areas needing attention.

C. The Contractor must warrant all replaced material for a period of 1 year from date of replacement.

D. The Contractor must replace unacceptable trees/plants/vegetation no later than the next succeeding planting season. Unacceptable trees/plants/vegetation must be replaced in accordance with the original specifications.

E. Any tree or plant that is 25 percent or more dead or disfigured is considered dead. Plants are considered disfigured when excessive dead wood has been removed or when the symmetry, typical habit of growth, or sculptural form has been impaired by the removal of dead wood.

F. The above Warranty is applicable to any growing conditions through which plants of like kind could be expected to survive and any deformity or cause of death which could be attributed to, or affected by, the physiological conditions of the plant. The Warranty does not apply to plant losses due to abnormal weather conditions such as floods,

excessive wind damage, drought, severe freezing, or abnormal rain, as determined by the National Weather Service.

PART 2 - PRODUCTS

2.01 Temporary Landscape Protection:

A. Landscape protection fencing must be comprised of the following:
   1. In accordance with COS Standard Plan No. 132A. Use chain link fencing only.
   2. Fencing Type 1 and/or Type 2, or as designated by Engineer:
      a. Chain link fence materials including footings, posts, braces, and mesh to be used to form a 6-foot-high enclosure.
      b. Footings:
         1) Type 1: no footings required.
         2) Type 2: above ground precast concrete block type footings, 100 pounds minimum or minimum 16”x 8” x 8” high concrete piers, with sleeves for posts.
      c. Posts: 1-1/2 inch steel pipe, minimum. Use with approval by the Engineer in areas where fence must cross existing paved surfaces or as indicated on the Contract Documents.
      d. Mesh: 2 inch by 2 inch, 11-gauge chain link fabric, minimum.

B. Landscape Protection Signage: If required, signage must meet the following requirements:
   1. Provide weather resistant, fluorescent green or yellow signs 48 inch by 48 inch with minimum of 3-inch-high letters indicating the following:
      a. Tree Protection Warning: *“No Trespassing on the Critical Root Zone of this/these tree/trees/plants without direct approval of the Engineer. Unauthorized activities or Work within the Critical Root Zone will result in a fine of $1,500, or the appraised landscape value, whichever is greater.”*
      b. Botanical/common names.
      c. Appraised value of plants.

C. Reserved

D. Tree Tags: Race-track shaped aluminum tags engraved with individual tree numbers as indicated on Contract Documents.

E. Water: Irrigation water must be supplied by the Contractor.

F. Mycorrhizae Fungal Inoculant: Mycogrow Gel, manufactured by Fungi Perfecti (Olympia, WA) or Mycorrhizal Landscape Inoculant, manufactured by BioOrganics (Santa Monica, CA), or approved equal.

G. Slow Release Fertilizer: Osmocote 14-14-14 slow release pellets, Osmocote Controlled Release Fertilizer 13-13-13, Sierra Controlled Release Fertilizer Plus Minors 17-6-12, or approved equal.

H. Mulch (Wood Chips): Chipped wood mulch or hog fuel. Submit mulch to laboratory to be checked for undesirable pathogens. Submit laboratory report.

I. Coir Mat: Geocoir®DeKoWe 400, by Belton Industries, Koir Mat 400 by Nedia Enterprises, or approved equal.

PART 3 - EXECUTION

3.01 Preparation:

A. Prior to any construction activity the Contractor must:

1. Review protective measures required by the Contract.
2. Verify adequacy of the extent of Landscape Requiring Protection, as defined in the Contract Documents.
    a. Review Contract Documents and periphery of the Site for any additional landscape or any additional trees whose CRZ may be affected by the Work and therefore need to be protected.
    b. Tag trees with designated numbers.
    c. Post tree preservation area/restrictions signage and appraised value signage on all Landscape Requiring Protection as specified herein.
    d. Protect Landscape in accordance with Contract Documents.
    e. Protect soil and roots within the Dripline of all Landscape Requiring Protection with a 1” mesh opening coir mat under four (4) inches deep of wood chips. Provide a minimum of 6 inches radius zone clear of mulch at the base of each tree or shrub.
    f. Coordinate with the Engineer regarding areas requiring special attention as identified and specified on the Contract Documents.
    g. If root pruning in the CRZ is required, it must be done no later than 3 months prior to commencement of the other construction activities impacting the CRZ.

3.02 Fencing and Signage:

A. Landscape protection fencing:

1. Type 1 Fencing: Drive posts a minimum of 2 feet below existing grade and deep enough to remain rigid during subsequent excavating and grading.
2. Type 2 Fencing: Install fence on above ground precast concrete block type footings in locations as indicated by Contract Documents.
3. Install fencing and mulch (wood chips) to protect Trees Requiring Protection from construction activities when trees are located inside the construction fence.
4. For Landscape Requiring Protection located outside the construction fence, no additional protection fencing is required if construction activities will not impact the landscape. If construction activities are expected adjacent or near Trees Requiring Protection, install chain-link fencing in accordance with COS standard Plan No. 132A, Type 1 and 2 for the duration of any construction activities.
5. Do not compact soil or use heavy equipment in the Landscape Protection Area when installing protective fencing installation.
6. Provide diagonal bracing to vertical posts at corners of enclosures and wherever needed to ensure rigidity of the fencing.
7. Install chain link fabric tight to grade at the bottom edge and stretched uniformly between posts. Install top of fabric 6 feet above grade, minimum.
8. Install fabric to form continuous fencing as indicated on Contract Documents. Attach fabric to posts 12 inches on center with 11-gauge wire ties securely fastened, or with bolted ring clips, and to top rail 3 feet on center maximum.
9. Attach orange flag strips 12 inches long at 3 feet on center along the fence, 5 feet above grade.
10. Provide 1 locked gate at each fenced area.

B. Landscape Protection Signage:

1. Securely attach at least one landscape protection sign to each landscape protection area fence. Multiple signs may be required for extensive lengths of fencing if so directed by the Engineer.

3.03 Tree, Vegetation, and Soil Protection:

A. The Contractor must coordinate with the Engineer and SPR Urban Forester to meet protection requirements specified on the Contract Documents and must notify the Engineer of any construction work within the drip-line of existing trees at least 48 hours prior to the scheduled activity.

B. Where existing trees or vegetation 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 must employ all methods necessary to prevent adverse impact to these existing trees including protection against cutting, breaking or skinning of roots, skinning or bruising

of bark, compaction of root zones, and breaking of branches. These methods may include but are not limited to:

1. Tree protection fencing: Do not compact soil or use heavy equipment when installing protective fencing. No work may commence until the tree protection fence is in place for any given work zone and no tree protection may be moved until the work is substantially complete in any given work zone. Tree protection fencing is temporary and may be moved from completed areas and re-used as the construction progresses.
2. Temporary tie-up of low limbs: Under the supervision of the Engineer, tie back flexible limbs and overhead branches that could be damaged by the passage or activity of equipment. Anticipate limbs that could be in the way of necessary equipment to avoid limb damage and provide a remedy before work occurs. Do not remove tree limbs without the prior written acceptance of the Engineer.
3. Surface Protection Measures: Surface protection measures must be provided in all landscape protection areas (including tree driplines) except areas where existing or proposed pavement is present and areas where only hand tools will be utilized. Areas within the dripline of existing trees which are designated for pavement replacement require surface protection measures while pavement is removed. Surface protection methods utilized must be sufficient to prevent root damage and soil compaction:
    a. Protect soil and roots within the landscape protection areas with a 1" mesh opening coir mat under 4 inches of wood chips. Provide a 36-inch diameter zone clear of mulch at the base of each tree.
    b. For protection from repetitive foot traffic, light equipment use, and other light construction activities, apply a 6-inch thick layer of mulch and/or plywood planking within the dripline of trees. Provide a 24-inch radius clear zone at the base of each tree.
    c. For protection from heavy equipment use, truck use and other heavy or repetitive construction activities place steel plates and/or timber planking within the dripline of trees. Provide sand, soil or other approved material below steel plates and planking to prevent contact with roots.
    d. In areas of Landscape Requiring Protection with understory landscape (such as lawn or shrubs) as indicated by Contract Documents, provide mulch when directed to do so by the Engineer as needed to protect soils and roots from any work taking place within the fencing.
4. Tree root protection, root pruning and root treatment: Preserve and protect surface roots and perform all Trenching, Excavation and Tunneling within the Drip-Line as specified in Paragraph 3.05 herein and in the Contract Documents.

C. Maintenance of Tree, Vegetation, and Soil Protection Measures

1. Monitor maintenance of each landscape protection areas to ensure it is in a healthy condition and immediately report any deficiencies or concerns to the Engineer immediately.
2. Implement adjustments to the landscape protection areas as directed by the Engineer or as needed during the course of the Work.
3. Perform on-site review as needed during construction for activities that are adjacent to or affecting any landscape protection areas.
4. Monitor clearing and grubbing in areas requiring special attention as identified on tree and plant protection Contract Documents in order to preserve roots.
5. Monitor any work within landscape protection areas including all excavation, demolition, and resurfacing.

3.04 Above Grade Work:

A. For tree removal or tree trimming within 10 feet of any overhead utility lines the Contractor must make the notifications specified in City of Seattle Standard Specifications (most recent edition).

B. When the Contractor anticipates construction operations that will unavoidably affect tree limbs, the Contractor must notify the Engineer at least five (5) Working Days in advance of commencing such operations. Call the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspection.

1. Before trimming any trees, the Contractor must notify the Engineer of the proposed method and the amount of trimming anticipated.
2. Trimming must be done by an ISA Certified Arborist working for a professional tree service company whose past and current performance is in accordance with the American National Standards Institute Standards (ANSI) A300 Pruning Standards.

C. Use of the area within protective fences and within the landscape protection area:

1. Do not store materials potentially harmful to tree roots within 20 feet of outside limit of protected areas. Potentially harmful materials include, but are not limited to: petroleum products, cement and concrete materials, cement additives, lime, paint coatings, waterproofing agents, form coatings, detergents, acids, and cleaning agents.
2. No grades may be altered within the required protective fence area.
3. Control soil moisture within the landscape protection area. Prevent flooding of the soil, and protect root areas from leachate, cement, oil, fuel and lubricating oil, and all contaminants.
4. Notify the Engineer at least two (2) Working Days in advance of the need to move a tree protection fence.

5. Upon relocation of fence, continue all other protection efforts and maintenance of landscape protection area in accordance with the Contract.

3.05 Trenching and Tunneling within the Dripline:

A. Trenching and tunneling within the drip-line of existing trees not designated for removal must be in accordance with the City of Seattle Standard Plans & Specifications (most recent edition), and defined zone clearance requirements.

B. Excavation or tunneling of any kind within the landscape protection area, 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. Call the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspection

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

1. Within the CRZ, hand-excavate to prevent tears and breaks in root surfaces. Leave roots larger than 2 inches in diameter intact and undamaged. During the time of exposure, keep roots moist with moist soil, wet mulch, and burlap, or Engineer-approved equal.
2. Use air spade to dig all trenches within CRZ, or as directed by the Engineer.
3. Tree roots smaller than 2-inches in diameter must be cut flush along the edge of the trench or tunnel. Cut off roots cleanly with a sharp blade when roots are exposed or disturbed by work activities.
4. Ripping or tearing of tree roots will not be allowed.
5. Place utility conduit either under roots by tunneling, or over roots using adequate sand bedding and providing adequate cover. Obtain approval from the Engineer that bedding is adequate.

3.06 Repair, Replacement and Payment for Damage:

A. Trees, shrubs, grass, or other plant material not ordered or designated to be removed but that are destroyed or irreparably damaged by Contractor's operations as determined by the Engineer, must be repaired or replaced by the Contractor in accordance with the Engineer's recommendations.

1. Replacement of trees must adhere to the City's Tree Replacement policy (at least 2 replacement trees for every 1 tree removed).
2. Replacements must be of the same species and as nearly as possible of the same size as the trees to be replaced (minimum of 2" caliper).

3. Replacement of damaged or destroyed shrubs, grasses, and/or other plant materials must restore such vegetation or areas of vegetation to pre-construction conditions or better, to the satisfaction of the Engineer.
4. The Contractor must allow two (2) Working Days advance notice for inspection of nursery stock replacements by the Engineer.

B. Payment: If for any reason a tree, shrub, grass area, or other plant material/area cannot be fully replaced or restored in accordance with 3.06.A above, 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 must be done in accordance with the requirements of the Contract Documents during the first fall or spring planting period, whichever comes first.

3.07 General Site Restoration

A. Lawn Area Restoration: The Engineer will 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. Restoration must be performed in accordance with the relevant Contract Specification Sections or as directed by the Engineer.

B. Planting Area Restoration: The Engineer will determine the level of restoration necessary depending on the amount of damage to the existing planting areas and soils. Areas that have been driven on extensively and are compacted or bare will require replacement.

C. Watering: If required by the Engineer, water must be provided to condition the soil to lessen compaction or to provide dust control. Water must be furnished and applied by Contractor from an approved on-site supply or by watering truck if necessary.

3.08 Fence Removal:

A. Do not remove temporary protection fencing until the Engineer has given approval to do so. Fence removal is subject to all protective measures for landscape protection areas as stated in Section 01 56 39.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY OF WORK:

A. Generally, the work of the Contract is not expected to result in the significant disturbance of soils resulting in erosion and soil sediment transport however the use of significant quantities of granular materials for paved-in-place elastic layer supplemental resilient pad and synthetic turf infills requires continuous management and control of potential migration into adjacent landscapes and stormwater inlets. The Contractor is to pay particular attention to the management of granular waste materials in the removal of existing synthetic turf.

B. This Section describes in generic terms work consisting of the furnishing, installing, maintaining, removing, and disposing of Construction Stormwater Controls (CSC, also referred to as TESC "Temporary Erosion and Sedimentation Controls"). The CSC must be designed and implemented to prevent erosion and scour, to treat sediment laden water for acceptable discharge, and to prevent the conveyance of sediment into surface waters, drainage systems, and environmentally critical areas.

C. Guidelines and requirements are provided pertaining to the requirements of Title 22 Subtitle VIII and Chapter 25.09 of the Seattle Municipal Code (SMC).

D. At the end of this Section two sample forms are attached. These are the CSC Monitoring & Maintenance Log and the CSC-BMP Construction Change Tracking Form, and are intended for use by the Contractor during the execution of the Work. These forms are available electronically in the Contracting Forms Workbook.

E. City of Seattle Standard Plans or Standard Specifications sections referenced in this Section may be obtained on line at:

http://www.seattle.gov/util/engineering/standardspecsplans/

F. During construction, the Contractor must incorporate practices that prevent erosion (or control erosion when prevention is unavoidable) and must make every effort to maintain effective erosion and sediment controls throughout the Work, including implementing timely corrective actions as may be necessary. Sediment must be prevented from entering any surface water, drainage facility, or natural drainage system, and must be prevented from transport beyond the Project Site. Work must comply with Director's Rules based on SMC Chapters 22.800 through 22.808 and other codes addressing grading, stormwater control, ground water control, and other construction controls.

G. The Contractor must provide a Construction Stormwater Control Plan prepared in accordance with the above regulations and as specified in this Section, which is subject to review and approval by the Engineer. The CSC Plan must identify and confirm qualifications for the Contractor's Certified On-Site Construction Erosion Control Lead (see Section 00 72 00 paragraph 1.03.M.3). The plan must be compatible with and coordinated with the Work and its phasing, ensuring continuous protection.

1.02 NOT USED

1.03 SUBMITTALS:

A. Construction Stormwater Control (CSC):

1. Submit Product Data for all materials and equipment required for the work to remain compliant with the Contract and local code.

PART 2 - PRODUCTS

2.01 TEMPORARY CONSTRUCTION ACCESS

A. General;

1. For use in the protection of landscape and pavements at the point of Contractor access.
2. Anticipate that all work will require some degree of protected access.
3. In order to mitigate damage to landscapes, all work will utilize a combination of approved two-layer sheet-protection such as plywood, steel, or prefabricated HDPE plastic pads.

B. Geotextile Separator Fabric to be 8oz/sy non-woven polyethylene, breathable, water permeable.

C. Wood Fiber Ballast; where directed, use a minimum 9” compacted depth of arborists mulch, shredded softwood bark, or similar as load-distributing ballast.

C. Plywood to be minimum 5/8” CDX. No composites. Where used alone no less than two layers of plywood will be permitted.

D. Steel to be 1” road plate.

E. Pre-Formed HDPE Traffic Pad to be manufactured specifically as a load-distributing panel system approved prior to use.

2.02 EROSION CONTROL MATERIALS:

A. Mulches and Amendments:

1. Straw Mulch: All straw mulch Material must be in an air-dried condition free of noxious weeds and other materials detrimental to plant life. Straw must be seasoned

before baling or loading and must be suitable for spreading with mulch blower Equipment.

2. Arborist's Wood Chip Mulch: Wood chips salvaged from clearing and grubbing activity may be approved as a substitute for bark mulch, if found acceptable by the Engineer prior to application.

3 Compost Amendments: Composted Organic Material (Compost), must be comply with Seattle Standard Specification Section 9-14.4(8), in all respects, including testing, with additional requirements as follows:

   a. Materials must be sorted, ground, aerated and aged for a minimum of one year, with gradation wherein 100% passes a 7/16 inch sieve. The material must have a pH between 5.5 and 7.0 and must have a carbon to nitrogen (C:N) ratio between 20:1 and 40:1 with a maximum electrical conductivity of 3 ohms/cm.

   b. The product must be tested by a Contractor-provided accredited laboratory acceptable to the Engineer. At least 2 Working Days in advance of placement, the Contractor must submit a Manufacturer's Certificate of Compliance stating all test requirements meet the specified requirements. The product must be certified free of all plant parasitic organisms, viable weed seeds, heavy metals or parasitic residues.

4. Other Composted Materials: Other composted material must comply with Seattle Standard Specification Section 9-14.4(8), in all respects, including testing, with additional requirements as follows:

   a. Compost material must have 100 % passing a ½-inch sieve. The carbon to nitrogen ratio (C:N) of the compost must be in the range of 20:1 to 35:1. Organic matter of the composted Material must be between 4% and 10%, and the moisture content must be between 35% and 50% as determined by ASTM D2974. The pH of the compost shall be between 5.5 and 7.0 as determined by ASTM D2976. The maximum electrical conductivity of composted Material must be 6 ohms/cm. Decomposed Organic Compost must be mature as determined by US Composting Council stability test ratings referred to in WAC 173-350.

   b. The product must be tested within 6 months of proposed use. The Contractor must submit a Manufacturer's certificate of compliance showing specification-compliant test results, a one-gallon sample, and the Supplier's name and contact information to the Engineer a minimum of 5 Working Days in advance of use.

   c. The compost must have a Solvita Compost Maturity Test performed at the Project Site, and must score a maturity index value of 6 or greater.

B. Matting and Stakes:

   1. Jute Matting:

      a. Jute Matting For Non-Stream Applications: Material must be of a uniform open plain weave of unbleached, single jute yarn treated with a fire retardant chemical.

The yarn must be of a loosely twisted construction and must not vary in thickness by more than 1/2 of its nominal diameter. Jute matting must be furnished in rolled strips approximately 50 yards in length. Matting width must be 48 inches ± 1 inch, with an average weight of 0.92 ± 5% pound per square yard.

b. Jute Matting:

1) Jute matting shall be of a uniform open plain weave of unbleached 100% jute yarn. Plastic or any geo-synthetic netting must not be used for stream bank construction or restoration.

2) The following table specifies acceptable product applications:

Slope	Minimum Criteria	Test Method
Slope ≥ 1:1	25 oz/sy <40% open area	ASTM D-3776 Corp of Engineers COE CW002215
3:1 < slope < 1:1	14 oz/sy <60% open area	ASTM D-3776 Corp of Engineers COE CW002215
4:1 < slope < 3:1	9 oz/sy <65% open area	ASTM D-3776 Corp of Engineers COE CW002215
Slope < 4:1	No matting required unless otherwise specified in the Contract	

2. Coir Matting

a. Coir matting must be of a uniform open plain weave of unbleached 100% coir fabric from coconut husk. Plastic or any geo-synthetic netting must not be used for stream bank construction or restoration.

b. Coir matting must meet and be installed in accordance with the following:

Slope Application	Minimum Criteria	Test Method	Recommended Products
Slope ≥ 1:1	25 oz/sy <40% open area	Weight: ASTM D-3776 Open Area: US Army Corps of Engineers COE CW002215	"Geocoir/Dekowe 900" "Koir Mat 900" or approved equal
3:1 < slope < 1:1	14 oz/sy <60% open area		"Geocoir/Dekowe 700" "Koir Mat 700" or approved equal
4:1 < slope < 3:1	9 oz/sy <65% open area		"Geocoir/Dekowe 400" "Koir Mat 400" or approved equal
Slope < 4:1	No matting required unless otherwise specified in the Contract		

3. Excelsior Matting:
    a. Excelsior matting must be a machine produced mat of wood excelsior covered on one side with a biodegradable plastic netting or twisted paper composition. The Contractor must submit Manufacturer's Certificate of Compliance, stating that the excelsior matting is environmentally safe and acceptable, to the Engineer for approval at least 10 Working Days in advance of proposed Material application. This submittal must be accompanied by a sample at least 3 square feet in area.
    b. The excelsior matting must have a wood fiber minimum dry weight of 0.8 lb/SY ± 5 %, and must be of uniform thickness with the fiber evenly distributed over the entire area of the mat.
    c. The width of a single roll of matting and net must be 36 inches minimum, and the length of the roll must be approximately 150 feet.
4. Clear and Black Plastic Covering: Plastic covering must meet the requirements of the National Bureau of Standards Voluntary Product Standard PS 17-69, for polyethylene sheeting having a minimum thickness of 6 mils.
5. Stakes for Erosion Control Matting: Stakes may be wire staples, steel pins, steel spikes, or wooden stakes. Stakes for securing erosion control matting to earth surfaces must be 12-inch length minimum, and must have sufficient strength to withstand pounding the stakes into soil flush with the surface.

E. Shear boards: Shear boards must be 2 inch x 8 inch x 8 foot, non-treated, rough finished lumber. When conditions require a length less than 8 feet, the Contractor must plan the layout such that no individual length of cut shear board is less than 4 feet.

F. Wattles: Wattles act as a screen or filter and must consist of biodegradable plant material such as any combination of twigs, wicker, bamboo, other withes, straw, coir, and wood shavings in the shape of cylinders typically ranging from 10 inches to 16

inches diameter and of any length. The wattle must be encased within biodegradable netting.

2.03 CONSTRUCTION GEO-TEXTILES:

A. All Construction Geotextile materials must comply with the requirements detailed in Seattle Standards Section 9-37, as applicable to the specific Work item.

PART 3 - EXECUTION

3.01 GENERAL CONSTRUCTION REQUIREMENTS:

A. Guiding Regulations, Codes, and Rules:

1. Work involving erosion and sedimentation control within The City of Seattle must comply with Paragraph 1.02 of this Section.
2. Work involving erosion and sedimentation control within Seattle's Rights-of-Way outside of The City of Seattle limits must also comply with the requirements of the local jurisdiction.

B. General Guidelines and Measures for Doing the Work:

1. As part of Contract Work execution, the Contractor must:
   a. Prevent and control erosion and sedimentation processes,
   b. Prevent and control scour and scour processes in water bearing channels,
   c. Prevent transport of sediment,
   d. Protect surface waters and drainage systems from entry of sediment and other construction byproduct,
   e. Prevent erosion and sedimentation impacts to areas not designated for Work and
   f. Coordinate erosion and sedimentation controls with scheduling of the Work.
2. Methods of accomplishing these goals include, but are not be limited to:
   a. Installing temporary ditches, berms, culverts, and other measures to control and redirect surface waters;
   b. Installing temporary dams, settling basins, energy dissipaters, and other measures to detain water, prevent scour, and allow for sediment drop and controlled removal;
   c. Installing measures controlling surfacing groundwater and dewatering discharges;
   d. Installing temporary covers or otherwise protecting slopes, stockpiles, and exposed or disturbed soils from erosion and sediment producing processes;
   e. Installing temporary work area perimeter and sediment transport prevention measures, such as silt fences, wattles, filters, and berms;

f. Treating sediment laden waters, and removing and disposing of sediment;

g. Installing sediment and debris removal controls for equipment entering and leaving designated Work areas, and

h. Installing temporary fencing, flagging, and other markings at boundaries of areas identified as not part of the Work.

C. Temporary Construction Access

1. Each Site includes a Site Preparation Plan that identifies both the location, type, and extent of one of the following three types of temporary construction access required.
2. "Plywood Only" requires a layer of approved geotextile with two layers of 5/8" (minimum CDX plywood with staggered joints. The ends of each run shall be a single layer a minimum of 2'.
3. Steel
4. Plastic
5. Maintenance
6. Removal & Restoration

3.02 EROSION CONTROL MULCHING:

A. General:

1. When the CSC Plan indicates a separate mulch application for an area in addition to seeding, this mulching must immediately follow the seeding.
2. Areas not accessible by mulching Equipment must be mulched by approved hand methods.

B. Straw Mulch:

1. Straw mulch erosion control application must be done with a forced air mulch spreader. In spreading straw mulch, the spreader must not cut or break the straw stalks into lengths less than 2 inches. Straw mulch coverage must have a minimum thickness of 2 inches. When a forced air Equipment mulch application does not provide acceptable results, the Contractor must employ manual or other application methods such as hand spreading and raking.
2. Should the straw mulch coverage expose at any time bare ground of more than 50% in any 100 square foot area, then the Contractor must promptly remulch the exposed area to provide full coverage at the required thickness.

C. Wood Chip Mulch:

1. Wood chip mulch erosion control application must be done with a forced air mulch spreader and provide a 2 inch minimum thickness coverage. When a forced air Equipment mulch application does not provide acceptable results, the Contractor must employ manual or other application methods such as hand spreading and raking.
2. Should the wood chip mulch coverage expose at any time bare ground of more than 50% in any 100 square foot area, then the Contractor must promptly remulch the exposed area to provide full coverage at the required thickness.

D. Compost:

1. Compost erosion control application must be with a forced air mulch spreader. Coverage applications shall have a minimum thickness of one and one half inches (1-1/2 inches). Where a forced air mulch spreader application is indicated as providing unacceptable results, the Contractor shall employ manual or other methods such as hand spreading and raking.
2. Should the Compost coverage expose bare ground of more than 50% in any 100 square foot area, and then the Contractor shall promptly remulch the exposed area to full coverage of the thickness required.

3.03 EROSION CONTROL MATTING:

A. General:

1. Erosion control matting may consist of one or more applications of coir, jute, or excelsior matting.
2. Erosion control matting must be installed and secured in accordance with the manufacturer's recommendations.
3. Unless the matting manufacturer recommends otherwise, seeding, with or without amendment or mulch, must be applied before the placement of matting.
4. Staking must be driven flush with grade and must penetrate the earth a minimum 12 inches.
5. The Contractor must timely maintain the integrity of the matting by repairing or replacing as necessary all improperly anchored, torn, uplifted, or missing matting. Torn or missing matting must be covered with additional matting overlapping the tear or the exposed area with a minimum 24-inch overlap of all surrounding matting. This patch must be staked at each corner 3 inches from the edge of patch and along all edges with a spacing not exceeding 12 inches. Uplifted and improperly anchored matting must be repaired by replacing failed anchors, or by increasing the density of anchors as applicable.
6. Temporary matting and stakes must be completely removed at the time of permanent restoration.

B. Non-Ditch and Non-Channel Matting Installation:

1. In general, the matting must be placed flush with the soil surface with the first matting installed at the lowest elevation. Additional upper elevation matting must be installed over lower elevation matting with a minimum 6 inch overlap. Matting must be installed with the long axis of matting parallel to the contour. Overlap of matting ends installed along a contour must be with the "upstream" matting being installed over the "downstream" matting with a minimum 6 inch overlap with the "upstream" direction indicated by the grade in the swale at the base of the slope.

2. Unless the matting manufacturer recommends otherwise, the higher elevation edge of matting must be buried in an anchor trench 6-inches-deep by 12-inches wide with soil firmly tamped against the matting. Upper elevation matting must be installed over lower elevation matting with an overlap the full width of anchor trench. Before backfilling the anchor trench, staking must penetrate the matting in the center of the anchor trench. Spacing of staking within the trench must be three (3) feet maximum, except that at each end of the matting strip, a stake must be placed through the mat fabric six (6) inches from edges at the corner including if overlapped by another mat. Backfill in the trench must be tamped firm.

3. When placing matting within the drip line area of tree, anchor trenches are not allowed. Instead, the upper elevation edge of the upmost matting must be staked approximately 3 inches from the edge. Spacing of the stakes must be three (3) feet maximum except at ends, where the stake must be installed through the mat fabric 6 inches from all edges including when overlapped. Upper elevation fabric installed over lower elevation fabric must have a minimum 12 inch overlap with staking placed in the overlapping area 3 inches from the upper edge of fabric.

4. For all width matting fabrics, spacing of stakes within a row must be at least three feet and spacing between rows of stakes must be at least three (3) feet. Each long edge of the matting fabric, whether overlapped or not, must be staked three (3) inches from the long edge with stake spacing of three (3) feet maximum. The fabric ends (the short edge) must be staked three (3) inches from the end whether overlapped or not, with a minimum 3 stakes along the short edge.

C. Ditch and Channel Matting Installation: Matting installed in ditches and channels must have the long axis of the matting parallel to the direction of water flow. The first matting installation must be at the invert of the ditch or channel. Additional matting installation must be installed overlapping the upper edge of previously placed fabric by at least 12 inches. In the direction of flow, upstream matting must overlap downstream matting by 12 inches. Matting must be held in place with ballast or by other means capable of withstanding peak flows.

3.04 PLASTIC COVERING:

A. Stockpiles, areas with no vegetative growth, areas where vegetative growth is to inhibited, and areas with disturbed soil must be covered with black plastic covering. Sandbag or similar ballast must be placed on the cover in a grid with no less than 5 foot

spacing in two right angle directions. At all ends without overlap, ballast must be placed within 12 inches of the edge and spaced at 5 feet maximum along the perimeter.

B. Clear plastic covering must cover areas where the growth of vegetation is not to be inhibited.

C. With the exception of stockpiles, plastic covering sheets must be installed with the long axis parallel with slope contours. The upper edge of the fabric must be placed into a 12-inch wide by 6-inch deep anchor trench and backfilled with native soils tamped into place. Upper slope fabric must overlap down slope fabric in the anchor trench a minimum of 12 inches. Along the same contour, the ends of new fabric must overlap in-place fabric a minimum of 24 inches.

D. In general, ballast must be placed on the cover using sandbags or similar ballast distributed over the cover in a manner to prevent uplift, slippage, and any other movement of the cover. Spacing of ballast must exceed a 10-foot grid in line with and against the long axis of the sheet. All overlaps, edges, and corners must be ballasted.

E. On steep slopes and where slippage of ballast or ballasted fabric is possible, the ballast must be secured in-place by rope tied to upslope anchors firmly set in the earth.

F. Excavation of anchor trenches is not allowed within the drip line of trees. Instead, ballast must be placed on the fabric and on the overlaps secured by rope tied to anchor stakes upslope of the drip line area.

G. Rips and tears must be timely repaired by placing additional covering over the defect with a minimum 24 inch overlap in all directions from the defect. The repair must be ballasted with spacing in any direction of no more than 5 feet and along all edges and at all corners. Ballast must be anchored to upslope stakes.

H. Uplifted areas must receive additional ballast as necessary to prevent uplifting.

I. Areas where covering has slipped and the underlying surface becomes exposed must be timely repaired in the same manner as rips and tears.

J. Clear plastic covering intended to cover a vegetated surface without long term inhibiting effects must be monitored frequently as needed to ensure permanent damage is not occurring. If vegetative degradation be observed, the Contractor must amend the cover practice to a condition not detrimental to the vegetation.

3.05 STRUCTURAL AND BIOMECHANICAL EROSION CONTROLS:

A. Equipment Wash Area:

1. Where Equipment and vehicular traffic may contribute to the transport of sediment and other debris beyond a work area within a Project Site or beyond the Project Site, the Contractor must have in place a stabilized construction wash area at a location or locations to remove sediment, mud, and other debris from tires and other areas of the equipment or vehicles here such materials tend to collect.

2. Stabilized construction wash areas must be in place and ready for operation before the potential for transporting such material occurs.
3. The wash area must consist of one or more of the following as the Work requires and as the Contract may require:
    a. Graded entrance and exit water trough all Equipment and vehicles must go through. The Contractor may require a water trough for each direction. The depth of water in the trough must be maintained at a level adequate for the size of Equipment and vehicle expected. The length and width of the trough must be sized to ensure all length and width Equipment and vehicle can be acceptably cleaned.
    b. Hose, hose brush, long handled brush, and similar Supplies, and adequate labor to acceptably handle the size and volume of traffic.
    c. Adequate source of water and means to contain the water within the designated wash area.
    d. Regular removal and disposal of sediment and debris.
    e. Removal and disposal of non-debris and non-sediment pollutants and contaminants.
    f. A drain as may be necessary with controls in place to discharge water, compliant with applicable regulation, law, permit, and as the Contract may require.
    g. An area before and after the wash area of sufficient size with quarry spall or other coarse aggregate to allow for after-wash drip collection.

B. Road Stabilization:

1. Temporary road stabilization measures may be required in areas within and beyond the Project Site, such as access roads, haul roads, subdivision roads, parking areas, staging areas, and other vehicular and Equipment traffic routes. The stabilization required must be adequate for the Equipment and vehicular traffic and for the Project Site local conditions, local climate, and weather typical for the Contract Time.
2. Temporary road stabilization measures may consist of placing and compacting a thickness of quarry spall, a thickness of Mineral Aggregate Type 2 or Type 13 (see Seattle Standard Specifications Section 9-03.14, if applicable), other aggregate, or a combination of these and other Material.
3. Where temporary road construction cannot be aligned to avoid areas within the dripline of trees not identified for removal, the Contractor must comply with the requirements of Paragraph 1.05 of Section 01 76 00 – Protection of Existing Facilities.
4. Temporary road stabilization measures must be maintained by repairing ruts, tracks, settling, and other failing areas. Such repairs may include placing and compacting additional aggregate. Settled, broken, rutted, and otherwise damaged timber, mulch,

and other material within the drip lines of trees must be repaired by increasing the thickness of material.

5. Upon completion of the Work, or as may be required to accommodate the Work, temporary road stabilization measures must be removed and disposed of. Within the dripline of tree, the removal must be conducted to prevent damage to feeder and surface roots and minimize compaction of soils.

3.06 TEMPORARY SEDIMENT CONTROLS:

A. Silt Fence (Sediment Fence or Filter Fence):

1. Silt fences must act as a filter to both allow the passage of water through the fence and also to prevent the passage of sediment through, under, or over the fence. Silt fences must be in-place before the area is disturbed and must be coordinated with soil disturbance activity.
2. Silt fence(s) must be constructed at locations downstream or down slope of surface runoff areas and upstream or upslope of surface bodies of waters. Silt fences must be spaced to account for grade of slope, runoff flow rate and velocity, sheeting and rilling, type and relative density of soil(s), rate of sediment loading, expected maintenance type and frequency, and other factors as the site and Work require. Silt fences must not be placed across or in streams, channels and ditches.
3. Silt fences must be located along contours with the ends turned uphill to capture runoff and prevent flow around the end of the fence. Where the installation requires crossing of contours in areas other than at the ends, gravel check dams must be placed perpendicular to the uphill face of the fence to minimize concentrated flow and erosion along the fence. The gravel check dams must be approximately 1 foot deep at the fence and must continue perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface. The gravel check dams must consist of crushed surfacing base course gravel backfill for walls, or shoulder ballast. The gravel check dams must be spaced at 10-feet maximum intervals along the fence where the fence crosses contours. The slope of the fence line where contours are crossed must not be steeper than 3H: 1V.
4. The height of the fence fabric (geo-textile) above ground surface must be between 30 and 36 inches.
5. Posts must be of sufficient length, depth, and spacing to withstand maximum loading for the durations estimated between sediment removals. Unless the Contractor can justify otherwise to the Engineer, posts must be installed to a depth of 30 inches minimum, except within the drip line of a tree (see Item 7 below), and must be spaced no more than six (6) feet apart in a fence line. If required post depth penetration cannot be obtained, the posts must be adequately secured on the upslope side by bracing or guying to an adequately installed anchor. Posts must be either wood or steel. Wood posts must have minimum dimensions of 1-1/4 inches by 1-1/4 inches and must be white oak or other hardwood resistant to rot, with no defects.

Steel posts must consist of U, T, L, or C shape posts with a minimum weight of 1.33 pounds per foot, or other steel posts having equivalent or greater strength and bending resistance.

6. The fence fabric and support backing systems must be attached on the up-slope side of the posts with staples, wire, hog rings, or other connection device as recommended by the manufacturer, in a manner that does not tear or damage the fabric. At the bottom of the fence, the fabric and support backing system must be buried at least 6 inches below the ground surface, and then backfilled with native soils compacted by tamping or other appropriate compaction methods.
7. Excavation for installation of silt fence within the drip line of trees, and around other vegetation to be retained, must be without damage to roots. Roots that are exposed must not be damaged and must be promptly covered with earth. Where the bottom of fabric and support backing cannot be installed to a 6 inch depth due to interference with roots, the fabric and backing must be placed flat on the upside of fence for a minimum 12 inch width and then covered with a minimum 6 inch depth of large size aggregate ballast. In non-trench fabric bottom installations, post penetrations into the earth must be increased and the height of fence above the top of ballast must not exceed three (3) feet.
8. Fence support backing system, in the form of wire or plastic mesh with maximum mesh spacing of 2 inches by 4 inches and of adequate strength to withstand maximum loading, must be attached to posts and fabric as recommended by the Supplier. Plastic mesh must have the same or greater ultraviolet (UV) resistance as the geo-textile fabric. All geo-textile fabric must have backing whether exposed or buried.
9. Fence fabric must be continuous along any single length of filter fence. Continuous fence requirements include:
    a. The geotextile fabric must be sewn together during manufacture or by the Supplier to form a single length of geo-textile for a continuous fence application. All sewn seams must be located at a support post.
    b. Separate geotextile fabric may be installed across posts with a minimum 10 foot overlap where the overlap is supported by no less than three (3) posts with spacing between any posts not greater than 4 feet. Overlapped fabric must always be secured to support backing.
    c. The Contractor may place 2 posts, one on each side of the overlapped fabric and backing, and twist the overlapped fabric at least 2 complete revolutions before driving the posts into the earth. The overlaps must extend a minimum one (1) foot beyond the 2 posts before twisting.
10. Lapped or twisted fabric and backing that slip is considered defective and must be replaced with sewn geotextile. For pre-staked silt fence, laps may be performed in accordance with the manufacturer's written recommendations.

B. Sediment Removal: Sediment must be removed and disposed of when the sediment build-up reaches a height of 10 inches to 12 inches. Removal is also required if build-up exceeds one third (1/3) the height of fence.

C. Damaged Fence Repair:

1. Damaged or improperly functioning silt fence must be promptly repaired or replaced.
2. Rips, tears, holes, and other defects in the geo-textile fabric or the backing must be promptly repaired by placing new material(s) over the damaged materials the full width and height of fence including buried or covered fabric and backing, and must overlap existing fence material(s) a minimum 5 feet each side of the defect. The repaired fence must be supported by and securely tied to at least 5 evenly spaced posts.
3. Broken posts must be replaced with 2 posts spaced 1 foot on each side of the broken post. New posts must be driven to 30 inches into the soil or braced to upslope anchors. The fabric and backing must be securely tied to each new post.
4. Posts that lean greater than 1H: 4V must be replumbed and must be supported at the top with bracing or guying to an adequately installed upslope anchor.
5. Water or sediment escaping beneath the silt fence must be repaired by installing new fabric and backing over the existing material extending 3 feet upslope with a minimum 3 foot overlap on both sides. Ballast must be placed over the on-surface repair with a minimum 6 inch depth large aggregate ballast. A new post or posts must be installed along the leak with spacing of 2 feet maximum.
6. Any other conditions that reduce the effectiveness of the silt fence requires immediate repair and/or replacement.

3.07 NOT USED

3.08 DRAINAGE AND SEWER SYSTEM PROTECTION:

A. The Contractor must prevent the introduction of pollutants, contaminants, sediment, and other material from entering Storm Drain, combined Sewer, and other drainage system via any entrance vehicle. Sediment prevention for drainage structures may require such apparatus as sediment sumps, cover filters or outlet pipe cover filters.

B. Filters must allow the passage of water into or from the drainage structure without unreasonable backup or ponding and must prevent the passage of sediment and other debris.

C. Filters must be secured to the opening being protected to withstand all loadings and to resist movement including sediment and debris build-up, flows typical for the drainage structure and the local drainage conditions, and the potential for disturbance from construction and traffic activity.

D. Filters covering large areas not having adequate structural support must be reinforced with and secured to a plastic or wire mesh support backing system.

E. Where filters are expected to be in place for a considerable period of exposure, UV resistance and other climate and environmental strengths must be adequate.

F. Frequency of maintenance must include removal of sediment and other debris when either the sump build-up reaches approximately 1/3 capacity, or when obstructed filtration or the allowance for the passage of water is causing water back up.

G. Sediment and debris removal must be done carefully to prevent the escape of these materials into the drainage system.

3.09 WATTLES:

A. Wattles must be installed within shallow trenches parallel with the contour and perpendicular to runoff or other flow. A sequence of wattles must begin at the base of the slope and proceed uphill. Excavated material must be spread evenly along the upslope side and must be compacted using hand tamping or similar method. On gradually sloped or on clay and plastic silt type soils, trenches must be 2 to 3 inches deep. On loose granular soils, in high rainfall areas, or on steep slopes, trenches must be 3 to 5 inches deep or half the thickness of the wattle, whichever is greater.

B. Wattles must be spaced horizontally to allow not greater than a six (6) foot vertical change of elevation between wattle rows.

C. The wattle must be installed snugly into the trench, abutting adjacent wattles tightly end to end with minimal overlapping of ends. Wattles must be staked at each end, and in between at 4-foot maximum centers. Where trench conditions require, pilot holes for the stakes must be driven through the wattle and into the soil using a straight bar. Stakes must be driven through the center of the wattle at least 6 inches into the earth, leaving 2 to 3 inches of the stake protruding above the wattle.

D. Wattles must be maintained in contact with the soil in the trench, and must be inspected immediately after a runoff producing rainfall, as needed to verify soil contact.

3.10 CONSTRUCTION STORMWATER CONTROL MAINTENANCE:

A. The Contractor must keep a record of the CSC-BMP measures using forms similar to the samples attached to the end of this section during the entire duration of the Work. These forms are available in the Contracting Forms Workbook.

B. Construction Stormwater Control measures must be inspected at regular intervals and immediately following significant runoff producing rainfall events. The individual BMP and other control measures must be verified as performing acceptably and must be maintained until they are no longer needed, or are to be converted as part of a permanent erosion and sediment control when specified in the Contract.

C. The various devices must be inspected for damage, bypass, undercutting, and non-performance, and must be promptly repaired. Sediment buildup must be removed as specified or more frequent intervals when performance becomes questionable. Debris

and contaminated sediment must be properly disposed of. Clean sediments may be stabilized on-site as the CSC plan indicates.

D. When wet weather is forecast, the CESCL must verify that all measures are in-place and are functioning effectively and acceptably.

3.11 REMOVAL AND REUSE OF CONSTRUCTION STORMWATER CONTROLS:

A. When a temporary erosion or sediment control feature is no longer required, the Contractor must remove the measure or measures.

B. Reuse of a control measure may be acceptable if:

1. The measure or device has been thoroughly cleaned of all debris;
2. The measure or device is free of tears, holes, or other damage; and
3. The measure performs as intended and required.

3.12 SWEEPING AND WASHING:

A. The Contractor must ensure that soil, debris, or other material tracked and deposited is removed by sweeping or washing and properly disposed of.

END OF SECTION

Sample forms follow:

CSC Monitoring & Maintenance Log
CSC-BMP Construction Change Tracking Form

CSC MONITORING & MAINTENANCE LOG

Use this form manually or electronically to track maintenance activities related to BMPs and other CSC measures. Form(s) must be maintained on-site, reflecting most current status. If forms kept manually, make additional copies of form as needed. Keep all completed copies of this form with the on-site CSC Plan.

PW #	PROJECT NAME:	CONTRACTOR

PRIOR TO EARTHWORK:

I hereby certify all required BMPs are in place prior to construction

Printed Name of CESCL | Signature & Date

DURING EARTH WORK:

Date Inspected	Inspected by (Name)	BMP & Location	Repairs/Modifications Needed (Briefly Describe; write "N/A" if none)	Comments/Sampling Results

CSC - BMP CONSTRUCTION CHANGE TRACKING FORM

Use this form manually or electronically to track revisions/changes to BMPs and other CSC measures as work progresses. Form(s) must be maintained on-site, reflecting most current status. If forms kept manually, make additional copies of form as needed. Keep all completed copies of this form with the on-site CSC Plan. Reflect all CSC BMP changes on the CSC Plan Sheets.

PW #	PROJECT NAME:	CONTRACTOR

Change Number	Change Date	Name of CESCL Making BMP Change	CESCL Certification Expiration Date	Description of CSC Plan Sheet Change With Drawing Number

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. This section covers the requirements for compliance with environmental precautions and controls.

1.02 RELATED SECTIONS:

A. Section 01 32 13 - Progress Schedules

B. Section 01 33 10 - Submittals

C. Section 01 57 13 - Construction Stormwater Control

1.03 SUBMITTALS:

A. Within 10 Working Days of Notice to Proceed, the Contractor must submit an Environmental Pollution Control Plan. The Plan must include:

1. Water quality
2. Air quality, including dust control
3. Noise pollution
4. Temporary water pollution/erosion control
5. Oil, Fuel, and Chemical Storage, Handling, Spill Prevention, and Control.

1.04 NOTIFICATIONS RELATIVE TO CONTRACTOR'S ACTIVITIES:

A. The Contractor must plan and schedule Contractor work activities to conform to and allow time for notifications, approvals, reviews, and other conditions of the Contract Documents as detailed in Section 00 72 00 subsection 1.04.BB

B. Required notifications pertaining to spills, discharges, and similar incidents and emergencies are also detailed in Section 00 72 00 subsection 1.04.BB. These include, but may not be limited to:

1. Sanitary Sewer Spills (see subparagraph 1.04.BB.3.j)
2. Chemical, Oil, Hazardous Substance, or other Contaminant Spill or Discharge (see subparagraph 1.04.BB.3.k)

1.05 CHANGE ORDERS DUE TO ENVIRONMENTAL PROTECTION REQUIREMENTS:

A. General: During the life of the Contract, the Contractor must 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, 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 must 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 must 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 must:

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 00 72 00, 1.04.BB.

C. The Contractor must 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. Title 22 Subtitle VIII and Chapter 25.09 of the Seattle Municipal Code (SMC).
5. 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 (but 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 must:
    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 must 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 must:
    a. Obtain a waste discharge permit from the Department of Ecology before:
        1) Washing aggregate, or
        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 must 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 must 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 is responsible for controlling erosion, pollution, sedimentation, and runoff during the shutdown period.

G. The Contractor must protect water quality using appropriate methods subject to review and approval by the Engineer. In addition to other requirements in the Contract, water quality control measures may include, but are not limited to, the following:

1. Diversion of Storm Water: Storm water may 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 downstream flows.
2. Intercepting Ground Water: Surfacing ground water may 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 must provide means of controlling underground water that may be encountered during the Work.
3. Turbid Water Treatment Before Discharge:
    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. Surface water turbidity must be measured in a manner acceptable to the Engineer and is subject to verification by the Engineer.
    b. Turbid water from the Project Site must be treated before being discharged into stream or other State waters.
    c. Turbulence limitations include:
        1) For Lake Class Receiving Waters, turbidity must not exceed 5 NTU (Nephelometric Turbidity Units) over background conditions;
        2) For Class AA and Class A Waters, turbidity must 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;
        3) Discharges to a State waterway caused by aggregate washing, drainage from aggregate pit sites, and stockpiles or dewatering of pits and excavations must not increase the existing turbidity of the receiving waters;

4) For other classes of waters, refer to WAC 173-201-045 and WAC 173-201A-030.

d. 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 measures are required to minimize exposed areas and slopes until permanent measures are effective. Plastic sheet covering must 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 or erosion occur, the Contractor is responsible for restoring damaged areas and for cleanup of eroded material, including that in ditches, catch basins, manholes, culverts, and other pipes.

5. Chlorine Residual: Water containing chlorine residual must 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 must be periodically tested for chlorine residual.

6. Vehicle and Equipment Washing: Water used for washing vehicles and Equipment must 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 must provide a device for oil separation.

7. Oil and Chemical Storage and Handling: Handling and storage of oil and chemicals must not take place adjacent to waterways. The storage must be accomplished via use of dike tanks or barrels with drip pans provided under the dispensing area, or other such method approved by the Engineer. Shut-off and lock valves must be provided on tanks. Shut-off nozzles must be provided on hoses. Oil and chemicals must be dispensed only during daylight hours unless the dispensing area is properly lighted. Should an oil or chemical spill occur, the Contractor must provide timely notification in accordance with Section 00 72 00, Paragraph 1.04.BB. Fencing must be provided around oil storage. Locks must 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 must provide blocking and sealing of the sanitary Sewer line. Sanitary Sewer flow must be pumped out, collected, and conveyed or pumped directly to a sanitary Sewer system manhole for discharge. The existing Sewers must 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 must be removed to a disposal site. Equipment and tools in contact with the above materials must 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 must 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. Inasmuch as saw-cutting by-products increase the pH of the wastewater, filtering prior to discharge is NOT acceptable. Impervious surfaces contaminated with sediment and grit from saw-cutting, planing or pulverizing operations must 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 must be prevented from entering any inlet, catch basin, or other drainage structure or feature. Accumulated sediments and material must be removed from drainage channels on a regular basis. If necessary, temporary filters or filter materials must be placed in drainage channels to prevent the passage of material.

1.07 AIR QUALITY:

A. The Contractor must identify those portions of the Work that have potential to impact air quality. Specific means and methods to prevent and/or control impacts to air must be described for each such portion of work.

B. The Contractor must 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 must 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 must 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 must 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 must 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 must be equipped with exhaust and air intake silencers designed for the maximum degree of silencing. The type of silencer(s) required must be consistent with those used for high density residential, hotel, and hospital areas.

B. The Contractor must perform 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 must be liable for the payment of all fines and penalties resulting from failure to comply with the Federal, State and local pollution control regulations, including when 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 must be considered as incidental to the Work and such costs must be included in the Lump Sum Bid.

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, the Contractor must immediately cease construction activity at the discovery site and surrounding area and promptly notify the Engineer. If ordered by the Engineer, the Contractor must suspend construction activity that, in the opinion of the Engineer, would be in violation of Chapter 27.53 RCW. Suspension of this construction activity must 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 must comply with the Construction Stormwater Control Technical Requirements Manual (based on SMC Chapter 22.800 Stormwater, Grading & Drainage Code) and DCIS Best Management

Practices Manual, which describes temporary measures. Such measures may be indicated in the Contract, 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. If required by the Contract, the Contractor must, before starting the Work, submit to the Engineer for approval a Construction Stormwater Control (CSC) Plan in accordance with Section 01 57 13 Construction Stormwater Control.

E. The Contractor must comply with the CSC Plan approved per Section 01 57 13, and must 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 is responsible for the effectiveness of any and all CSC/TESC measures, whether approved within the CSC plan or not. The Owner shall not be held liable for any failure of any TESC/CSC measure, nor for any delays to the Work due to the Contractor's failure to submit an acceptable plan.

F. The Contractor must coordinate CSC measures 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 orders the Work suspended for an extended time under Section 00 72 00 Paragraph 1.08.G, the Contractor must make, before the Engineer assumes maintenance responsibility, every effort to control erosion, pollution, sedimentation, and run-off during the suspension, such that no additional TESC/CSC measures are required. Section 00 72 00, Paragraph 1.08.H describes the Engineer's responsibility in such cases.

H. The extent of excavation, borrow, and embankment operations in progress must 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 CSC measures must 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. 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 must not 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 is the Contractor's responsibility. Costs for temporary erosion control, for temporary sedimentation control, and for temporary water pollution control work must be considered incidental to the Work and such costs must be included in the Lump Sum Bid.

L. Records of submitted and actual pollution/erosion/sedimentation controls and plans must be retained for a period of three years after the Completion Date and must be available at reasonable times and places for inspection by the Engineer and, when applicable, other entities that may have interest in the Project.

1.12 DEWATERING:

A. The Contractor must 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 is responsible for obtaining such approval before commencing any pumping or de-watering operation.

C. The Contractor must include measures for control and treatment of 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

PART 1 - GENERAL

1.01 GENERAL:

The Contract drawings provide baseline and benchmark references; however, the Contractor is responsible for the layout of individual items of the Work. Such responsibilities are outlined in this Section and pertain to other Work as separately described in individual Drawings and Specifications.

1.02 RELATED SPECIFICATION SECTIONS: Related sections include, but are not limited to:

A. Section 01 11 00 - Summary of Work

B. Section 01 33 10 – Submittals

C. Section 01 76 00 - Protection of Existing Facilities

D. Section 01 78 39 - Record Documents

1.03 SURVEYING:

A. The Contractor must provide such field engineering services as are required for proper execution of the Work including, but not limited to:

1. Establishing and maintaining lines and levels from control points and baselines provided by the Contract drawings.
2. Construction staking for all construction activities, such as location of features, gridlines, structures (including elevations of inverts), pipe slopes, and rim elevations.
3. Recording of as-built information.

B. Survey base data: Any survey information provided with the Contract Documents is subject to the following caveats:

1. The site plan for the construction project area was compiled by the designer of record.
2. The Engineer makes no representation that the survey information is complete or that it addresses every site condition which may be significant to the Work.
3. The provision of the survey information by the Contract Documents does not relieve the Contractor of the responsibility to carefully examine the site and account for any conditions/elements that vary from or are in addition to the conditions/elements shown on the survey.
4. The existence and location of underground and other utilities and facilities indicated as existing are not guaranteed. Before beginning site Work, the Contractor must

investigate and verify the existence and location of underground utilities and other construction. Refer to Section 01 76 00 - Protection of Existing Facilities.

1.04 QUALITY ASSURANCE:

A. Survey Requirements:

1. The Contractor's surveyor must be a licensed professional surveyor in the State of Washington.
2. The Contractor must keep updated survey field notes in a standard field book and in a format set by the Engineer.
3. Survey field notes must include all survey work performed by the Contractor's surveyor in establishing line, grade and slopes for the construction work.
4. Copies of these survey field notes must be provided the Engineer upon request.
5. Upon physical completion of the Contract Work, the survey field books must be submitted to the Engineer and become the property of the Engineer.

B. If the survey work provided by the Contractor does not meet the standards of the Engineer, the Contractor must, upon the Engineer's Written Notice, remove the individual or individuals doing the survey work and retain a suitable replacement surveyor. If this fails, the Engineer, at the Contractor's expense, may complete the survey work required and deduct the cost from the Contract amount.

C. The Engineer reserves the right to check all work laid out by the Contractor during the progress of the work, as deemed necessary to verify conformance with the Plans and Specifications. The Contractor must allow sufficient time to permit such checks before completing the Work. These checks will be made during the regular working hours.

D. If existing reference and control points are damaged, moved, altered, or destroyed by the Contractor, the Park Surveyor's cost of re-establishing such points must be borne by the Contractor at the crew rate of $300 per hour.

E. All costs for survey work required to be performed by the Contractor must be included in the Bid.

1.05 SUBMITTALS:

A. Comply with pertinent provisions of Section 01 33 10 - Submittals.

B. Upon request of the Engineer or the Consultant, the Contractor must submit:

1. Data demonstrating qualifications of persons proposed to perform survey or other field engineering services.
2. Documentation verifying accuracy of field engineering work.

3. Certification, signed by the Contractor's surveyor, that elevations and locations of improvements are in conformance or non-conformance with the Contract Documents.

1.06 PROCEDURES:

A. In addition to procedures directed by the Engineer or the Consultant for proper performance of the Contractor's responsibilities, the Contractor must:

1. Protect construction control points, including grade control.
2. Preserve permanent reference points during progress of the work as shown on the contract drawings or staked in field.
3. Preserve grade control stakes.
4. Not relocate existing reference and control points without approval of the Engineer and Parks Surveyor.
5. Report damaged or destroyed reference or control points to the Parks Surveyor.
6. Be responsible for any increased costs or delays to the Contract relating to reference and/or control points which are damaged, moved, altered or destroyed by the Contractor or its subcontractors, suppliers, agents or employees.
7. Discontinue use of reference points alleged to be in error until accuracy of the points can be verified.

PART 2 - PRODUCTS: *Not Used*

PART 3 - EXECUTION

3.01 CONSTRUCTION LAYOUT:

A. The Contractor must:

1. Employ a surveyor licensed by the State of Washington to lay out the Work of this Contract.
2. Establish working lines for each structure and at reasonable intervals across the site.
3. Lay out the work described by the Contract Documents using recognized surveying methods and keep an accurate field book of work completed.
4. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale drawings to determine dimensions.
5. Advise the entities engaged in construction activities of marked lines and levels provided for their use.

6. As construction proceeds, check every major element for line, level and plumb.
7. Provide stakes as required by various sections of these specifications and as required for accurate construction. Make staking information available to the Consultant for review prior to executing construction based on staking.
8. Record deviations from required lines and levels and advise the Engineer when deviations that exceed indicated or recognized tolerances are detected. Record drawings deviations that are accepted and not corrected on as-built drawings.

3.02 AS-BUILT INFORMATION:

A. The Contractor must locate and establish grade of completed construction for use in preparing as-built documents of the project. Do not cover work until survey has been completed. As-built information is necessary for, but not limited to, the following:

1. Locations of utility structures, fittings and changes of direction of underground utilities.
2. Locations of shutoffs, valves and clean-outs for underground utilities, including locations of solenoid valves for irrigation systems.
3. Corners and/or center lines, and benchmark elevations of bridges, buildings, and other major structures.
4. Center lines and grades of roads, paths, vehicle gates.
5. Points at which new utility lines intersect existing.

END OF SECTION

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS:

A. All Wastes generated during the Project must be managed and disposed of in accordance with all applicable local, State and federal regulations.

B. Unless otherwise specified in the Contract, the Contractor is responsible for arranging and implementing the proper handling, management, segregation, storage, transport, and disposal of all wastes that are not Contaminated Soils and/or Dangerous Waste(s), including processing and maintaining required documentation. This may include:

1. Identifying, proposing, and contracting with disposal sites that can legally accept the types of identified or characterized wastes.
2. Identifying, proposing, and contracting with waste transporters qualified and licensed to transport the types of identified or characterized wastes. All wastes must be transported in accordance with federal, state and local transportation requirements, including driver training, placarding and use of shipping papers or waste manifests.
3. Obtaining waste clearances or other waste acceptance approvals through Public Health-Seattle & King County (PHSKC) or other agencies as appropriate and as required.
4. Creating and processing all necessary documentation, such as Certificates of Disposal or Recycling, sampling and analysis reports, waste clearance forms, waste acceptance forms, bills of lading, scale tickets, waste receipts, and others as applicable.
5. Providing the Engineer timely notice for reviewing documentation before transporting waste.
6. Providing the Engineer copies of all documentation pertaining to waste generation, recycling and disposal.

1.02 RELATED SECTIONS:

Section 02 10 00 Site Preparation

1.03 DEFINITIONS:

A. The following terms used in this Section are defined in Seattle Municipal Code (SMC) Chapter 21.36.

1. City's Waste – see SMC 21.36.012
2. Construction, Demolition and Land Clearing Waste (CDL Waste) – see SMC 21.36.012

3. Contaminated Soils – see SMC 21.36.012
4. Dangerous Waste – see SMC 21.36.012
5. Special Waste – see SMC 21.36.016
6. Unacceptable Waste – see SMC 21.36.016

1.04 GENERAL WASTE DISPOSAL:

A. In accordance with SMC 21.36.089, the following recyclable materials cannot be disposed as construction and demolition waste.
- Concrete, bricks and asphalt paving
- Metal (both ferrous and non-ferrous)
- Cardboard
- New construction gypsum scrap
- Unpainted and untreated wood
- Tear-off asphalt shingles
- Carpet
- Plastic film wrap

B. The Owner has established that this Project must generate the least amount of waste possible. The Contractor must utilize processes and procedures that minimize production of waste caused by error, poor planning, breakage, mishandling, contamination, or other factors.

C. In accordance with SMC 21.36.112, no waste generated within the City of Seattle may be disposed of in a waste disposal facility owned and operated by King County, unless specifically agreed by the City and King County. Union Pacific's Seattle Intermodal Facility (SIF) or successor receiving facility is designated as the receiving facility for disposal of all City's Waste, including waste left over after separating out Special Waste, Construction, Demolition and Landclearing (CDL) Waste, or materials destined for recycling. If utilizing this service, the Contractor, as a generator of such waste, must ensure correct delivery of such to SIF (or successor receiving facility).

1. PHSKC requires that waste be cleared and acceptable for the City's receiving facilities. Waste that is, appears to be, or is suspected of being contaminated, hazardous, dangerous, or may have operational constraints must be identified to and approved by PHSKC by submitting a completed Waste Characterization Form. A sample of this form is appended to this section, and the most current form and more information can be found at https://kingcounty.gov/depts/dnrp/solid-waste/facilities/waste-clearance.aspx.

D. Private disposal companies and waste sites outside of King County may require other documentation. Laboratory analysis of waste material may be required to obtain waste clearance or acceptance. Copies of all waste clearance, acceptance forms, and any

accompanying laboratory tests/reports or related supplemental information must be provided to the Engineer.

E. Disposal sites used under the Contract must comply with all applicable rules, ordinances, codes, regulations and law, and must have all required authorizations for the waste to be disposed. This may require the Contractor to obtain required permits for the waste site.

1. Disposal of excess material within a wetland area will not be allowed without a Section 404 permit issued by the U.S. Army Corps of Engineers and approval by the local agency with jurisdiction over the wetland. The Contractor must notify the Engineer prior to submittal of an application for this or any other environmental permit.

F. Waste sites located within the City limits of Seattle are subject to the rules and regulations set forth in Seattle's Stormwater Code and Grading Code and must at minimum have a grading permit issued to the property owner by the Director of the Seattle Department of Construction and Inspections.

G. Waste sites located outside the City limits of Seattle but within unincorporated King County are subject to the rules and regulations set forth by current King County grading requirements. Sites located outside the City limits of Seattle or unincorporated King County may also be subject to rules and regulations of the local governmental authority having jurisdiction.

H. The selection of waste sites and their use is subject to Engineer approval.

1. Sites, operations, or results of operations, which create a definite nuisance problem, or result in damage to public or private properties, are not acceptable.
2. Utilization of a site without submitting a legal grading permit and Consent Agreement from the property owner to the Engineer and obtaining approval of the Engineer will be considered unauthorized.
3. Surplus material must not be wasted within public properties or rights of way without all required permitting and, if located within City of Seattle right of way, a street use permit issued by the Director of the Seattle Department of Transportation. (SDOT).

I. Options for the disposal of woody debris from clearing and grubbing include on-site grinding for use as mulch or delivery to facilities that compost or recycle woody debris into soil amendment or mulch end products. Any action required to comply with any permit and/or any approval requirements at a Contractor-provided disposal site must be performed by the Contractor at no additional cost to the Owner.

1.05 DISPOSAL OF SPECIAL OR UNACCEPTABLE WASTE:

A. No asbestos, contaminated soils, hazardous, dangerous, or otherwise unacceptable waste is expected to be encountered for this Work. If encountered, such unacceptable waste

must be disposed of in accordance with all applicable local, State, and federal regulations, and the Owner will consider this as a "Changed Condition."

B. For special handling procedures for treated wood and/or potentially contaminated soils, refer to Subsection 3.04 below

1.06 SUBMITTALS:

A. Draft Waste Management Plan: Within 10 Working days after receipt of Notice to Proceed, or prior to any waste removal, whichever occurs sooner, the Contractor must submit to the Engineer a Draft Waste Management Plan. The Draft Plan must contain the following:

1. Analysis of the waste that the project will generate, including a list of types of wastestreams and estimated quantities of each wastestream.
2. For each wastestream, identification of disposal or recycle site(s) with the estimated quantities of the wastestream; and permits for the disposal sites, if necessary.
3. Identification of the proposed transporter to be used for each wastestream and applicable licenses that may be necessary for transporting the wastestream.
4. For each wastestream, descriptions of the storage of each wastestream on the project site before recycling or disposal. Include procedures to ensure that wastes are stored in a safe, secure manner that does not allow for leakage or other releases of waste. Include details regarding controls, signage and inspections.
5. Copies of all residential property owner agreements.

B. Final Waste Management Plan: Within 5 Working Days of the receipt of Engineer's review and comments to the Draft Waste Management Plan, the Contractor must submit a Final Waste Management Plan that incorporates revisions to the draft plan.

1. The Final Waste Management Plan must also include:
   a. Identification of the Manager and all on-site parties responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.
   b. A description of how Contractors will instruct the waste management procedures to staff and subcontractors and document such trainings. The Contractor must provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.
   c. A description of the regular meetings to be held to address waste management. Refer to Section 01 32 13 – Progress Schedules.
2. The Contractor must distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Engineer, and the Consultant.

C. Should additional or alternate waste sites become necessary during the life of the Contract, the locations and information for each site must be submitted to the Engineer for approval at least 10 Working Days prior to its use.

1. Furnish copies of permits for waste sites.

D. The Contractor must submit to the Engineer within 10 Working Days of receipt by the disposal site, 2 copies of each shipment list, bill of lading, and/or transmittal document, listing and describing the waste material shipped from the Project Site and deposited at the waste disposal site. The submitted shipment list must have the waste site operator's confirmation of receipt of the waste, and the name of the waste transporter. The Contractor must also provide the Engineer with the following copies:

1. Documentation of disposal as applicable
2. Waste sampling and analysis reports as applicable
3. Waste clearance or acceptance forms (copies of agency-approved forms must be provided to the Engineer).

E. Application for Progress Payments: The Contractor must submit with each Application for Progress Payment a Summary of Waste Generated by the Project. Failure to submit this information will render the Application for Payment incomplete and may delay Progress Payment. The Summary must be submitted on a form acceptable to the Engineer. An acceptable form is included in the "Contractor Forms Workbook" (a Microsoft Excel file containing most of the commonly used forms pertinent to the Contract), which can be found on a spreadsheet set created when the "Pay Estimate" package is created/exported by the Contractor (contact the Engineer if further instruction is needed). The form must contain the following information:

1. The amount (in tons or cubic yards) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid at the landfill, and the total disposal cost. Attach manifests, weight tickets, receipt, and invoices as applicable.
2. For each material recycled, reused, or salvaged from the Project, the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings from salvage or recycling of each material. Attach manifests, weight tickets, receipts, and invoices as applicable.

F. The Owner may request to review or approve all shipping papers prior to wastes leaving the project site.

G. When operations are complete, a release from all damages, duly executed by the waste site property owner and stating that the restoration of the property is satisfactory, is required.

1. Retainage withheld from the Contractor's payments will not be released until all such property owner releases have been furnished to the Engineer.

2. Should the release be, in the opinion of the Owner, arbitrarily withheld, the Owner may, at its sole discretion, accept that portion of the work involved and cause final payment to be made.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

3.01 GENERAL:

A. Use only approved waste sites.

B. Take the protective measures required for the type of waste being handled. Hazardous must shall be separated, stored, and disposed of according to applicable regulations.

C. After disposal, perform all operations necessary to put the waste sites in a neat, clean and orderly condition.

D. Final cleanup must be in accordance with the Contract and the requirements of the Stormwater Code, Grading Ordinance, permits, and residential property agreements.

3.02 SITE MAINTENANCE:

A. Keep work area, site, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris resulting from Contractor's operations.

B. The Contractor must lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat, clean, and clearly marked in order to avoid contamination of materials.

C. Provide on-site containers for collection of waste materials, debris, and rubbish. Periodically remove waste from the site.

D. Do not use the Owner's waste containers for construction waste.

E. Dispose daily of all flammable, hazardous, and toxic waste materials. Dispose of trash and debris in compliance with governing codes, ordinances, regulations, and anti-pollution laws.

F. Locate dumpster(s) inside the staging area or at a site designated by the Engineer.

3.03 DISPOSAL OF SURPLUS MATERIAL:

A. Material obtained from all excavation within the Project boundary must not be wasted unless the excavated material is designated by the Engineer as unsuitable for use in embankment construction, trench backfill, or for other purposes.

1. All excavated material not required for backfill must be removed from the site as the work progresses.

B. Other surplus, excess, or salvaged materials of value remaining after completion of associated Work must be offered to the Engineer. If declined by the Engineer, the Contractor must dispose of these materials in accordance with the requirements noted herein.

C. Material determined to be unsuitable by the Engineer must be disposed of in accordance with the requirements noted herein.

3.04 PROCEDURES FOR TREATED LIGHT POLES AND POTENTIALLY CONTAMINATED SOIL – (RESERVED)

END OF SECTION

Public Health
Seattle & King County

SEATTLE/KING COUNTY WASTE CHARACTERIZATION FORM

WC#_____

Please Type or Print in Ink **Initial** _____ **Renewal** _____ **Previous #**_____

A. WASTE GENERATOR

Company:_____ Phone #:_____

Contact:_____ E-mail:_____

WAD/EPA ID #:_____ Fax #:_____

Address of Waste Generation:_____ City:_____

Mailing Address:_____

City:_____ State:_____ ZIP:_____

Preferred Communication: · Phone · E-mail · Fax · Mail

APN _____

B. CONSULTANT (*If Applicable*)

Company:_____ Phone #:_____

Contact: _____ Fax #:_____

E-mail: _____

C. WASTE HAULER

Company:_____ Phone #:_____

Contact: _____ Fax #:_____

Mailing Address:_____

City:_____ State:_____ i ZIP:_____

Waste Packaging: · Drum · Bulk Solid · Other:_____

D. WASTE STREAM INFORMATION

Name of Waste:_____

Process Generating Waste:_____

Annual Amount in pounds or tons:_____ Estimated Amount per Delivery:_____

Frequency of Disposal: · One time only · Weekly · Monthly · Other:_____

Special Handling Instructions/Supplemental Information: _____

_____

Public Health
Seattle & King County

E. PHYSICAL CHARACTERISTICS OF WASTE (*See Instructions*)

1. Color:_____
2. Does the waste have a strong incidental odor? · No · Yes, if so, describe:_____
3. Physical State: · Solid · Liquid · Semi-Solid · Powder · Other:
   _____
4. Free Liquids: · No · Yes - Volume:_____%
5. pH: · ≤2 · > 2-4 · 4-7 · 7 · 7-10 · 10- <12.5 · ≥12.5 · NA
6. Flash Point: · NA · <140°F/60°C · 140-199°F/60-93°C · ≥200°F/93°C

F. CHEMICAL COMPOSITION RANGE (MIN-MAX)

1. _____ _____-_____%
   _____ _____-_____%
   _____ _____-_____%
   _____ _____-_____%
   _____ _____-_____%
   _____ _____-_____%
   _____ _____-_____%
   _____ _____-_____%
   Total: _____%

2. Does the waste contain any of following? (provide concentration if known):

	NO	LESS THAN	ACTUAL
PCBs	·	· <50 ppm	____ppm
Cyanides	·	· <30 ppm	____ppm
Sulfides	·	· <500 ppm	____ppm

3. Method used to determine composition: · Analytical Data · · MSDS · Other:_____

G. SAMPLING INFORMATION (*If Applicable*)

1. Source of Sample (eg. drum, stockpile, sump/catch basin; tank)_____
2. Sampling Method: · Composite · Discrete/grab · Other:_____
3. Number of samples:_____

H. GENERATOR CERTIFICATION

By signing this Waste Characterization Form, the Generator certifies:

1. This waste is not a "Hazardous Waste" as defined by USEPA and/or the state.
2. This waste does not contain regulated radioactive materials or regulated concentrations of PCBs (Polychlorinated Biphenyls).
3. All information provided is a true and accurate description of the waste material. All relevant information regarding known or suspected hazards in the possession of the Generator has been disclosed.
4. This waste complies with the regulations of the Seattle-King County Department of Public Health and the local solid waste division.
5. The analytical data presented herein, attached hereto, or otherwise submitted for the purpose of completing or supplementing any or all of the information on this form were derived from testing a representative sample taken in accordance with 40 CFR 261.20(c) or equivalent rules.
6. If any changes occur in the character of the waste (e.g., physical characteristics, chemical composition, process of generation, etc.), the Generator shall notify the Seattle-King County Department of Public Health.

7. Signature:_____ 8. Title:_____
   (not required if submitted electronically)

9. Name: _____ 10. Date:_____
   Type or Print

Public Health
Seattle & King County

WASTE CHARACTERIZATION FORM INSTRUCTIONS

Information on this form, is used to determine if questionable wastes may be disposed as solid waste in a legal, safe, and environmentally sound manner. Answers must be provided for all sections of this form, and must be printed in ink or typed. A response of "NONE", or "NA" (not applicable) can be made if appropriate. If additional space is needed, indicate on the Waste Characterization Form and attach. If you have questions concerning this form, please contact the Waste Characterization Program at (206) 263-8528.

PARTS A. – C. Enter appropriate contact information. If you have waste generator ID number issued by the USEPA or Washington Department of Ecology, enter it in section A.

PART D. WASTE STREAM INFORMATION

Name of Waste - Enter the name generally descriptive of this waste (e.g., paint sludge, contaminated soil, sharps)

Process Generating Waste - List the specific process/operation or source that generates the waste (e.g., spray painting, spill clean up, process wastewater treatment, building maintenance).

Annual Amount - Enter the amount of waste that will be generated and transported annually (expressed in pounds, or tons). If this waste is going directly to a transfer station or landfill enter an estimate of the amount to be delivered per trip.

Frequency of Disposal - Enter how often this waste will be removed from the site.

Special Handling Instructions/Supplemental Information - For all wastes, describe any special handling requirements and any additional information that you feel would assist in determining the proper method(s) for transportation, treatment, storage, and disposal of the waste.

In addition, for the following wastes include the information specified:

Biomedical Waste (as defined by local ordinance): Describe the type of biomedical waste and the treatment method used.

Empty drums or other containers: List the number, size of containers, materials they contained.

Food Products/Containerized Liquids: Describe the products or containerized liquids (e. g., beef jerky, beer, shampoo). List the number and size of containers for any containerized liquids.

For the wastes listed above, skip Parts E, F and G. However, Part H must be completed.

PART E. PHYSICAL CHARACTERISTICS OF WASTE

1. Color - Describe the color of the waste (e.g., blue, transparent, varies).
2. Odor - DO NOT SMELL THE WASTE. If the waste has a known incidental odor check "Yes" and describe it (e.g., acrid, pungent, solvent, sweet).
3. Physical State - Check the appropriate box for the physical state of the waste. Include a description if "other" is chosen (e.g., gas).
4. Free Liquids - Check "Yes" if liquid is usually present when packaging for shipment and estimate the percentage of liquid. Check "No" if there are no free liquids as determined by the Paint Filter Test (Method 9095 of SW-846) or direct observation.
5. pH - Check the appropriate box for the pH of the liquid portion of the waste. For solid or organic liquid wastes, indicate the pH of 10% aqueous solution of the waste, if applicable. Check "NA" for non-water soluble materials (e.g., foundry sand).
6. Flash Point - Check the appropriate box for the flash point of the waste and the method used to obtain the flash point, if applicable.

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PART F. CHEMICAL COMPOSITION

1. If known, list all organic and/or inorganic components of the waste using specific chemical names. If trade names are used, attach Material Safety Data Sheets or other documents which adequately describe the composition of the waste. For each component, estimate the range (in percents) in which the component is present. The total of the maximum values of the components must be greater than or equal to 100% including water, earth, etc.
2. If this waste contains PCBs, cyanides, or sulfides, indicate the concentration(s). If this waste does not contain these constituents, indicate by checking the "NO" box(es) which apply. If the concentration of these constituents is unknown, please indicate "UNK" under "ACTUAL".
3. Indicate the method(s) used to determine composition and attach supporting documents.

PART G. SAMPLING INFORMATION

1. Indicate where the sample of the waste was obtained.
2. Check the appropriate box indicating the method of sampling.
3. Indicate the number of samples taken.

If the sample was handled using Chain of Custody, attach the completed form.

PART H. GENERATOR CERTIFICATION

By signing this Waste Characterization Form, the Generator certifies that the statements in numbers 1, 2, 3, 4, 5 and 6 are true and accurate with respect to the waste streams listed.

7. Signature - An authorized employee of the Generator must sign this form.
8. Title - Enter employee's title.
9. Name - Enter employee's name.
10. Date - Enter the date signed.

Send the completed application to -

Public Health – Seattle & King County
Waste Characterization Program
Chinook Building
401 5th Ave, Suite 1100
Seattle, WA. 98104

You may also fax the form to - (206) 296-0189

Questions? Contact Waste Characterization at –

Telephone: (206) 477-0184
E-mail: wc@kingcounty.gov

http://www.kingcounty.gov/healthservices/health/ehs/toxic/SolidWaste.aspx

PART 1 - GENERAL

1.01 SUMMARY:

A. This section includes administrative and procedural requirements for final cleaning of the Work prior to Substantial Completion, including but not limited to:

1. Cleaning procedures
2. Inspection

PART 2 - PRODUCTS:

A. Do not use cleaning materials that may damage finished surfaces.

B. Do not use cleaning materials hazardous to health or property.

C. Use only cleaning materials and methods recommended by manufacturer of item or material to be cleaned.

D. Submittals: Provide for the Engineer's review and approval manufacturer's Safety Data Sheets (SDS) for any and all chemical cleaning products utilized.

PART 3 - EXECUTION

3.01 FINAL CLEANING:

A. Cleaning: The Contractor must 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:

1. Remove dust and dirt in corners.
2. Remove grease, mastic, adhesives, paint splatter, 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, adhesives, films and any other discernible substances or contaminants.
    b) Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces.
    c) Restore reflective surfaces to original reflective conditions.
    d) Replace chipped, cracked, broken, or otherwise damaged materials, including but not limited to glass and transparent materials.

e) Remove excess lubrication and other substances from mechanical and electrical equipment.

f) Clean plumbing fixtures to a sanitary condition.

g) Clean light fixtures and lamps.

3. Remove debris and surface dust from limited-access spaces including trenches, equipment vaults, manholes, catch basins, crawl spaces, and similar spaces.

4. Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances. Rake grounds which are neither planted nor paved to a smooth, even-textured surface.

5. Sweep paved areas to a broom-clean condition. Remove stains, petrol-chemical spills, paint splatter, and other foreign deposits.

6. Leave concrete floors broom-clean. Remove stains, spills, and other foreign deposits.

7. Vacuum carpeted surfaces. Remove coverings, stains, spills, and other substances. Any areas that in the opinion of the Engineer show noticeable wear, staining, or other damage are subject to rejection and replacement.

B. Pest Control: Engage an experienced, licensed exterminator to conduct a final inspection and rid the Work of rodents, insects, and other pests that may be identified as a result of such inspection.

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 pre-existing features and/or previously completed Work.

D. Extra Materials: Excess materials of value remaining after completion of associated Work must be offered to the Engineer. If declined by the Engineer, the Contractor must dispose of these materials as directed by the Engineer.

3.02 INSPECTION:

A. Prior to requesting inspection for certification of Substantial Completion, the Contractor must inspect the Work site and verify it has been cleaned and debris removed in accordance with Contract requirements.

B. Prior to certifying Substantial Completion, the Engineer will conduct a detailed inspection of the Work and Work site. If any Work items are identified as insufficiently cleaned per Contract requirements, such items will be included on the inspection Punch List. If any such item is, in the sole opinion of the Engineer, sufficiently deficient as to render the Work unsuitable for full and beneficial use by the Owner or otherwise not meet Substantial Completion requirements, Substantial Completion will be denied.

C. No additional time will be allowed in the Contract for correction of deficiencies identified per paragraph 3.02.B above. The Contractor must correct all such deficiencies to the satisfaction of the Engineer before certification of Substantial Completion. In order to achieve Substantial Completion, the entire Project must be clean and ready for occupancy by staff and public.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section covers the requirements for Contractor's protection of existing facilities.

1.02 NOTIFICATIONS AND COMPLIANCE:

A. Notifications Relative to Contractor's Activities:

1. The Contractor must plan and schedule Contractor work activities to conform to and allow time for notifications, approvals, reviews, and other conditions of the Contract Documents.
2. Notifications related to protection of existing facilities are specified in Section 00 72 00, subsection 1.04.BB.

B. The Contractor shall be liable for all damages arising from noncompliance with this Section.

1.03 LOAD LIMITS:

A. General:

1. When moving Equipment and materials on any public Highway, the Contractor must comply with any law that controls traffic or limits loads. The Contract does not exempt the Contractor from such laws nor does it license overloads. At the Engineer's request, the Contractor must provide any information needed to determine the weight of Equipment on the roadway.
2. When the Contractor moves Equipment or materials for the Project, legal load limits apply on any:
    a. Road open to or in use by public traffic.
    b. Existing Road not designated for reconstruction under the current Contract.
    c. Newly paved Road (with its final lift in place) built under this Contract. The Contractor may haul overloads (not exceeding 25 percent) on such roads not open to public traffic if this does not damage completed Work. Should damage occur, the Contractor must pay all repair costs.
3. On all other parts of the Project, the Contractor may operate Equipment without load-limit restrictions except as restricted by Subsection 1.03.B below.
    a. In doing so, however, the Contractor remains responsible for any damage that may result.

b. All vehicles subject to licensing on a tonnage basis are required to obtain licenses to cover the maximum legal capacity before being eligible to operate under the load-limit restrictions described in the Subsection 1.03.B below.

4. The Engineer may approve higher load limits than those allowed by Subsection 1.03.B below (Load Limit Restrictions) if it is necessary and safe to do so.

   a. To obtain such approval, the Contractor must make this request in writing to the Engineer at least 5 Working Days in advance of the need.

   b. The request must describe in detail the loading, configuration, and movement or position of the Equipment on the structure or over the culverts and pipes.

   c. The request must state that the Contractor assumes all risk for damages.

   d. The Contractor must include in the Bid item prices any and all costs associated with operating over bridges or culverts.

   e. Nothing in this Section shall serve to eliminate, reduce, or otherwise alter the Contractor's other responsibilities under the Contract or under public Highway laws.

B. Load-Limit Restrictions:

1. The following load limits apply:

   a. Structures Designed for Direct Bearing of Live Loads: On these structures, the gross or maximum load on each individual vehicle axle must not exceed the legal load limit by more than 35 percent. No more than one vehicle may operate over any structure at one time.

   b. Underpasses and Reinforced Concrete Box Culverts Under Embankments: Over these structures, maximum loads are 24,000 pounds on a single axle and 16,000 pounds each on tandem axles spaced less than 10 feet apart, provided that:

      1) The embankment has been built in accordance with the paragraphs a), b) and c) below.

         a) The Contractor must place earth embankments in horizontal layers of uniform thickness. These layers must run full width from the top to the bottom of the embankment. Slopes must be compacted to the required density as part of embankment compaction.

         b) During grading operations, the Contractor must shape the surfaces of embankments and excavations to uniform cross-sections and eliminate all ruts and low places that could hold water.

         c) On a tangent, the Contractor must raise the center of the embankment above the sides. On a sidehill, the high point of any layer must intersect the original ground and must slope uniformly toward the lower side. This slope must not exceed 1 foot in 20 feet.

2) The embankment has reached at least 3 feet above the top of the underpass or Culvert.

a) When the embankment has reached 5 feet above the top of the Culvert or underpass, the Contractor may increase axle loads up to 100,000 pounds each if outside wheel spacing is at least 7 feet on centers on the axle.

c. Pipe Culverts and Sewer Pipes: Loads over pipe Culverts and sewer pipes may not exceed 24,000 pounds on a single axle and 16,000 pounds each on tandem axles spaced less than 10 feet apart. These limits are permitted only if:

1) The Culvert or pipe has been installed and backfilled to specifications, and

2) The embankment has reached at least 2 feet above the top limit of pipe compaction.

3) When the embankment has reached 5 feet above the top limit of pipe compaction, the Contractor may increase per-axle loads up to 100,000 pounds if outside wheel spacing is at least 7 feet on centers on the axle centers, except that:

a) For Class III reinforced concrete pipes, the embankment must be risen above the top limit of compaction at least 6 feet

b) For Class II reinforced concrete pipes, the maximum load for each axle is 80,000 pounds if outside wheel spacing is at least 7 feet on axle centers. In this case, the embankment must be risen above the top limit of compaction at least 6 feet.

1.04 PROTECTION AND RESTORATION OF PRIVATE AND PUBLIC PROPERTY:

A. The Contractor must protect from damage or destruction private and public property located on or near the Work that is not designated for repair, replacement or removal. The Contractor must ensure that interference with the use of such property is minimized.

B. Property includes land; improvements lawfully occupying the Right of Way; trees, shrubbery and landscaping; electrical distribution and transmission systems; water distribution and transmission systems; survey markers and monuments; buildings and structures; conduits and pipes; fences; highway facilities such as signal systems (including loop detection systems in pavement structures both approaching and at signalized intersections), roadway lighting systems, signs, guardrails, pavements, curbs, driveways, sidewalks, traffic buttons, paint striping and other channelization; and other property of all descriptions whether shown on the Drawings or not.

C. The Contractor is alerted to the existence of cast iron Water Mains within the Right of Way having pipe joints very sensitive to disturbance.

1. These pipe joints have been known to develop leakage when disturbed by shifting earth, or excessive vibrations, or adverse impacts of any other construction excavation work

2. The Contractor must take additional precautions to eliminate adverse impact to cast iron Water Main.

D. The Contractor must, at no additional cost to the Owner, provide and install safeguards acceptable to the Engineer to protect public and private property.

1. If the use of public or private property is interfered with by the Contractor, the Contractor's agents or the Contractor's employees, such interference must be terminated immediately.

2. If public or private property is damaged or destroyed by the Contractor, the Contractor's agents or the Contractor's employees, such damaged or destroyed property shall be considered defective or unauthorized per Section 00 72 00 subsection 1.03.G, and repaired and restored immediately to its former condition by the Contractor at the Contractor's expense.

3. Should the Contractor refuse or not respond promptly to a written request to restore damaged or destroyed property to its original condition, the Engineer may have such property restored by other means at the Contractor's expense as permitted by Section 00 72 00 subsection 1.03.H.

E. Per WAC 332-120, no survey monument may be damaged or removed without proper permit. Seattle Public Utilities is responsible for maintaining all Right of Way survey monumentation. If any survey monument is in danger of being dislodged or lost because of nearby construction, or in danger of being disturbed during removal of pavement where monumentation, whether cased or not, exists within the pavement, the Contractor must secure a permit and provide advance notification as required by Section 00 72 00, subsection 1.04.BB.3.q.

1. The cost to replace survey monumentation damaged or lost because of the Contractor's failure to follow the requirements of Section 00 72 00 subsection 1.04.BB.3.q will be at the sole expense of the Contractor. Costs include, but may not be limited to, the cost of replacement survey monuments and the survey labor and supervision needed to set monuments as closely as possible to their original locations.

1.05 PROTECTION AND RESTORATION OF TREES, SHRUBS, AND PLANT MATERIAL:

A. See Section 01 56 39 - Temporary Tree, Vegetation, and Soil Protection.

1.06 PROTECTION AND RESTORATION OF FENCES, MAILBOXES, AND MISCELLANEOUS ITEMS:

A. The Contractor must enclose the Work area by installing and maintaining temporary fencing when Work is within easements or abuts private property.

B. For U.S. Postal Service collection boxes and similar items, refer to Section 00 72 00 subsection 1.04.BB.3.o.

C. Reserved.

D. When trenching is required within a planting strip the Contractor must protect the existing curb, gutter and sidewalk from damage, utilizing timber pads or other surface protection if/as necessary.

1. The Contractor must demonstrate to the Engineer's satisfaction that the measures proposed to protect existing improvements are adequate prior to proceeding with trenching in the planting strip.

E. Where sprinkler systems are encountered in a planting strip, the Contractor must carefully remove the existing sprinkler system for reinstallation by the Contractor after the work in the planting strip is complete.

F. When, due to the Contractor's operations, plastic traffic buttons, lane markers or pavement markings are damaged, destroyed or obliterated outside the neat lines of a trench or area of pavement restoration, the Contractor must restore them in kind at no expense to the Owner.

1.07 UTILITIES AND SIMILAR FACILITIES:

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

B. The Contractor must protect from damage private and public utilities encountered during the Work. Utilities include, but are not limited to, Sewer and Storm Drain systems; water supply and distribution systems; electrical transmission and distribution systems; natural gas distribution systems; telephone, telegraph, and CATV systems; fiber optic systems; fire alarm systems; petroleum pipe lines; steam distribution systems; traffic control systems; power lines and appurtenances; METRO trolley lines and feeders; railroad tracks and appurtenances; and similar facilities and systems.

C. 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.

1. 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.

2. Under some circumstances however, this removal or relocation may have to be performed concurrent with the Work. In this case, the Contractor must coordinate the Contract Work with that of the utility company as needed to minimize interference with both kinds of work.

3. 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 must document the location, type, size, and other relevant information regarding the utility and immediately notify the Engineer in writing.

D. The Contractor may encounter underground facilities that are not reflected or accurately shown in the Contract Documents. When the relocation of these facilities is necessary to accommodate the Work, the Engineer will provide for the relocation of these facilities by other forces, or the relocation may be performed by the Contractor as extra Work pursuant to a Change Order.

E. The Contractor may encounter private water-service utilities that are not reflected or accurately shown in the Contract Documents. Such private water-service utilities may be either a single water-service utility from the water meter or a multiple water-service utility(ies) from the water meter.

1. Records of such utilities are not maintained by the Engineer and therefore may not appear on the Drawings and may not be field located by Seattle Public Utilities.
2. The locations of these private utilities can usually be ascertained by relative meter location, residence location, or through discussion with various private property owners.
3. The Contractor must locate and protect these private water services from damage.

F. The Contractor is also alerted to the existence of RCW Chapter 19.122, an act relating to underground utilities and prescribing penalties, and Section 00 72 00, Subsection 1.04.BB, herein prescribing certain notification to be made by the Contractor.

1. Any cost or scheduling impact incurred by the Contractor by reason of Contractor's required compliance with these statutory and contractual provisions shall be borne by the Contractor.
2. No excavation may begin until all known facilities near the excavation area have been located and marked.

G. The Engineer and the owners of utilities, or their authorized agents, reserve the right to enter upon the Right of Way for the purpose of making changes, connections, or repairs to their facilities.

1. The Contractor must cooperate with forces engaged in such work and must avoid any unnecessary delay or hindrance to work being performed by other forces.
2. The Contractor must provide all notifications and applications needed to effectively coordinate utility and Contractor Work (See Section 00 72 00, Subsection 1.04.BB).

H. Should the Contractor desire to have an adjustment in line or grade made on a utility or other improvement for the Contractor's convenience and the rearrangement is in addition to, or different from, that indicated in the Contract, the Contractor must make all necessary notifications and applications with the owner of the utility for such rearrangement and bear all expenses in connection with that work.

I. If it is necessary to provide temporary water supply connections due to conflict with private water-service pipes during construction, the Contractor must to do so at no additional cost to the Owner.

J. In all cases, private water-service lines damaged by the Contractor must be repaired by the Contractor at the Contractor's expense.

1. The Contractor must notify the Engineer immediately of any such damage and must begin repairs immediately and work continuously until water service is restored.
2. Repair of damaged private water-service lines must be inspected by Seattle Public Utilities or applicable water utility prior to backfilling.

K. Except as otherwise provided herein, all costs incurred by the Contractor in complying with requirements of this Section must be included in the Lump Sum Bid. When others delay the Work through late removal or relocation of any utility or similar facility, the Contractor's loss of time will be adjusted by extending the Contract Time per Section 00 72 00, subsection 1.08.I.3.L. The Contractor must, before an excavation begins, submit a locate request via the Utilities Underground Location Center 1-800-424-5555 or http://www.callbeforeyoudig.org/washington/, in accordance with Section 00 72 00, subsection 1.04.BB.3.m.

1. The Contractor must also notify the Engineer prior to excavation and provide the results of the utility locate.

1.08 UTILITY CLEARANCES:

A. Clearances Between Water Mains and Other Utilities:

1. Where possible, sewers must be laid at a lower invert elevation than Water Mains.
2. Water mains and sewers must 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:
   a. Five (5) feet horizontal when the Water Main is a ductile iron Water Main.
   b. Less than 5 feet to a minimum of 18" when the Water Main is ductile iron, and:
      1) The sewer is constructed of materials and with joints that are equivalent to Water Main standards, including pressure-testing requirements.
      2) The bottom of the Water Main is at least 18 inches above the top of the sewer.
3. Water mains crossing over sewers must be constructed of ductile iron and must be spaced to provide a minimum separation of 18 inches between the bottom of the Water Main and the top of the sewer.
4. Water Mains passing under sewers must be protected by providing:
   a. A minimum vertical spacing of 18 inches between the bottom of the sewer and the top of the Water Main.
   b. Adequate support for the sewer to prevent excessive deflection of joints or any possibility of the sewer line bearing weight on the Water Main.

c. The point of crossing centered between two successive joints of the Water Main pipe.

5. When the Water Main is existing and new side sewers are being installed or reconnected the following requirements pursuant to SMC Chapter 21.16 apply:
   a. Ductile iron pipe must be used for all side sewers crossing over Water Mains, for a perpendicular distance of at least 5 feet from the center of the Water Main.
   b. Side sewers laid below Water Mains must 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 ductile or cast iron pipe is used for the side Sewer.
6. All utilities, both public and private, passing over, under, or very close to existing Water Mains within distances specified in this Section must be coordinated with Seattle Public Utility (SPU) Water Operations at least 15 Working Days in advance of construction, as well as coordinated with and approved by the Engineer. See Section 00 72 00, Subsection 1.04.BB.3.g.
   a. Provide minimum 5 foot horizontal separation from the existing Water Main.
   b. Provide minimum 18 inch separation vertically under the existing Water Main.
   c. No new utility may be installed over an existing Water Main.
7. Notifications regarding shutdowns of Water Mains or obstructions of hydrants and valves shall be in accordance with Section 00 72 00, Subsection 1.04.BB.3.g
8. Exceptions to the requirements in this Section must be approved by the Engineer.

B. Clearances Between Gas Mains and Other Utilities:
   1. Minimum clearances of 1 foot vertical and 6 inches horizontal are required to separate an existing gas main, or a gas service line, from a new ductile iron water line to be installed above or below the gas line.
      a. If these minimum clearances cannot be maintained, a protective wrap must be provided for the entire distance where clearances are less than required.
      b. Wrapping material must consist of either a split PVC pipe or PVC wrapping of at least 0.04-inch thickness and may be applied to either one of the pipes.
   2. Horizontal and vertical clearances of 6 inches or more are preferred between Water Mains and all other utilities except gas and sewer lines (see Subsections 1.08.B and 1.08.A, respectively, for gas and sewer lines). If a smaller separation is unavoidable, the space between the Water Main and the other utilities must be filled with polyethylene plastic foam material before backfilling.

C. Clearances Between Sewers:
   1. Whenever a new Sewer /drain pipe clears an existing or new utility by 6 inches or less, polyethylene plastic foam in accordance with City of Seattle Standard Plans and

Specifications (most recent edition), must be placed between the utilities as a cushion prior to backfilling.

D. Clearances with Electrical Distribution and Transmission Systems:

1. When an underground electrical facility is identified or "marked for locate" as specified in Subsection 1.07.L above and is within the vicinity of a proposed excavation, the Contractor must provide advance notification as per Section 00 72 00, Subsection 1.04.BB.3.h, and an Electrical Safety Observer may be required. Clearances must be maintained per Seattle Standard Specification Section 1-07.17(2)C. A SCL Electrical Safety Observer may be required per Section 1-05.2(2)
2. If Work involves tree removal, tree trimming, or trees proposed for planting within 10 feet of an overhead electrical distribution or transmission wire, the Contractor must provide advance notification as specified in Section 00 72 00, Subsection 1.04.BB.3.l - Overhead Electrical Power Lines and Trees.
3. The Contractor must comply with Section 00 72 00, subsection 1.03.B.2 when construction is proposed near any Seattle City Light electrical facility.

E. Tree Clearances: Planting of new trees must meet the tree clearance requirements as specified on City of Seattle Standard Plan No. 030 for any tree plantings in street rights of way. Tree plantings within SPR properties (not located within utility easements or directly over SPR utilities) must be located per SPR standards and as shown on the Contract Documents. Trees must be located no closer than 5 feet on either side of the utility lines.

PART 2 - PRODUCTS

2.01 POLYETHYLENE PLASTIC FOAM:

A. Polyethylene plastic foam used in sanitary Sewer and Storm Drain construction must meet Federal Specification PPP-C-1752C Type 1, Class 2, (ETHAFOAM™).

PART 3 - EXECUTION

(Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of the Contract apply to work in this Section.

A. Specific related Sections include, but are not limited to:

- Section 00 72 00 - General Conditions
- Section 01 77 19 – Contract Closeout
- Section 01 78 36 - Warranties and Bonds
- Section 01 78 39 - Record Documents

1.02 WORK IN OTHER SECTIONS: Coordinate related work specified in other parts of the Project Manual

1.03 DESCRIPTION OF WORK: The Operations and Maintenance (O&M) Manual must contain all operating and maintenance instructions, information, and/or data relevant to all:

A. Landscape and irrigation components;

B. Architectural products;

C. Finishes and furnishings;

D. Mechanical equipment and components;

E. Electrical equipment and components; and

F. Any other special equipment and components required for the project.

An itemized indexed list of all warranted items and products and their warranty term must be placed at the beginning of the O&M Manual for easy reference. The O&M Manuals must be prepared in both physical form (paper) and electronic form (.pdf).

1.04 O&M MANUAL FORM AND MATERIALS:

A. Organization - the O&M Manual must be organized in accordance with the 48 Division CSI (Construction Specifications Institute) numbering system. Divisions must be flagged with tabs.

B. Size - must be 8-1/2" x 11"

C. Paper - provide 20 pound (74 g/m^2) minimum; white for text 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. Separation of Information – Separate each CSI Division with heavy-weight, durable paper or plastic tabbed index dividers, 110-lb index (210 g/m^2) or equivalent, resistant to folding and tearing. Separate each product and or component parts of equipment within a CSI Division with standard tabbed dividers, 90-lb index (165 g/m^2) or equivalent, followed by typewritten page describing the contents of the section.

G. Index Tabs- Each index tab must be neatly and legibly printed (using typewriter or laser printer) to describe the contents of the section. Index tabs must be durable, plastic coated, reinforced, and indexed to match the names and order listed in the Table of Contents. Inserted index tabs are not allowed.

H. Binders - provide:

1. Commercial quality three-ring hard cover binders with durable and cleanable plastic covers for inserting required cover and spine information.
2. Ring size: As suitable to content; 3 inch-maximum, 1-inch minimum.
3. When multiple binders are used, correlate data into related groupings.

I. Manual Cover - the Cover of the O&M Manual must include the following information in the order shown:

1. Title of Project
2. CIP Project Number
3. Public Works Contract Number
4. The words "Operations and Maintenance Manual"
5. If applicable, the volume number (label volumes as 1 of 4, 2 of 4, 3 of 4, etc.)
6. Company Name of primary Consultant/Designer
7. Company Name of Prime Contractor
8. If applicable, Company Name(s) of primary Subcontractor(s) (e.g. Mechanical, Electrical, etc.)
9. Physical Completion Date (this may be provided as a placeholder for the Owner to fill in after acknowledgement of Physical Completion.

J. Manual Spine - the spine of the O&M Manual must showthe name of the project followed by “O&M Manual” and the year completed. If there are multiple volumes, identify the volume number and the general subject matter covered in that volume.

1.05 CONTENTS:

A. Title Page - provide the title of the Project; name of the Project Manager; names, addresses, telephone numbers of the Consultant, major Subconsultants, General Contractor, and major Subcontractors; 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. Owner's Acknowledgment of Physical Completion - since the O&M Manual is due in advance of Physical Completion, this may be provided as a placeholder page, with the actual acknowledgment to be inserted by the Owner after receipt of the approved O&M Manual.

D. Warranty List noted in 1.03 listed above.

E. The Contractor must provide a table summarizing recommended and required maintenance activities and schedules for all equipment/components, i.e. scheduled maintenance spreadsheet. The Consultant will utilize this information in part for developing a Preventive Maintenance Schedule.

F. Body of Manual - must be in the Construction Specification Institute (CSI) Format.

1. Divisions 02 through 48: Bind all product data, product maintenance data, and warranty information together for each product listed. All products and systems that could reasonably be expected to require repair or replacement within 40 years after Project Physical Completion must be covered in this manual. Include:

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.

c. Paintings and Coatings - for all painting work, provide a complete finish schedule of products, color names and numbers, formulas, and gloss used. Provide a drawing showing all paint and color locations.

d. 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.

e. For each product or finish, list names, addresses and telephone numbers of suppliers, including local source of supplies and replacement parts.

f. 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.

g. Additional Requirements- as specified in individual specification sections and such data or information that may be identified as useful or important during instruction of Parks' personnel.

h. Preventive Maintenance Instructions: Include for each piece of equipment or system furnished requiring periodic inspections, lubrication, adjustment and/or other periodic tasks, as appropriate to ensure optimum and continued performance as specified.

i. 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.

G. Warranties and Bonds:

1. Product Warranties: Include copies of all Extended Warranties with products that have them. See individual Project Manual sections for requirements. Identify such warranties in the table of contents at the beginning of the O&M Manual.

2. Bind in a copy of each warranty with each product or system. The original of each warranty must be bound in a separate labeled hard cover binder and submitted with the Approved O&M Manuals. See section 01 78 36 - Warranties and Bonds.

1.06 SUBMITTAL SCHEDULE:

A. At least ten (10) days prior to scheduled Substantial Completion, submit two (2) copies of preliminary draft of proposed formats and outlines of contents to the Project Manager for review and approval by the Consultant and the Engineer. After the review, the copy will be returned to the contractor with accompanying comments. Incorporate comments in the draft O&M manual submitted per Paragraph 1.06.B.

B. Prior to requesting acknowledgement of Substantial Completion, or prior to Contractor training of Parks' personnel (whichever is earlier), submit two (2) copies of completed draft O&M Manual in approved final form to the Project Manager for review and approval by the Consultant and Engineer.

C. If the draft O&M Manual is not approved by both the Consultant and Engineer per Paragraph 1.06.B above, during the period between Substantial and Physical Completion, revise the O&M Manual to incorporate any comments, corrections, revisions, or requests for additional information received by the Consultant or Engineer. All such changes will be reviewed by the Consultant and Engineer to verify adherence to Contract requirements. The Contractor shall not request confirmation of Physical Completion until the As-Built Documents have been approved by both the Consultant and Engineer.

C. Submit three (3) copies of approved O&M Manual(s) in final form to the Project Manager prior to Physical Completion. If the original two (2) draft copies submitted per Paragraph 1.06.B were approved by both the Consultant and Engineer without any changes needed, only one (1) final O&M Manual need be submitted at this time.

D. Submit one (1) copy of approved O&M Manual(s) in electronic format (.pdf) along with the physical copies of the O&M Manual to the Project Manager prior to Physical Completion.

PART 2- PRODUCTS: *(Not Used)*

PART 3- EXECUTION: *(Not Used)*

END OF SECTION

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, and warranty inspections.

B. Unless otherwise extended per paragraph 1.02.A below, the general guaranty and warranty for the entire project must be as provided per Section 00 72 00, paragraph 1.03.J.

C. Related Sections include, but are not limited to:

- Section 00 72 00 - General Conditions
- Section 01 77 19 – Contract Closeout
- Section 01 78 23 - Operations and Maintenance Manual
- Section 01 78 39 - Record Documents

1.02 EXTENSION OF STANDARD CONTRACTOR-BONDED WARRANTY:

A. The general guaranty and warranty for the entire project must be as provided per Section 00 72 00, paragraph 1.03.J, with the exception that the duration of the warranty period for the work of Section 32 18 23 Infilled Synthetic Turf must extend 8 years from the date of Physical Completion.

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 Suppliers must provide limited or full warranties for products that they provide as specified elsewhere in the Project Manual.

C. Extended warranties must start on the Physical Completion date established by the Engineer and cover the warranty period specified in the technical specifications or the time period provided by the subcontractor, supplier and/or manufacturer, whichever is longer. Warranties must 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.

D. Form of Extended Warranty: The Contractor must provide a separate written Warranty for each element of work wherein a separate extended warranty period is required under

the Contract. Each Warranty must be printed on the Contractor's letterhead, and any information or printed materials pertaining to that warranty must be attached thereto. The Warranty must be stated, at minimum, to include all aspects of the model statement appended to this section, and must not include any conditions or qualifications that would reduce the coverage provided by this model statement. The Contractor also has the option to utilize the model warranty language as generated by the "Warranty" sheet contained within the Contracting Forms Workbook, provided that the form letter has been fully and accurately populated with the necessary information.

1.04 SUBMITTAL REQUIREMENTS:

A. See Section 01 78 23 – Operations and Maintenance Manual.

1.05 WARRANTY PROVISIONS:

A. Unless extended per Paragraph 1.02.A above, the bonded warranty period for the general Contractor must be as specified in Section 00 72 00, Paragraph 1.03.J.2.

B. In the event of failure of any part of the Work during the warranty period, the Contractor must repair or remove and replace the defective components, including repair/replacement of any overlying or dependent construction, at no additional charge to the Engineer.

C. Repairs and replacements must be completed in accordance with all the requirements of the Contract Documents. Repaired or replaced Work must be equivalent to the original work unless otherwise approved in writing by the Engineer.

D. In the event of repeated failure of any repaired component, or if the Engineer is not satisfied that the quality of repairs meets the requirements of the Contract Documents, the Engineer may order defective work completely removed and replaced with new.

E. The Engineer will schedule a warranty inspection of all work completed under the Contract prior to expiration of the General Warranty period. The Engineer will establish the date, time and place for the warranty inspection and notify the Contractor and Consultant to send representatives. Working with the Engineer and the Contractor, the Consultant will identify warranty defects and prepare a warranty inspection list of items to be corrected. The Consultant will provide a copy of the warranty inspection list to the Engineer and the Contractor. The Contractor must 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 the Engineer referring the matter for corrective action in accordance with Section 00 72 00.

F. If any replacement or repair is made under the Warranty provisions of this Contract, the Warranty period for all Work involved in such replacement or repair must be renewed for an additional one-year period, provided, however, that the revised Warranty

expiration date for such Work shall not extend more than two years past the original Warranty expiration date established upon Physical Completion.

PART 2 - PRODUCTS: *(Not Used)*

PART 3 - EXECUTION: *(Not Used)*

END OF SECTION

(Model Warranty Statement follows)

(NOTE: Print letter on Contractor's letterhead. This form is also provided in Contractor Forms Workbook.)

CERTIFICATE OF WARRANTY

<Date>

Scott Stevens, PE
Engineering Manager
Seattle Parks and Recreation Department
300 Elliott Avenue West
1st Floor, Box 17
Seattle, WA 98119

SUBJECT: *<PW# and Project Name>*
<Subcontractor Name if applicable>, <Description of Warranted Work>

<Contractor Name> certifies that the <description of warranted work>, installed by <"our company" or subcontractor name, as applicable> as part of <PW# & Project Title> located at *<Park Name>* (*<Park Address>*), is performed in strict accordance with the Contract Documents.

Furthermore, *<Contractor Name>* guarantees this Work to be free of defects in materials and workmanship until *<last day of warranty period>*, which is *<number, spelled>* (*<#, numeric>*) years from the established Physical Completion date of *<Engineer-confirmed Physical Completion date>*, as required by the Contract.

During this warranty period, at no cost to the Owner, *<Contractor Name>* will repair or replace, without delay, any defects in materials, equipment, installation, and/or workmanship, as well as correct any associated damage to the Owner's property caused as a result of such defect occurring and/or repair of such defect, in full accordance with Contract requirements.

Sincerely,

<Contact name & title>,
<Company name>
<Company street address>
<Company City, State, & Zip Code>
<Contact telephone number>

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Related Sections include, but are not limited to:
- Section 00 72 00 - General Conditions
- Section 01 77 19 – Contract Closeout
- Section 01 78 23 - Operations and Maintenance Manual
- Section 01 78 36 – Warranties and Bonds

1.02 AS-BUILT DOCUMENTS:

A. As-Built Records: These consist of Redline Drawings, Engineer-approved Shop Drawings, and any other drawings or documents that accurately describe the Work actually done under the Contract, including any and all deviations from the Work as originally bid. As-Built documentation must therefore include, but not be limited to, design changes, fabrications, assembly diagrams, and other as-built records as specified in the Contract or as required by the Engineer.

B. Redline Drawings: The Contractor must maintain a clean, undamaged set of bond copies of the Contract Drawings. This drawing set must be clearly labeled: "REDLINE DRAWINGS". This Redline Drawing set (which is sometimes referred to as “As-Built Drawings”) must be neatly annotated to show the actual installation of materials and systems wherever the installation varies substantially from the Work as originally shown in the Contract Documents. The Contractor must annotate all drawings where variation between the design depicted in the Contract Documents and the As-Built conditions can be reasonably discerned. When Shop Drawings apply, record a cross-reference at the corresponding location on the Contract Drawings and affix the Shop Drawings to the prints. Clearly identify as-built modifications resulting from Change Orders with the appropriate Modification Proposal number. Give particular attention to underground or concealed elements that would be difficult to measure and record at a later date.

1.03 USE AND PROTECTION:

A. Do not use Redline Drawings or other As-Built Records for construction purposes. Protect from deterioration and loss in a secure, fire-resistive location at the project site. Provide access to all As-Built Records for the Consultant’s reference during normal working hours.

1.04 QUALITY ASSURANCE:

A. Delegate the responsibility for maintenance of As-Built Documentation to one person on the Contractor's staff, as approved by the Engineer. Identify this person at the pre-construction meeting and place on the Contractor’s Personnel submittal.

B. Make entries on the Redline Drawings clearly showing as-built conditions within 24 hours after completing any element of work.

C. Accuracy of records:

1. If changes or additions pertain to the specifications contained in the Contract Project Manual, coordinate such changes and additions within both the Redline Drawings and the pertinent Project Manual pages, making adequate and proper entries on each page of specifications and each sheet of drawings and other documents where such entry is required or relevant to show the change(s) fully and accurately.

2. Accuracy of records must be such that future search for items shown in the final project Record Documents may rely reasonably on information obtained from the approved project As-Built Documentation,

1.05 MAINTENANCE OF RECORD DOCUMENTS:

A. Maintain and store in field office apart from documents used for construction, the following documents:

1. Permit drawings, bearing building permit approval from SDCI and/or other regulatory agency having jurisdiction, if any.

2. Project Manual, bearing building permit approval from SDCI and/or other regulatory agency having jurisdiction, if any.

3. The Signed Contract, Bonds, Insurance, Addenda, Design Clarifications, Field Directives, Modification Proposals, Change Orders, and approved Substitutions.

4. Approved shop drawings and all other submittals.

5. Field test records.

6. A 3-ring binder containing clearly-identified pages from the Project Manual that have been annotated to reflect As-Built conditions as described in Section 1.04.C.1 above.

B. Provide files and racks for storage of documents

C. File documents in accordance with Project Manual table of contents.

D. Make documents available for weekly progress meeting and at all times for inspection by Consultant.

E. In the event of loss of recorded data, the Contractor must use all means necessary to again secure the data to the Engineer's satisfaction.

F. Payment may be withheld or pay requests modified for incomplete or inaccurate recording of as-built information.

G. The Engineer may request confirmation of recorded work by independent survey or inspection. If inaccuracies are found, Engineer may order hidden elements to be

exposed for recording. All costs associated with this work may be deducted from the Contractor's Contract amount if the information has either not been recorded or has been recorded incorrectly.

1.06 SUBMITTALS:

A. Before requesting confirmation of Substantial Completion, the Contractor must deliver two (2) complete color copy sets of draft As-Built Documents to the Owner for review and approval. The As-Built Documents must include the full Redline Drawing set; annotated Project Manual; Change Orders; and approved shop drawings, product data, and samples which clearly and legibly show all deviations from the Contract Documents with red-colored pencil. The As-Built Documents must be approved by both the Engineer and the Consultant.

B. If the draft As-Built Documents are not approved by both the Consultant and Engineer per Paragraph 1.06.A above, during the period between Substantial and Physical Completion, revise the As-Built Documents to incorporate any comments, corrections, revisions, or requests for additional information received by the Consultant or Engineer. All such changes will be reviewed by the Consultant and Engineer to verify adherence to Contract requirements. The Contractor shall not request confirmation of Physical Completion until the As-Built Documents have been approved by both the Consultant and Engineer.

C. Once approved by both the Consultant and the Engineer, the Contractor must submit scanned color copies (PDF format) and the final, approved originals of the approved As-Built Documents to the Engineer. These must be provided prior to the Contractor requesting establishment of the actual Physical Completion date from the Engineer.

PART 2 - PRODUCTS: *(Not Used)*

PART 3 - EXECUTION

3.01 RECORDING:

A. Mark As-Built Documents with red erasable pencil; other colors may be used when appropriate to distinguish between elements of the Work on the same drawing, such as different systems or Work resulting from different Modification Proposals.

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 became visible as part of the project implementation and did not result in a change order.

D. Note all changes resulting from Modification Proposals by MP number.

E. Note all changes resulting from Field Directives.

F. Note all product or material substitutions.

G. Record information concurrently with construction progress. Do not conceal any work until all relevant as-built information is recorded.

H. The Contractor and its Subcontractors must coordinate recording of as-built information as follows:

1. The Contractor must ensure each Subcontractor makes record notations for his/her own Work and forwards these at least weekly to the general Contractor while such Work is in progress. The general Contractor must transfer each Subcontractor's notations as well as record their own notations of the general Work to a single set of As-Built Documents.

2. Legibly mark record As-Built documents 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.

I. Project Manual Specifications (including relevant Addenda): Legibly mark each section to record:

1. Manufacturer, trade name, catalog number, and Supplier of each equipment item and material actually installed; and

2. Changes made by field directive or by change order.

J. 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 a manageable set, and print suitable titles, dates and other identification on the cover sheet(s).

END OF SECTION

DIVISION 02

Existing Conditions

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. The work occurs at Montlake Playfield, 1618 E Calhoun St, Seattle, WA 98112.

B. Work specified in this section includes, but is not necessarily limited to, the following:

1. Conform to the requirements and conditions of all jurisdictions, including State and Local code requirements relating to the control of fugitive dust and sediment and application of Temporary Erosion Sediment & Control measures.
2. Layout and field engineering related to the identification of specific limits of work and selective demolition.
3. Protecting from harm objects not specifically scheduled for removal including the existing electrical, storm drainage, and irrigation systems, furnishings and fencing.
4. Erection of such temporary chain link fencing as necessary to completely secure any and all construction staging, stockpiling, and laydown areas.
5. Installation, Maintenance, and Removal of temporary construction access as necessary.
6. Removal and offsite disposal of existing synthetic turf surfacing and infill materials. The Contractor shall make every effort to recycle used synthetic turf materials.
7. Removal of existing timber edge anchor, complete.
8. Contractor shall use extreme care to protect the existing field base during construction. Employ protective measures to minimize impact and damage to the existing sand surface. Construction traffic should be limited to areas of the existing synthetic turf rather than on the surface of the sand base.
9. Remove and securely store all loose furnishings and equipment encountered that interferes with the performance of the work.
10. The Contractor shall re-grade and compact the sand base areas that are damaged, disturbed and displaced by the turf removal activities.
11. The Contractor shall establish planarity for the entire field surface with the least possible disturbance, to meet and match existing edge anchors and the limit of work. For field adjustments, use approved washed plaster sand.

1.02 Existing site conditions:

A. Refer to drawings for existing condition information.

B. Carefully maintain benchmarks, monuments and other reference points. If disturbed or destroyed, replace as directed. It is the responsibility of the Contractor to familiarize themselves with all records of existing utilities in area of site work.

1.03 Existing utilities:

A. The Contractor shall contact the appropriate utility agencies for identification of underground utility location, and coordinate with all existing utilities prior to proceeding with demolition activity. Protect any active pipe and conduit encountered; notify Engineer of their existence and record on "as-built" drawings. The contractor shall contact 8-1-1 a minimum of 72 hours prior to excavation.

B. Existing utilities shown on the plans are from record drawings and may not indicate exact locations of subsurface components.

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.

1.04 Dust control:

A. Protect persons and property from damage and discomfort caused by dust. Apply water as necessary to quell dust.

1.05 Roadway protection:

A. Provide wheel-cleaning stations to clean wheels and undercarriage of trucks before leaving site, as necessary to prevent dirt from being carried onto public streets. If streets are fouled, they must be cleaned immediately in conformance with the City and County requirements, as applicable. This requirement applies to all vehicle movements for the entire period of construction.

1.06 Traffic regulation:

A. Conduct operations in such a manner to avoid unnecessary interference to existing traffic. Minimize heavy vehicle traffic to and from site during peak traffic hours. Do not park or queue vehicles in traffic lanes. Provide flagmen as required. Conform to City and County traffic control requirements.

B. Contractor shall be responsible for all traffic control and emergency call outs resulting from Contractor operations.

C. Maintain fire lanes, roadways and alleys to existing buildings continuously, as required by the fire department having jurisdiction.

D. Existing walkways and roadways leading past the construction shall remain clear and safe at all times. Provide barriers, flashing lights, walkways, guardrails and night lighting as required for safety and control.

1.07 Dimensions and layout:

A. The Contractor shall be responsible for furnishing, setting and marking all line, grade, and location stakes, including offsets and general construction staking, together with clearing limits. The Engineer will provide layout data in a digital format upon request.

B. There shall be on site at all times, when work-requiring control is being performed, all necessary equipment, supplies, and instruments related thereto. A qualified layout Engineer, surveyor, or technical specialist must be assigned to the Contractor's crew for this work. This equipment and personnel must be available at no additional cost to the Owner for the purpose of verifying layout and certifying the accuracy of work on the site.

C. The Contractor is responsible for preserving all benchmarks and stakes and replacing any that are displaced or missing as a result of the Contractor's operations.

D. The Contractor is responsible for review of all Owner records relative to the existing underground utilities. The Contractor is responsible to avoid damaging these facilities and shall repair all recorded utilities at no additional cost to the Owner.

E. The Contractor shall to notify the Owner's Representative immediately of underground utilities encountered, which are not shown on the Owner's record.

1.08 Construction access protection:

A. Provide all protection measures required to maintain existing asphalt pavement, concrete curbs and walkways, cinder track surfacing, and landscape including, but not limited to geotextile fabric, plastic sheeting, plywood sheeting and steel plates.

1.09 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. 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.
2. 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.

1.10 Protection of Existing Field Base

The Contractor shall take all measures possible to protect the existing sand aggregate base, these shall include:

A. Light weight, specialized equipment for removal and installation of synthetic turf.

B. To the greatest extent practical, construction traffic associated with the removal of the existing synthetic turf should occur on the existing synthetic turf.

C. Further protection to include but not limited to ¾" plywood or other sheet protection over existing base for vehicle and equipment access.

D. Steel plates placed at field construction entrance to protect existing sand aggregate base and existing utilities.

PART 2 MATERIALS

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 Temporary Construction Access

A. Geotextile Fabric

1. The Contractor may utilize the same geotextile as specified for the field installation. Minimum specification for the temporary construction access is as follows;

2. Material: Fabric to be 100% Polypropylene, non-woven, needle-punched engineering fabric with a minimum weight of 4.0 oz/sy.
3. Physical Properties:

Tensile Strength, lbs., (ASTM D-4632):	100
Elongation (%), (ASTM D4632):	50
Puncture Strength, (lbs), (ASTM D4833):	65
Mullen Burst Strength (PSI), (ASTM D3786):	200
Trapezoidal Tear, (lbs), (ASTM D4533):	45
Abrasion Res. % Str. Ret., (ASTM D4886):	80

Coefficient. of Perm., cm/sec., (ASTM D4491): 0.22
Flow Rate Gal./Min./Sq. Ft.) (ASTM D4491): 140

4. Soil Bearing Structural Fabric to be Tencate Geosynthetics Mirafi 140N or approved equal.

B. Plywood to be minimum ¾" CDX or better, minimum 4'x8' sheets.

C. Steel Plate to be 1" common road plate ASTM A-36 or better with appropriate lifting points, 5'x8' standard to 8'x20' curb crossing as appropriate, straight and flat, with no burrs or jagged edges. Prefabricated plastic mats may be substituted as approved.

D. Timber curb spacers as needed.

2.03 Reserved

2.04 Washed plaster sand:

A. Washed plaster sand shall be used as a recovery volume as needed, where insufficient material existing in-place..

B. Gradation: Sand to meet the following particle size limitations:

Sieve Size	Percent Passing by Weight
No. 4	100
No. 8	95-100
No. 30	75-85
No. 100	0-4
No. 200 (Wet Sieve)	0 - 2
No. 270 (Wet Sieve)	0 - 1

PART 3 EXECUTION

3.01 Field layout and engineering:

A. The General Contractor shall be responsible for the layout of all the preparation and demolition work required to construct all work in accordance with the drawings and specifications. The Engineer will provide layout data in a digital format upon request.

3.02 Protection of Existing Conditions:

A. Provide, erect and maintain barricades, coverings, or other types of protection necessary to prevent damage to existing trees indicated to remain in place.

B. Do not shut off or cap utilities without prior notice. Coordinate work with Division 1 requirements. Maintain storm drains and sewers open for free drainage:

C. Provide storm drain inlet protection at all catch basins located within 300' including those in adjacent rights-of-way and anywhere materials staging or stockpiling occurs.

D. Objectionable noises: Limit use of air hammers and other noisy equipment as much as possible. Conform to Owner requirements regarding noise control.

E. Maintain vehicular and pedestrian traffic routes:

1. Ensure minimum interference with roads, sidewalks, and adjacent facilities.
2. Do not close or obstruct streets, sidewalks, alleys or passageways without permission from Owner.
3. If required by Owner or city, provide alternate routes around closed or obstructed traffic ways.

F. Temporary Construction Access

1. Curb Crossings shall be performed to SDOT Standards by Permit only.
2. Temporary construction access roads over existing pavement or landscape shall include fabric, one lift of plywood, one lift of steel plate. Stagger joints.

3.03 Demolition:

A. Completely remove and dispose of synthetic turf where defined. See notes on drawings for items to be removed and limits of removal.

B. Reserved

C. Adjacent materials and surfaces designated to remain that are damaged by the Contractor's operations shall be removed and new materials shall be furnished and installed to match existing, at no additional cost to the Owner.

D. Carefully dismantle and remove items, if any, to be salvaged. The salvaged items

shall then be labeled, bundled, and delivered to a storage site specified by the Owner's Representative.

3.04 Disposal of materials:

A. The Contractor in a manner consistent with all government regulations shall dispose the refuse resulting fromdemolition.

1. No burning permitted.
2. Do not leave refuse material on the project site, shoved onto abutting private properties, or buried in embankments or trenches on the project site.
3. Do not deposit debris in stream, body of water, street or alley, or upon private property except by written consent of the private property Owner.
4. Maintain hauling routes clean and free of debris resulting from work of this section.

3.05 Reserved

3.06 Reserved

3.07 Cleaning:

A. The Contractor shall utilize such means as he deems necessary to remove all loose debris and surfacing from existing base matt structural spray system without affecting the performance characteristics of the system to remain including permeability and resilience.

B. All waste generated shall be disposed of off-site within 24 hours of its initial accumulation.

END OF SECTION 02 10 00

DIVISION 32

Exterior Improvements

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. Scope of work to include all labor, material, equipment, transportation and services to install complete new vertically draining in-filled synthetic turf surfacing system as shown and described. System to be as herein specified including, but not specifically limited to the following:

1. All access, material deliveries to the Park area, and equipment limitations shall be as approved in advance by the Owner.
2. Submittal of all material technical data, shop drawings, and physical materials samples as required.
3. Provide independent testing of the synthetic turf materials prior to shipment to the project site.
4. Staging and storage area preparation as shown. Coordinate the schedule of all synthetic turf materials for on-site storage.
5. Review and acceptance or certification of the Field Base surface as it applies to installation of supplemental pad and turf system, including permeability, planarity, and stability, and warranty implementation.
6. Furnish and install approved Supplement Resilient Pad System for all Athletic Field surfaces.
7. Installation of complete vertically draining Athletic Field synthetic turf surfacing system consisting of 2.25” fiber height, slit-film fiber composition, with granular cork and sand infill, all as specified and approved.
8. Installation of tufted and inlaid field lines and markings as designated.
9. Provide surplus turf and infill materials to the Owner for future repair and maintenance purposes.
10. Provide all appropriate maintenance and repair manuals and warranty package to Owner.
11. Coordinate and Facilitate Maintenance Training with City Staff.

1.02 FIELD SYNTHETIC TURF SYSTEM SUPPLIERS

A. The following Vendors are approved for this work.

1. AstroTurf Corporation
2. Others as Approved.

B. Approved Suppliers of pre-manufactured panelized Supplemental Resilient Pad are:

1. Schmitz Foam Products, Inc.
2. Or approved equal.

C. The following polyethylene fiber manufacturers are pre-approved for use in the specified In-filled Synthetic Turf Systems:

1. Astroturf Corporation
2.
8. Others as approved.

D. The synthetic turf vendor shall provide written documentation in the form of a signed affidavit certifying the source of the fiber used for the field including both green and any other colors used for the lines and markings.

E. Fiber shall be certified to have less than 50 ppm or less of lead from both the fiber supplier and the turf vendor.

1.03 SUBSTITUTION REQUESTS

A. Substitution Requests for Supplemental Pad systems, Synthetic Turf or Synthetic Turf components must conform to the requirements of Section 01 25 00 Substitution & Product Option and include documented conformance with Paragraph 1.04 Minimum Qualifications for Synthetic Turf System.

1.04 MINIMUM QUALIFICATIONS FOR SYNTHETIC TURF SYSTEM

A. Definitions: for the purposes of defining the necessary qualifications required to perform this work, the following definitions will apply.

1. "Infilled Synthetic Turf" refers to surfacing systems comprised of extruded tape or monofilament polyethylene fibers no less than 2.25" in finished height, tufted into a coated polyethylene backing, filled with loose, resilient fills to within 1" of the fiber tops.
2. "System" refers to a finished product consisting of the resilient underlayment, laminated backing and coatings, tufted polyethylene fibers, and granular infill materials, together acting as a single assembly.
3. "Full sized" shall mean a single installation of no less than 75,000 contiguous square feet. Large contiguous installations will be considered as a single installation regardless of total square footage.
4. "Successful" in the context of this specification shall be defined as having had zero *repeat* customer call-backs for defects of manufacturing for the life of the warranty or craftsmanship for the first two years.

B. Synthetic Turf System shall be warranted by the Approved Supplier, to include all components and materials complete, assembled, and in place including fabrics, resins, fibers, cord, adhesives, and infill materials. There shall be no third-party supplier, manufacturer, or installer named in the warranty.

C. The Synthetic Turf Vendor shall be vertically integrated with manufacturing and installation. The manufacturing shall include a vertically integrated manufacturing process including in-house fiber extrusion, tufting, and coating.

The manufacturer of the synthetic turf system must have produced a minimum of twenty (20) successful in-filled synthetic turf athletic fields of full size and outdoors within the past two (2) years. The manufacturer of the synthetic turf system must have produced a minimum of five (5) successful in-filled synthetic turf full size football or soccer fields with the identical specified product including infill composition to that proposed for this project within the past 3 years.

D. The synthetic turf surfacing system vendor shall have a designated, payrolled representative available for service based in the Pacific Northwest (Oregon, Washington, Idaho).

1.05 STANDARD SPECIFICATIONS

A. For standards: American Society for Testing Materials (ASTM), (latest edition).

1.06 POST AWARD SUBMITTALS

A. Shop Drawings: Electronically submit to the Engineer complete and detailed drawings showing all component parts of the synthetic turf system. The shop drawings shall be prepared to scale (1” = 20’) and shall include:

1. total depth of infill
2. supplemental pad
3. edge details
4. insert details including backing material
5. seam details
6. seam layout
7. gluing patterns
8. dimensional shop drawing for all field lines, markings and boundaries

B. Synthetic Turf System Samples: Submit the following physical samples to the Engineer:

1. Two 12"x 12" samples each of each green turf showing backing with perforations.
2. Two 12" x 12" samples each of turf showing method of seam makeup with

perforations. One sample to have example of inlaid lines (if applicable).
3. Two 1-pound (or 0.5cf) samples of each of the proposed in-fill materials.
4. Two 12" x12" Examples of the Supplemental Resilient Pad makeup.

C. Manufacturer's Specifications and Warranty:

1. Electronically submit selected manufacturer's material specifications and installation instructions. Include detailed specifications of manufacturer's provisions for achieving permeability, stating rate in infiltration and permeability in inches per hour of system materials for the vertical draining system.
2. Electronically submit sample of warranty package herein specified for review.

D. Reserved.

E. Testing and Quality Control: Submit the following test results for the system specified. An independent testing laboratory experience with testing of synthetic turf or carpeting materials shall certify these tests. The qualifications of the testing laboratory to be utilized for the submittal and the pre-shipment testing shall be submitted to the Engineer for approval. Applicable minimum material ASTM tests:

1. Dynamic Cushion Test - ASTM F355, Procedure A, (system); ASTM F355 procedure A at the 24" drop.
2. Yarn and fabric characteristics.
3. Pill Burn Test – ASTM D2859

F. Maintenance and Operating Data:

1. Prior to acceptance and/or occupancy by the Owner, furnish to the Engineer five (5) copies in hard cover form of maintenance and data with imprinted Project, Owner, Engineer, Contractor and Turf Subcontractor names, and date of turf system installation.
2. In addition, provide descriptions of any equipment recommended for maintenance and repair, citing specific vendors for each unit.
3. Use and Limitations - Provide a separate page stating approved activity usage for the turf and activities not recommended relative to warranty.
4. Index - Index with tab dividers for data as follows: Materials installed with their characteristics:
    a. General maintenance
    b. Small repair procedures
    c. Biological cleanup and disinfectant procedures (blood, vomit, animal waste, etc.)
    d. Minor seam repair
    e. Discussion of precautions to be practiced, general maintenance, and

uses to protect turf surface and to maintain installation's warranty

f. Recommendations for paint application and removal of lines and markings
g. Recommendations for snow removal procedures.
h. Provide additional maintenance requirements associated with organic infill materials including:
   i. Infill moisture content monitoring procedures
   ii. Optimum and allowable infill moisture content range and supplemental irrigation procedures
   iii. Infill compaction reduction and top-dressing procedures.
   iv. Infill replacement at high wear and displacement areas (i.e. soccer corner kick, penalty kick, and goal mouth areas; baseball batter's box, base and plate locations; football pat, etc.) requiring hand work
   v. Infill grooming and field sweeping procedures.
   vi. Biological cleanup and disinfectant procedures (blood, vomit, pet waste, etc.)
   vii. Organic infill attic stock storage recommendations and requirements

1.07 PRE-SHIPMENT SUBMITTALS

A. Prior to shipment of the synthetic turf materials to the job site, synthetic turf material from every sixth roll shall be randomly sampled and the tested by an independent testing laboratory experience with testing synthetic turf materials. The testing laboratory shall be completely independent with no ties to the turf manufacturer. The testing shall include the following:

Item	Standard	Property
1.	D418	Pile Weight
2.	D418	Total Weight
3.	D418	Pile Height
4.	D1335	Tuft Bind (without infill)
5.	D1682	Grab/Tear Strength.
6.	DIN 18-035	Permeability

B. Copies of the test results shall be transmitted to the Engineer directly from the testing laboratory. The synthetic turf materials shall not be shipped to the site without written authorization from the Engineer and Owner approving the test results.

C. Samples of the synthetic turf material tested from every sixth (6^{th}) roll shall also be transmitted to the Engineer for approval by the independent testing laboratory prior to shipment of the synthetic turf materials to the job site. Sample size shall be minimum 12" x 12".

D. All fees and costs associated with the pre-shipment sampling and testing shall be paid by the Contractor.

1.08 CERTIFICATION OF THE BASE

A. The Synthetic Turf Surfacing Contractor shall furnish to the Engineer and Owner, prior to the synthetic turf system installation as applicable, a written certification of the acceptability by the turf vendor of the permeable aggregate base as suitable for installation and warranty validation.

1.09 TURF SYSTEM HOLD HARMLESS

A. The synthetic turf manufacturer and installer shall not infringe upon any current or pending patents held by other synthetic turf manufacturers or installers.

B. The Contractor, their synthetic turf subcontractor, and the synthetic turf manufacturer shall hold the Owner, Owner's Representative, and the Design Consultants harmless from infringement of any current or future patent issued for the synthetic turf surfacing system, installation methods and vertical draining characteristics. A notarized statement shall be provided as part of the submittal package.

1.10 WARRANTY OF SYNTHETIC TURF

A. Warranty shall cover, in general, the usability of the turf surface, accessories, use characteristics, and suitability of the installation. All items covered by warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting contractor for the period of eight (8) years to the Owner, for the designated uses enumerated as follows:

1. Soccer
2. Football
3. Ultimate Frisbee
4. Lacrosse
5. Marching band
6. Physical exercises
7. Physical education activities
8. Pneumatic rubber-tired maintenance and service vehicles
9. Pedestrian traffic and other similar uses
10. Ceremonial and Entertainment Events with portable floor coverings

B. A Principal of the applicable firm, duly authorized to make contracts, shall sign the turf vendor warranty. If the turf vendor is not the manufacturer, the manufacturing firm shall also sign the warranty. The term "Contractor" contained herein means the

firm furnishing warranty. "Owner" is the City of Seattle Department of Parks and Recreation. Warranty period shall be a minimum of eight years from date of acceptance of the installed system by the Owner as Substantially Complete.

1.11 FORM OF WARRANTY OF SYNTHETIC TURF SYSTEM

A. Contractor hereby warrants to Owner, subject to the limitations and conditions set forth below, that its synthetic turf system consisting of synthetic turf described as ___(vendor insert system trade name here)___, and the adhesives used in the installation, is free from defects in material and workmanship and shall, for a period of eight years as applicable from the date of acceptance by the Owner, remain serviceable for multiple sports activities.

B. Contractor warrants to the Owner that its synthetic turf system materials shall not fade, fail, shrink, wrinkle, or reflect excessive wear. Contractor shall, at their sole expense and cost, replace such areas of the synthetic turf system not performing to these standards for the life of the warranty.

C. Definitions

1. The term "not fade" in the context of this warranty shall mean that the synthetic turf material shall remain a uniform shade of green, or other colors installed, with no significant loss of color.
2. The term "not fail" or "excessive wear" as used in the context of this warranty shall mean that the length and weight of the face yarn or pile material in the synthetic turf surface above the infill materials shall not have been decreased by more than 10% per year according to ASTM D418, nor exceed 50% during the warranty period. In the event that the synthetic turf system does not retain its fiber height or shock absorbency and is consequently no longer serviceable during the warranty period, the Contractor shall, at their sole expense, replace such portion of the system that is no longer serviceable.
3. The term "serviceable" in the context of this warranty shall mean that the synthetic turf system for the soccer field shall have a maximum "G" value according to ASTM F1936-10 and Procedure A, ASTM F355, not to exceed 130G's at any location upon installation and shall not exceed 160G's throughout life of the warranty period. This shall be determined by conducting dynamic cushioning tests at 12 random locations approximately equally distributed over the entire surface.

D. Where applicable, the fabric seams shall remain attached to the underlying surface over the warranty period and shall not separate or become unglued or unattached, as applicable.

E. Contractor warrants to the Owner that synthetic system shall drain vertically a minimum of 20 inches precipitation per hour without visible surface ponding.

1. Drainage and infiltration performance shall remain at or above the specified rate for the duration of the Warranty.
2. The Contractor acknowledges that synthetic turf surfacing systems including paved-in-place supplemental pad and granular cork infill are often subject to an expended conditioning period following installation, where infiltration performance may not meet the required rate. Each incident of ponding resulting in displacement of the infill materials must be addressed in a timely manner. The Engineer will inspect and review the conditions with the Contractors service representative to determine a course of action.

F. Contractor shall replace with new materials, at their sole expense, any damage to the synthetic turf system that extends more than 3 feet beyond the location of foreign combustibles, which may ignite and fire-damage the synthetic turf system. The Contractor shall not be held liable for any incidental or consequential damages. These warranties and the Contractor's obligations here-under are expressly conditioned upon;

1. The Owner making all minor repairs to the synthetic turf system upon the discovery of the need for such repairs.
2. The Owner maintaining and properly caring for the synthetic turf system in accordance with the Contractor's maintenance manual and instructions.
3. The Owner complying with the dynamic and static load specifications established by the Contractor.

G. The warranty is not to cover any defect, failure, damage or undue wear in or to the synthetic turf system caused by or connected with abuse, neglect, deliberate acts, act of God, casualty, static or dynamic loads exceeding Contractor's recommendations, footwear having cleats, spikes, or similar projections other than conventional baseball, football, soccer, or rugby shoes having cleats of not more than 1/2" in length, and other conventional running track shoes having spikes of not more than 1/4" in length, or use of improper cleaning methods.

H. Contractor shall be allowed to examine the synthetic turf system regarding any claim that the Owner makes to be present at any time, to analyze the results of all tests conducted by the Owner or others, and to conduct such tests of their own. Contractor shall not be responsible for any costs or expenses incurred by the Owner or others with respect to such tests, except the Contractor shall pay for costs of all tests and analysis conducted or directed by their representative.

I. In the event the Contractor does not respond to the Owner’s written notice within 10 days of receipt of notice or does not submit, schedule and execute corrective work within 30 days for any material replacement and within 5 days for work limited to repairs of existing materials or repair that can be made with attic stock materials, the Owner has the option of having the work performed at the expense of the Contractor.

J. Sample form of warranty herein set forth is a suggested form for use for the work under this section. Manufacturer's standard form of warranty may be used provided all conditions specified are incorporated. All claims by the Owner under this warranty must be made in writing to Contractor's address at_____ within 30 days after the Owner learns of the defect giving rise to the claim. This warranty shall constitute a contract made in the State of Washington and shall be governed by the laws thereof.

1.12 FORM OF WARRANTY FOR SUPPLEMENTAL RESILIENT PAD SYSTEM

A. Contractor hereby warrants to Owner, subject to the limitations and conditions set forth below, that Field Supplemental Resilient Pad System consisting of (insert proprietary terminology), is free from defects in material and workmanship and shall, for a period of eight years from the date of acceptance by the Owner, remain serviceable for multiple sports and snow removal activities.

B. Contractor warrants to the Owner that its field underlayment materials shall remain permeable and shall not fail, shrink or buckle. Contractor shall, at their sole expense and cost, replace such areas of the field underlayment system not performing to these standards for the life of the warranty.

C. Definitions

1. The term "permeable" in the context of this warranty shall mean that the field underlayment material shall provide a minimum vertical drainage rate of 100 inches per hour.
2. The term "not shrink" in the context of this warranty shall mean that the field underlayment panels shall remain butted together without gaps exceeding ¼ inch in any location across the field.
3. The term "buckle" in the context of this warranty shall mean that the field underlayment shall lay flat on the base without warping or creating surface irregularities in excess of ¼ inch.

D. Contractor shall replace with new materials, at their sole expense, any field underlayment materials that do not comply with these warranty requirements.

E. These warranties and the Contractor's obligations here-under are expressly conditioned upon:

1. The Owner maintaining and properly caring for the synthetic turf and field underlayment system in accordance with the Contractor's maintenance manual and instructions.
2. The Owner complying with the dynamic and static load specifications established by the Contractor.

F. The warranty is not to cover any defect, failure, damage caused by or connected with abuse, neglect, deliberate acts, act of God, casualty, static or dynamic loads exceeding Contractor's recommendations.

G. Contractor shall be allowed to examine the field underlayment system regarding any claim that the Owner makes to be present at any time, to analyze the results of all tests conducted by the Owner or others, and to conduct such tests of their own. Contractor shall not be responsible for any costs or expenses incurred by the Owner or others with respect to such tests, except the Contractor shall pay for costs of all tests and analysis conducted or approved by the Owner's Representative.

H. In the event the Contractor does not respond to the Owner's written notice within 10 days of receipt of notice or does not submit, schedule and execute corrective work within 30 days, the Owner has the option of having the work performed at the expense of the Contractor.

I. Sample form of warranty herein set forth is a suggested form for use for the work under this section. Manufacturer's standard form of warranty may be used provided all conditions specified are incorporated. All claims by the Owner under this warranty must be made in writing to Contractor's address at_____ within 30 days after the Owner learns of the defect giving rise to the claim. This warranty shall constitute a contract made in the State of Washington and shall be governed by the laws thereof.

1.13 WARRANTY TESTING

A. The turf for the field is to be tested for dynamic cushioning ("GMAX" Test) by an experienced independent testing laboratory acceptable to the Engineer or Owner at the completion of the installation shortly prior to acceptance inspection by the Owner/Engineer (or as directed), and annually within 30 calendar days of the anniversary date of Substantial Completion, and finally 60-90 calendar days prior to the scheduled expiration of the warranty. If conditions of the Specifications and/or Warranty are not met, the Contractor has the option of corrective work or replacement. In the event corrective work does not meet the requirements of the Specifications after a second attempt to bring the system within these limits, then the Contractor is to replace non-conforming areas or sections solely at the Owner's discretion and direction.

B. Tests shall be performed substantially in accordance with ASTM F-1936-10 and F355 10A.

C. Test locations shall not be as designated in F-1936-10, Paragraph 8, but shall be similarly applied, randomly and approximately equally located across the playing

surface, and shall be approximately duplicated for each annual test. Included in the report shall be the measured depth of the infill material at all test locations.

D. All costs for the stated testing shall be paid by the Synthetic Turf Surfacing Contractor.

E. If the Contractor does not have the tests performed within 10 days of specified times listed, the Owner has the option of ordering the testing work at the expense of the Synthetic Turf Surfacing Contractor.

PART 2 – MATERIALS

2.01 GENERAL

A. Infilled Synthetic Turf: The turf system shall be a vertical-draining permeable synthetic turf system. The turf system shall consist of a synthetic grass-like surface pile, which shall be tufted into a synthetic backing.

B. All backing layers and coatings shall be firmly bonded together. Coating materials must be completely cured and bonded to the other backing layers. Synthetic turf panels or rolls that do not meet this requirement will be rejected.

C. The entire system shall be resistant to weather, insects, rot, mildew, and fungus growth, and be non-allergenic and non-toxic. The entire system shall be constructed to maximize dimensional stability, to resist damage and normal wear and tear from its designated use, and to minimize ultraviolet degradation.

D. All adhesives used in bonding the system together shall be resistant to moisture, bacterial and fungus attacks, and resistant to ultraviolet rays at any location upon installation.

2.02 DYNAMIC CUSHIONING REQUIREMENTS

A. The dynamic cushioning of the system complete shall not exceed a maximum value of 130 G's per ASTM, F1936-10 and ASTM, F355, procedure A at any location upon installation.

2.03 SUPPLEMENTAL RESILIENT PAD & DRAINAGE SYSTEMS

A. GOETEXTILE FABRIC

1. Woven, high-tensile strength permeable geosynthetic separator fabric.

2. High tenacity polypropylene yarn woven to form a dimensionally stable network. Resists ultraviolet deterioration, rotting and biological degradation and is inert to commonly encountered soil chemicals.

3. Product shall meet or exceed the following properties:

PROPERTY	TEST METHOD	ENGLISH M.A.R.V. (Minimum Average Roll Value)	METRIC M.A.R.V. (Minimum Average Roll Value)
Wide Width Tensile	ASTM D-4595	2640 x 2460 lbs/ft	38.5 x 35.9 kN/m
Wide Width Tensile (2% Strain)	ASTM D-4595	480 x 588 lbs/ft	7.0 x 8.6 kN/m
Wide Width Tensile (5% Strain)	ASTM D-4595	1212 x 1356 lbs/ft	17.7 x 19.8 kN/m
Wide Width Tensile (10% Strain)	ASTM D-4595	2340 x 2412 lbs/ft	34.1 x 35.2 kN/m
UV Resistance (at 500 hrs)	ASTM D-4355	80%	80%
Apparent Opening Size (AOS)*	ASTM D-4751	30 US Std. Sieve	0.6 mm
Permittivity	ASTM D-4491	.70 sec^{-1}	.70 sec^{-1}
Permeability	ASTM D-4491	.04 cm/sec	.04 cm/sec
Water Flow Rate	ASTM D-4491	50 gpm/ft^2	2037 $l/min/m^2$
Roll Sizes		15’ x 300’	4.6 m x 91.5 m

4. Product shall be ADS Geosynthetics 270HP Woven Geotextile or approved equal.

B. PRE-FORMED PANELIZED SYSTEM

1. The information provided below was current at the time of publication. Any variation to the specification below shall be as published by the approved supplier.
2. The approved Shock Pad shall be ProPlay-Sport 23D as manufactured by Schmitz Foam Products, 188 Treat Avenue Coldwater, MI USA Attn: Allen Hubbard 413-575-7993, or approved equivalent.

3. The XPE foam flakes shall be sourced from clean post-industrial (pre-consumer) waste.
4. The XPE foam flakes shall be closed-celled; the bonding of the XPE foam flakes shall be open to water infiltration.
5. The XPE foam flakes shall be thermally bonded to a PES spunbond textile, with a mass of 70 g/m².
6. The shock pad shall be manufactured in panels of 7.5' x 3.08'
7. The shock pad sheets shall contain expansion slots (to the plane), to take in thermal expansion.
8. The shock pad shall meet or exceed all performance properties listed in the table below.

PROPERTY	STANDARD	UNIT	TYPICAL VALUE
Thickness [1]	EN 1969	mm / in.	23 / 0.91
Mass per unit area		lb / square foot	.82
Tensile strength [2]	EN 12230	psi	38
Compressive strength @ 25% deflection Thickness after 72 hour recovery	ASTM D 3575	psi inches	16 0.90
Compressive strength @ 50% deflection Thickness after 72 hour recovery	ASTM D 3575	psi inches	79 0.89
Water flow rate under 2" hydraulic head	ASTM D 4491	gpm / ft2	15
Water permeability by permittivity	ASTM D 4491	gpm / ft2	6.8
Hydraulic transmissivity [3]	ASTM D 4716	gpm / ft	155
Water infiltration rate	EN 12616	in/hr.	Greater than 1000
Gmax / Impact attenuation [4]	ASTM F355	-	80-110
Thermal conductivity	EN 12667	W/m.K	0.05

[1] at a load of 2 kPa
[2] tensile stress by tensile strength and product thickness
[3] by in-plane flow rate at a hydraulic gradient of 0.005 (slope = 0.5%) and a load of 2 kPa
[4] with typical turf system
[5] by product dimensions

2.04 PERMEABILITY REQUIREMENTS OF THE SYNTHETIC TURF SYSTEM

A. The system, including the synthetic turf infill materials and Supplemental Resilient Pad System, shall drain vertically a minimum of 20 inches precipitation per hour without visible surface ponding.

B. If a non-permeable backing material (seaming tape or scrim) exceeds 12 inches in width it shall be perforated in accordance with paragraph 2.10.B of this section. Perforations shall be drilled from the surface after the adhesive has set.

2.05 SYNTHETIC TURF PILE SURFACE

A. The pile surface shall provide good traction in all types of weather with the use of conventional "sneaker-type shoes" and composition, molded-sole athletic shoes.

B. The pile surface shall be suitable for both temporary and permanent line markings using rubber-base paint where applicable.

C. Pile surface shall be nominally uniform in length for all portions of the field. Synthetic turf panels or rolls with irregular pile heights or with “J hooked” fibers that extend more than 1/4 inch above the surrounding fibers will be rejected.

2.06 SYNTHETIC TURF FABRIC SURFACE

A. The fabric surface shall be constructed and installed in minimum 15-foot widths with no longitudinal or transverse seams, except for head or tee seams at field boundaries and inlaid lines within a finished roll assembly. The seams shall be 15'-0" spacing.

B. Rolls that do not lay evenly and with full dimension width will be rejected. No fitted pieces or relief cuts will be allowed to true alignment.

C. The color shall be uniform with no visible deviations in shade permitted. Rolls that do not meet this requirement will be rejected.

D. Color

1. Field “body” shall be a blend of 50% “Field Green” and 50% “Lime Green” or as approved.

2. Field Markings for specific sports shall be as indicated in “Lines and Markings” below

2.07 SYNTHETIC TURF SYSTEM MATERIAL COMPONENTS

A. Pile fibers shall resemble freshly-grown natural grass in appearance, texture and colors.

B. Fabric backing for the in-filled synthetic turf systems can be loose laid and anchored at the perimeter of the fields as shown in the details or adhered to the base.

C. All turf seams shall be sewn per paragraph 3.05 of this specification. All seams shall include at least one fabric roll selvage edge – no transverse or "head" seams will be permitted.

2.08 NOT USED

2.09 LINES AND MARKINGS

A. Complete, Permanent Field Markings shall be provided with the initial installation of the surfacing system for the following activities, color as indicated. Layouts shall be accurately surveyed and marked prior to installation.

1. Football (White with Blue Team Box)
2. Lacrosse (Blue)

Not Used

B. Manufacturer shall guarantee the field synthetic turf is adaptable to both temporary and permanent painted lines and markings.

2.10 MINIMUM SPECIFICATIONS FOR SYNTHETIC TURF SYSTEM MATERIALS

A. The minimum acceptable material assembly option approved by submittal will be verified and enforced and will be the basis for Owner's testing. Material that fails to meet these minimum specifications will be rejected. The material specifications in this section are minimums. The manufacturer of the synthetic turf fiber and fabric may elect to exceed these specifications to insure compliance with all requirements and the warranty as specified in this section.

B. All products shall be supplied with a backing perforated after final coating with a minimum ¼" diameter perforations spaced 3" x4" continuously.

C. Color of field synthetic turf to be a blend of light and medium/dark greens as approved by Owner. The fiber used for the lines and markings shall be of the same composition as that used for the green areas.

D. 2.25" Parallel Slit-Film Turf System, Material Assembly Option 1, 3/8" Stitch Gauge

Item	ASTM	Property	Minimum Specifications
1.	D418	Pile Weight (Total)	38-42 oz/sq yard
2.	D418	Primary Backing	7 oz/sq yard total
3.	D418	Back Coating	18+ oz/sq yard
4.	D418	Total Weight	>63 oz/sq yard
5.	D5823	Pile Height	2.25”
6.	D1335	Tuft Bind (without infill)	8 lbs.
7.	D1682	Grab/Tear Strength	200 lbs.
8.	D2859	Pill Burn Test	Pass
9.	-	Infill Weights*	1.3lb/sf Cork 3.5lb/sf Sand

*Infill Weights are generally per the approved product specification, as proposed by the Contractor to achieve and maintain performance specifications for resiliency, infiltration, and durability.

E. Fabric Composition:

1. The primary pile fiber shall be 100% polyethylene athletic quality yarn designed specifically for outdoor use and stabilized to resist the effects of ultra-violet degradation, heat, wear, water and airborne pollution.
2. The secondary or supplemental fiber component shall be textured nylon or polyethylene as approved.
3. The coating and backing materials shall assure suitable tuft bind strength, dimensional stability, and long-term wearing properties.

F. Fiber shall be certified to have less than 50 ppm or less of lead from both the fiber supplier and the turf vendor.

G. The parallel long slit film fiber shall meet the following requirements:

Item	ASTM	Property	Minimum Specifications
1.	D1577	Yarn Denier / Ply	5,000 / 1
2.	D1577	Base Filament Thickness	100 U Micron
3.	D2256	Yarn Breaking Strength	20 lbs
4.	D2256	Yarn Elongation to Break	50%
5.	D789	Yarn Melting Point	240^{o} F.

H. Fiber Wear Simulation: Fiber shall exhibit no splitting or appreciable degradation after a minimum of 20,000 cycles of simulated Lisport wear testing and shall remain serviceable without appreciable face weight loss after a minimum of 40,000 cycles of simulated Lisport wear testing.

I. Fabric Composition: Shall consist of a blend of primary polyethylene long parallel slit film and monofilament yarn tufted into polypropylene backings coated with high-grade polyurethane. Coating and backing materials shall assure suitable tuft bind strength, dimensional stability, and long-term wearing properties.

2.11 RESERVED

2.12 INFILL MATERIALS

A. Granular Cork Infill: The synthetic turf shall utilize a combination of sand and granular cork as follows;

1. Granular Cork product shall be as submitted by the Contractor and approved by the Owner & Engineer prior to shipping.
2. Cork to be of the following properties or characteristics;
   a) Allowable Range of Bulk Density: 80-300 kg/m^3
   b) Moisture Content: <12%
   c) Particle Gradation, Typical

Screen	% Pass (by Weight)
#4	100
#8	98-100
#10	90-100
#14	50-75
#18	25-50
#20	0-25
#30	0-10
#40	0-1

B. Granular Cork materials applied to the synthetic turf system from shipment bags into mechanical spreader equipment needs to be monitored to eliminate incorporation of super fines, i.e. chaff into the infill application. Segregation of the cork materials during transport occurs and quality control of this the material is required.

C. The Granular Cork infill shall be tested at the point of manufacture and assembly, and at point of delivery on site for compliance with the particle sizes included in the approved submittal. A minimum of one test result for every 15 tons (1 super-sack typically holds 2,000lb) of cork infill shall be required from materials delivered and stored on site. No infill shall be allowed to be installed until confirmation of compliance with specification requirements is documented on site by independent laboratory testing. Testing of infill prior to infill placement shall be coordinated by the vendor to have no impact on installation sequence of schedule for timely completion of the work.

D. Sand Infill

1. Material shall be poorly graded sand, sub-round to round, compaction resistant, washed and dried. The sand shall meet the following criteria:

Shape	Round to Sub-round
Sphericity	0.65 – 0.85
Roundness	0.60 – 0.70
Hardness (Moh)	7

2. The sand gradation shall meet the following wet sieve analysis:

Sieve Size	Percent Retained
#8	0%
#10	0% – 3%
#12	0% – 10%
#16	65% – 85%
#20	10% – 30%
#30	0% – 3%
Pan	0% – 1%

3. The maximum sand content shall be nominally 70-75% by weight. The exact infill material ratio may be altered to provide strength, shock attenuation, and to provide permeability by the vendor/installer as approved by the Engineer / Owner.

PART 3 – INSTALLATION

3.01 CERTIFICATION OF FIELD BASE INSTALLATION

A. The Contractor shall perform an inspection of the existing field base and submit written certification of acceptance of the base for the installation of the synthetic turf system.

B. Coordinate this work with Section 02 10 00 Site Preparation.

1. Establish Base Aggregate Planarity at +/- ¼” in 10’ as identified using a tight string line on the surface.
2. Remove materials from areas found above the preferred plane and place in areas found below the designed plane.
3. Supplement fill areas with Washed Plaster Sand.
4. Make all repairs to a uniform density, generally 90-95% of maximum dry density.

C. Summary of certification shall include, but not be limited to:

1. Acceptance of the base construction "finish surfaces" as totally suitable for the application of work specified under this section.

3.02 SUPPLEMENTAL RESILIENT PAD INSTALLATION

A. Note Used

B. Panelized Supplemental Resilient Pad System

1. Panels shall be installed over the approved geotextile fabric.

2. Acceptance of the base construction "finish surfaces" as totally suitable for the application of work specified under this section includes installation of the pre-engineered drainage underlayment.

3. Use only new materials manufactured and shipped for the specific installation. No used, recycled or refurbished materials are to be installed. Manufacturer must provide documentation of material content and MSDS sheet for submittal package.

4. Product to be shipped as flat panels on prepackaged pallets. Pallets to be wrapped with heavy-duty barrier for protection from moisture and UV exposure.

5. Seams should be mechanically locked into place by hand without use of additional materials, glue, fasteners or secondary processes or equipment.

6. Material must be installed using manufacturers guidelines.

7. Manufacturer must provide written procedures to selected turf supplier for the installation of turf on top of underlayment.

8. Surplus materials to be determined by the Owner prior to order and delivery of product to the installation site. Surplus quantities to be identified in writing by the Contractor at the time of order placement.

3.03 SYNTHETIC TURF INSTALLATION

A. Perform all work in strict accordance to the drawings, specifications, shop drawings

and manufacturer's specifications and instructions.

B. Site access to be per the approved staging and access plan.

C. Verification: The Contractor is responsible for inspecting, verifying, and accepting all installed work of this section.

D. Environmental Conditions: Do not apply adhesive materials or infill material when:

1. Ambient air temperature is below 40 degrees F.
2. Material temperatures are below 40 degrees F.
3. Rain is falling or pending
4. Conditions exist, or are pending, that will be unsuitable to the installation of the system.

E. Preparation:

1. Accept base onto which the synthetic turf surfacing system and the anchoring system are to be applied, as specified above.
2. Immediately prior to application of the synthetic turf, the base shall be thoroughly cleaned of all foreign material or any other substances that may be detrimental to permeability and the installation of the turf system.

3.04 INSPECTION OF MATERIALS

A. Prior to installation, and immediately upon delivery of synthetic turf system materials to the project site, the Synthetic Turf Surfacing Contractor shall inspect material as follows:

1. For damaged or defective items;
2. Measure turf pile height and thickness of each roll;
3. Measure backing perforation diameter and spacing;
4. Reject damaged materials and all materials out of tolerance with this specification.

B. After installation, inspect project area for acceptable seaming, adhesive bonding, uniformity of color of turf, bubble- and wrinkle-free surface smoothness as laid, field lines and markings, insert installations, edge details. Remove and/or repair deficient workmanship in a manner consistent with these specifications prior to requesting the Engineer's inspection pursuant to completion and acceptance of the work.

3.05 OWNER'S TEST

A. Owner may have samples of the turf submitted and tested for verification of conformance to specifications. Turf system acceptance is subject to the results of

these tests.

B. Any material so tested and found not conforming to specification will be rejected and replaced with material conforming to the specification at Synthetic Turf Surfacing Contractor's expense. Re-submittal shall be required.

3.06 SYNTHETIC TURF SEAMING

A. The fabric surface shall be constructed and installed in 15 -foot minimum widths with no longitudinal or transverse seams, except for head or tee seams at field boundaries and inlaid lines within a finished roll assembly.

B. Rolls that do not lay evenly and with full dimension width will be rejected. No fitted pieces will be allowed to true alignment.

C. Bonding of Material Surfaces: The bonding or fastening of all system material components shall provide a permanent, tight, secure and hazard-free, athletic playing surface. System material components include:

1. Bonding all seams and inlaid line and markings
2. Bonding and seaming must maintain their integrity for total length of warranty period.

D. Seams (Joint)

1. All longitudinal turf seams shall be sewn with high strength polyester fiber cord or nylon or bonded with an approved adhesive and carpet scrim
2. Backing layers must lie flat on the field base to provide a uniform pile surface.
3. The width between fiber rows at the seam locations shall not exceed that of the tufting gauge of the turf materials.
4. All seams shall be brushed to provide full coverage of fiber over the thread.

E. Turf Edges: Turf edges to be securely nailed at the perimeter.

3.07 IN-FILL INSTALLATION

A. The in-fill material shall be applied in a dry condition and when the synthetic turf is dry.

B. The synthetic turf installer shall not infringe upon any current or pending patents held by other synthetic turf manufacturers or installers with the installation of the in-fill materials.

C. The infill materials will be installed with a minimum of 8 top-dresser

passes/applications.

D. The infill installation shall not result in fiber material trapped below the surface of the infill material. If fiber is trapped below the surface, a portion or all of the infill material must be removed and reinstalled.

E. The infill material shall be installed at a uniform depth across the entire field area. Infill depths shall not vary by more than a total 5mm from the design infill level indicated in the approved submittals across the entire synthetic turf surfacing area.

Designed Infill Depth for 2.25" Fiber Height Systems is 38mm. Infill uniformity, or comparative depths of all measurements taken, shall vary by no more than 5mm.

F. The brushing of the in-fill material shall provide fiber fibrillation resulting in a natural, uniform surface appearance.

3.08 CLEANING

A. Remove all excess materials and any debris, etc., from the field surface after completion of the work. Remove all stains and other blemishes from all finished surfaces. Leave work in clean, new appearing condition, ready for use by Owner.

B. The Contractor shall inspect the entire field area with a hand held metal detector to identify any construction materials or tools left on the field. All such materials shall be removed prior to Owner occupancy of the field.

3.09 EXTRA MATERIALS

A. Deliver to Owner all extra materials herein specified. Receive Owner's written receipt for all materials. Deliver receipt to Engineer.

B. Turf for Future Repairs: Material may be roll ends or cutoffs; however, each piece of fabric shall be at least 5' x 10'.

Minimum Quantities for each Facility/Site:

Green Turf	750 sf	
White Turf		200lf (4" width)
Blue	100lf (4" width)	
Blue	250 sf	

C. Infill, Per Site

1. Provide a minimum (4) Barrels, 33 gallon each with lids, Cork Infill from batches used in the initial installation.

2. Provide 500lb Cork infill material from batches used in the initial installation, in a "supersack", palletized, delivered to the Owners warehouse or maintenance yard within the Seattle City Limits.

D. Clearly mark, palletize and shrink wrap all surplus. Mark as follows;

(FACILITY NAME – FIELD #) TURF / INFILL

3.10 MAINTENANCE

A. Contractor shall monitor the performance of the installation for 6 months and provide remedial service as required to maintain safety and playability. This includes, but is not limited to, re-distribution of infill materials redistributed by stormwater during the installations initial exposures to significant precipitation. Vendor shall anticipate two to three operations including sweeping and grooming.

B. Contractor shall complete maintenance of the synthetic turf field at both 6 months and 1 year after the date of Substantial Completion. Minimum maintenance activities shall include:

1. Inspect and repair as required each inlay and seam.
2. Brush and remove surface debris, loose fibers and any other deleterious material. Use of a rotating, mechanical brush is recommended.
3. Re-level infill to specified uniformity.

Contractor shall demonstrate / perform Maintenance Training of the above tasks prior to Physical Completion of the Contract.

C. All maintenance activities shall be as approved and directed by the original manufacturer.

D. All maintenance activities shall be coordinated with scheduled use of the facility and completed at the convenience of the Owner.

END OF SECTION 32 18 23

PART 1 - GENERAL

1.01 Description: The work includes the furnishing and installation of soil and/or amendments for lawn areas, athletic fields, or landscape planting areas as restoration of damage occurring during construction.

1.02 Reference Sections:

02 10 00	Site Preparation
32 92 23	Sodding

1.03 Quality Assurance: All products supplied shall comply with applicable state and local codes.

1.04 Submittals:

A. Submittal Procedure

At least 10 Working Days prior to placement of any soils specified in this Section, the Contractor shall submit to the Engineer the following. All test results shall be from samples sampled and tested less than 90 days prior to date of submittal.

1. Aggregate and Loam Analysis. Grain size analysis results of the Mineral Aggregate or Sandy Loam portion of each soil mix, performed by an accredited laboratory in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.
2. Compost Analysis. Quality analysis results for the compost portion of each soil mix performed in accordance with STA standards, as specified in this Section.
3. Mix Analysis. Test results from an accredited soil laboratory, including the following parameters:
    a. Total Nitrogen and Soluble Nitrogen (NO3 + NH3)
    b. Phosphorous
    c. Potassium
    d. pH
    e. Organic Matter % (Loss on Ignition method)
    f. Conductivity
    g. Calcium
    h. Sulfur
    i. Boron
    j. Weed seed (for General Turf Area Soil and High Performance Turf Mixes)
4. Recommendations. Fertilizer and amendment recommendations for the specified plant type (turf, shrubs/groundcovers, or annuals: with special provisions for Bioretention applications) and soil application depth; from the accredited laboratory, an accredited Soil Scientist or Agronomist.
5. Mix Samples (see below)

6. Manufacturer. The Manufacturer's Certificate(s) of Compliance from the Supplier of the soil mix, and (if different) the Suppliers of the compost, including their name(s) and address(es).
7. Laboratory Information. Include the following information about the testing laboratories:
    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.

Note: Soil analysis tests shall be current (no more than 90 days old), shall be performed by a local (Puget Sound Region) testing lab. Soil mix samples shall meet or exceed the Specifications prior to delivery to the job site and shall not require on-site mixing or substantial chemical alteration after delivery unless otherwise approved by the Engineer.

B. Sample submittals:

1. One ten (10) pound bag of each soil mix or one five (5) gallon container of each soil type used on the project.
2. One ten (10) pound bag or five (5) gallon of compost sample.

C. Acceptance:

1. Acceptance of Soils Prior to Placement. The Contractor shall not place any soils or soil mixes specified in this Section until the Engineer has reviewed and confirmed the following:
2. Soil mix delivery ticket(s). Delivery tickets shall show that the full delivered amount of soil matches the product type, volume and Manufacturer named in the submittals.
3. Visual match with submitted samples. Delivered product will be compared to the submitted sample, to verify that it matches the submitted sample. The Engineer may inspect any loads of soil on delivery and stop placement if it is determined that the delivered soil does not appear to match the submittals; and require sampling and testing of the delivered soil, before authorizing soil placement. All testing costs shall be the responsibility of the Contractor.

1.05 Project Conditions:

A. The existing site soils shall be amended for lawn, planting beds, bioretention cells, or as otherwise shown on the drawings.

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 Soil Materials:

The following soils and soil mixes are specified by the Engineer, according to project needs, and are all subject to the General Testing and Submittal Requirements of the City of Seattle Standards:

A. Reused Amended Site Soil
Soil from the Project Site that is either, amended in place, or moved/stockpiled during grading operations and then amended with compost as needed to meet minimum organic matter content requirements.

1. Source. Reused Amended Site Soil shall be native topsoil taken from within the Project Site, either from areas where construction excavation is to be performed; from borrow, pit, or quarry sites strippings; or other designated sources. The general limits of the Material to be utilized for topsoil will be as indicated by the Engineer. The Engineer will make the final determination of the areas where the most suitable Material exists within these general limits, and depth of excavation. The Contractor shall reserve this Material for the specified use. Generally, this is expected to occur in the areas disturbed by the project operations.
2. Unwanted Vegetation. In the production of Reused Amended Site Soil, no vegetative matter shall become a part of the topsoil, including grass, large brush and trees over 4 feet in height. Prior to removal, the Contractor shall strip existing vegetation. Plants on the King County Noxious Weed Lists or invasive root-propagating plants including but not limited to horsetail, ivy, clematis, knotweed, etc., shall not be incorporated in the topsoil. Such plants shall be removed and disposed.
3. Organic content. The final Reused Amended Site Soil shall have a minimum organic matter content by dry weight of 5% for areas where lawn will be installed, and 10% for all other landscape areas. Organic matter shall be determined by Loss-on-Ignition test (ASTM D2974, or TMECC 05.07A). Native site topsoil shall be amended with Compost if more organic content is needed to meet these requirements. Compost amendment requirements may be added at default rates of 22% by volume for turf or 38% for planting beds (1.75" amendment tilled to 8" depth for turf, 3" amendment tilled to 8" depth for beds); or calculated based on tests of the soil and compost, using the Soil Amendment Rate Calculator at http://your.kingcounty.gov/solidwaste/compost-calculator.htm or similar calculator available at http://www.soilsforsalmon.org/excel/Compost_Calculator.xls.
4. Stockpiling. Designated Material shall be placed at locations approved by the Engineer that do not interfere with the construction of the Project. The Contractor shall take all precautions to avoid disturbing the existing ground beyond the Project Site or other areas designated by the Engineer.

5. Testing and Submittals. Testing and submittals shall comply with all provisions of this Section.

B. Planting Soil

An imported soil mix for planting beds, planted medians and planting strips.

1. Mix. Planting soil shall consist of a mix of 2 to 3 parts Sandy Loam soil and 1 part compost by volume. The resulting mix shall contain approximately 8-15% organic matter by weight, tested by the Loss on Ignition method.
2. Sandy Loam. Shall be imported and shall be as defined by the United States Department of Agriculture Classification System, and documented by a Particle Size Analysis performed by an accredited laboratory. The sandy loam fraction of mix shall be screened through a ½" mesh, to remove all rocks, plant parts and other debris.
3. Compost. Compost used shall meet the definition of Compost in this Section.
4. Contaminants. Sandy Loam shall be free from: Materials toxic to plant growth; visible seeds, rhizomes or roots; for any King County-listed noxious weeds, or invasive root-propagating plants including but not limited to horsetail, ivy, clematis, knotweed, etc.
5. Testing and Submittals. Testing and submittals shall comply with all provisions of this Section.

C. General Turf Area Soil

An imported soil mix for passive-recreation turf areas.

General Turf Area Soil is for general-use and passive recreation lawn areas, in areas where year-round maintenance and positive drainage are important. For sports fields or high-traffic lawn areas such as Seattle Center, the Contractor shall use High Performance Turf Mix.

1. Mix. General Turf Area Soil shall consist of 2 parts sand meeting the requirements below, and 1 part Compost by volume. The resulting mix shall contain approximately 4-6% organic matter by weight, tested by the Loss on Ignitions method.
2. Sand. Sand used shall meet the following particle distribution.

Screen Size	Percent Retained
3/8 inch	0
#4	<3%
#6	<5%
#10	<20%
#18	<20%
#20	25-50%
#30	
#35	
#40	>20%

#60	
#100	<10%
#200	<5%
#270	<5%
2um	<5%
<2um	<3%

3. Compost. Compost used shall meet the definition of Compost in this Section 2.02 and be certified in compliance with the US Composting Council STA program.
4. Testing and Submittals. Testing and submittals shall comply with all provisions of this Section.
5. Weed Seeds and Propagules. General Turf Area Soil shall not contain any viable seeds or roots capable of sprouting of any State-listed noxious weed, or invasive root-propagating plants including but not limited to horsetail, ivy, clematis, knotweed, etc. Soil found to contain these prohibited viable plant materials shall be removed and replaced at the Contractor's expense.

2.02 Compost

A. General

1. Procurement. For Project Sites located within the City limits of Seattle; the Contractor shall procure compost Materials from only approved sources as specified by the City of Seattle, City Purchasing and Contracting Services (http://www.seattle.gov/contracting/construction.htm).
2. Quality. Compost production and quality shall comply with Chapter 173-350 WAC, and meet the criteria below:
3. Regulatory Standards. Compost products shall be the result of the biological degradation and transformation of feedstocks as specified below, under controlled conditions designed to promote aerobic decomposition, per WAC 173-350-220, which is available at http://apps.leg.wa.gov/wac/default.aspx?cite=173-350-220

B. Submittals. The Contractor shall submit the following information to the Engineer for approval:

1. 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).
2. The Supplier shall verify in writing, and provide lab analyses that the Materials comply with the processes, testing, and standards specified in WAC 173-350 and these Specifications. An independent STA Program certified laboratory shall perform the analysis.
3. A list of the feedstock by percentage present in the final compost product.

4. A copy of the producer's current STA certification as issued by the U.S. Composting Council.
5. Acceptance shall be based upon a satisfactory Test Report from an independent STA program certified laboratory and the sample(s) submitted to the Engineer.

C. Testing Requirements. The compost Supplier shall test all compost products within 90 Calendar Days prior to application, at the Suppliers expense. Samples shall be collected using the Seal of Testing Assurance (STA) sample collection protocol, available from the U.S. Composting Council, Phone: 631-737-4931, www.compostingcouncil.org. The sample shall be tested by an independent STA Program certified laboratory. A copy of the approved independent STA Program laboratory test report shall be submitted to the Engineer prior to initial application of the compost.

D. Gradation. Compost shall meet the following size gradations when tested in accordance with the U.S. Composting Council "Testing Methods for the Examination of Compost and Composting" (TMECC) Test Method 02.02-B, "Sample Sieving for Aggregate Size Classification":

1. Fine Compost. Fine Compost, typically used for soil amendment, shall meet the following gradation by dry weight:

	Min.	Max.
Percent passing 2"	100%	
Percent passing 1"	99%	100%
Percent passing 5/8"	90%	100%
Percent passing 1/4"	75%	100%

2. Coarse Compost. Coarse Compost, typically used for erosion control or surface mulching, shall meet the following gradation by dry weight:

	Min.	Max.
Percent passing 3"	100%	
Percent passing 1"	90%	100%
Percent passing 3/4"	70%	100%
Percent passing 1/4"	40%	60%

E. Other Physical Properties

1. pH. The pH shall be between 6.0 and 8.5 when tested in accordance with TMECC 04.11-A; "1:5 Slurry pH".
2. Physical Contaminants. Manufactured inert material (concrete, ceramics, metal, etc.) shall be less than 1.0 percent by weight as determined by TMECC 03.08-A "percent dry weight basis". Film plastics shall be 0.1% or less, by dry weight.
3. Organic Content. Minimum organic matter content shall be 40 percent by dry weight basis as determined by TMECC 05.07A; "Loss-On-Ignition Organic Matter Method".

4. Salinity. Soluble salt contents shall be less than 5.0 mmhos/cm tested in accordance with TMECC 04.10-A; "1:5 Slurry Method, Mass Basis".
5. Maturity. Maturity shall be greater than 80% in accordance with TMECC 05.05-A; "Germination and Vigor". The Engineer may also evaluate compost for maturity using the Solvita Compost Maturity Test at time of delivery. Fine Compost shall score a number 6 or above on the Solvita Compost Maturity Test. Coarse Compost shall score a 5 or above on the Solvita Compost Maturity Test.
6. Stability, Stability shall be 7 or below in accordance with TMECC 05.08-B; "Carbon Dioxide Evolution Rate".
7. Feedstocks. The compost product shall contain a minimum of 65 percent by volume from recycled plant waste as defined in WAC 173-350-100 as "Yard waste", "Crop residues", and "bulking agents". A maximum of 35 percent by volume of" post-consumer food waste" as defined in WAC 173-350-100 may be substituted for recycled plant waste. A minimum of 10% food waste in compost is required. The Engineer may approve compost products containing up to 35% biosolids or manure feedstocks for specific projects or soil blends, but these feedstocks are not allowed unless specified, and not allowed in compost used for Bioretention Soils.
8. C:N. Fine Compost shall have a carbon to nitrogen ratio of less than 25:1 as determined using TMECC 04.01 "Total Carbon" and TMECC 04.02D; "Total Kjeldhal Nitrogen". The Engineer may specify a C:N ratio up to 35:1 for projects where the plants selected are entirely Puget Sound native species. Compost may be mixed with fir or hemlock bark meeting requirements of 9-14.4(3) to raise the C:N ratio above 25:1. Coarse Compost shall have a carbon to nitrogen ratio between 20:1 and 45:1.

2.03 Additional Fertilizers and Soil Amendments: Materials shall be as follows:

A. Soil Amendment – Dolomite Lime

1. Fine ground Dolomite Lime
Shall be retained by Taylor Standard Sieves as follows:

No. 20 sieve - retains 0%
No. 100 sieve - retains 25%

B. Fertilizer

1. Lawn Starter Fertilizer: Use (10-20-20) (or, approved equal) with the following characteristics:

Total Nitrogen* (N)	10.0%
(10.0% Ammoniacal Nitrogen)	
Available Phosphate (P205)	20.0%
Soluble Potash (K20)	20.0%
Sulfur (S)	7.0%

*Nitrogen shall be derived from: Ammonium Sulfate, Potassium Chloride, and Monoammonium Phosphate and Urea.

2. Lawn Maintenance Fertilizer: Use (16-16-16) (or, approved equal) with the following characteristics:

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%

*Nitrogen shall be derived from: Ammonium Sulfate, Potassium Chloride, Monoammonium Phosphate, and Urea.

3. Landscape Planting Fertilizer: Use (20-10-5+ minors) TURFGRO, "GROPACS" Fertilizer Packets (or, approved equal) with the following characteristics:

Total Nitrogen* (N)	20.0%
(18% Urea Nitrogen)	
(2.0% Ammoniacal Nitrogen)	
Available Phosphate (P205)	10.0%
Soluble Potash (K20)	5.0%
Calcium (Ca)	3.0%
Magnesium (Mg)	2.0%
Sulfur (S)	3.0%
Boron (B)	0.04%
Copper (Cu)	0.20%
Iron (Fe)	1.0%
Manganese (Mn)	0.10%
Zinc (Zn)	0.10%

*Nitrogen shall be derived from: Ammonium Sulfate, Potassium Chloride, Monoammonium Phosphate, and Urea.

PART 3 - EXECUTION

3.01 Preparation of Sub-grade:

Subgrade work shall proceed only under dry weather conditions or by approval of the Engineer.

A. Rip, disc, or scarify undisturbed or compacted sub-grade soils to a minimum depth of 12 inches. Sub-grade elevations shall be as follows:

1. For Lawn Areas – Establish sub-grade elevation 4 inches below finished grade. After establishing subgrade, rip subgrade with minimum 13 inch long shank ripper attachment pulled behind a tractor with minimum 20 horse power.
2. For Landscape Planting Areas – Establish sub-grade elevation 6 inches below finished grade. After establishing subgrade, rip subgrade with minimum 13

inch shank ripper attachment pulled behind a tractor with minimum 20 horse power.

3. For Athletic Fields:

    a. Establish subgrade elevation 6 inches below finished grade. After establishing subgrade, rip subgrade with minimum 13 inch long shank ripper attachment pulled behind a tractor with minimum 20 horse power.
    b. Rototill the subgrade to create a well broken up and loose soil profile free of rocks and clumps of compacted soil larger than 6 inches.
    c. Re-establish subgrade elevation by rolling with a mechanical roller to a compaction rate of 85-90% compacted dry density.

3.02 Placing Soil and Soil Amendments:

The placement of soils and soil amendments shall proceed only under dry weather conditions or by approval of the Engineer.

A. For General Lawns Areas:

1. Place 4 inches of specified General Turf Area Soil and rototill soil thoroughly into top 6 inches of prepared sub-grade using a rototiller with minimum 8 inch long tines. The soil profile shall be a minimum of ten (10) inches deep of thoroughly homogenized mix of imported soils and site soils.
2. Incorporate specified Lime and Fertilizers by broadcasting over entire the seeded area at an even distribution and rate, then broom rake the fertilizer into the top inch of specified or amended soil at rates as follows.

    a. Dolomite Lime: Recommended application Rate: Incorporate fifty (50) pounds of Dolomite Lime per 1,000 square feet in direct broadcast application.
    b. Starter Fertilizer: Recommended Application Rates: For (10-20-20): (Bag size = 50lbs.)
    For Hand or Mechanical seeding apply at 1lb. of (N)/1000s.f. (10lbs. blended material/1000 s.f.) in direct broadcast applications.
    For Hydroseeding areas, see Section 32 92 19.16.
    c. Maintenance Fertilizer: Recommended Application Rates: For (16-16-16): (Bag size = 50lbs.)
    For all seeded areas apply at 1lb. (N)/1000s.f. (5.3lbs./1000s.f. of blended material) in seeded areas.

B. For Landscape Planting Areas:

1. Place 6 inches of Planting Soil and thoroughly rototill soil into top 8 inches of prepared sub-grade using a rototiller with minimum 12 inch long tines.
2. Broadcast Planting Fertilizer at a rate of one-half pound (1/2#) of nitrogen per 1,000 square feet after placement and before rototilling of planting soils.

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.

C. Compact prepared soil with water filled drum or equal compactor to reach compaction levels between 85 to 95 percent density. Do not over –compact soil by over working or driving vehicles over the prepared soil.

3.04 Inspections: 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 landscape planting can occur by calling the SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov to make arrangements for inspections.

END OF SECTION #

PART 1 - GENERAL

1.01 Description: Provide seeded lawns as shown on the contract drawings and as specified herein.

A. The work includes the following:

1. Preparation of the sub-soil.
2. Soil Preparation; including the placing of specified soils and/or soil amendments.
3. Liming and Fertilizing.
4. Seeding of lawns, athletic fields, and other indicated areas.
5. Maintenance.

1.02 Related Sections:

Section 32 91 13 - Soil Preparation

1.03 References:

A. All construction shall be in accordance with the City of Seattle Standard Plans and Specifications (most recent edition).

B. The Seattle Parks & Recreation (SPR) Standard Specifications and Details.

1.04 Quality Assurance: The seed shall be furnished in containers that show the following information: seed name, lot number, net weight, percentage of purity, germination, weed seed and inert material. Seed that has become wet, moldy, or otherwise damaged will not be accepted. Seed shall conform to the requirements of the Washington State seed law and when applicable the Federal Seed Act, and shall be "certified" grade or better.

1.05 Submittals: Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight and percentages of purity, germination and weed seed for each grass species.

1.06 Delivery, Storage and Handling: Deliver seed and fertilizer materials in original unopened containers showing weight, analysis, and name of manufacturer. Store the seed in such a manner that will prevent the wetting and deterioration of the seed.

1.07 Field Quality Control:

A. Grading inspections:

1. Rough grading or sub-grades shall be inspected and approved by the Engineer prior to placing playfield soil.
2. Finish grading, soil placement and preparation shall be inspected and approved by the Engineer prior to seed application.

B. Other Inspections: The Contractor shall request a provisional inspection by the Engineer upon completion of the work. Call the **SPR Inspection Request Line @ (206) 684-7034 or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspections. Upon Substantial Completion and completion of the punch list items, the Engineer will make provisional acceptance in writing.

1.08 Project Conditions:

A. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.

B. Provide hoses and lawn-watering equipment as required.

1.09 Warranty: Provide a uniform stand of grass. Reseed all areas, which fail to provide a uniform stand of grass with specified materials until the Engineer accepts all affected areas.

PART 2 - PRODUCTS

2.01 Grass Seed Mix for Irrigated/Mowed Lawn Areas and Athletic Fields:

A. The 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:
Minimum pure seed percent - 98%
Minimum germination percent - 90%
Maximum weed seed percent - 0.5%

C. All Seed shall be packed in clean, sound containers of uniform weight.

D. Soil preparation: Soil preparation shall be per Section 32 91 13, unless otherwise specified.

E. Soil Amendments shall be as follows: Compost, Lime, Fertilizers, etc., per Section 32 91 13 - Soil Preparation.

PART 3 - EXECUTION

3.01 Inspection: The Engineer shall examine all of the finished surfaces. Do not start seeding work until all unsatisfactory conditions are corrected.

3.02 Preparation of Sub-soils:

A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be seeded. Remove contaminated subsoil.

C. Scarify sub-soil to a depth of four (4) inches where specified soil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading, has compacted subsoil.

3.03 Placing Specified Soils or Soil Amendments:

A. Spread specified soil or soil amendments to the specified depth over all areas to be seeded and rototill into the subsoil, refer to Section 32 91 13 - Soil Preparation for options.

B. Place specified soil or amendment during dry weather and on dry, unfrozen, prepared subsoil.

C. Grade all areas to eliminate rough, low, soft areas, and to ensure positive drainage. Achieve elevations and grades as shown on the drawings. Roll for firmness and to prepare for seeding.

3.04 Liming and Fertilizing:

A. Incorporate fifty (50) pounds of Dolomite Lime per 1,000 square feet (if required by soil test or as directed by the Engineer).

B. Incorporate specified Installation Fertilizer by broadcasting over entire area at an even distribution and rate, then broom rake the fertilizer into the top inch of specified or amended soil at the rate of one (1) pounds of nitrogen per 1,000 square feet.

3.05 Seeding:

A. Seed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operation.

B. After applying lime, fertilizer and amendments at the specified rates, drag to an even grade and roll for firmness.

C. Grass Seed Mixes shall be spread at the rate of eight (8) pounds per 1,000 square feet.

D. Half of the seed shall be sown at right angles to the first sowing, lightly rake to cover seed, compact by rolling, spread a thin layer (approximately 1/4 inch) of fertile mulch over the entire area and water as required.

E. Spread a minimum of ¼" of Fertile Mulch over all seeded areas (except Ecology Mix) and broom rack to an even consistency.

F. Seeding shall not be done during windy weather (above 25 mph) or when the ground is overly wet (saturated) or frozen. Contractor shall give the Owner 48 hours notice of seeding operations. Seeding, fertilizing, and mulching of prepared areas shall be performed during the following time frames:

1. Seeding shall be done from April 1 to May 31 or from September 1 to October 31.
2. No seeding shall be done before or after these dates without the Engineer's written approval. Written permission to seed from June 1 to August 31 may be granted only if automatic irrigation is available and operational at the site. Permission to seed from November 1 to March 31 will only be given when completion of the Project is imminent and the environmental conditions are conducive to acceptable growth. No seeding shall be done on weekends or legal holidays without written approval of the Engineer.
3. Application of pre-germinated seed, moisture retention agents and/or provision for supplemental watering may be required by the Engineer should the Contractor schedule this portion of the Work outside the time frames listed in item 1 immediately above.
4. All areas that are partially completed to grade, shall be prepared and seeded during the first available planting period and shall not be allowed to sit idle for long periods of time without receiving the erosion control specified in the Contract.
5. When environmental conditions are not conducive to acceptable results from seeding operations, the Engineer may order the Work suspended, and it shall be resumed only when the desired results are likely to be obtained.

3.06 Maintenance and Establishment:

A. Maintain seeded areas until grass is well established and exhibits a vigorous growing condition.

B. Maintenance shall include protection, watering, weeding and at least two mowings.

C. After the first mowing, turf shall be fertilized at the rate of one (1) pound of nitrogen per 1,000 square feet.

D. All grass clippings shall be removed from the site during each mowing.

3.07 Acceptance:

A. Inspection to determine Physical Completion of seeded areas shall be made by the Engineer upon the Contractor's request. Provide notification at least five (5) working days before requested inspection date.

1. Seeded areas shall be accepted provided that all requirements, including maintenance, have been complied with and grass is well established and exhibits a vigorous growing condition.
2. Upon Physical Completion, the Owner shall assume all lawn maintenance responsibilities.

3.08 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 any and all damage to the site resulting from seeding operations.

3.09 Warranty and Replacement: All seeded areas must have a relatively uniform stand of turf grass or other seed mixes as specified with no bare spots over 6" square at the time of Substantial Completion. Reseed at the original rate and fertilize at the rates as for all blended materials. All areas failing to vigorously establish within 90 days after germination or one growing season (whichever is longest), shall be redone at the Contractor’s expense.

END OF SECTION

Seattle Parks & Recreation
healthy people healthy environment strong communities

Date: **April 14, 2022**
To: **Peggy Tosdal, Capital Projects Coordinator**
CC: **File**
From: **David Graves, AICP, Strategic Advisor**
Subject: **Montlake Playfield turf replacement – SEPA/ECA Exemption**

Background

Montlake Playfield is located in the Montlake neighborhood, in Northeast Seattle. The playfield is located on the southerly shore of Portage Bay, between Lake Washington and Lake Union. The playfield includes the Montlake Community Center, a children's play area, a football/soccer field surrounded by a running track, baseball & softball fields, and tennis courts. The perimeter of the playfield, adjacent to Portage Bay is comprised of a large lake shore wetland complex. There is a trail along the edge of the upland area and a canoe/kayak launch near the Community Center. State Route 520 crosses Portage Bay in close proximity to the easterly portion of the wetland area.

The 60,000 sq.ft. football/soccer field is used by Seattle Prep for practices and also by other sports groups of varying ages for use throughout the year. The playfield was originally constructed in the 1930's on previously swampy land. Over the years, fill from a variety of large construction projects has been placed on the playfield in an attempt to raise the grades of the playfield to make it more playable. In 2012, Seattle Parks and Recreation (SPR) replaced the existing natural grass football/soccer field with the synthetic turf surface from the nearby University of Washington Husky Stadium. That synthetic surface now needs to be replaced

The playfield is located within Liquefaction and Peat Settlement Prone Environmentally Critical Areas (ECAs) and adjacent to Wetland and Wildlife Habitat ECAs as identified on the City's GIS database.

Summary of Proposed Project

SPR is proposing to replace the artificial turf at Montlake Playfield. The surface, called a carpet, has a distinct playable life span and the field is due for replacement along with the infill material. Little to no work is anticipated on the sub-grade below the carpet and no grading and/or excavation is proposed. Work involved to replace the turf is as follows:

Site Preparation elements:

- Install temporary construction fencing around the entire field, including the staging area for the new carpet and infill;
- Install construction stormwater sediment controls and any other necessary BMPs;
- Remove the existing turf carpet and infill and properly disposal of these materials; and,
- If there are deficiencies in the sub-grade upon inspection, they will be addressed directly by the consultant/contractor and repair(s) will meet SPR standards and specifications.

Synthetic Turf System Installation:

- Turf manufactured and installed to specifications; the turf system includes supplemental pad, turf product, infill materials and field markings

There is no excavation planned, no ADA improvements needed, and no outside fill anticipated. No trees will be removed, and any disturbed areas will be restored.

SEPA Determination

Pursuant to SMC 25.05.800.C – Repair, remodeling, and maintenance activities, the following is exempt from threshold determination and environmental impact statement requirements under SEPA:

> [T]he following activities shall be categorically exempt: the repair, remodeling, maintenance, or minor alteration of *existing* private or public structures, facilities, or equipment, including utilities, *recreation*, and transportation *facilities involving no material expansions or changes in use beyond that previously existing*; except that, where undertaken wholly or in part on lands covered by water, only minor repair or replacement of structures may be exempt….

No physical changes to the field are proposed, it is only the replacement of the turf and associated infill. The hours of play will remain the same and no lighting is proposed. Since the proposed work is the repair and maintenance of an *existing recreation facility involving no material expansions in use beyond that previously existing*, it is exempt from threshold determination and environmental impact statement requirements under SEPA.

ECA Analysis

Pursuant to SMC 25.09.045 Exemptions, "[c]ity agencies taking the action under any subsection of this Section 25.09.045 and a public agency taking the action under subsection 25.09.045.J do not need to make an application to the Director, provided that, if no application is made, they shall comply with all provisions of this Section 25.09.045, make all determinations required to be made by the Director, including required conditions, and maintain records documenting compliance with all provisions."[1]

Subsection I - *Structure maintenance of existing public facilities and utilities* provides that the "[o]peration, maintenance, remodeling, repair, and removal of existing public facilities and utilities, if these activities are normal and routine and if these activities do not result in substantial disturbance or adverse impacts of environmentally critical areas or buffers [is exempt]." The proposed work replaces the existing carpet and infill material on the playfield with no changes to the subgrade material or grading/excavation. There will be no expansion of the field. The replacement is maintenance of an existing public park facility. All appropriate BMPs will be implemented. It is unlikely that the proposed improvements will result in substantial disturbance of the underlying Liquefaction and Peat Settlement Prone ECAs and adjacent Wetland and Wildlife Habitat ECAs.

Conclusion

As the proposed turf replacement at the Montlake Playfield is maintenance of an existing recreation facility involving no material expansions in use beyond what is currently existing, it is **exempt** from threshold determination and environmental impact statement requirements under SEPA. Furthermore, as the proposal is routine maintenance of an existing public facility and will not substantially disturb the identified Liquefaction Prone, Peat Settlement, Wetland and Wildlife Habitat ECAs, the proposal is **exempt** from the provisions of SMC Ch. 25.09, Regulations for Environmentally Critical Areas.

[1] SMC 25.09.045.A.3.b