

01 10 00
SUMMARY OF WORK

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Work Covered by Contract Documents.
- C. Contract Method.
- D. Permits and Fees
- E. Work by the District or Others.
- F. Contractor's Use and Site Premise.

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract for Construction.

1.03 WORK COVERED BY THE CONTRACT DOCUMENTS

A. All work shall be performed on the Beaverton School District – Mountainside High School Athletic Field Remediation Project located at: Mountainside High School, 12500 SW 175th Ave., Beaverton, Oregon 97007.

1. Field remediation work to be done in the following order of priority: Varsity Softball Field; South Soccer Field kick corner area.

B. The Work shall include all supplies, tools, equipment, transportation, utilities, service, superintendence, labor, and the furnishing of all materials, items, and accessories needed for the Project.

1. All on-site work, including demolition, installation, and final cleaning is required to be completed during the regularly scheduled hours. Contractor is to coordinate work to accommodate the continuous operation of the adjacent streets and utilities, without interruption or hindrance.

2. The Contractor shall provide for all scheduling, coordination, cutting and patching and all other items required by the Contract Documents to complete the Work.

C. Work of this Contract includes, but is not limited to, the following elements: Opening up artificial turf and existing field trenches, removal of all bentonite, replacement of rock & CDF per the documents, remove and replace brock pad as needed and replace artificial turf as indicated. G-max testing shall be required for all replacement areas.

1.04 CONTRACT METHOD

A. Construct the work under a District modified A101 & A201 Contract, furnished by the District. See Sample contract attached.

1.05 PERMITS AND FEES

A. All permits will be the responsibility of the Contractor.

1.06 WORK BY THE DISTRICT OR OTHERS

A. If District-awarded contracts interfere with each other due to work being performed at the same time or at the same Site, the District will determine the sequence of work under all contracts. "Contractor's Use of Site and Premises" Articles in this Section outline the District's policies on use of site.

B. Coordinate Work with utilities of the District and public or private agencies.

1.07 OWNER FURNISHED PRODUCTS INSTALLED BY CONTRACTOR (OFCl)

A. There are no OFCl items on this project.

1.08 OWNER FURNISHED PRODUCTS INSTALLED BY OWNER (OFOI)

A. There are no OFOI items on this project.

1.09 CONTRACTOR'S USE OF SITE AND PREMISES

A. Construction operations are to be limited to areas indicated on contractor's logistics plan to be approved by the District.

B. Use of the Site:

1. Do not unreasonably encumber Site or facility with materials and equipment.
2. Do not load structure with weight that will endanger structure.
3. Confine operations at the site to the areas permitted. Portions of the site beyond areas in which work is indicated are not to be disturbed.
4. Keep existing driveways and entrances serving the premises clear and available at all times. Do not use parking for storage of materials.
5. Move stored products which interfere with the District operations and other contractors.
6. Assume full responsibility for the protection and safekeeping of stored products.
7. Provide resources for trash removal. Facility dumpsters and trash cans cannot be used for Contractor's trash disposal. Contractor shall not interfere with District waste facilities and scheduled trash pickup.
8. Lock automotive type vehicles and other mechanized or motorized construction equipment when parked and unattended. Do not leave vehicles or equipment unattended with the motor running or ignition key in place.
9. Areas of the site which will be occupied by the Contractor or impacted by construction shall be restored to existing conditions. Contractor is responsible for damage caused by construction activities to surfaces not rated for heavy traffic. Protect surrounding building, bleachers, trash receptacles and any irrigation nearby.
10. It is understood that the Contractor has the most knowledge about staging construction and the extent of restoration required. The Contract Documents therefore do not indicate new construction to replace existing.
11. Landscaping damaged by the Contractor or associated activities shall be repaired to original conditions. All newly seeded or planted areas will be maintained through a period of establishment as determined as reasonable but not less than one growing season. Contractor shall follow requirements as indicated below:
 - a. The Contractor shall be responsible for protecting seeded areas from damage and maintaining seeded areas as necessary to establish a complete coverage of the specified vegetation in a healthy and growing condition for 365 days from the date of substantial completion of the project.
 - b. Mowing: Mow all seeded areas as required to maintain in a healthy growing condition, and to control the germination and spread of noxious weeds. Mow a minimum of once per maintenance period. Line trimmers may be used where appropriate.
 - c. Re-Seeding: Upon detection of damaged or failing areas and areas showing

unsatisfactory growth and coverage, the Contractor shall restore the area as necessary to establish a complete cover crop. Reseed using the seed mixes specified.

d. Provide necessary watering of seeded areas via temporary irrigation system or hand watering. Any irrigation system is subject to requirements for system use, such as approved backflow devices. Perform necessary site visits and observations to maintain the proper amounts of moisture in soils to promote healthy and vigorous plant growth. Correct conditions of over or under-watering as may be determined by weekly observations during the irrigation season.

13. Contractor is to protect existing trees in the vicinity of construction operations. No Work, staging, or vehicle traffic is to extend into the drip line of a tree. Contractor will be responsible for any and all penalties, fines, arborist reports, inspections, and required remediation steps for causing damage to a tree or its root system.

C. Contractor's Use of the Existing Site:

1. Keep public areas such as public site entrances and stairs free from the accumulation of waste materials, rubbish, or construction debris.

2. Cleaning:

a. Contractor to ensure that non-construction areas remain free of construction debris and dust throughout the course of the project. Daily cleaning will be required.

3. Area of exterior work will need to be secured with a construction fence.

D. Contractor's Site Conduct:

1. Identifying name tags will be worn at all times.

2. No loitering in the school buildings.

3. The site is a tobacco-free site. This means no smoking or chewing on the property.

4. Keep the project free of pop cans, lunch wrappers, etc.

5. The supervisor will review the scheduling of any work that is excessively noisy.

6. Profanity is not acceptable.

7. The wearing of clothing with logos displaying alcohol, tobacco, illegal substances, or suggestive themes is not acceptable attire.

8. The Contractor, the Contractor's employees and all subcontractor's and subcontractor's employees who perform Work will be required to comply with the District's policies and procedures.

9. Beyond courtesy, there should be no interaction between Contractor and the District's staff.

E. Emergency Building Exits During Construction:

1. Protect the public and the District's staff from construction hazards in the emergency egress pathways.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION 01 10 00

01 14 00
WORK RESTRICTIONS

PART 1 - GENERAL

1.01 Section includes

- A. Related Requirements
- B. Access to Site
- C. Coordination with Occupants
- D. Use of Site
- E. Standard Working Hours/Days
- F. Deviation from Standard Hours/Days

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract for Construction

1.03 ACCESS TO SITE

- A. Contractor shall limit use of premises for Work and for construction operations.
- B. Coordinate use of premises under direction of the District.

1.04 COORDINATION WITH OCCUPANTS

- A. Contractor shall coordinate use of premises with District.
- B. The District shall permit public closure of the areas of work.
 - 1. Contractor shall limit access to authorized personnel only and shall not allow public access without prior authorization from the District.

1.05 SECURITY REQUIREMENTS

- A. All personnel under the employment of the Contractor and its Subcontractors who spend time at the project site are to wear photo ID badges while on the work site. Individuals not wearing badges will be removed from the project work site. ID badges are to contain:
 - 1. Individual's full name (no nicknames).
 - 2. Individual's company affiliation.
 - 3. Recent photograph of the individual; taken within the last 4 years.
- B. Badges must be always worn by workers in a visible location.
- C. All personnel under the employment of the Contractor and its Subcontractors that spend time at the project site must pass a formal background screening review before being allowed on the work site. Background screening is to be done by a professional screening firm meeting the following qualifications:
 - 1. Must have a minimum of five years of screening experience specifically for construction industry clients,
 - 2. Must have a minimum of fifteen employees.
 - 3. Must be able to provide access to an internet-based screening management software system which has a feature to allow access by the District to view the pass-no pass result for each screened Contractor/Subcontractor employee working on a District project.
 - 4. Must be accredited by the National Association of Professional Background Screeners (NAPBS).

D. Each individual will be screened for having committed any crime as listed in ORS 342.143, most recent edition.

1.06 USE OF SITE

A. Contractor shall have full access to the Site during construction, but shall coordinate and limit locations as required for the operations of other construction projects and District use.

Contractor to indicate locations and schedule to District in advance for approval.

B. Contractor shall direct all construction vehicle and delivery traffic along an access route as approved by the District.

C. Contractor shall professionally prepare a site logistics plan defining Contractor areas for work, access, staging, and storage utilizing CAD, Bluebeam, Adobe Acrobat, or other similar software.

D. Provide staging and logistics plan delineated on Project Site Plan. Include operations plan, material lay-down area plan, fencing locations, open trench protection plan. Project Site Plan shall be on 11x17 paper and shall be professionally prepared.

E. Contractor shall limit his use of the premises for Work and for storage to allow for:

1. District occupancy and operations.
2. Coordinated use of premises under direction of District.
3. Full responsibility for protection and safekeeping of products under this Contract stored at Site.
4. Moving stored products, under Contractor's control, which interfere with operations of District or a separate Contractor.
5. Obtaining and paying for use of additional storage or work areas needed for operations.
6. Conformance to fire / life safety requirements and fire equipment access.
7. Worker vehicle parking on-site.

F. Work on weekends, evenings or holidays may be required to meet the project phasing schedules. Provide 72 hours notification to the District to ensure necessary inspections, monitoring, testing, etc. are provided during these work hours.

G. On a site plan indicate lay down areas, pedestrian walkways, and contractor parking areas.

H. The Contractor shall submit a diagram one week prior to start of construction indicating the construction zone, and barricades and access for students and School Personnel, for approval by the District.

I. The Contractor must provide and maintain access and code compliant egress to and from all occupied spaces.

J. Contractor shall post temporary signage (appropriate and secure) to redirect students and staff for emergency exiting.

K. The Contractor shall diligently maintain all construction zone barricades and fencing.

1. Fence panels will be required for work shall be secured with two fence clamps per joint.
2. The Contractor shall secure end panels in a manner acceptable to the District.
3. The use of tie wire will not be an acceptable method for securing fence panels.
4. Construction zone gates shall be secured with chains and District provided padlocks.

1.07 STANDARD WORKING HOURS/DAYS

A. The project schedule assumes a 5-day work week. It is up to the contractor to determine their required work week needed to meet the required substantial completion date. Contractor is required to provide onsite management on days that they are working including Saturdays.

- B. Exterior work that generates noise shall be performed in accordance with local codes.
- C. For work occurring during the school year between Monday and Friday, before beginning work, contractor shall check in daily with the Project Manager and/or Project Coordinator to review the previous day's work and discuss upcoming work for that day/evening. This check-in will take place on every school day, Monday through Friday, so District staff members can be made aware of current construction activity.

1.08 DEVIATION FROM STANDARD HOURS/DAYS

- A. For any deviation from the above stated working days/times, Contractor shall submit a request in writing to the District at least 48 hours prior to the date in question. While the District cannot assure approval in every instance, efforts shall be made to accommodate such requests.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 CONTRACT TIME / MILESTONE SCHEDULE AND DESCRIPTION OF PHASES

A. Contract Time and Milestone Schedule:

- 1. Contract phasing will be determined by the Project Representative in cooperation with the school activities. Contractor to coordinate with Project Representative for availability and use of the fields.

REFER TO INVITATION TO BID FOR ALL DATES REFERENCED IN THIS SECTION.

B. Description of General Construction Requirements:

- 1. These descriptions of the construction requirements are general in nature and in no way offer the complete and concise description of all the work required by the Contract Documents.
- 2. The start dates represented in the milestone schedule are preliminary and the District reserves the right to modify these dates based on when the Notice to Proceed is issued.
- 3. The Contractor is responsible for providing the manpower and scheduling the shifts necessary to complete the work in accordance with the Contract Time and Milestone Schedule.
- 4. The School will remain open during the academic year and will be partially occupied during summer construction periods. The Work of this project must consider that the site will be occupied by students and staff and will be phased as generally described above and in other contract documents.
- 5. Non-School hours are defined as hours before 7:00 AM, and after 3:00 PM on days when school is in session.
- 6. Follow City of Beaverton Noise Ordinance.
- 7. Work that is hazardous, noisy, or that causes vibration may not be performed in the buildings or on the site during school hours, without written approval from the District. This includes but is not limited to the following work activities:
 - a. Concrete bushing, chipping, grinding, jack hammering.
 - b. Earthwork compaction, including the operation of vibratory compaction equipment.

END OF SECTION 01 14 00

01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Requests for Information (RFI)
- C. Architectural Supplemental Instructions (ASI)
- D. Construction Change Directives (CCD)
- E. Change Order Requests (COR)
- F. Change Orders

1.02 RELATED REQUIREMENTS

- A. Section 01 31 23 Project Management Database

1.03 REQUESTS FOR INFORMATION

- A. Initiating the Request for Information (RFI).
 - 1. Where the Contractor requires additional information to assist in interpreting the documents or understanding how to apply the provisions of the Contract Documents, the Contractor shall submit an RFI to the Engineer to distribute as appropriate to the Project team.
 - 2. Upon submitting an RFI, Contractor is to determine if there are portions of the ongoing Work that are directly affected by the issue described in the RFI that need to be stopped until further direction is received, and they are to notify the Engineer and District of this in writing. The Engineer and/or District will direct Contractor as to whether or not they are to stop working in those areas.
- B. All requests shall include the following:
 - 1. RFI number (assign sequential numbers to RFIs).
 - 2. Specific reference to the drawings, specifications or field conditions that initiated the need for interpretation, including drawing number(s), detail number(s), and specification section numbers(s).
 - 3. List of subcontractors involved.
 - 4. Date of request.
 - 5. Date that response is needed.
 - 6. Background: State purpose of Request. Provide concise information necessary for the Engineer's understanding of the Request.
 - 7. State Contractor's interpretation of the requirements of the Contract Documents.
 - 8. Provide statements in condensed and precise question format, and where appropriate, compose in such a way that "yes" or "no" would be acceptable response.
 - 9. If the statement of the question for which interpretation is requested is ambiguous or unclear, the Request shall be considered incomplete.
 - 10. Use additional forms, diagrams, or marked-up Contract Drawings where necessary.
 - 11. Reason for need for information (unanticipated field condition, conflict in documents, change in requirements of third party such as code entity).
- C. Suggested options for resolution.
- D. Indication of whether or not the issue appears to have potential impact on the Contract Sum or Contract Time.

- E. Space for Engineer's response.
- F. Limit Requests for Information to not more than one issue or question.
 - 1. Avoid questions that may include multiple sub-issues
 - 2. If Engineer determines that a Request contains more than one issue, Contractor will be required to resubmit.
- G. Engineer's Review
 - 1. After receipt of an RFI, Engineer will determine whether the Request is complete.
 - 2. If Request is determined to be incomplete, Engineer will notify Contractor in writing of the deficiencies. Engineer will take no further action on incomplete RFI until deficiencies are remedied.
 - 3. Allow 5 working days for review by Engineer.
 - a. If a longer review time is deemed necessary, Engineer will notify Contractor of the anticipated response time, within 5 working days of receipt of the complete RFI.
 - b. Indicate "URGENT" on RFIs which may impact the Project Schedule to notify Engineer of priority.
 - c. Urgent RFIs will take precedence and be answered as soon as possible.
- H. Engineer's Response
 - 1. Responses issued by Engineer will be to explain and clarify the intent of the Contract Documents.
 - 2. Responses of the Engineer shall be consistent with the intent of the Contract.
- I. Distribution and Notification
 - 1. Upon receipt of the Engineer's response, Contractor shall distribute copies to the initiator of the request and to all affected parties.
 - 2. Contractor is responsible for immediately implementing the changes to the Contract Documents in accordance with the Engineer's response. Contractor shall be responsible for costs incurred due to continuing with Work that is contrary to the direction given in the Engineer's response.
 - 3. Contractor is to notify the District within 48 hours of receiving the Engineer's response of any cost or schedule impacts due to the changes made to the Contract Documents by the Engineer's response.
 - 4. If there is a cost impact or a schedule impact due to the Engineer's response, Contractor shall process a Change Order Request and obtain District's approval before proceeding with the changes. While waiting for the District's approval, Contractor shall not proceed with Work that will need to be redone if/when the cost or schedule impacts are approved.
- J. Coordination with Contractor Submittals
 - 1. Contractor shall take special care to ensure that RFI responses are included and coordinated with all trades and required project Submittals and Shop Drawings.
 - 2. Submittals and Shop Drawings that do not incorporate all RFI responses shall be returned to Contractor without review as incomplete.
- K. Administrative Costs
 - 1. Requests for Information (RFIs) for information that is already contained or provided for in the Contract Documents may result in additional administrative costs to the District, which the District may charge to the Contractor.
 - 2. Requests for Information (RFIs) for solutions to Contractor's errors may result in additional administrative costs to the District, which the District may charge to the Contractor.

3. Requests for Information (RFIs) for Substitution Requests may result in additional administrative costs to the District, which the District may charge to the Contractor.

1.04 ARCHITECTURAL SUPPLEMENTAL INSTRUCTIONS

A. The District, without invalidating the Contract, may issue Architectural Supplemental Instructions (ASI) authorizing changes in the Work.

B. Distribution and Notification

1. Upon receipt of the ASI, Contractor shall distribute copies to all affected parties.
2. Contractor is responsible for immediately implementing the changes to the Contract Documents in accordance with the ASI. Contractor shall be responsible for costs incurred due to continuing with Work that is contrary to the direction given in the ASI.
3. Contractor is to notify the District within 48 hours of receiving the ASI of any cost or schedule impacts due to the changes made to the Contract Documents by the ASI.
4. If there is a cost impact or a schedule impact due to the ASI, Contractor shall process a Change Order Request and obtain District's approval before proceeding with the changes. While waiting for the District's approval, Contractor shall not proceed with Work that will need to be redone if/when the cost or schedule impacts are approved.

C. Coordination with Contractor Submittals

1. Contractor shall take special care to ensure that ASI's are included and coordinated with all trades and required project Submittals and Shop Drawings.
2. Submittals and Shop Drawings that do not incorporate all ASI's shall be returned to Contractor without review as incomplete.

1.05 CONSTRUCTION CHANGE DIRECTIVES

A. Where the District has requested a change to the Work and the District and Contractor cannot agree to the terms of adjustment to the Contract Sum or Contract Time, the District shall issue a Construction Change Directive compelling to the Contractor to commence with the change, tracking both the time and cost of the work until such time as the Contractor and District can come to an agreement.

B. Construction Change Directives shall contain a complete description of the changes in the work and shall designate the method to be followed to determine changes in the Contract Sum or Contract Time.

C. Contractor shall maintain detailed records on a time and materials basis of the Work required.

D. Upon completion of the change in the Work, the Contractor shall submit an itemized account and supporting data necessary to substantiate the cost and time adjustments to the Contract for preparation of a Change Order by the District's Representative.

E. Payment to the Contractor shall not be made on basis of a Construction Change Directive until it is made into a Change Order approved by the District, its Representative, the Contractor and the Engineer. Portions of a Construction Change Directive shall not be eligible to be made into a Change Order for partial payment.

1.06 CHANGE ORDER REQUESTS

A. Contractor shall process a Change Order Request (COR) for changes to the Contract Documents that result in revisions in the Contract Sum or Contract Time.

B. A separate COR shall be created for each issue.

C. Contractor is to submit the COR to the Engineer for review via eBuilder (per Section 01 31 23).

- D. The Engineer shall review the COR's scope and pricing and may request additional information or clarification from the Contractor.
- E. After completing their review, the Engineer will forward the COR to the Project Representative with their comments.
- F. The Project Representative will review the COR's scope and pricing and may request additional information or clarification from the Contractor or the Engineer.
- G. After completing their review, the Project Representative will forward the COR with their recommendation.
- I. Upon approval of the COR by the District's Representative, the Contractor can officially proceed with the changes.
- J. Approved COR's may be rolled-up into a Change Order on a monthly basis or sooner as mutually agreed upon.
- K. Refer to the General Conditions of the Contract for further information.

1.07 CHANGE ORDERS

- A. Change Orders shall be recorded as a revision to the Contract for Construction and Contractor shall immediately upon execution add their content and value to both the Construction Schedule and the Schedule of Values.
- B. Applications for Payment shall include all executed change orders in order to be considered complete and acceptable for payment processing.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION 01 26 00

01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Schedule of Values
- C. Progress Payment Procedures
- D. Payment for Stored Materials
- E. Payment for Deposits on Ordered Materials
- F. Payment Procedures for Testing Laboratory Services

1.02 RELATED REQUIREMENTS

- A. The General Conditions to the Contract

1.03 SCHEDULE OF VALUES

- A. Within 10 days of the Contract Award, the Contractor shall submit to the District for review and approval, the Schedule of Values.
- B. The Schedule of Values shall allocate the entire Contract Sum among the various portions of the Work and shall be prepared in such form as approved by the District and supported by such data to substantiate its accuracy.
- C. The Schedule of Values shall be itemized to the following level of detail:
 - 1. Separate the costs into Specification Sections
 - 2. Separate costs for each Specification Section into Demo, Install Labor, and Install Materials.
- D. District shall review and approve the Schedule of Values for use in the preparation of Applications for Payment.

1.04 PROGRESS PAYMENT PROCEDURES

- A. Each Application for Payment shall be submitted based on the procedures outlined in the Contract.
- B. Applications for Payment that have an inflated % complete for any give line item shall be rejected. Contractor shall revise and resubmit the Application for Payment with the corrected % complete. The Contractor shall be responsible for hardships due to delays in the approval of the Application for Payments that are caused by errors in the Applications.
- C. General Conditions shall be billed monthly at the same % complete as the total % complete for that Application for Payment.

1.05 PAYMENT FOR STORED MATERIALS

- A. Contractor may be entitled to receive payment for stored materials provided the following conditions have been met:
 - 1. A valid off-site stored materials insurance certificate is to be provided to the District. The policy needs to reference the project that the materials are for, and the value of the policy needs to meet or exceed the value of stored materials. The District is to be listed as additional insured on the policy.
 - 2. Materials shall be clearly labeled as District property and specific to the project, and shall be stored separately from other materials.

3. The District shall obtain verification from an independent third party that all items are present within the warehouse. The cost of the initial verification process will be the responsibility of the Contractor to pay for.

6. Contractor is to provide an executed bill of sale as proof of payment for stored materials.

7. Verification of stored materials and partial payment for such materials do not constitute acceptance on the part of the District. If materials stored are found to be unsuitable for installation or incorporation into the Work for any reason, Contractor shall bear full responsibility for any and all corrections needed.

8. District shall not be responsible for any additional costs incurred for the storage of materials unless such storage is the result of and a part of an approved Change Order where the District is found to be responsible for such costs.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 29 00

01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Project Coordination
- C. Construction Organization and Start-up
- D. Construction Coordination
- E. Coordinating Subcontractors' Work
- F. Project Meetings

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract for Construction

1.03 PROJECT COORDINATION

A. Before submitting the Bid to the District, and continuously after the execution of this Contract, the Contractor shall carefully study and compare the Contract Documents and shall at once report to the District, any error, inconsistency, or omission it may discover including any requirement which may be contrary to any law, ordinance, rule, regulation, or order of any public authority bearing on the performance of the Work.

B. By submitting bid for this Contract and the Work under it, the Contractor agrees that the Contract Documents, along with any addendums or other supplementary written instructions issued that have become a part of the Contract Documents, appear accurate, consistent, and complete insofar as can reasonably be determined. If the Contractor has reported in writing an error, inconsistency or omission and has promptly stopped the affected Work until instructed, and otherwise followed the instructions of the District, the Contractor shall not be liable to the District for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents. The Contractor shall do no Work without Contract Documents and, when required, reviewed Shop Drawings, Product Data or samples for such portions of the Work.

1.04 CONSTRUCTION ORGANIZATION AND START-UP

A. Establish on-site lines of authority and communications by attending Pre-construction Meeting and Progress Meetings as required by the Engineer, District and District's Representatives.

B. Comply with procedures for intra-project communications including but not limited to:

- 1. Submittals
- 2. Reports and records
- 3. Recommendations
- 4. Coordination drawings
- 5. Schedules
- 6. Resolution of conflicts

C. Communication and transmitted documents are to flow from subcontractors to the GC (prime Contractor) and then in parallel to the Engineer and the District Project Representative. Communication and document transmission from the Engineer and the District to the

subcontractors is to occur in the same manner, except that the flow will be the reverse of that noted above.

1.05 CONSTRUCTION COORDINATION

A. General Coordination:

1. Coordinate various elements of the work and entities engaged to perform work.
2. Coordinate the work with existing facilities/conditions, and with work by separate contractors and by the District.
2. Review the Construction Documents for possible conflicts prior to rough-in. Contractor is responsible for verification that equipment will fit in the space provided. Resolve conflicts with the Engineer prior to rough-in work.

1.06 COORDINATING SUBCONTRACTORS' WORK

A. Coordinate the Work of all Subcontractors and make certain that, where the Work of one trade is dependent upon the Work of another trade, the Work first installed is properly placed, installed, aligned, and finished as specified or required to properly receive subsequent materials applied or attached thereto.

B. Direct Subcontractors to correct defects in their workmanship when subcontractors of subsequent materials have a reasonable and justifiable objection to conditions of work.

C. Do not force Subcontractors to apply or install products to improperly finished product.

D. Coordinate changes to assure that:

1. Requirements of Contract Documents are fulfilled.
2. Changes in Contract requirements of all affected trades are reflected in executed Change Orders.

E. Scheduling and Installation Sequence:

1. Coordinate scheduling, submittals, and Work of various sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
2. Schedule work in accordance with current Project Construction Schedule.
 - a. Coordinate schedules of all trades.
 - b. Verify timely deliveries of products for installation by other trades.
 - c. Verify that labor and equipment are adequate for Work and schedule.
 - d. Verify that material deliveries are adequate to maintain schedule.

1.07 PROJECT MEETINGS

A. Preconstruction Meetings:

1. District Project Representative will manage the preconstruction meeting for execution of District-Contractor Contract and exchange of preliminary submittals.

B. Site Mobilization Meetings

1. District Project Representative will administer site mobilization conference at Project site for clarification of District and Contractor responsibilities in use of site and for review of administrative procedures.

C. Progress Meetings

1. Contractor shall attend the weekly or biweekly project site meetings throughout the course of the Work. The District will work with Contractor to make physical arrangements for the meetings. Contractor to prepare agenda with copies of the meeting minutes from the previous meeting and all necessary logs and schedules for the participants.

2. The District shall preside at the weekly meetings.
3. The Contractor will provide meeting minute's format/template. The Contractor shall record the minutes at the meetings which shall be distributed within two days to District, Engineer, subcontractors, participants at the meetings, and those affected by decisions made at the meetings.
4. Attendees shall include Contractor's project manager and superintendent, District Project Representatives, and Engineer as appropriate to the topics for each meeting.
5. Suggested agenda topics: informational items, safety, schedule review, RFI & ASI review, submittal review, Contractor issues, design issues, District issues, change order requests and pay applications, and closeout.

D. Pre-Installation Meeting

1. Prior to commencement of critical new activities on site, Contractor shall conduct a Pre-Installation Meeting. Contractor shall ensure that all relevant subcontractors are present inclusive of those performing work immediately prior and subsequent to the subject activity as well as those who are impacted by the Work.
2. The purpose of the meeting is to review field conditions to confirm that the site and all previous work is ready for the commencement of the new activity, confirm clear understanding of the intention of the plans and specifications and to identify potential risks and resolutions to those risks related to the proposed work.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION 01 30 00

01 31 23
PROJECT MANAGEMENT DATABASE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Summary
- C. General Requirements
- D. System Requirements
- E. System Access
- F. System Use

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract for Construction

1.03 SUMMARY

A. Project Management Communications: The District, Contractor and Engineer shall use the Internet web-based project management communications tool, E-Builder® ASP software and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.

B. Purpose: The intent of using E-Builder® is to improve project work efforts by promoting timely initial communications and responses and to reduce the number of paper documents while providing improved record keeping by creation of electronic document files.

1.04 GENERAL REQUIREMENTS

A. Project management communications is available through E-Builder® as provided by "E-Builder®" in the form and manner required by the District.

B. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant.

C. Support: E-Builder® will provide on-going support through on-line help files.

D. Training: The District will provide a minimum 2-hour e-Builder Training Session for awarded Contractor's project manager or lead member of Contractor's project staff for the specific E-Builder modules required on this project.

E. Authorized Users: Access to the web site will be by individuals who are licensed users as required by the District.

F. Licenses Granted by District: District shall pay for and provide licenses for the following members of the project team:

1. Lead member of Engineer's design team responsible.
2. Contractor's project manager or lead member of Contractor's project staff.
3. District's project manager or representative.
4. Others as deemed appropriate by District.

1.05 SYSTEM REQUIREMENTS

A. System Configuration:

1. Operating System: Windows 7 or later, or OS X v10.8 or later.

2. Display capable of SVGA (1024 x 768 pixels) 256 colors display.
 3. 101 key Keyboard.
 4. Mouse or other pointing device.
- B. Operating system and software configuration:
1. All software shall be properly licensed with vendors or developers. Use of "E-Builder" does not convey any rights or licensure for use of any software, hardware or internet service provider.
 2. Software Configuration:
 - a. The most current version of Microsoft Internet Explorer, Google Chrome, or Safari. This specification is not intended to restrict the host server or client computers provided that industry standard HTTP clients may access the published content.
 - b. The most current version of Adobe Acrobat Reader (current version is a free distribution for download).
 - c. Other plug-ins specified by E-Builder® as applicable to the system (current versions are a free distribution for download from www.e-builder.net).
 - d. Users are recommended to have properly licensed versions of the standard Microsoft Office Suite (current version must be purchased) or the equivalent.

1.06 SYSTEM ACCESS

- A. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Contractor shall be responsible for providing suitable computer systems for each licensed user at the user's normal work location with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.
- B. Authorized users will be contacted directly by the web site provider, E-Builder®, who will assign the temporary user password.
- C. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.

1.07 SYSTEM USE

- A. District's Administrative Users: District administrative users have access and control of user licenses and all posted items. **DO NOT POST PRIVATE ITEMS OR YOUR COMPANY'S CONFIDENTIAL ITEMS IN THE DATABASE!**
- B. Improper or abusive language toward any party or repeated posting of items intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s). Costs incurred or associated with such issues shall be the financial responsibility of the party responsible for the transgression.
- C. Communications: Communication for this project for the items listed below shall be solely through E-Builder®
1. Submission of Contractor shop drawings and submittals, and receiving processed shop drawings and submittals.
 2. Submission of Requests for Information (RFI) and receiving RFI responses from the District and Engineer.
 3. Receiving Engineer's Supplemental Instructions.
 4. Submission of invoices and approval or rejection of same.
 5. Distribution of meeting minutes.
 6. Submission of as-built record drawings (electronic format).

7. Submission of test results and Operation and Maintenance (O&M) manuals (electronic format).
 8. Submission of Change Orders (COs) and contract amendments and approval or rejection of same.
 9. Transmission of formal letters and notices between the District and the Contractor.
 10. All other communication shall be conducted in an industry standard manner.
- D. In the event of occasional operational problems with e-Builder, transmission of the above documents may be done for a temporary period of time by hand carrying, email, normal mail or express mail. Prior approval must be obtained from the District before utilizing this backup communication system and a resumption of e-Builder use is to initiate as soon as the operational problems are corrected.
- E. Communications shall be labeled in a manner that is site- and Contractor-specific and references projects in a coded sequential method. The District and Engineers will refer to RFIs, Submittals, ASIs, and all other eBuilder tracked communications with the eBuilder assigned number. It is the Contractor's responsibility to coordinate their numbering system with the eBuilder assigned numbers.
- F. Project Documentation: The following project documentation will be prepared by Contractor, converted to PDF electronic format, and shall be uploaded to E-Builder® on a **weekly basis** or as project record documents:
1. Project Schedule (See Requirements in the Contract General Conditions).
 2. Contractor's Daily Construction Progress Reports (See Requirements in Section 01 32 00).
 3. Photographic Documentation (See Requirements in Section 01 32 00).
 4. Other project supporting documentation as required by District.
 5. Close-Out Submittals (See Requirements in Section 01 77 00).
- G. Document Integrity and Revisions:
1. Documents, comments, drawings, and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
 2. The system shall identify revised or superseded documents and their predecessors.
 3. Server or Client side software enhancements during the life of the project shall not alter or restrict the content data published by the system. System upgrades shall not affect access to older documents or software.
- H. Document Security: The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties' communication except for Administrative Users.
- I. Document Integration: Documents of various types shall be logically related to one another and discoverable.
- J. Notifications and Distribution: Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.
- K. Ownership of Documents and Information: All documents, files, or other information posted on the system shall become the property of the District.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION 01 31 23

01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Scheduling of Work
- C. Construction Progress Schedule
- D. Three Week Look Ahead
- E. Recovery Schedule
- F. Submittals Schedule
- G. Site Specific Safety Plans
- H. Site Specific Staging and Logistics Plan
- I. Construction Progress Reporting
- J. Photographic Documentation

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract for Construction.

1.03 SCHEDULING OF WORK

- A. The primary objectives of the project scheduling program are as follows:
 - 1. To ensure the adequate planning, scheduling, and execution of the construction activities so they may be prosecuted in an orderly and expeditious manner within the Contract Time and the Milestones stipulated by the Contract.
 - 2. To provide optimum coordination between Subcontractors.
 - 3. To establish the basis for measuring and monitoring individual Contractor progress and overall project progress.
 - 4. To detect problems for the purpose of taking corrective action to maintain the scheduled program and to provide a mechanism or tool for determining and monitoring such corrective actions.
- B. If the Contractor should desire or intend to complete the Work earlier than any required Milestone or Completion date, the District, Engineer, or the District's Project Representative shall not be liable to the Contractor for any costs or other damages should the Contractor be unable to complete the Work before this earlier date. The duties, obligations, and warranties of the District to the Contractor shall be consistent with and applicable only to the completion of the Work on the Milestone and Completion dates required in the Contract, unless the District, the District's Representative and the Contractor otherwise agree in writing.

1.04 CONSTRUCTION PROGRESS SCHEDULE

- A. Pursuant to the General Conditions of this Contract, the following additional scheduling requirements are a part of this Contract.
- B. The Construction Progress Schedule shall be created using the current version of MS Project or approved equal.
- C. Work under this Section shall consist of completing a Construction Progress Schedule showing in detail how the Contractor plans to execute and coordinate the Work.
- D. Each work item on the Construction Progress Schedule, as well as being correlated to the payment document, shall be broken into feasible work segments/activities (where practicable)

with individual starting and stopping dates.

E. Work shall be segmented to demonstrate its relationship to the various Milestone Dates. Activity titles shall be self-explanatory, and abbreviations shall be shown in the legend.

1.05 THREE WEEK LOOK AHEAD SCHEDULE

A. Each week the Contractor shall prepare and present an update schedule showing the planned activities for the next three weeks and 1 week prior. The schedule shall be coordinated with the master schedule and accurately portray activities completed and activities planned for the upcoming weeks. Unless otherwise directed by the District, the Contractor shall present this schedule at the weekly meeting.

B. Provide copies to the participants at the time of the weekly Progress Meeting.

C. Format shall be 11" by 17" or as necessary to be easily legible.

1.06 RECOVERY SCHEDULE

A. Should any conditions exist, such that certain activities shown on the Contractor's Construction Progress Schedule fall behind schedule to the extent that any of the critical path Milestones or Completion Dates are in jeopardy, the Contractor shall be required to, at no cost to the District, prepare and submit a supplementary Recovery Schedule. The Recovery Schedule shall be in a written form with appropriate details including an explanation and display on how he/she intends to reschedule those activities to regain compliance with the Construction Progress Schedule during the immediate subsequent pay period.

B. The Contractor and District's Representative shall do the following after determination of the requirement for a Recovery Schedule:

1. Within three (3) calendar days, the Contractor shall present to the District's Representative the Recovery Schedule.

2. The Recovery Schedule shall represent the Contractor's best judgment regarding how to reorganize and accelerate the Work to get back on schedule within the immediate subsequent pay period. The Recovery Schedule shall be prepared to a similar level of detail as the Construction Progress Schedule.

C. Five (5) calendar days prior to the expiration of the Recovery Schedule, the District's Representative and the Contractor will meet at the job site to determine whether the Contractor has regained compliance with the Construction Schedule. At the direction of the District's Representative, one of the following will happen:

1. If, in the opinion of the District's Representative, the Contractor is still behind schedule, the Contractor in conjunction with the District's Representative will prepare another Recovery Schedule, at the Contractor's expense to take effect during the immediate subsequent pay period.

2. If, in the opinion of the District's Representative, the Contractor has sufficiently regained compliance with the Construction Schedule, the use of the Construction Schedule will be resumed.

1.07 SUBMITTALS SCHEDULE

A. In conjunction with the preparation of the Construction Progress Schedule, the Contractor Shall prepare a Submittals Schedule that shall outline all required submittals and when they are required to be approved based on ordering lead times and the incorporation of products into the Work in conformance with the Construction Progress Schedule.

B. Contractor shall then reverse engineer the Submittals Schedule to determine when submittals need to be provided to the District and design team, noting latest approval dates and

factoring in time for the re-submittal of items if necessary.

C. The Submittals Schedule shall be clearly identified within Construction Progress Schedule and shall be updated and reviewed at each Project Progress Meeting.

D. Contractor shall fill out submittal log that will include all dates associated with submittals. The log will be updated accordingly and submitted weekly for approval.

1.08 SITE SPECIFIC SAFETY PLAN

A. In an effort to reduce accidents and maintain a safe work site, the Contractor, prior to any work on site, shall submit to the District a detailed site-specific safety plan which outlines, at a minimum, a detailed description of the following:

1. Facility Safety and Security
2. Construction Safety and Security
3. Disaster Response
4. Emergency Procedures and Protection
5. Safety and Health Procedures and Work Practices pertaining to:
 - a. Demolition
 - b. Electrical
 - c. Excavations
 - d. Fall Protection
 - e. Fire Prevention
 - f. Hazard Communications
 - g. Heavy Equipment
 - h. Housekeeping
 - i. Signs – Barricades – Fencing

1.09 SITE SPECIFIC STAGING AND LOGISTICS PLAN

A. The Contractor, prior to any work on site, shall submit to the District a detailed site specific staging and logistics plan

1.10 CONSTRUCTION PROGRESS REPORTING

A. The Contractor shall review the progress and quality of the Work on a daily basis and shall report on that progress daily and upload the reports to e-Builder.

B. Written progress reports shall include, at a minimum:

1. Project name.
2. Date.
3. Author of report.
4. Weather conditions including wind, precipitation and temperature.
5. Trades present through the reporting period and count.
6. A summary of the Work performed that day.
7. Materials and equipment delivered, utilized and/or stored on site.
8. Conformance with Contract Documents and/or any observed deviations.
9. Conformance with or deviation from Construction Progress Schedule.
10. Tests and/or inspections performed inclusive of results
11. List of site visitors including regulatory agencies and/or testing and inspection entities.
12. Notes from any safety meetings.

1.11 PHOTOGRAPHIC DOCUMENTATION

A. Contractor shall provide ground-level, color digital progress photos weekly for a permanent record of the Project. Photos should be dated and include a description of the picture and the camera location. Contractor shall upload all photos to e-Builder.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION 01 32 00

01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Quality Control
- C. Tolerances
- D. References
- E. Testing and Inspection Services
- F. Manufacturers' Field Services

1.02 RELATED REQUIREMENTS

- A. General Conditions of the Contract for Construction.

1.03 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Products, materials, and equipment may be subject to inspection by Engineer and the District at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise, deleterious exposure during construction period.

1.04 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.05 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, complies with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Contract Documents by mention or inference in reference documents shall not be altered by

contractual relationships, duties, or responsibilities of parties in Contract, nor those of Engineer.

1.06 TESTING AND INSPECTION SERVICES

A. The District will select, employ, and pay for specified services of an independent firm to perform testing and inspection. Independent firm will perform tests, inspections, and other services as required by Engineer and authorities having jurisdiction.

1. Laboratory: Authorized to operate in State of Oregon.
2. Laboratory Staff: Maintain full-time specialist on staff to review services.
3. Testing Equipment: Calibrated at reasonable intervals with devices that are accurate and traceable to the National Bureau of Standards or accepted values of natural physical constants.

B. Testing may be required for, but is not limited to, the following:

1. Soils

C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer or the District.

D. Reports shall be submitted by independent firm to the District, Engineer, Contractor, and authorities having jurisdiction, in duplicate when so directed, indicating observations and results of tests and compliance or noncompliance with Contract Documents. Submit final report indicating correction of Work previously reported as noncompliant.

E. Contractor is to cooperate with independent firm and furnish samples of materials, design, mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

1. Notify independent firm 48 hours before expected time for operations requiring services.
2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

H. Agency Responsibilities:

1. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
2. Perform indicated sampling and testing of products according to specified standards.
3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
4. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.
5. Perform additional tests required by Engineer.
6. Attend preconstruction meetings and progress meetings.

I. Agency Reports: After each test, promptly submit electronic copies of report to the District, Project Representative, Engineer, Contractor, and authorities having jurisdiction.

Written inspection or test reports shall include:

1. Name of testing agency or test laboratory.
2. Date issued.

3. Project title and number.
4. Name of inspector and individuals present.
5. Date and time of sampling or inspection.
6. Identification of product and Specification Section.
7. Location in Project.
8. Type of inspection or test.
9. Date of test.
10. Complete inspection or test data.
11. Results of tests.
12. Interpretations.
13. Recommendations.
14. Conformance with Contract Documents.

J. Limits on Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

1.07 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, required material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment and commissioning as applicable, and to initiate instructions when necessary.
- B. Fabricator: Company specializing in performing work associated with the project with documented experience, and proper certifications.
- C. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer is subject to approval of Engineer. Observer is subject to approval by the District.
- D. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01 40 00

01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General Requirements
- B. Products
- C. Material and Equipment Selection.
- D. Product delivery requirements.
- E. Manufacturer's Instructions.
- F. Product storage and handling requirements.
- G. Product options.

1.02 GENERAL REQUIREMENTS

- A. General conditions of the Contract for Construction.

1.03 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.

1.04 MATERIAL AND EQUIPMENT SELECTION

- A. Manufactured and fabricated products:
 - 1. Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - 2. Where two or more items of the same kind are indicated, provided items that are identical and by the same manufacturer.
 - 3. Adhere to manufacturer's capacities, sizes, and dimensions shown or specified unless variations are specifically approved in writing.
- B. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.05 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.06 MANUFACTURER'S INSTRUCTIONS

- A. Perform work in accordance with manufacturer's printed installation instructions. Obtain and distribute copies of such instructions to parties involved in the installation.

- B. Maintain one set of complete instructions at the job site during installation and until completion.
- C. Handle, install, connect, clean, condition, and adjust products in strict accordance with manufacturer's printed instructions and in conformity with specified requirements.
- D. Consult with the Engineer for further instructions should job conditions or specified requirements conflict with manufacturer's instructions.
- E. Do not proceed with work without clear instructions.
- F. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents.

1.07 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Provide off-Site storage and protection when Site does not permit on-Site storage or protection.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- E. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- F. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.08 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of the manufacturers named and comply with Specifications; no options or substitutions allowed.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

01 73 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Related Requirements
- B. Related Sections
- C. Project Record Documents
- D. Product Warranties and Product Bonds
- E. Examination
- F. Execution
- G. Protecting Installed Construction
- H. Final Cleaning

1.02 RELATED REQUIREMENTS

- A. General conditions of the Contract for Construction.

1.03 RELATED SECTIONS

- A. Section 01 10 00 – Summary of Work
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 40 00 – Quality Requirements
- D. Section 01 77 00 – Closeout Procedures

1.04 PROJECT RECORD DOCUMENTS

- A. Record documents are prepared by the Engineer. As-built documents are prepared by the Contractor.
- B. Maintain on Site one set of the following documents as a basis for as-built documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
- C. Ensure entries are complete and accurate, enabling future reference by District.
- D. Store as-built documents separate from documents used for construction.
- E. Record information concurrent with construction progress, not less than weekly.
- F. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Changes made by Addenda and modifications.
- G. As-Built Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, RFI's, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify and locate existing buried or concealed items encountered during Project.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Drawings.

H. As-built document submittal requirements specified in Section 01 77 00 – Closeout Procedures: Closeout Requirements.

I. The contractor will be required to learn and use District Project Management database (e-Builder) for this project. Refer to Section 01 31 23 – Project Management Database.

1.05 PRODUCT WARRANTIES

A. Obtain warranties executed by responsible Subcontractor's suppliers, and manufacturers within ten days after completion on applicable item of Work.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with District's permission, submit documents within ten days after acceptance.

2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty period.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

3.02 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step-in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

3.03 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection as needed.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

C. Use durable sheet materials to protect finished concrete, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy equipment.

D. Prohibit traffic from landscaped areas.

E. Refer for Section 01 10 00 – Summary of Work for more information.

3.04 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.
- B. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- C. Remove waste and surplus materials, rubbish, and construction facilities from Site.
- D. Repair, patch, and touch up marred surfaces.

END OF SECTION 01 73 00

01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Related Sections
- B. Preliminary Closeout Reviews
- C. Substantial Completion Documentation
- D. Closeout Requirements

1.02 RELATED SECTIONS

- A. Section 01 73 00 - Execution and Closeout Requirements

1.03 PRELIMINARY CLOSEOUT REVIEWS

- A. When Contractor considers Work Substantially Complete, submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Contractor has inspected Work for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. The Project, properties, and streets are finally cleaned of debris and dirt caused by Contractor operations.
 - 5. Work is substantially complete and ready for final inspection.
 - 6. Provide preliminary punch list identifying any known corrective items
- C. District Representative will coordinate inspection of the Work to verify completion status as soon as possible after receipt of Contractor's certification.
- D. Should District Representative consider Work incomplete or defective:
 - 1. Project Representative will promptly notify Contractor in writing listing incomplete or defective work.
 - 2. Contractor shall immediately remedy deficiencies and send second written certification that Work is complete.
 - 3. Project Representative will coordinate re-inspection of the Work.
- E. When District's Project Representative and Engineer find Work acceptable under Contract Documents, they will jointly request Contractor to make closeout submittals.
- F. Re-inspection Fees: Should more than two Substantial inspections or one Final inspection be required due to Contractor's failure to correct specified deficiencies, the Contractor shall bear all costs (including compensation for the Engineer's additional services) made necessary thereby.

1.04 SUBSTANTIAL COMPLETION DOCUMENTATION

- A. General: Contractor shall submit documentation for Substantial Completion when it is evident that the Project can be occupied for its intended use and Final Completion can be achieved within fourteen (14) days.
- B. Complete the following before requesting review for certification of Substantial Completion, either for entire Work or for portions of Work.
 - 1. Create a list of items that are incomplete with the request. Include the value of incomplete Work, and reason for Work being incomplete.
 - 2. Include supporting documentation for completing as indicated in these Contract Documents.

3. Submit statement showing accounting of changes to Contract Sum.
4. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, and similar documents.
5. Complete final cleanup requirements.
6. Complete major punch list items.
7. Provide all certifications, reports and inspection records confirming that all work has been completed in accordance with the Contract Documents.

1.05 CLOSEOUT REQUIREMENTS

- A. Subsequent to final punch list sign-off and prior to Application for Final Payment, submit all record documents to District that are required by governing or other authorities.
- B. Remove all temporary services and contractor property from premises and affected areas restored.
- C. Provide the following Closeout Documents. All documents are to be uploaded to e-Builder.

1. Closeout pdf documentations;

- a. A Table of Contents, tab dividers for each item, and divider sheets describing the information to follow behind each tab divider.
- b. A list of subcontractors with contact information (including emergency phone number), and a summary description of their scope of work.
- c. A list of manufacturers with phone numbers and addresses of local distributors, service representatives and parts dealers. Include 24-hour service representatives when available.
- d. Warranties and guarantees from all subcontractors and suppliers including contact information for each warranty and a detailed description of their scope of work.
- e. The letter from the Contractor stating that the Work is Substantially Complete.
- f. The Engineer's and Engineer's Substantial Completion Observation Reports and punch lists.
- g. The signed Substantial Completion Certificate.
- h. Record of the final punch list work being completed and accepted by District and Engineer.
- i. The final Application for Payment.
- j. Contractor's affidavit of payment of debts and claims.
- k. Certificate of consent of surety company to final payment.
- l. Contractor's certificate of completion and release of liens.
- m. Final permit(s) with all required signatures.

2. As-built Drawings (one electronic copy):

- a. Contractor shall submit a color scan of their fully updated as-built drawings as defined in Section 01 73 00 - Execution and Closeout Requirements.
- b. Engineer will use Contractor's as-built drawings as the basis for project Record Drawings.

D. Final Payment Documentation: The final payment for the remaining retained percentages shall not become due until the Contractor submits:

1. An affidavit that all payrolls, bills for materials and equipment, and other

indebtedness connected with the Work for which the District or the District's property might in any way be responsible, have been paid or will be paid or otherwise satisfied within thirty (30) days after receipt of final payment from the District.

2. Consent of surety to final payment.

3. Certificate of Completion and Release of Liens.

4. All Closeout Documents have been accepted by the District.

5. If any third party fails or refuses to provide a release of claim or waiver of lien as required by the District, the Contractor shall furnish a bond satisfactory to the District to indemnify the District from liability.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION 01 77 00

02 10 00
SITE PREPARATION

PART 1 GENERAL

1.01 DESCRIPTION

- A. 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:
- B. The work occurs at Mountainside High School, 12500 SW 175th Ave, Beaverton, OR 97007.
- C. Related Work of other Sections includes;
 - 32 11 23 Aggregate Base Courses
- D. 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 and synthetic turf surfacing.
 - 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. Contractor shall use extreme care to protect the existing synthetic turf and aggregate base during construction. Employ protective measures to minimize impact and damage to the existing surfaces and section.
 - 8. Remove and securely store all loose furnishings and equipment encountered that interferes with the performance of the work.
 - 9. The Contractor shall take all precautions to protect the existing permeable aggregate base materials during the removal of the existing synthetic turf. Construction traffic should be limited to areas of the existing synthetic turf rather than on the surface of the permeable aggregate base.
 - 10. The Contractor shall re-grade and compact the permeable aggregate 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 surfacing and edge anchors and the limit of work. For field adjustments where permeable aggregate top course material proved coarser than the planarity deficiency being remedied, approved washed plaster sand or infill sand may be used as specified.
- E. Prior to Mobilization, the Contractor shall submit for approval a comprehensive staging, access, and work sequencing plan illustrating protections to the existing conditions to

remain undisturbed.

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: Refer to the Record Drawings provided with the Bid Documents.

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 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, and landscape including, but not limited to geotextile fabric, plastic sheeting, plywood sheeting and steel plates.
- B. Specific requirements for construction access over the existing synthetic turf surface and section are provided elsewhere.
- C. Deviation from the Approved Access and Staging Plan shall be performed only as approved.

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 1.09.C above.

1.10 PROTECTION OF EXISTING FIELD SURFACES AND SECTIONS

The Contractor shall take all measures possible to protect the existing surfacing and 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 to be removed, or on the exposed base protected with sheeting.
- C. Further protection to include but not limited to staggered $\frac{3}{4}$ " plywood protection over existing base for vehicle and equipment access.
- D. Steel plates placed at field construction entrance to protect existing permeable 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 ensure that they continue to meet the Specifications.

2.02 TEMPORARY CONSTRUCTION ACCESS

A. Geotextile Fabric

1. Material: Fabric to be 100% Polypropylene, non-woven, needle-punched engineering fabric with a minimum weight of 4.0 oz/sy.
2. Physical Properties:
 - a. Tensile Strength, lbs., (ASTM D-4632): 100
 - b. Elongation (%), (ASTM D4632): 50
 - c. Puncture Strength, (lbs), (ASTM D4833): 65
 - d. Mullen Burst Strength (PSI), (ASTM D3786): 200
 - e. Trapezoidal Tear, (lbs), (ASTM D4533): 45
 - f. Abrasion Res. % Str. Ret., (ASTM D4886): 80
 - g. Coefficient. of Perm., cm/sec., (ASTM D4491): 0.22
 - h. Flow Rate Gal./Min./Sq. Ft.) (ASTM D4491): 140
3. 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 FIELD SECTION AGGREGATES RECOVERY VOLUME

- A. For replacement of volume lost to contamination refer to Section 32 11 23.

2.04 WASHED PLASTER SAND

- A. Washed plaster sand shall be installed in areas where the finished surface of the top course permeable aggregate requires fill adjustment of less than 3/8" depth in the areas where the existing permeable aggregate has been displaced. Material shall be installed at such depth to meet and match the top of the existing, adjacent permeable aggregate areas.

- B. Gradation: Sand to meet the following particle size limitations:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
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. Selective Removal
 - 1. Synthetic Turf: The Contractor shall remove such synthetic turf as defined, leaving a clean and viable edge remaining, suitable for attachment of the new materials.
- 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 from clearing and grubbing.
 - 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 PERMEABLE AGGREGATE BASE PREPARATION

- A. Top course permeable aggregate shall be carefully compacted to 90-95% maximum dry density. The top surface shall meet and match the top of the adjacent areas. Surface tolerance for all areas within the playfield shall not vary by more than 1/4".
- B. The entire surface area of the permeable aggregate base shall be verified for planarity. The synthetic turf installation foreman and the Engineer shall confirm planarity by pulling a string line taut across the width and length of the field, at a minimum 2' interval. Any areas deviating more than ¼" shall be modified / reworked by the contractor to the required tolerance.
- C. The entire surface area of the permeable aggregate base shall be verified for stability and suitability for the installation of the synthetic turf. The finished surface shall be uniformly firm and unyielding, and laterally stable under loading.
- D. The permeable aggregate base shall be inspected for infiltration rate by the engineer prior to acceptance.
- E. Contractor shall establish a transition zone by removing aggregate sufficiently to allow the Supplemental Resilient Pad System to uniformly meet and match the existing Synthetic Turf Edge Anchor.
- F. Turf installation may not begin until aggregate base is accepted in writing by the turf vendor.

3.06 AGGREGATE TOLERANCES

- A. The Contractor shall utilize a laser plane system for grade control.
- B. The surface of the top course permeable aggregate shall not deviate from designated compacted grade within the range of -0.00" and +0.25" and shall not deviate more than ¼" as measured by a 10-foot straight edge.

- C. Upon completion of the fine grading, compaction, and Contractor confirmation of conformance with the tolerances, the Contractor shall notify the Engineer and schedule an inspection for approval. The Contractor shall have a laser plane system available to the Engineer for the inspections. The Contractor shall not be authorized to install synthetic turf over the permeable aggregate until it has been inspected and approved by the Engineer.
- D. Upon completion of elevation verification, the entire permeable aggregate surface shall be inspected for planarity. Planarity inspection shall be completed in conjunction, coordination with the synthetic turf vendor. The installation foreman for the synthetic turf shall be present at the time of the inspection. Inspection shall consist of stretching a string line taut over the finished permeable aggregate surface at such interval as may be required to confirm surface planarity and acceptance for installation of synthetic turf surface. Any deviation greater than $\frac{1}{4}$ " shall require remediation efforts as may be required to meet subgrade tolerance.

3.07 CLEANING

- A. The Contractor shall utilize such means as he deems necessary to remove all loose debris and surfacing from existing base mat 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

32 11 23

AGGREGATE BASE COURSES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section includes aggregate base and leveling aggregates and geotextile separation fabric to be installed under synthetic turf surfacing.

1.03 ACTION SUBMITTALS

- A. General: Submit the following in accordance with Division 1 Section "Administrative Requirements".
 - 1. Product data for drainage piping specialties.
- B. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for geotextile fabrics.
 - 2. Drainage Aggregate Particle Gradation
 - 3. Permeable Base Course Aggregate Particle Gradation
 - 4. Permeable Top Course Aggregate Particle Gradation
- C. Samples:
 - 1. Geotextile fabric: Submit 12"x12" sample
 - 2. For each aggregate type, submit a 1 gallon zip lock bag with representative sample.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installer.
- B. Material Test Reports: For each aggregate type by a qualified testing agency.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company performing the work of this Section shall have experience in the satisfactory performance of earthwork and aggregate placement for at least three artificial turf fields.
- B. Grading Tolerances:
 - 1. Subgrade: ± 0.04 feet
 - 2. Surface of leveling aggregate: $\pm 0.02' : 20' / \pm 0.04$ feet cumulative from design grade

- C. Compaction of Subgrade Tolerance: Minimum of 92 percent of maximum dry density at the moisture content of the material as defined by ASTM D 1557.
- D. Stability of Subgrade: No more than ¼ inch deflection of the subgrade under proof roll.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide the following:

- 1. Geotextile Separation Fabric: A needle-punched non-woven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Fabric shall meet the following mechanical properties:
 - a. Grab tensile strength: ASTM D 4643 ≥ 160 lbs.
 - b. Grab tensile elongation: ASTM D 4632 ≥ 50%
 - c. Trapezoid tear strength: ASTM D 3533 ≥ 60
 - d. CBR Puncture strength: ASTM D 6241 ≥ 410 lbs.
 - e. AOS: ASTM D 4751 ≤ #70 US standard mesh
 - f. Permittivity: ASTM D 4491 ≥ 1.5 sec-1
 - g. Flow Rate: ASTM D 4355 ≥ 110 gal./min./ft.2
 - h. Weight: 4oz / sy

2.02 MATERIALS

- A. Storm Drainage

- 1. Conduit Materials: Furnish ells, clean-outs, tees, reducing tees, wyes, couplings, increasers, crosses, transitions, and end caps of the same type and class of material as the conduit, or of material having equal or superior physical and chemical properties as acceptable to the Architect. Use soil tight joints in lateral and collector drains.
- 2. Closed Pipe: ADS N-12 smooth interior corrugated HDPE pipe. Pipe shall conform to AASHTO M294, ASTM D1248, and ASTM D2412.
- 3. Perforated Pipe for French Drain Applications: ADS N-12 smooth interior corrugated HDPE pipe. Use perforated pipe in lateral drains. Pipe shall conform to AASHTO M294, ASTM D1248, and ASTM D2412. Perforations shall conform to AASHTO M252, Class1.
- 4. Flat Pipe: ADS AdvanEDGE 12" height pipe, no fabric wrap.
- 5. Slot Drains: ACO Sport System 3000 (Aco Polymer Products 800 993-2738) with catch basin (8 required). Use radiused segments. Catch basins shall be installed at each point of connection to storm system and at other locations for access for cleaning as shown on plans.
- 6. Drain Rock: Washed 3/4"-1/2" aggregate with less than 1% by weight passing the US Standard No. 200 Sieve.
- 7. Filter Fabric: Mirafi 140N or approved equivalent.

- B. Base and Leveling Synthetic Turf Aggregates: Gravel crushed from durable rock parent material having a slake durability index of at least 90%, based on a two-cycle slake durability test according to ASTM D 4644. It shall be angular having at least two fractured faces. It shall be free of foreign material.

- 1. Aggregates shall meet the following gradation requirements as determined by ASTM C136 and C117:

- a. Per project submittal dated 12/29/2015, base aggregate percent passing value ranges for sieve sizes 1" through 3/8" should be expanded to allow matching of field conditions.
- b. Per project submittal dated 07/28/2016, leveling aggregate percent passing value ranges for sieve sizes 3/8" through #100 should be expanded to allow matching of field conditions.

Tyler standard Screen U.S. Series Equiv. No. Sieve Size	% of particles Passing Base Aggregate	% of particles Passing Leveling Aggregate
2"	100	-
1-1/2"	90-100	-
1"	75-100	-
3/4"	65-95	-
1/2"	55-85	100
3/8"	40-75	85-100
#8	0-40	35-75
#16	0-20	10-55
#30	0-7	0-40
#50/60	0-5	0-15
#100	0-3	0-8
#200 (wet)	0-2	0-5

2.03 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to evaluate base and leveling aggregates.
- B. Testing: Test and inspect base and leveling aggregates according to ASTM C136 and C117.
 - 1. Provide a supplier test gradation for provisional approval.
 - 2. Provide a sample for each aggregate specified sufficient for the owners testing of approved products. If accepted, this will become the testing basis for production quality control.
 - 3. Coordinate collection of production / import samples with the Owners Testing Laboratory.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine subgrades with Installer present for compliance with requirements for line and grade, compaction, stability, and other conditions affecting performance of the Work.
- B. Areas failing to meet specified tolerances shall be corrected.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PROOF ROLL

- A. Proof roll ground surface in the presence of Owner's Representative or Owner-designated consultant. Proof rolling shall be done with a 10 to 12 yd. dump truck filled with aggregate. Compact the subgrade until it is firm and unyielding.

3.03 GEOTEXTILE FABRIC

- A. Geotextile fabric shall be placed on approved subgrade where indicated in the drawings. Subgrade shall be smooth free of obstructions, depressions, debris, soft or low-density pockets of material. Shingle/Lap edges and ends of geotextile fabrics not less than 12 inches. Fabric shall be free of tension, stress, folds, wrinkles, or creases.

3.04 SUBSURFACE DRAINAGE

- A. Stockpile and reinstall existing storm drain pipe to greatest extent feasible. If new material is needed, refer to Section 2.2A above and replace with like material as required.

3.05 BASE AND LEVELING AGGREGATES

- A. Minimize construction traffic over drain pipe to prevent damage. Sequence work so that drainage aggregates are applied over top of pipe in advance of tracked vehicle traffic.
- B. Place layer of unsegregated and uniformly dispersed base aggregates in position for compacting layers. Place material in lifts not to exceed 8". Grade and compact to specified tolerances.
- C. Place layer of leveling aggregates compact to a firm, unyielding condition. Grade to specified tolerances.
- D. During placement and compaction, the moisture content of the material shall be maintained at the highest-level practical for the material without causing free water to drain through the material and build up on lower courses or on the subgrade. Frequent light applications of water shall be applied rather than heavy applications to provide the necessary moisture without washing finer graded fraction.

3.06 COMPACTION

- A. Artificial Turf Base and Leveling Aggregates: Immediately following spreading and final shaping, the full depth of each layer of crushed aggregates shall be compacted to a well keyed, unyielding condition. Compaction shall be accomplished with a static roller on artificial turf base and leveling aggregates. Vibratory action is not permitted. Test compaction by conducting a proof roll with a fully loaded dump truck in the presence of the Owner's Representative. If there is any deformation or rutting it shall be further compacted until the aggregates are completely unyielding.
- B. Planarity Test: Conduct planarity test in the presence of the Owner's Representative and the synthetic turf manufacturer's authorized representative. Finished surface of leveling aggregate shall not deviate from true plane by more than the specified grading tolerances in the Quality Assurance paragraph in Part 1 of this Section. Provide a 200 foot masons line, and marking paint sufficient to mark areas to be corrected. Provide workers to hold each end of the string line. Demonstrate surface planarity by stretching string line over surface at regular intervals as directed by turf manufacturer's representative and/or Owner's Representative sufficient to identify all areas in need of correction.
- C. Correct any deficiencies observed during test.
- D. Repeat steps B and C above until planarity is approved by Owner and synthetic turf manufacturer's representative.

END OF SECTION 32 11 23