

SECTION 31 22 00 GRADING

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. The scope of this section relates to earthwork and grading operations.
- B. Labor, materials, equipment, and services necessary to complete site preparation, grading, and related items as indicated on plans or in specifications.

1.2 SUBSTITUTIONS

- A. Material substitutions or grading plan alterations are accepted only with written approval of Owner and or Engineer.

1.3 FINISHED GRADE

- A. "Finished Grade" as used herein, refers to:
 - 1. Top of synthetic turf infill.
 - 2. Top of synthetic track surfacing.
 - 3. Top of curb or finished grade of hardscape.
- B. Unless otherwise indicated, provide uniform slopes between points for which finished grades are indicated or between such points and existing established grade.
- C. The contractor is required to

1.4 GEOTECHNICAL REPORT

- A. Refer to geotechnical report for additional information and requirements.

1.5 PROJECT CONDITIONS

- A. The Contractor must verify existing conditions before starting work.
- B. The Contractor must protect existing structures and facilities.
 - 1. The Contractor must not interfere with use of adjacent buildings.
 - 2. The Contractor must maintain free and safe passage to and from adjacent buildings and maintenance areas.
 - 3. The Contractor must prevent movement or settlement of walls and structures, provide bracing or shoring, be responsible for safety and support of structures and assume liability for building movement, settlement, damage, or injury.
 - 4. The Contractor must cease operations and notify owner immediately if safety of structures appears to be endangered, take precautions to properly support structures, and resume operations only after safety is restored.
 - 5. The Contractor must provide, and maintain barricades, lighting, and guardrails required by applicable regulatory advisory to protect passersby, workers and building occupants.

1.6 QUALITY ASSURANCE

- A. After completion of each grading operation the contractor must provide a conformance survey that verifies the field is within tolerance. The survey must be prepared on a (25' x 25') grid and submitted to the engineer for review and approval prior to starting next fill level / grading operation.
 - 1. For synthetic track conduct conformance survey on subgrade, top of aggregate, top of base lift, top of finishing left and top of synthetic surface.
 - 2. For synthetic turf conduct conformance survey on subgrade and top of aggregate base stone.

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- B. The contractor must, in the presence, of an Owners representative or the engineer perform a string line test on drain stone material prior to drain pad turf installation. The string line is to be run at 10' intervals over the entire field in both length and width directions. Any depressions or ridges exceeding 1/8" must be marked and then corrected by the contractor.
- C. Conformance surveys are to be conducted and signed by licensed land surveyor.
- D. String line testing may be performed by the contractor.
- E. The Contractor must receive written approval of conformance survey prior to starting next fill level / grading operation. Proceeding without approval or working "at risk" is not acceptable.

PART 2 – MATERIALS

2.1 EXCESS OR UNSUITABLE MATERIAL

- A. Excess or unsuitable material, broken asphaltic concrete, broken Portland cement concrete, pipes, etc., must be removed and disposed of by the contractor. Materials must be disposed of at an approved disposal site. Contractor must, prior to commencement of work, submit a letter to owner stating locations of disposal sites for excess materials, and certifying that they have obtained property owner's permission for disposal of surplus materials.

2.2 FILL MATERIALS

- A. Soil Materials for subgrade, whether from sources on or off site, must be approved by the Geotechnical Engineer as suitable for intended use, and specifically for required location or purpose. Purchase and delivery of import materials, as required, will be the responsibility of the Contractor.
- B. Trench spoils may be used for fill only when specifically accepted by Geotechnical Engineer and only when cut / fill requirements allow. The Contractor is responsible for spoils export as needed.

2.3 GRADE STAKES AND LINES

- A. Grading, including sub-grading and finished grading of un-surfaced, as well as paved areas, must be controlled by such intermediate grade stakes and lines as may be necessary to obtain slopes and levels required by finished grade elevations shown on plans. Compacted sub-grades and finished grade surfaces must parallel and conform to control planes established by grade stakes and lines.

2.4 VERIFICATION OF QUANTITIES

- A. Quantities shown on grading plans and sections are for contractor's convenience only and are guaranteed. Grading must be done in conformance with elevations shown on plans and in accordance with specifications. Discrepancies between such mentioned quantities and/or sections, and requirements of grading plans and/or specifications, will not entitle contractor to additional remuneration.

2.5 TOLERANCES

- A. Sub-grade elevations may only vary within a tolerance of ± 0.04 -feet in 10-feet, measure in any direction. Sub-grade elevations if not shown on plans are to be calculated by the Contractor based on finished grade and material thickness noted in construction details.
- B. Top of drain stone elevations may only vary within a tolerance of ± 0.03 -feet in 10-feet, measure in any direction. Top of drain stone elevations if not shown on plans are to be calculated by the Contractor based on finished grade and material thickness noted in construction details.
- C. Finished grade elevations of playing field surfaces may only vary within a tolerance of ± 0.03 -feet 10 feet, measure in any direction.
- D. Finished grade elevations of hardscape or pavement may only vary within a tolerance of ± 0.03 -feet in 10-feet, measure in any direction. Regardless of tolerance allowed variance all general access walking surfaces must be ADA compliant (Americans with Disabilities Act).

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- E. The inside edge of the track perimeter sidewalk must meet track surface tolerances and provide smooth grade with no lips, dips or gaps from track to concrete sidewalk.
- F. Finished grade elevations of track running and event surfaces may only vary within a tolerance of ± 0.02 -feet in 10 feet, measure in any direction.
- G. Regardless of tolerances the contractor is responsible for provide smooth transitions from varied surfaces such as hardscape to track or track to field.

2.6 CHEMICAL TREATMENT

Per the geotechnical recommendations from Cleary Consultants, Inc. the subgrade within the project area shall be chemically treated to a depth of 18-inches with four percent (4%) Hi-Cal Quicklime with addition of two percent (2%) Portland Cement by dry weight.

PART 3 – EXECUTION

3.1 EXCAVATION

- A. Excavate areas shown on plans or as specified herein may include cutting for paving area and construction sub-grades, pipe line trenches, and turf areas.
- B. Excavation must be kept free from water until compacted fills and structures are complete to above water, safe from uplift and horizontal water pressure and the backfill has been placed. De-watering equipment must be adequate to protect against flotation.
- C. Excavated material not necessary to, or suitable for fill construction, must be removed from site.

3.2 GRADING

- A. Prepare subgrade after stripping the existing remnants as required by Geotechnical Report. Subgrade preparation may include but is not limited to chemical treatment and processes for ripping, scarifying, moisture management and compaction. The contractor must prepare the subgrade and construct all subbase with chemical treatment as indicated and per the project Geotechnical recommendations by Cleary Consulting, Inc.
- B. On-site soils and imported granular soils should be compacted at a moisture content near optimum. Depending on the actual soils and compaction equipment, compaction moisture contents may need to be changed to avoid or limit soil yielding or pumping.
- C. At completion of grading work, site must be left in a clean and finished condition conforming to the drawing.
- D. Sub-grade surfaces must be finished to uniform grades and slopes per drawings, and in such a manner as to drain properly and be free of depressions, which may cause areas of standing water.

3.3 GEOTECHNICAL TESTING AND INSPECTION

- A. All earthwork operations including subgrade and backfill is to be tested and inspected by a Geotechnical Engineer prior to proceeding with work.

END OF SECTION