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Letter of Transmittal

TO: **Plan Holders**

FROM: **Travis Petitjean**

DATE: **4/26/22**

SUBJECT: Addendum 1
A New Baseball Field for Worth County High School
Worth County School District

WE ARE SENDING YOU:

_ Enclosed
_ Prints
_ Change order

17 Pages via EMAIL (including cover)
_ Specifications

ENCLOSED:

COPIES	DATE	DESCRIPTION
1	4/26/22	Addendum 1

Transmitted as checked below:

X For your use
_ As requested
_ For your information
_ For review & comment

_ No exceptions taken
_ Exceptions noted
_ Resubmit

REMARKS:

COPY : A+B File 21086 / A-1

[M:\21086 Worth - Worth High Baseball Field\Addenda\Transmittal Add 1.doc]

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A NEW BASEBALL FIELD
FOR WORTH COUNTY HIGH SCHOOL
WORTH COUNTY SCHOOL DISTRICT
ADDENDUM NO. 1
April 26, 2022

REVISIONS TO THE SPECIFICATIONS:

1. Section 002513 PreBid Meetings:
    a. Delete in its entirety and replace with the attached Section 002513 PreBid Meetings which revises the date and time to coincide with the Invitation to Bid date and time.

2. Section 312000 Earth Moving:
    a. Delete Section 312000 in its entirety.

3. Section 312300 Earthwork
    a. Delete in its entirety and replace with the attached Section 312300 Earthwork.

REVISIONS TO THE DRAWINGS:

4. Sheet E1001:
    a. Add a duplex receptacle on exterior wall of room 1000-102 to serve irrigation controller. Serve from receptacle circuit #3 and locate receptacle adjacent to the irrigation controller. Provide 2-2" stub out conduits with pull string from irrigation controller to 20' out from building for zone control conductors (provided and installed by irrigation subcontractor). Coordinate exact location prior to rough in with irrigation system installer.

END

SECTION 002513

PREBID MEETINGS

PART 1 - PREBID MEETING

1.01 **Architect** will conduct a Prebid meeting as indicated below:
- A. Meeting Date: **May 9, 2022**.
- B. Meeting Time: **10:00 a.m.**, local time.
- C. Location: Worth County Middle School, 1305 N. Isabella St., Sylvester, GA 31791.

1.02 Attendance:
- A. Prime Bidders: Attendance at Prebid meeting is **mandatory**.
- B. Subcontractors: Attendance at Prebid meeting is recommended.
- C. Notice: Bids will only be accepted from prime bidders represented on Prebid Meeting sign-in sheet.

1.03 Bidder Questions: Submit written questions to be addressed at Prebid meeting minimum of **two** business days prior to meeting.

1.04 Agenda: Prebid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:

1. Procurement and Contracting Requirements:
   - a) Advertisement for Bids.
   - b) Instructions to Bidders.
   - c) Bidder Qualifications.
   - d) Bonding.
   - e) Insurance.
   - f) Bid Security.
   - g) Bid Form and Attachments.
   - h) Bid Submittal Requirements.
   - i) Bid Submittal Checklist.
   - j) Notice of Award.
2. Communication during Bidding Period:
   - a) Obtaining documents.
   - b) Access to Project Web site.
   - c) Bidder's Requests for Information.
   - d) Bidder's Substitution Request/Prior Approval Request.
   - e) Addenda.
3. Contracting Requirements:
   - a) Agreement.
   - b) The General Conditions.
   - c) The Supplementary Conditions.
   - d) Other Owner requirements.
4. Construction Documents:
   - a) Scopes of Work.
   - b) Temporary Facilities.
   - c) Use of Site.
   - d) Work Restrictions.
   - e) Alternates, Allowances, and Unit Prices.
   - f) Substitutions following award.
5. Separate Contracts:

a) Work by Owner.
b) Work of Other Contracts.

6. Schedule:
   a) Project Schedule.
   b) Contract Time.
   c) Other Bidder Questions.
7. Site/facility visit or walkthrough.
8. Post-Meeting Addendum.

1.05 Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees and others known by the issuing office to have received a complete set of Procurement and Contracting Documents. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.

A. Sign-in Sheet: Minutes will include list of meeting attendees.
B. List of Planholders: Minutes will include list of planholders.

END OF DOCUMENT 002513

SECTION 312300

EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Preparing subgrades for synthetic turf fields, slabs-on-grade, walks, pavements, parking areas, driveways, lawns and grasses.
2. Spreading and finish grading of topsoil on all site areas including lawn and landscape areas.
3. Excavating and backfilling for synthetic sports fields and paving.
4. Excavating and backfilling for utility trenches.
5. Excavating and backfilling pits for buried utility structures.
6. Removing sediment from storage areas.
7. Stockpile excess soil on site.

B. Related Sections include the following:

1. Division 1 Section "Temporary Facilities and Controls" for temporary controls, utilities, and support facilities.
2. Division 31 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe or synthetic field.

C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill. Offsite borrow areas shall be approved by the Geotechnical firm prior to use.

D. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions.
2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
3. Boulder Excavation: Includes the excavation of existing boulders and previously blasted rock that was buried on the site during previous construction that cannot be used for initial backfill of pipes.
4. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

F. Fill: Soil materials used to raise existing grades.

G. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation (Mass Rock) or 1 cu. yd. for footing, trench, and pit excavation (Confined Excavation / Trench Rock) that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings:

1. Mass Excavation: Any material that cannot be excavated with a single tooth ripper mounted on a crawler tractor having a minimum draw pull be rated no less than 80,000 pounds (Caterpillar D-8 or equivalent).
2. Excavation of Footings and Trenches (Trench Rock): Late-model, track-mounted hydraulic excavator; having a bucket equipped with rock teeth and having a curling force rating of not less than 40,000 pounds; measured according to SAE J-1179.
   a. Trench rock shall consist of rock associated with linear excavations for storm or utility pipes or footings with a width of ten feet (10') or less.
3. Any material that may be classified as rock or boulders shall be evaluated by the Geotechnical Engineer or his representative prior to excavation. No claims for payment of rock excavation will be paid for unless the excavation is witnessed and verified by a representative of the Geotechnical Testing Company.

H. Soil Materials: Defined under Part 2 "Products", if not defined here.

I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base, drainage fill, or topsoil materials.

K. Topsoil: Shall be as defined in Division 31 Section "Site Clearing."

L. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 698 for on-site soil material proposed for fill and backfill.

B. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

C. Photographic documentation of each section of storm drainage taken structure to structure at time pipe is bedded in stone shall be provided to the Owner prior to spreading of topsoil.

1.5 REGULATORY REQUIREMENTS

A. Verify and comply with all Federal, OSHA, State, County, City or local requirements concerning earthwork, excavation, and related activities.

B. WARNING: NO PERSON(S) SHALL ENTER MANHOLES OR OTHER UNDERGROUND STRUCTURES, TRENCHES, OR EXCAVATIONS WITHOUT PROTECTIVE BREATHING APPARATUS AND AT LEAST ONE OTHER PERSON PRESENT FOR SAFETY AND MONITORING AT ALL TIMES.

1.6 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548. Soil tests, field density tests, and, observation and report of predensification shall be made by a Geotechnical Testing Agency (Geotechnical Engineer) paid for in accordance with Division 1 Requirements.

B. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

1. Protect structures, utilities, sidewalks, pavement and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
2. The Contractor, and all sub-contractors, shall be responsible for all safety measures, procedures, or devices as required by OSHA, Federal, State or local authorities. No person shall enter a manhole or other underground structure without protective breathing apparatus, and at least one other person present for safety. All earthwork, trenching, and grading operations shall conform to minimum OSHA requirements for safety, shoring, bracing, and protective measures.

C. Barricade open excavations occurring as part of this work and post with warning lights.

1. Operate warning lights as recommended by authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify Engineer not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Engineer's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory Suitable Soils: Satisfactory (suitable) soil materials are limited to soils classified in accordance with ASTM D 2487 Soil Classification Groups GC, SC, CL, GW, GP, GM, SW, SP, SM and ML or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter and having a liquid limit less than 45, plastic index less than 25 and a Standard Proctor maximum dry density (ASTM D-698) greater than 100 pcf.

B. Unsatisfactory Soils: Soil Classification Groups OL, CH, MH, OH, and PT according to ASTM D 2487 or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction. Rework of these soils shall be at the Contractor’s expense.

C. Unsuitable soil/materials are soils or materials defined as Soil Classification Groups OL, CH, MH, OH and PT and/or that are not suitable or appropriate for their intended use as determined by the Testing Agency or the Engineer of Record.

D. Base Course: Graded, crushed aggregate base conforming to Georgia Department of Transportation specifications.

E. Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2” in any dimension, debris, waste, frozen material, vegetable or other deleterious matter.

F. Granular Fill: Washed, evenly graded mixture of crushed stone of size noted on Drawings.

G. Granular Aggregate Base For Use As Drainage Course Under Slabs-On-Grade: Granite/Gneiss Crusher Run or Crushed Concrete with Granite or Gneiss aggregate complying with GDOT Subsection 815.2.01 for Group II aggregates, except that the aggregate may be recycled concrete.

H. Drainage Fill For Use As Drainage Course Under Slabs-On-Grade: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.

I. Sand For Use As Drainage Course Under Slabs-On-Grade: ASTM C33/C33M, fine aggregate.

2.2 CONTROLLED LOW-STRENGTH MATERIAL

A. Controlled Low-Strength Material: Self-compacting, flowable concrete material produced from the following:

1. Portland Cement: ASTM C150/C150M, Type I Type II or Type III.
2. Fly Ash: ASTM C618, Class C or F.
3. Normal-Weight Aggregate: ASTM C33/C33M, 3/8-inch nominal maximum aggregate size.
4. Water: ASTM C94/C94M.
5. Air-Entraining Admixture: ASTM C260/C260M.

B. Produce conventional-weight, controlled low-strength material with 140-psi compressive strength when tested according to ASTM C495/C495M.

2.3 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick continuously inscribed with a description of the utility; colored as follows:

1. Blue: Water systems.
2. Green: Storm Sewer Systems.
3. Green: Sewer Systems

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."

C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Site Clearing," during earthwork operations.

3.2 SHORING AND BRACING

A. Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

B. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

C. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.

D. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.

E. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

3.3 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared or excavated subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

C. Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Construct temporary drainage ditches to divert groundwater and subsurface water away from building and paving areas. Do not use footing excavations as temporary drainage ditches. Do not permit construction drainage onto adjacent property.

D. Otherwise satisfactory soils not properly dewatered by the Contractor are not subject to Unit Price or Allowance Payments by the Owner. Contractor shall maintain proper dewatering throughout construction.

3.4 EXPLOSIVES

A. Do not use explosives.

3.5 EXCAVATION, GENERAL

A. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by the Geotechnical Engineer. The Contract Sum will be adjusted for rock excavation according to Contract provisions.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
   a. Intermittent drilling; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
2. Rock excavation includes removal and off-site disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction.

3.6 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 feet. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

3.7 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.8 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe at elevations indicated or below frost line, whichever is deeper.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated or required for safety purposes.

1. Clearance: 12 inches each side of pipe or conduit unless pipe is in rock, in which case excavation shall be 6 inches clear on each side of pipe.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. Allow for bedding courses as required for each item.
   a. Storm Drainage – See Details. Provide photographic documentation of all pipe runs, structure to structure, at time of installation and prior to backfilling with soil.

3.9 SUBGRADE INSPECTION, PREDENSIFICATION, AND PROOFROLLING

A. Notify Geotechnical Engineer when excavations have reached required subgrade.

B. If Geotechnical Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. The entire stripped subgrade for turf fields, and paving areas shall be scarified and compacted and then proof-rolled as recommended by the Geotechnical Engineer. The compaction efforts shall be sufficient to densify the subgrade of areas to receive fill to a minimum density of 95% in accordance with ASTM-D-698 for a depth of 12 inches. All at grade areas and cut surfaces shall be scarified and compacted to at least 98% of the same criteria for a depth of 12 inches.

D. Proof-roll subgrade below the turf fields and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.

2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or as directed.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.10 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Controlled low-strength material may be used when approved by Engineer.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

3.11 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of trees to remain.

3.12 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, ice, vegetation, or other deleterious matter.

3.13 UTILITY TRENCH BACKFILL

A. Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Engineer or authorities having jurisdiction.

B. Do not backfill storm drain lines until bedded pipe is photographically documented.

C. Place backfill on subgrades free of mud, frost, snow or ice.

D. All storm drain trenches shall be backfilled with #57 Stone as shown on the details.

E. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

F. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

G. Backfill voids with satisfactory soils while installing and removing shoring and bracing.

H. Place and compact final backfill of satisfactory soil to final subgrade elevation.

I. Install warning tape directly above utilities, 12 inches below finished grade.

3.14 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use satisfactory soil material.
4. Under building slabs, use satisfactory soil material to floor slab base material.
5. Under footings and foundations, use satisfactory soil material.

C. Place soil fill on subgrades free of mud, frost, snow, ice, vegetation or deleterious matter.

3.15 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 3 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

3.16 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure to prevent wedging.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698 and not less than the following percentages of relative density, determined in accordance with ASTM D 2049 for soils which will not exhibit a well-defined moisture-density relationship.

1. Subgrades for Turf Fields and Pavements: Compact to at least 95 percent of the Standard Proctor Maximum Dry Density. The upper one foot of fill material and subgrade areas shall be compacted to 98% of compaction criteria.
2. Lawn or Landscape Areas: Compact each layer of backfill or fill soil material to 95%.
3. Base Material for Pavements and Turf Fields: Compact to at least 98 percent of the standard proctor maximum dry density (ASTM D 698).

3.17 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated, allowing for minimum depth of topsoil. Compact with uniform levels or slopes between points where elevations are shown or between such points and existing grades.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Curbs, Walks, Lawns, and Unpaved Areas: Plus or minus 1/2 inch. Backfill against curbs and pavement edges flush to provide smooth finish in areas to grassed. Grade areas to receive sod to allow for 1-1/2 inch thickness.
2. Pavements: Plus or minus 1/2 inch.

3.18 GRADING OF ALL LAWN AND LANDSCAPE AREAS

A. General: Uniformly grade areas including adjacent transition areas. Smooth finish surfaces within specified to within plus or minus 0.10' between points where elevations are shown or between such points and existing grades. Grade areas adjacent pavement to slope as indicated on the drawings and to prevent ponding of water or sudden changes of grade.

B. Topsoil Placement:

1. All lawn and landscape areas shall have a 4" uniform layer of topsoil spread prior to final grading. Smooth and compact finished surface with uniform levels between points where elevations are shown or between such points and existing grades.
2. Grade elevation of topsoil relative to walks, curbs, paved surfaces, and drainage structures, manhole tops, valve boxes, etc. to conform to the following criteria.
   a. Sodded Lawn Areas - One and one-half inches below finish grade.

C. Temporary and Permanent Grassing shall be performed in accordance with Division 32 Section "Landscape Work."

3.19 GRADING FOR SYNTHETIC TURF SUBGRADE

A. Perform grading of athletic fields using laser or GPS controlled grading equipment. Grade subgrades to plus or minus 0.10 feet. Refer to the drawings for subgrade depths.

3.20 BASE COURSE

A. Place base course on subgrades free of mud, frost, snow, ice, vegetation or deleterious matter.

B. On prepared subgrade, place base course under pavements as follows:

1. Place base course material over subgrade course under hot-mix asphalt pavement.
2. Shape base course to required crown elevations and cross-slope grades.
3. Place base course 8 inches or less in compacted thickness in a single layer, unless mandated otherwise by Authorities having jurisdiction.
4. Where indicated on the Drawings, place base course that exceeds 8 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
5. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 100 percent of maximum dry unit weight according to ASTM D 1557.

C. Pavement Shoulders: Place shoulders along edges of base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.21 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. Construct Drainage Course of Sand, Drainage Fill, or Granular Base Course.

C. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

4. Place drainage course 6 inches or less in compacted thickness in a single layer.
5. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
6. Compact each layer of drainage course to required cross sections and thicknesses to not less than 98 percent of maximum dry unit weight according to ASTM D698.

3.22 FIELD QUALITY CONTROL:

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Quality Control Testing During Construction: Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed. An experienced geotechnical engineer shall observe the pre-densification of the paving areas. One copy of results of all Compaction Test and observations of pre-densification shall be submitted to Owner, Engineer and Engineer.

1. Testing company shall perform field density tests in accordance with ASTM D 2937 (drive cylinder method), ASTM D 2167 (rubber balloon method), as applicable, or nuclear method ASTM D 2922.
2. Pavement Subgrade Areas: Make at least one field density test for each one foot lift for every 5,000 sq. ft. in pavement subgrade areas.
3. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
4. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.

B. If in opinion of Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction to meet the requirements specified herein. Re-testing of areas shall be at the Contractor's expense.

3.23 PROTECTION

A. Protect Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth required; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.24 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove waste material, trash, and debris, and legally dispose of it off Owner's property.

3.25 INSUFFICIENT FILL MATERIAL

A. If the quantity of grading material is insufficient to provide finished grade and subgrade elevations shown on the drawings, the Contractor shall obtain the required material from onsite as directed by the Engineer at no additional cost to the Owner.

3.26 EXCESS CUT MATERIAL

A. If the quantity of grading material is in excess of the quantities necessary to provide subgrade and finish grade elevations indicated on the drawings, the excess material shall be stockpiled on site at location noted on the Drawings or as directed by the Engineer. No additional payment will be made for stockpiling the excess material.

END.