Division 31  | Earthwork

Section includes various guidelines for earthwork, site clearing, termite control, subgrade processing, and topsoil replacement.

This design guideline is written to the designer of record (DOR). This guideline is written to document UA standards of work, assist the designers in ensuring UA standards are incorporated into the contract documents and provide a resource to facilitate the design process. It is the designer of record’s responsibility to coordinate the criteria set forth in design guideline and in conjunction with the manufacturer requirements and use the most stringent standard.

Section 31 00 00 – Earthwork

A. General

This section addresses requirements for earthwork, including clearing, grading, excavation and fill and excavation support and protection related to building construction and infrastructure projects on The University of Alabama Campus.

The design of site and landscape elements is very important in enhancing the campus environment and maintaining its distinctive character. These elements are the basis for creating a campus environment which is cohesive and preserves its sense of continuity.

The campus site and landscape standards which follow are intended to be used as basic design guidelines during the site design process and for the preparation of contract documents. They are also intended to be used as tools to aid the Design Consultant in making their planning and design decisions.

B. Subgrade Processing and Topsoil Replacement

1. All the existing utilities are located and marked approximate and for information purposes only. The contractor shall verify, through University of Alabama line locate procedures, all utility locations before construction begins. In the event of any damage to the existing utilities, they shall be repaired or replaced to the satisfaction of the UA representative and utility owner at the contractor's expense. All utilities are to be potholed by the contractor and location verified before work is allowed to proceed.

2. Prior to any construction, contractor shall investigate and document condition of existing grades. If large concentrations of stone, or deleterious material is encountered then select fill shall be required. Documentation shall include photos and areas shall be indicated on plan.

3. All undisturbed subgrades and select fill areas, shall be 85% stone free. Subgrades that contain more than 15% stone and debris in any 12” x 12” area shall be removed and replaced, by the general contractor. All subgrade/select fill areas shall be free of any construction debris and waste material (stakes, roots, stone, concrete chunks, broken pipe, electrical conduit, drink bottles, etc.) Contractor to replace contaminated soil with acceptable subgrade material to be approved by campus Landscape Architect.

4. All temporary stones, for roadways, construction accesses, sidewalks, drives, construction, etc. shall be considered incidental to the project. It is the General Contractors' responsibility to fully remove, at no additional cost to the owner, these temporary materials prior to placement of subgrade/ select fill. This applies to all materials, equipment, etc., the contractor transports to the project. Do not waste on site.
5. Topsoil material and subgrade preparations shall be performed during dry weather. Contractor shall be responsible for coordinating with and providing at least 24 hour advance notice to UA Landscape Architect for inspection and acceptance of subgrade in landscape areas prior to placement of topsoil. Any topsoil placed prior to approval of subgrade by UA Landscape Architect shall be removed by the contractor at no additional costs to the University.

6. Topsoil shall be rolled in-place to prevent future settling.

7. Topsoil shall be free of viable noxious weeds or vegetation or vegetation propagules. Contractor shall be responsible for applying necessary chemicals to topsoil to rid material of such weed, seed or propagules. Chemicals to be applied must be approved by U/A Landscape Architect prior to application.

8. Any and all areas in, near or adjacent to the construction limits that are disturbed during the construction process are to be repaired to the original or better condition at no additional cost to the owner. All grades, existing and constructed, shall be tied together to match in a seamless manner and grassed.

9. Eliminate uneven areas and low spots, including those adjacent to but outside the project limits, so as to ensure proper positive drainage toward drainage areas, and provide gradual grade change(s) of ground elevations.

10. Areas to be grassed shall be Sodded, Hydro-seeded or applied with Straw Matt - To be determined by UA Landscape architect or qualified representative prior to installation. No seed and straw. All sod is to be rolled after installation per the direction of the Landscape Architect.

11. Prior to any construction, contractor shall coordinate with the UA Landscape and Grounds Department the working condition of all Irrigation system(s) within the project in order to establish the current working condition of such system(s). Contractor shall be responsible for replacement of any and all damage, of existing irrigation system(s) that was working properly before the pre-construction irrigation review meeting for the project. The contractor shall also be responsible for damage to any landscaping affected by the disruption of the irrigation system(s). Irrigation system(s) disrupted shall be repaired at direction of UA by the contractor. Any Cost associated with the aforementioned shall be the contractor’s expense with no additional costs to the University of Alabama. Irrigation lines and control wiring are to be placed at a depth approved by the U/A Landscape Architect.

12. Protect all hardscape surfaces (concrete sidewalks, patios, brick pavers, inlet boxes, gutters, etc.), and water distribution infrastructure, from damage from heavy equipment by use of temporary bridging (fabric, sand, wood, etc.). Contractor shall be responsible for repairs to all damaged hardscape at no additional costs to the University of Alabama.

13. At the end of the project, the contractor shall pressure wash all concrete surfaces (i.e., curb and gutters, sidewalk, drives, storm sewer boxes, brick pavers, existing building brick and stone, specifically existing concrete abutting required concrete surfaces within the project and all adjacent area(s)) to eliminate staining from earthen material, construction equipment, oils, paints, etc. This work shall be considered incidental to the contract at no additional costs to the University of Alabama.

14. Final inspection for acceptance to be performed by the U/A Landscape Architect and all deficient items are to be corrected immediately by the contractor at no additional cost to the University of Alabama.
B. Subgrade Processing & Topsoil Replacement

1. Contractor shall anticipate fine grading of building pad site following installation of foundation system(s) associated with the project. Any excess or spoil material shall be removed from site. All costs associated with fine grading of building pad, additional embankment fill, or removal and disposal of excess material shall be incidental to the lump sum bid on the project.

2. The top six (6) inches on the entire width of both cuts and fills shall be processed by thoroughly pulverizing, blending, and mixing the subgrade material until uniform in texture and appearance. Subgrade processing will be required to a minimum of one (1) foot beyond the back of curb and/or sidewalk(s), and five (5) feet beyond concrete slab areas.

3. All temporary stones, 1” or greater, for roadways, construction accesses, sidewalks, drives, construction, etc..., shall be considered incidental to the project. It is the General Contractors’ responsibility to fully remove, at no additional cost to the owner, these temporary materials as the project is completed. This applies to all materials, equipment, etc..., the contractor transports to the project. Do not waste on site.

4. All prepared subgrades shall be 85% stone free. Subgrades that contain more than 15% stone in any 12” x 12” area shall be removed and replaced, by the general contractor. Contractor to replace contaminated soil with acceptable subgrade material to be approved by campus Landscape Architect.

5. After all excavation has been completed and at the direction of the Campus Landscape Architect, topsoil shall be replaced on all excavated or disturbed areas to a minimum depth of four (4) inches.

6. Preparation of subgrade in areas mentioned in preceding paragraph shall follow UA Construction Standards and Grasses as follows:

   A. In areas that have not been altered or disturbed by excavation, grading, or stripping operations but included as landscape areas on the Landscaping Plan, prepare subgrade as follows:

      1) Till to a depth of not less than six (6) inches to a homogeneous mixture of fine texture, free of lumps, clods, or stones in excess of one (1) inch in greatest dimension.

      2) Remove all foreign materials, including any and all extraneous materials such roots, concrete, rubble, or any other debris from landscape areas(s) in excess of one (1) inch. Subgrade must be at least 85% soil.

      3) Eliminate uneven areas and low spots so as to ensure proper positive drainage towards drainage areas, and provide gradual grade change(s) of ground elevations.

      4) Re-till soil to a homogeneous mixture of fine texture, free of lumps, clods, or stones larger than one (1) inch in greatest dimension, roots, and other extraneous material.

   B. In all areas, prepare subgrade as follows:

      1) Scarify subgrade to a depth of not less than four (4) inches.
2) Remove all foreign materials, including any and all extraneous materials such as lumps, clods, stone, roots, concrete, or rubble larger than one (1) inch in dimension, or any other debris from landscape area(s).

3) Spread minimum of four (4) inches topsoil. Topsoil shall be placed in such a manner to ensure positive drainage towards drainage areas, inlets, etc.

C. Topsoil Replacement

1. General notes for all landscape areas shall be as follows:
   
   A. Topsoil material and subgrade preparations shall be performed during dry weather. CONTRACTOR shall be responsible for coordinating with and providing advance notice to OWNER 24 hrs. prior to inspection for acceptance of subgrade in landscaping areas prior to placement of topsoil. Any topsoil placed prior to approval of subgrade by OWNER shall be removed by CONTRACTOR at no additional costs to the project.

   B. Any foreign materials shall be removed while spreading of topsoil. There shall not be any rocks or debris greater than one (1) inch.

   C. Near existing trees / plants, sidewalks, curbs, concrete surfaces, fencing, walls, buildings, other hardscape or structures, topsoil shall be spread manually to prevent damage to such.

   D. All topsoil shall be rolled in-place.

   E. Fertilizer shall be applied at a rate required by topsoil analysis. Apply lime at rate required to achieve pH range between 5.0 and 7.0. Fertilizer and lime shall be thoroughly mixed into the upper two (2) inches of topsoil prior to rolling.

   F. Topsoil shall be placed so that no potential for water to stand and / or percolate behind curbs or pavement surfaces so that integrity of curb or paved surfaces are not affected by such.

2. Project specific notes for landscape areas shall be as follows:

   A. Contractor shall be responsible for any and all temporary grassing necessary for erosion / sedimentation control and to meet ADEM NPDES Stormwater Permit requirements.

   B. Contractor shall be responsible for fine grading all areas to the designated finish grade elevation is as noted on the drawings.

   C. Contractor shall be responsible for any and all clean-up associated with landscaping subgrade preparations and topsoil applications, including any and all required erosion / sedimentation control, during and after such preparations and topsoil applications until Landscaping and Irrigation Contractor begins work in each area.

3. Landscaping and Topsoil Material requirements as per UA Construction Standards for Landscaping and Topsoil.

   A. Material used for topsoil shall be as follows:
      
      1) Topsoil material used shall be equivalent to Bama sandy loam.
      
      2) Permeability rate for topsoil material shall be .6 to 6 inches per hour.
3) Topsoil material shall have low shrink–swell potential.

4) pH range shall be between 5.0 and 7.0

5) Minimum organic matter of 2.0%.

B. Topsoil shall be free of viable noxious weed seed or vegetation propagules. Contractor shall be responsible for applying necessary chemicals to topsoil to rid material of such weed seed or vegetation propagules.

C. Topsoil shall be tested for physical properties, organic content, pH range, and nutrient content by an agricultural soils lab. The soils lab shall provide instructions on the proper method of taking soil samples, and shall determine rate of fertilizer and/or lime application necessary to meet topsoil material requirements. The Contractor is responsible for adhering to such requirements as recommended by the soils testing lab. The Contractor shall provide Owner a minimum of 48-hour notice in advance of taking soil samples for proper coordination and observation by Owner. Soil test shall be submitted and approved by Campus Landscape Architect prior to any topsoil being transported or placed on site.

4. All costs associated with grading of site to accommodate topsoil placement, subgrade preparation, and actual topsoil placement, fine grading of such topsoil, removal and off-site disposal of all excess or unsuitable material, coordination with Landscaping Contractor, clean-up, or other items associated with such work shall be incidental to the lump sum bid on the project.

5. Any and all areas in, near or adjacent to the construction limits that are disturbed during the construction process are to be repaired to the original condition or better at no additional cost to the owner. All grades, existing and constructed, shall be tied together to match in a seamless manner and grassed.
Section 31 13 16 – Termite Control

A. General

In all new construction and major renovation projects, Designer should require preconstruction soil treatment for termite control. Effective subterranean termite control requires the establishment of an unbroken vertical and/or horizontal chemical barrier between facility foundation and termite colonies in the soil. Treated areas should be posted with a written warning until they are covered. Prior to treatment, the Contractor should give UA one week’s notice so that a representative of Operations may schedule random sampling of treated soil. The Treatment Contractor will be required to warrant his work for a period of one year. Prior to the one year renewal date, the Treatment Contractor will be required to notify UA of a final inspection.

B. Products

1. Approved treatment emulsions are as follows:
   A. 1% Demon TC
   B. 1% Gold Crest Tribute
   C. 0.75% Pryfon 6 Insecticide
   D. Or as approved by the Owner or Engineer

C. Execution

1. For horizontal barriers, apply at the rate of 1 gallon per 10 SF if dirt fill is used. If fill material is washed gravel, apply at 1.5 gallons per 10 SF.

2. For vertical barriers, including foundation walls, expansion joints, plumbing traps or any slab penetration, apply at 4 gallons per 10 linear foot of fill depth to footing (example: a footing 3 ft. deep requires 12 gallons of emulsion per 10 linear feet.) Application should be by (1) rodding and (2) trenching and mixing emulsion with soil as it is being replaced in trench.

3. Where hollow masonry units are used in foundation walls, and where horizontal barrier application is not made prior to pouring of footing, treatment may be made through masonry voids to establish a chemical barrier at the top of footing. Apply at the rate of 2 gallons per 10 linear feet.

4. In crawl spaces, apply at 4 gallons per 10 linear feet per foot of depth to top of footing, to inside and outside of foundation walls, piers, supports or pipes.

5. Exterior foundation walls of both crawl spaces and slabs are to be treated after backfill is completed.

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