

# DIVISION 31 - EARTHWORK

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## **31 05 00 Common Work Results for Earthwork**

1. Clearly specify that all grading activities shall comply with the tree protection requirements specified in Division 1 and in Clemson's [Urban Forest and Landscape Management Policy](#).
2. Specify that debris and excess material be managed effectively to prevent onsite accumulation.
3. Specify that all earthwork be coordinated with other trades especially when considering soil compaction requirements.
4. Request any required subsurface investigation of the site in accordance with provisions of the A/E Agreement. The designer shall designate the location of any proposed soil boring locations and shall be especially aware of the locations of existing utilities. Notification to the local utility locating service and the CU Facilities Survey is also required and must be contacted for any preliminary subsurface investigation and must also be specified as a requirement for the contractor in any subsequent construction operations. The Owner will usually retain the appropriate geotechnical firm for subsurface investigation as well as testing services during construction.
5. The consulting A/E shall give special attention to ensuring that all required permits are obtained from the appropriate regulating authorities and that they are obtained within the prescribed time. It is the consultant's responsibility to ensure that these permits are obtained. See Section 31 25 00 and the University [Stormwater Planning and Management Policy](#) for further information.

## **31 11 00 Clearing and Grubbing**

1. Whenever possible, coordinate the placement excess material on campus as directed by the Project Manager.
2. Specify that topsoil is not being reused on the project shall be stockpiled on the campus at a location designated by the Project Manager.
3. Specify that all waste material and debris other than soil is to be removed from the campus and deposited in a legal disposal facility or landfill. Clemson University utilizes a C & D refuse service and may be available for limited amounts of waste material.
4. Require that hazardous waste of any kind be identified to the greatest extent possible in construction drawings disposed of in accordance with applicable Federal and State laws and regulations.
5. Prohibit the burning of trash and debris and the use of explosives on campus.

## **31 22 00 Grading**

1. Specify the proper quality control, safety measures and adequate protection as given in applicable codes and regulations for all excavations.



2. The designer is cautioned to pay special attention to compaction requirements to assure a uniform, coordinated specification in each area of fill placement. Specify compaction requirements for each particular area to comply with the appropriate ASTM density requirements.
3. The acquisition of any required additional fill material shall be specified as part of the contractor's responsibility.
4. Cut and fill slopes shall adhere to one of the conditions below:
  - Vegetated but not mowed slopes shall be no greater than 3:1.
  - Mowed slopes are to be no greater than 2:1
  - Stabilized but not vegetated slopes shall have a slope that is a safe angle of repose for the material being used.
5. Slopes greater than 2:1 shall have special stabilization such as river rock over rip-rap.
6. Should any area require a graded slope of 4:1 or greater, a retaining wall shall be employed to reduce the slope.
7. Provisions should be made to safely conduct surface water to storm drains or suitable natural water courses and to prevent surface runoff from damaging cut faces and fill slopes.
8. Terraces or diversions should be provided whenever the height of the cut or fill exceeds 20 feet. These should divide the slope face as equally as possible and should convey the water into stable outlets. Benches should be kept free of sediment during all phases of development.

## **31 25 00 Erosion and Sediment Control**

1. All Erosion and Sedimentation Controls and Soil Stabilization Practices shall follow design standards defined in the [SCDES BMP Handbook](#) or the elected permit authority's [Stormwater Management Program](#) as required by Clemson University's [Stormwater Planning and Management Policy](#).
2. Be sure that all provisions of the plan specified are in compliance with the Regulations contained in [Chapter 72, Article 2, South Carolina Code of Regulations](#) (Erosion and Sediment Reduction and Stormwater Management Regulations).
3. The design must include an approved erosion control plan as required in Appendix H of [OSE Manual](#).

## **31 31 00 Soil Treatment**

1. Specify the appropriate soil treatment for the control of subterranean termites on the project site. Specify that the person applying these soil treatments must be licensed with the [Clemson University Department of Pesticide Regulation](#).



2. Specify that the termiticides shall be applied at the highest label rate, and that the treatment must follow the standards for the prevention and control of wood destroying organisms prescribed by law.
3. Specify that the termiticide to be used, the rate of application, and the total quantity of material to be applied must be approved by [Facilities Maintenance](#) prior to the contractor awarding this subcontract for the work. The contractor shall also submit follow-up documentation of the actual use rate and total quantity of material applied to the site.
4. Specify that the contractor shall notify a representative of [Facilities Maintenance](#) at least 48 hours prior to the termiticide treatment. Inherent in this notification is the right of the Facilities staff to observe the termiticide containers being opened, seals being broken, mixing, and application. The termiticide used shall also be made available to University Facilities for testing and sampling.
5. Specify that the final surface preparation must be done by the pest control operator prior to the treatment. This will include the removal of foreign matter and debris which would decrease the effectiveness of treatment and the loosening and raking the soil in the treated area prior to treatment.
6. Specify that termiticides must not be applied when the soil is excessively wet or frozen, or when rainfall is predicted as imminent.
7. Specify that the treatment of soil adjacent to exterior foundation walls is to be done only after all required grading, excavating, and final landscaping and filling operations are completed, except as otherwise required in construction operations.
8. Specify that voids in block wall construction shall be treated as practicable to the footing in order that the termiticide reaches the footing rather than being absorbed by the masonry.
9. Specify that rodding alone is not permitted as the primary technique of treating the soil adjacent to the foundation walls. Trenching or trenching combined with rodding is acceptable.
10. Specify that signs shall be posted in the areas of application to warn workers that soil termiticide treatment has been applied.
11. Specify that a quality control inspection be conducted post treatment and documentation of this inspection be submitted to the Pest Control Department at University Facilities.
12. The contractor shall furnish a written warranty certifying that the applied soil treatment will prevent infestation of termites, and that if termite activity is discovered during the warranty period, the contractor will re-treat the soil and repair any damage caused by termite infestation. This warranty will consist of a five-year period from the date of Substantial Completion, signed by a representative of the pest control company and the general contractor. After this initial warranty period, Clemson University will have the right to assume the annual renewal with the pest control company.



# **PRODUCTS AND MATERIALS – DIVISION 31 – EARTHWORK**

## **Termiticides**

- Fipronil (Termidor)
- Isofenphos (Pryfon 6)
- Permethirin (Dragnet TF and Torpedo)
- Cypermethrin (Demon TC and Prevail FT)
- Fenvalerate (Tribute)

## **Erosion and Sedimentation Control**

- All erosion and sedimentation control BMPs shall use materials specified in the [SCDES BMP Handbook](#) or the elected permit authority's design manual.

## **Soil Stabilization**

- All soil stabilization BMPs shall use materials specified in the [SCDES BMP Handbook](#) or the elected permit authority's design manual unless otherwise noted.
- All erosion control blanket is to be completely biodegradable.

