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**RFP: CC-21  
AIRPORT HANGAR AT LOWCOUNTRY REGIONAL AIRPORT**

**RFP DUE: Monday, November 30, 2015 @ 11:00am**

**Addendum #2**

This addendum is dated November 20, 2015

## SECTION 02210

### SITE GRADING

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work included: Cut, fill, excavate, backfill, compact and grade the site as necessary to bring the roads, drives, building sites, paved areas and open areas to the lines and grades shown on the drawings.
1. The work includes, but is not necessarily limited to:
    - a. Building site preparation.
  2. Classification: All excavation is unclassified and excavation of every description, regardless of material encountered within the grading limits of the project, shall be performed to the lines and grades indicated.
- B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.
  2. Section 02221 - Trenching, Backfilling for Utilities.
  3. Section 02260 - Erosion and Sediment Control.
- C. Definitions:
1. Open areas: Open areas shall be those areas that do not include building sites, paved areas, street right-of-way and parking areas.
  2. Maximum density: Maximum weight in pounds per cubic foot of a specific material.
  3. Optimum moisture: Percentage of water in a specific material at maximum density.
  4. Rock excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery. To be considered as rock excavation, the material shall be continuous; individual boulders or rocks in soil will not be considered rock excavation.
  5. Muck: Materials unsuitable for foundation because of organic content, saturation to the extent that it is somewhat fluid and must be removed by dragline, dredge or other special equipment, are designated as muck. No extra payment will be made for muck removal.
  6. Unsuitable material: Unsuitable material is defined as earth material unsatisfactory for its intended use and as classified by the soils technician. In addition to organic matter, sod, muck, roots and rubbish, highly plastic clay soils of the CH and MH descriptions, and organic soils of the OL and OH descriptions, as defined in the Unified Soil Classification System shall be considered as unsuitable material.
  7. Suitable material: Where the term suitable material is used in specification sections pertaining to earthwork, it means earth or materials designated as being suitable for their intended use by soils technicians or the Engineer. Suitable material shall be designated as meeting the requirements of the Unified Soil Classification System types SW, GW, GC, SC, SM, ML, CL or as designated in these specifications.

8. Select material: Select material is defined as granular material to be used where indicated on the drawings or where specified herein consisting of soils conforming to the Unified Soil Classification types SW, SM, GW or GM or as otherwise approved by the Engineer as select fill. Select material shall contain no stones or rubble larger than 1-1/2" in diameter.
  9. Crushed stone (gravel): Crushed stone shall be No. 57 aggregate or equal conforming to ASTM C-33.
  10. Excavation: Excavation is defined as unclassified excavation of every description regardless of materials encountered.
- D. The Contractor must determine for himself the volume of material required by the site.

## 1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Comply with requirements of governmental agencies having jurisdiction.
- C. A testing laboratory retained by the Owner will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts of fill material and shall keep the laboratory informed of his progress. The cost of the initial tests shall be paid for by the Owner. Subsequent tests required as a result of improper compaction shall be paid for by the Contractor.

## 1.3 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

## 1.4 JOB CONDITIONS

- A. Notification of intent to excavate:
  1. South Carolina Underground Utility Damage Prevention Act (S.C. Code Ann, 58-35-10, CT-SEQ, Supp. 1978) requires persons to ascertain the location of underground public utility property prior to excavation or demolition in certain situations. The Act also requires such persons to give timely notice of intent to excavate or demolish prior to commencing such operations. Failure to comply could subject the violator to a civil penalty of up to one thousand dollars (\$1,000) for each violation of the Act.
  2. Notification of intent to excavate may be given by calling this toll free number: 1-800-922-0983.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. Soil material used as fill, backfill, subgrade for structures or pavements, embankments, or site grading shall consist of suitable material as found available on site until such supply of on-site material is depleted.
  - 1. Provide suitable material free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than 15% of the rocks or lumps larger than 2-1/2" in their greatest dimension.
  - 2. Do not permit rocks having a dimension greater than 1" in the upper 6" of fill or embankment.
- B. Should the quantity of suitable on-site material be insufficient to complete the work, suitable borrow material as approved by the Engineer shall be provided by the Contractor at no additional expense to the Owner.
- C. Select materials may be provided from on-site if acceptable material as approved by the Engineer is available on site. Otherwise approved select material shall be provided by the Contractor from an off-site source.

### 2.2 TOPSOIL

- A. Use topsoil consisting of material removed from the top 3" to 6" of existing on-site soils or from off site.
  - 1. Maximum clay content of 25%.
- B. Use topsoil containing no stones, roots, large clods of soil or other foreign matter.
- C. Stockpile topsoil separate from other excavated material.

### 2.3 WEED KILLER

- A. Provide a dry, free-flowing, dust free chemical compound, soluble in water, capable of inhibiting growth of vegetation and approved for use on this work by governmental agencies having jurisdiction.

### 2.4 EQUIPMENT

- A. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner without undue waste or damage of material.

## PART 3 - EXECUTION

### 3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

### 3.2 PREPARATION

- A. Clearing and grubbing: Clear and grub areas to be graded prior to commencement of the grading operations.

- B. Where so directed by the Owner, protect and leave standing designated desirable trees.
- C. Complete any demolition and/or removal work as may be required prior to grading operations.
- D. Dispose of all clearing, grubbing and demolition debris and other deleterious material off the project site. Vegetation, roots, brush, rubbish, stumps, etc. may be burned on-site where permitted by local authorities and regulations and approved by the Engineer.
- E. No conservation or furnishing of topsoil will be required.
- F. Sampling and preliminary testing:
  - 1. Prior to beginning the grading operations, the Contractor shall submit to the Engineer his proposed sequence of excavation operations.
  - 2. Based upon the sequence of excavation, samples of the fill materials will be obtained as excavation proceeds and tested for grain size permeability and moisture density relationship using the Standard Proctor Method (ASTM D698, Method A).
  - 3. Allow sufficient time for completion of laboratory tests before any fill operations begin, using the soils being tested.

### 3.3 FINISH ELEVATIONS AND LINES

- A. Construct areas outside of building or structure lines true to grades shown.
  - 1. Where no grade is indicated, shape finish surface to drain away from buildings or structures, as approved by the Engineer.
- B. Degree of finish shall be that ordinarily obtainable from bladegrader, supplemented with hand raking and finishing.
- C. Finish surfaces to within 0.10' above or below the established grade or approved cross section.

### 3.4 GENERAL PROCEDURES

- A. Existing utilities:
  - 1. Unless shown to be removed, locate and protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
  - 2. If active utility lines are encountered and are not shown on the drawings or otherwise made known to the Contractor, promptly notify the Engineer and take necessary steps to assure that service is not interrupted.
  - 3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
  - 4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.
  - 5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

- B. Protection of persons and property:
  - 1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.
  - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
  - 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.
- C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- D. Maintain access to adjacent areas at all times.
- E. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

### 3.5 EXCAVATING (CUTS)

- A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades and elevations indicated and specified herein.
- B. Provide sloping, sheeting, shoring, and bracing for excavations conforming with 29CFR1926 Subpart P-Excavations and the Contract Documents.
- C. Suitable excavated materials:
  - 1. Use all suitable materials removed from the excavation as far as practicable in the formation of the embankments, subgrades, shoulders, building sites and other places as directed.
  - 2. Unless otherwise indicated on the drawings or approved by the Engineer, surplus suitable material shall be removed from the site and disposed of by the Contractor.
- D. Unsuitable excavated material: Remove from the site and dispose of all unsuitable material unless otherwise approved by the Engineer.
- E. Rock excavation:
  - 1. Notify the Engineer upon encountering rock or similar material which cannot be removed or excavated by conventional earth moving or ripping equipment.
  - 2. Do not use explosives without written permission from the Engineer.
  - 3. When explosives are permitted, use only experienced powdermen or persons who are licensed or otherwise authorized to use explosives. Store, handle and use explosives in strict accordance with all regulatory bodies and the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc.
  - 4. The Contractor shall be solely responsible for any damage resulting from the use of explosives.
  - 5. The Contractor is responsible for securing all permits required in performing this work.
- F. Unauthorized excavation:
  - 1. Excavation of material to depths below the grades indicated unless so directed by the Engineer will be deemed unauthorized excavation.

2. Unauthorized overexcavation shall be backfilled and compacted without any additional expense to the Owner.
- G. Authorized overexcavation:
1. In the event that it is necessary to remove unsuitable material to a depth greater than that shown on the drawings or otherwise specified, the Contractor shall remove, replace and compact such material with suitable material as directed by the Engineer at no additional expense by the Owner.

### 3.6 FILLING AND BACKFILLING

- A. Use fills formed of suitable material placed in layers of not more than 8" in depth measured loose and rolled and/or vibrated with suitable equipment until compacted.
- B. Do not place rock that will not pass through a 6" diameter ring within the top 12" of the surface of the completed fill or rock that will not pass through a 3" diameter ring within the top 6" of the completed fill.
- C. Do not use broken concrete or asphaltic pavement in fills.
- D. Selection of borrow material:
1. Material in excess of that available on the site shall be suitable material furnished by the Contractor from private sources selected by the Contractor. The material shall be approved by the Engineer before use. All expenses involved in securing, developing, transporting and placing the material shall be borne by the Contractor.
  2. Provide delivery tickets with each load of imported borrow material delivered to the site, stating the type of fill material and the quantity.
    - a. Provide at the time of delivery.
    - b. No payment will be made for imported borrow material for which delivery tickets were not submitted to the Owner or the Owner's Representative at time of delivery.
- E. Placing and compacting:
1. Place backfill and fill materials in layers not more than 8" in loose depth with a moisture condition of  $\pm 2\%$  of optimum.
  2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
    - a. At the time of compaction, the water content of the material must be at optimum water content or within 2% above optimum.
    - b. Aerate material containing excessive moisture by blading, discing, or harrowing to hasten the drying process.
  3. Compact each layer to required percentage of maximum density for the area.
  4. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  5. Place backfill and fill materials evenly adjacent to structures, to required elevations.
  6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structures to approximately the same elevation in each lift.

F. Moisture control:

1. Do not use soil material that is either too dry or too wet to achieve proper compaction.
2. Where subgrade or layer of soil material is too dry to achieve proper compaction, uniformly apply water to surface of soil material such that free water does not appear on the surface during or subsequent to compacting operations.
3. Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
4. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the Engineer.

G. Compaction requirements:

1. Compact soils to not less than the following percentages of maximum dry density as determined in accordance with ASTM D698, Method A (Standard Proctor).
2. Fill beneath structures and beneath an area extending 10' beyond the limits of the foundation:

Top 12" of subgrade	100%
All other fill material	98%

3. Fill beneath roadway:

Top 12" of subgrade	100%
All other fill material	95%

4. Embankments:

Top 12" of subgrade	98%
All other fill material	95%

5. Fill beneath walkways:

Top 12" of subgrade	95%
All other fill material	90%

6. Lawn and unpaved open areas:

All other fill material	90%
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3.7 FINISH GRADING

A. General:

1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
2. Smooth the finished surfaces within specified tolerance.
3. Grade with uniform levels or slopes between points where elevations are shown on the drawings, or between such points and existing grades.
4. Where a change of slope is indicated on the drawings, construct a rolled transition section having a minimum radius of approximately 8'0", unless adjacent construction will not permit such a transition, or if such a transition defeats positive control of drainage.

B. Grading adjacent to structures: Grade areas adjacent to buildings to achieve drainage away from the structures and to prevent ponding.

C. Ditches and gutters and swales:

1. Cut accurately to the cross sections, grades and elevations shown.
2. Maintain excavations free from detrimental quantities of leaves, sticks, trash and other debris until completion of the work.



3. Dispose of excavated materials as specified herein; do not in any case deposit materials within 3'0" of the edge of a ditch.

### 3.8 FIELD QUALITY CONTROL

- A. Secure the Engineer's construction review and observation and approval of subgrades and fill layers before subsequent construction is permitted thereon.
- B. Field density determinations will be made, at no cost to the Contractor, to ensure that the specified densities are being obtained. Field density tests will be performed as determined by the Engineer, considering the following:
  1. At areas to receive paving, at least one field density test for every 5,000 sq. ft. of subgrade area, but not less than three tests.
  2. In each compacted fill layer, one field density test for every 5,000 sq. ft. of overlying paved area, but not less than three tests.
  3. In fill beneath structures, one field density test for every 2,500 sq. ft. in each layer.
  4. Other tests as deemed necessary by the Engineer.
- C. If, in the Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing until specified requirements are met.
  1. Additional testing will be provided by the Owner's selected testing laboratory and all costs for the additional testing will be borne by the Contractor.
- D. Proofrolling:
  1. The Contractor shall proofroll subgrade of areas to receive paving, structures on fill or impervious lining material.
    - a. Make not less than 3 passes of a 25 to 50 ton rubber tired roller over the full area.
    - b. Unstable, soft or otherwise unsuitable materials revealed by the proofrolling shall be removed and replaced with satisfactory materials, compacted as specified herein.

### 3.9 PLACING TOPSOIL

- A. Upon completion of site grading and other related site work, topsoil shall be uniformly spread over the graded or improved areas. Topsoil shall be evenly distributed to conform to final grade elevations shown on the plans.
- B. Place, level and lightly compact topsoil to a depth of not less than 3".
- C. Maintain topsoil free of roots, rocks, debris, clods of soil and any other objectionable material which might hinder subsequent grassing or mowing operations.
- D. Any surplus materials shall be disposed of in approved areas on the site.

### 3.10 MAINTENANCE

- A. Protection of newly graded areas:
  1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.

2. Repair and re-establish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

### 3.11 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

## SECTION 02221

### TRENCHING, BACKFILLING FOR UTILITIES

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work included: Trench, backfill, and compact as specified herein and as needed for installation of underground utilities associated with the Work.
- B. Related work:
  - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
  - 2. Section 02661 - Water Service Connections.

##### 1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

##### 1.3 JOB CONDITIONS

- A. Existing utilities:
  - 1. There now exists in the construction areas, waterworks, storm drainage, sanitary sewers, street paving, gas mains and other utilities.
  - 2. Approximate location of certain underground lines and structures are shown on the plans for information only, other underground lines or structures are not shown.
  - 3. Locate these and other possible unknown utility lines using electronic pipe finder, or other approved means.
  - 4. Locate, excavate and expose all existing underground lines in advance of trenching operations.
  - 5. The Contractor will be held responsible for the workmanlike repair of any damage done to any of these utilities in the execution of his work under this Section.
  - 6. The Contractor shall familiarize himself with the existing conditions and be prepared to adequately care for and safeguard himself and the Owner from damage.
- B. Notification of intent to excavate:
  - 1. South Carolina Underground Utility Damage Prevention Act (S.C. Code Ann, 58-35-10, CT-SEQ, Supp. 1978) requires persons to ascertain the location of underground public utility property prior to excavation or demolition in certain situations. The Act also requires such persons to give timely notice of intent to excavate or demolish prior to commencing such operations. Failure to comply could subject the violator to a civil penalty of up to one thousand dollars (\$1,000) for each violation of the Act.

2. Notification of intent to excavate may be given by calling this toll free number: 1-888-721-7877.
- C. Clearing:
1. Perform all clearing necessary for installation of the complete work.
  2. Clearing shall consist of removing all trees, stumps, roots, brush and debris in the rights-of-way obtained for the Work.
  3. All timber of merchantable size shall remain the property of the Owner and shall be trimmed and cut in such lengths as directed and stacked along the edge of the right-of-way.
  4. All other material, including trimmings from above, shall be completely disposed of in a satisfactory manner.

## PART 2 - PRODUCTS

### 2.1 EXCAVATED MATERIALS

- A. Perform all excavation of every description and of whatever substances encountered to depths indicated or specified.
- B. Pile material suitable for backfilling in an orderly manner at safe distance from banks or trenches to avoid overloading and to prevent slides or cave-ins.
- C. Remove and deposit unsuitable or excess materials as directed by the Engineer.

### 2.2 BACKFILL MATERIALS

- A. Provide from materials excavated for installation of utility.
  1. Select soil material free from organic matter and deleterious substances, containing no rocks or lumps over 2" in greatest dimension for backfill up to 12" above top of utility being covered.
  2. Do not permit rocks larger than 2" in greatest dimension in top 6" of backfill.

### 2.3 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.
- B. Should the quantity of suitable on-site material be insufficient to complete the work, provide suitable borrow material as approved by the Engineer at no additional expense to the Owner.
- C. Provide select materials from on-site if acceptable material as approved by the Engineer is available on-site. Otherwise, provide approved select material from an off-site source.

## PART 3 - EXECUTION

### 3.1 PROCEDURES

#### A. Existing utilities:

1. Unless shown to be removed, protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to trenching. If damaged, repair or replace at no additional cost to the Owner.
2. If active utility lines are encountered and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

#### B. Protection of persons and property:

1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.

#### C. Dewatering:

1. Remove all surface and subsurface waters from excavations and maintain the excavation in a dry condition during construction operations.
2. Maintain the ground water level a minimum of 3-feet below the trench bottom during excavation, installation and backfilling.
  - a. Material disturbed below the invert elevation due to improper dewatering shall be removed and replaced with crushed stone or lean concrete at no expense to the Owner.
  - b. Use sumps, pumps, drains, trenching, wells, vacuum or well point system as necessary to maintain the ground water level a minimum of 3-feet below the trench bottom and maintain a dry excavation.
  - c. Dewatering by trench pumping will not be permitted if migration of fine grained natural material (running sand) from bottom, side walls or bedding material will occur.
  - d. Provide monitoring wells sufficient in size, location, number and depth to monitor the ground water level in the construction area during excavation and backfill operations.
  - e. Maintain dewatering operations until backfilling and compaction operations are complete.
3. Water pumped or drained from trenches must be treated by an appropriately sized sediment and erosion control device prior to leaving the site. Discharging untreated or contaminated dewatering effluent is prohibited.
  - a. Contractor is responsible for acquiring all permits required to discharge the water and shall protect waterways from turbidity during the operation.

- b. Prevent flooding of streets, roadways, or private property.
  - c. Prevent onsite erosion that can be caused by concentrated discharges related to dewatering pumping, drains, or trenching.
  - d. Provide engines driving dewatering pumps with residential type mufflers.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- E. Maintain access to adjacent areas at all times.

### 3.2 TRENCH EXCAVATION (Unclassified)

- A. Provide sloping, sheeting, shoring, and bracing for excavations conforming with 29CFR1926 Subpart P-Excavations and the Contract Documents.
- B. Remove all materials of whatever substance encountered.
- C. Open cut:
- 1. Excavate for utilities by open cut.
  - 2. If conditions at the site prevent such open cut, and if approved by the Engineer, tunneling may be used.
  - 3. Short sections of a trench may be tunneled if, in the opinion of the Engineer, the conductor can be installed safely and backfill can be compacted properly into such tunnel.
  - 4. Remove boulders and other interfering objects, and backfill voids left by such removals, at no additional cost to the Owner.
  - 5. Remove wet or otherwise unstable soil incapable of properly supporting the utility, as determined by the Engineer, to depth required and backfill to proper grade with stone bedding material, at no additional cost to the Owner.
  - 6. Excavating for appurtenances:
    - a. Excavate for manholes and similar structures to a distance sufficient to leave at least 12" clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks.
    - b. Overdepth excavation beyond such appurtenances that has not been directed will be considered unauthorized. Fill with sand, gravel, or lean concrete as directed by the Engineer, and at no additional cost to the Owner.
- D. Trench to the minimum width necessary for proper installation of the utility, with sides as nearly vertical as possible. Accurately grade the bottom to provide uniform bearing for the utility.
- E. Provide sheeting and shoring necessary for protection of the Work and for the safety of personnel.
- 1. Remove in units when level of backfilling has reached the elevation necessary to protect the utility work and adjacent property.
  - 2. Sheeting at the bottom of trenches over 10' deep for sewers 15" and larger in size, shall remain in place and be cut off no less than 2" above top of pipe, at no additional cost to the Owner.
- F. Depressions:
- 1. Dig bell holes and depressions for joints after the trench has been graded. Provide uniform bearing for the pipe on prepared bottom of the trench.

2. Except where rock is encountered, do not excavate below the depth indicated or specified.
  3. Where rock is encountered, excavate rock to a minimum overdepth of 4" below the trench depth indicated or specified, and to provide 6" clearance in any horizontal direction from all parts of the utility and appurtenances.
- G. Special requirements relating to excavation for specific types of utilities shall comply with the following:
1. Water distribution lines:
    - a. Provide depth of cover shown or minimum cover of 36", whichever is greater.
    - b. Where minimum cover only is required, carry excavations to depths necessary to properly grade the pipe on tangents and vertical curves as directed by the Engineer.
    - c. Provide minimum clearance of 6" between pipe walls and trench walls or sheeting and bracing lines.
    - d. If minimum cover of 36" cannot be provided, then thermoplastic piping may not be used. Use ductile iron piping or other Engineer-approved material.
  2. Sanitary or storm sewer lines:
    - a. Comply with requirements of Section 02722 and Section 02721.
    - b. Do not excavate trench more than 200' ahead of pipe laying, unless permitted by Engineer.
    - c. Maintain trench sides vertical to point not less than 2' above top of pipe.
    - d. Upper portion of trench may be sloped to any width which will not cause damage to adjoining structures, utilities, pavements or private property.
  3. Electrical conduit:
    - a. Provide depth of cover shown or minimum cover of 36", whichever is greater.
    - b. Where minimum cover only is required, carry excavations to depths necessary to properly grade the conduit on tangents and vertical curves as directed by the Engineer.
    - c. Provide minimum clearance of 12" between conduit and trench wall or sheeting and bracing lines.
    - d. If minimum cover of 36" cannot be provided, then thermoplastic piping may not be used. Use ductile iron piping or other Engineer-approved material.
- H. Comply with pertinent OSHA regulations in regards to the excavation of utilities.

### 3.3 BACKFILLING

A. General:

1. Backfill trenches and excavations immediately after the pipes are laid, unless other protection is directed or indicated.
2. Select and deposit backfill materials with special reference to the future safety of the pipes.
3. Reopen trenches which have been improperly backfilled, to a depth as required for proper compaction. Refill and compact as specified, or otherwise correct to the approval of the Engineer.
4. Surplus material shall be disposed of as directed by the Engineer.
5. Original surface shall be restored to the approval of the Engineer.
6. Maintain proper dewatering during backfill and compaction operations.

- B. Lower portion of trench:
  - 1. Deposit approved backfill and bedding material in layers of 6" maximum thickness, and compact with suitable tampers to the density of the adjacent soil until there is a cover of not less than 24" over sewers and 12" over other utility lines.
  - 2. Take special care in backfilling and bedding operations not to damage pipe and pipe coatings.
- C. Remainder of trench:
  - 1. Except for special materials for pavements, backfill the remainder of the trench with material free from stones larger than 6" or 1/2 the layered thickness, whichever is smaller, in any dimension.
  - 2. Deposit backfill material in layers not exceeding the thickness specified, and compact each layer to the minimum density directed by the soil engineer.
- D. Adjacent to buildings: Mechanically compact backfill in 6" layers within ten (10') feet of buildings.
- E. Under roads, streets and other paved areas:
  - 1. Mechanically tamp in 6" layers using heavy duty pneumatic tampers or equal.
  - 2. Tamp each layer to a density equivalent of not less than 100% of an ASTM D 698 Proctor Curve.
  - 3. Provide additional compaction by leaving the backfilled trench open to traffic while maintaining the surface with crushed stone.
  - 4. Refill any settlement with crushed stone and continue such maintenance until replacement of pavement is authorized by the Engineer.
- F. Undeveloped areas:
  - 1. Backfill in wooded, swampy or undeveloped areas shall be as specified hereinbefore, except that tamping of the backfill above a level 2' over the top of the pipe will not be required.
  - 2. Mound excavated material neatly over the ditch to provide for future settlements.

### 3.4 MEASUREMENT AND PAYMENT

- A. Unclassified excavation for trenching:
  - 1. No measurement or direct payment will be made for the Work under this Section and all costs for same shall be included in the price bid for the utility line to which it pertains.

END OF SECTION



## SECTION 02260

### EROSION AND SEDIMENT CONTROL

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work included: Provide protection of the environment during the construction of this project to reduce soil erosion and siltation to the lowest reasonably achievable level.

##### 1.2 GENERAL

- A. Exercise every reasonable precaution, throughout the life of the project, to prevent the eroding of soil and the silting of rivers, streams, lakes, reservoirs, other water impoundments, ground or roadway surfaces, or other property. Erosion control practices to be used for this project are shown on the drawings and are to conform to South Carolina Department of Health and Environmental Control regulations.

##### 1.3 INSPECTIONS

- A. Inspection and monthly reporting to SCDHEC will be required in the NPDES General Permit for Storm Water Discharges From Large and Small Construction Activities SCR100000 (2006 CGP).
  - 1. Inspections must be performed by qualified personnel who meet the requirements listed in Section 3.10.D of the 2006 CGP.

#### PART 2 - PRODUCTS

##### 2.1 CRUSHED STONE

- A. Provide No. 1 aggregate (ASTM C 33) as defined in Section 815 of the SCDOT Standard Specifications for Highway Construction, Latest Edition, for the stabilized construction entrance and exit.
- B. Provide #57 crushed stone for temporary sediment barriers around inlets and for temporary stone check dams.

##### 2.2 GRASSING

- A. Comply with Section 02930 - Grassing.

##### 2.3 SILT FENCE

- A. All posts to be self-fastener angle steel, 5' in length.
  - 1. Wooden posts are not acceptable.
- B. Woven wire shall conform to the requirements of ASTM A 116, Class I zinc coating for wire. Each woven square shall measure 6" x 6". The top and bottom wires shall be 10 gauge. All other wires shall be 12-1/2 gauge.
  - 1. Securely attach woven wire to posts with wire ties.

- C. Provide filter fabric meeting the requirements of the South Carolina Department of Health and Environmental Control (SCDHEC), complying with the most current edition of the SCDOT Standard Specifications for Highway Construction and appearing on the SCDOT Approved Materials Sheet #34.
  - 1. Limit splices in filter fabric using continuous rolls whenever possible.
  - 2. Whenever splices are necessary a minimum overlap of 6" is required and all splices must occur at a post so that the integrity of the fence is not compromised.
  - 3. Securely attach filter fabric to top of woven wire and at posts with wire ties.
- D. Silt fences should be continuous and transverse to the flow. The silt fence should follow the contours of the site as closely as possible. Place the fence such that the water cannot runoff around the end of the fence.

#### 2.4 EROSION CONTROL BLANKET

- A. Use erosion control blanket S150, from North American Green or approved equal.
  - 1. Use Biostakes where staples are required or indicated on the drawings for stabilization.
    - a. Staple in pattern recommended by blanket manufacturer.
  - 2. Staple locations must be clearly marked on the blanket when stakes are used.

#### 2.5 RIP-RAP

- A. Comply with Section 02270 - Rip-Rap.

#### 2.6 FILTER FABRIC (Temporary Stone Check Dam)

- A. Use Stabilenka Filter Fabric (T-140N), Mirafil (140N) or approved equal.

#### 2.7 SEDIMENT TUBES

- A. Use sediment tubes as designated on the plans to control erosion along contours, around inlets, and in drainage conveyance swales.
- B. Use sediment tubes manufactured by an experienced manufacturer producing tubes for erosion control.
- C. Tube fill is to be composed of 100% weed free materials consisting of a mix of some or all of the following: curled excelsior wood, natural coconut fibers, hardwood mulch and agricultural straw.
- D. Tubular netting is to be constructed of a flexible outer netting that will contain the fill materials and sediment. Netting is to be constructed from seamless high density polyethylene, polyester, and/or ethyl vinyl acetate, photodegradable materials, treated with ultraviolet stabilizers.
- E. Tubes are to be minimum 20-inches in diameter with minimum weight of 3.2 lbs per foot +/- 10%. Minimum tube length is 10-feet. Netting weight is to be 0.35 oz/foot minimum.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Construct and maintain all erosion control measures until the substantial completion of the project.

### 3.2 TEMPORARY CONSTRUCTION ENTRANCE/EXIT

- A. Construct a gravel area or pad at points where vehicles enter and leave a construction site.
- B. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade and place gravel to the grade and dimensions shown on the plans.
- C. Construct drainage channels to carry water to a sediment trap or other suitable outlet.
- D. Use geotextile fabrics to improve stability of the foundation in locations subject to seepage or high water table.
- E. Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site by periodic top dressing with two inches of stone.
- F. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary.
- G. Immediately remove objectionable materials spilled, washed, or tracked onto public roadways.

### 3.3 TEMPORARY GRASSING

- A. Provide a temporary cover for erosion control on disturbed areas that will remain unstabilized for a period of more than 30 days in accordance with Section 02930.
- B. This practice applies to cleared areas, diversions, dams, temporary sediment basins, temporary road banks, and topsoil stockpiles where vegetation is needed for less than 1 year.
- C. Provide grassing on slope 5% or greater within 14 days of disturbance. Comply with Section 02930.

### 3.4 SILT FENCE

- A. Provide silt fence barrier where shown on the plans and on utility construction parallel to the disturbed trench where perpendicular sheet flow runoff occurs on disturbed areas with slopes greater than 4%.
- B. Place at the extreme limits of the area to be disturbed as shown.
- C. Construct temporary sediment barriers of filter fabric, buried at the bottom, stretched and supported by posts and install below small disturbed areas as indicated on the drawings to retain sediment by reducing the flow velocity to allow sediment deposition.
- D. Space posts 10'-0" on center, maximum or as indicated on the drawings.

- E. Remove sediment deposits prior to reaching one-third height of the fence.
- F. Monitor site frequently and place additional silt fencing should evidence indicate that erosion is about to occur at locations other than those shown on plan.

### 3.5 INLET PROTECTION

- A. Construct temporary sediment barriers around storm drain curb inlets using block and gravel as indicated on the drawings.
- B. Construct metal frame barriers around grate and frame of drop inlets as indicated on the drawings.
- C. Inspect structure after each rainfall and repair as required.
- D. Remove sediment when trap reaches one-half capacity.
- E. Remove structure when protected areas have been stabilized.

### 3.6 EROSION CONTROL BLANKET

- A. Provide on areas as shown on the plans or on all embankments with slopes equal to or steeper than 2-1/2:1.

### 3.7 TEMPORARY STONE CHECK DAMS

- A. Utilize temporary stone check dams as indicated on the plans or directed by Engineer.
- B. Provide temporary stone check dams constructed of both rip-rap and #57 stone, as illustrated on the plans.

### 3.8 SEDIMENT TUBES

- A. Construct small U-shaped trench that is 20% of depth of tube perpendicular to stormwater flow pattern.
- B. Anchor tube in trench according to manufacturers recommendations.
- C. Compact the upstream soil surface adjacent to the tube.
- D. Backfill sediment tube with coarse filter material on the upstream side.
- E. Follow manufactures recommendation on installation.
- F. Maintain, repair and/or replace sediment tubes as required to maintain their effectiveness throughout the project

### 3.9 MAINTENANCE

- A. Place all erosion control devices or measures prior to any land disturbing activity within the drainage area they are located.
- B. Inspect erosion control devices and clean or otherwise remove silt buildup as necessary once a week or 24-hours following a rain event of  $\geq 0.1$ ".

### 3.10 REMOVAL

- A. Remove temporary structures after protected areas have been stabilized.

### 3.11 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the lump sum price bid for the project.

END OF SECTION

## SECTION 02661

### WATER SERVICE CONNECTIONS

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work included: Provide water service connections, including meters, meter boxes, and other appurtenances as shown on the drawings, specified herein, and needed for a complete and proper installation.
  - 1. Service connections include connection to the distribution main, service line between main and the meter, meter with box and service stops.
- B. Related work:
  - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
  - 2. Section 02221 - Trenching, Backfilling for Utilities.

##### 1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be 100% manufactured in the United States.

##### 1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
  - 1. Materials list of items proposed to be provided under this Section.
  - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

##### 1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

#### PART 2 - PRODUCTS

##### 2.1 SERVICE PIPE

- A. Use materials for the various sizes of services as follows:
- B. Services 1" in diameter and smaller:
  - 1. Provide Type K, soft copper complying with ASTM B88, Table 4; or

2. High molecular weight polyethylene pipe complying with ASTM D1248, Type III, and AWWA C-901 for flexible pipe with SDR 7, CTS.
  - a. Pipe shall be stamped with National Sanitation Foundation approval for use with potable water at 18" intervals.
  - b. When polyethylene pipe is used, provide a continuous #12 gauge blue insulated copper tracer wire, approved by the manufacturer for direct burial, in the trench and tape to the top of the pipe using 2" duct tape. Terminate the tracer wire in the meter box and arrange to allow for the connection of equipment for tracking pipe, yet not interfere with the operation of the curb stop, meter, etc. Use underground water proof connections on all splices and thoroughly wrap all connections in electrical tape.
    - 1) Test all tracer wire for conductivity in accordance with Part 3.

## 2.2 SERVICE SADDLE

- A. Provide of the following materials:

Body	Type 304 Stainless Steel
Sales and Strips	Type 304 Stainless Steel
Studs	Type 304 Stainless Steel
Hardware	Type 304 Stainless Steel

- B. Provide double-strap for sizes 5" and larger.
- C. Provide Romac 304 and 305 or approved equal.
- D. Connect to pipeline using a 6" stainless steel nipple.
  1. Do not use a threaded PVC connection.

## 2.3 BRASS MATERIALS

- A. Provide materials complying with AWWA Standard C800, unless otherwise indicated or specified.
- B. Corporation stops: Furnish with AWWA Standard Corp. Stop Thread on inlet side, with outlet connection suitable for use with the type service pipe being installed.
- C. Service stops: Provide water works ground key type, oval flow way, tee handle, without drain.
  1. Quarter turn between "open-close" positions, controlled by integral check lugs.
  2. Inlet connection to match service pipe, outlet end to match meter spud.
- D. Goosenecks: Form from Type K copper tubing complying with ASTM B88, to a minimum length of 18".

## 2.4 METER BOXES

- A. General:
  1. Provide cast iron boxes in traffic areas.
  2. Provide pre-cast concrete boxes where indicated on the plans and only in non-traffic areas.
  3. Minimum dimensions: 19-1/2" long by 10" wide by 13" deep.

- B. Cast iron boxes:
  - 1. Provide MS-19 Rome meter box and cover by Opelika Foundry/Bingham and Taylor or equal.
  - 2. Coat with two (2) shop coats of water based bitumastic paint.
- C. Concrete boxes:
  - 1. Furnish with minimum wall thickness of 1-1/2".
  - 2. Provide small opening in top lid for reading meter, closed with hinged, cast iron flap.

## 2.5 METERS

- A. Provide sizes as listed in the Bid Form.
- B. Provide meters of standard design, complying with AWWA C700, and the following:
  - 1. Furnish meters with nutating discs.
  - 2. Utilize split case design.
  - 3. Furnish coupling nuts and tail pieces for each meter.
- C. Provide registers hermetically sealed and recording in cubic feet.
- D. Nutating disc shall rotate a permanent magnet within a completely sealed chamber; an opposing magnet shall actuate the gear train and register.

## 2.6 OTHER MATERIALS

- A. Provide other materials related to water service installation as shown on the plans.
- B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Install service lines from the distribution main to the property lines at each lot, or at each location indicated or directed by the Engineer.
- B. Depth of the service connection shall be no less than the top of main connected to, and shall be at least 12" deep at the meter box.
- C. Install insulating couplings between ferrous and non-ferrous pipe, fittings, etc. of such shape to effectively prevent metal-to-metal contact between the dissimilar metals.

### 3.2 EXCAVATION AND BACKFILLING

- A. Comply with pertinent provisions of Section 02221, except as otherwise specified herein.
- B. Under paved areas install service lines by jetting, unless otherwise directed by the Engineer.



### 3.3 INSTALLATION - SERVICE LINES

- A. Install flexible service lines in one continuous piece from main to service stop.
- B. Connections to mains, 3" and smaller:
  - 1. Provide tees or tapped couplings in new mains.
  - 2. Use approved service saddle on existing mains.
  - 3. Provide corporation stop on mains.
- C. Connections to cast iron or ductile iron mains:
  - 1. Drill and tap pipe barrel and install corporation stop therein.
- D. Connections to PVC mains, 4" and larger:
  - 1. Provide factory tapped coupling sleeves in new mains, located within 3-1/2' of designated service location.
  - 2. Use approved service saddle on existing mains.
  - 3. Provide corporation stop at all connections.
- E. Terminate each service line with service stop and/or meter, as indicated.
- F. Install service lines and casings under payment by coring method in accordance with the SCDOT Policy for Accommodating Utilities on Highway Rights-of-Way.

### 3.4 INSTALLATION - METER BOXES AND METERS

- A. Install boxes level in both directions and with top flush with finished grades.
- B. Do not let weight of box rest on the service line.
- C. Make installation in such manner that meter may be removed at any time without disturbing box setting.

### 3.5 TRACER WIRE TESTING

- A. General:
  - 1. Utilize an approved magnetic locating device, M Scope or Equal.
  - 2. Connect a cable conductively from the transmitter to a metal ground rod and to the tracer wire.
  - 3. Locate the line following the instructions of the magnetic locating device.
  - 4. If interference is encountered from adjacent utilities or if the depth of bury or line length interferes with the signal, install a dummy valve box with access to the tracer wire at no additional cost to the owner.
  - 5. Where there is a break in the tracer wire, repair with 3M DBY or ILSCO #IK-8 repair kit and wrap with poly wrap for cathodic protection.
- B. Creek crossing and wetland areas:
  - 1. Send a prescribed frequency with a shore line base signal ejector between 25 and 1024 HZ down a metal medium and read by a receiver.
  - 2. Select a frequency based on the depth and the amount of linear feet of the line.
  - 3. If the tracer wire has a break, reinstall the cable and repeat the conductivity test at no additional cost to the owner.
- C. Notify in advance and conduct all testing in the presence of the Engineer.

### 3.6 FLUSHING

- A. Flush each service line thoroughly after installation to clear of sand, dirt, or other construction debris.
- B. When meters are to be installed, accomplish flushing prior to meter installation.

### 3.7 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the lump sum price bid for the project.
- B. Pavement cut and replaced for installation of service lines will not be measured and no separate payment will be made for this item.

END OF SECTION

## SECTION 02740

### SEPTIC TANKS

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work included: Provide precast concrete septic tanks as indicated, specified, and as necessary to provide a complete and proper installation ready for connection to house plumbing system.
- B. Related work:
  - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
  - 2. Section 02221 - Excavation and Backfilling for Utilities.

##### 1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Tank manufacturer shall be one who is regularly engaged in the production of precast concrete septic tanks.

##### 1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
  - 1. Materials list of items proposed to be provided under this Section.
  - 2. Manufacturer's specifications, shop drawings, and other data needed to prove compliance with the specified requirements.

##### 1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Use slings or other approved methods for handling tanks so as to ensure delivery to the installation site in sound, undamaged condition.

#### PART 2 - PRODUCTS

##### 2.1 SEPTIC TANKS

- A. Provide precast concrete tanks with capacity of 1000 gallons, constructed in compliance with all pertinent provisions of the South Carolina Department of Health and Environmental Control.
- B. Fit tanks with removable concrete lids.

C. Inlet and outlet tees may be cast in or grouted in place.

D. Provide 6" clean out port in top lid.

## 2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

## PART 3 - EXECUTION

### 3.1 LOCATION

A. Install tank at each house, commercial establishment, etc., as directed by the Engineer.

### 3.2 EXCAVATION AND BACKFILLING

A. Comply with pertinent provisions of Section 02221 of these Specifications.

### 3.3 PIPING CONNECTIONS

A. Make all connections water tight, sealing securely with portland cement mortar.

### 3.4 MEASUREMENT AND PAYMENT

A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the lump sum price bid for the project.

END OF SECTION

## SECTION 02930

### GRASSING

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work included: Provide grassing of the areas specified herein, or as indicated, for a complete and proper installation.
  - 1. All disturbed areas.
- B. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

##### 1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Seed: Conform to all State laws and to all requirements and regulations of the South Carolina Department of Agriculture.
  - 1. Deliver to site each variety of seed individually packaged and tagged to show name, net weight, origin and lot number.
- C. Fertilizer: Conform to State fertilizer law.

##### 1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
  - 1. Complete materials list of items proposed to be provided under this Section.

##### 1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. At time of delivery, furnish the Engineer invoices of all materials received in order that application rates may be determined.
- C. Immediately remove from the site materials that do not comply with the specified requirements, and promptly replace with materials meeting the specified requirements.

## PART 2 - PRODUCTS

### 2.1 FERTILIZER

- A. Provide commercial balanced 16-4-12 or 12-4-8 fertilizer delivered to the site in bags labeled with the manufacturer's guaranteed analysis.

### 2.2 GRASS SEED

- A. Provide grass seed that is:
  - 1. Free from noxious weed seeds, and recleaned.
  - 2. Grade A recent crop seed.
  - 3. Treated with appropriate fungicide at time of mixing.
  - 4. Delivered to the site in sealed containers with dealer's guaranteed analysis.

### 2.3 LIME

- A. Provide agricultural grade, standard ground limestone conforming to current "Rules, Regulations and Standards of the Fertilizer Board of Control" issued at Clemson University.
- B. Bag tags or delivery slip for bulk loads shall indicate brand or trade name, calcium carbonate equivalent, and other pertinent data to identify the lime.

### 2.4 WOOD CELLULOSE FIBER

- A. Provide wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer.
- B. Material to be heat processed so as to contain no germination or growth inhibiting factors.
- C. It shall be dyed (non-toxic) an appropriate color to facilitate metering.

### 2.5 STRAW MULCH

- A. Provide straw or hay material.
  - 1. Straw to be stalks of wheat, rye, barley or oats.
  - 2. Hay to be timothy, peavine, alfalfa, or coastal bermuda.
- B. Material to be reasonably dry and reasonably free from mature seed bearing stalks, roots, or bulblets or Johnson Grass, Nutgrass, Wild Onion and other noxious weeds.

### 2.6 EXCELSIOR FIBER MULCH

- A. To consist of 4" to 6", average length, wood fibers cut from sound, green timber.
- B. Make cut in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood.

### 2.7 EROSION CONTROL BLANKET

- A. Provide on areas as shown on the plans.

- B. Provide Erosion Control Blanket S150, from North American Green, or approved equal.

**PART 3 - EXECUTION**

**3.1 GENERAL**

- A. Seed these areas immediately upon completion of grading or construction and clean-up operations.
  - 1. Slopes greater than four horizontal to one vertical.
  - 2. Utility rights-of-way adjacent to stream banks.
- B. Areas ready for planting between August 16 and February 28 shall be planted with a temporary cover of Schedule No. 2. At the acceptable seasons for planting Schedule No. 1, the turf shall be destroyed by reworking the soil, and Schedule No. 1 seeding established as specified herein.
- C. Use Rate A lbs. per 1000 sq. ft. on slopes over 5' horizontal to 1' vertical in height and use Rate B lbs. per 1000 sq. ft. on slopes less than 5' horizontal to 1' vertical.

**3.2 SEEDING SCHEDULES**

- A. Mixtures of different types of seed for the various schedules shall be weighed and mixed in proper proportions in the presence of the Engineer.
- B. Schedule No. 1 - Planting dates March 1 to August 15:

<b>Common Name of Seed</b>	<b>Rate A</b>	<b>Rate B</b>
Rye Grain	1	1
Common Bermuda (hulled)	0	1.5
Sericea Lespedeza (clay soils)	1	0
Weeping Love Grass (sandy soils)	1	0
Centipede	0.5	0.5

- C. Schedule No. 2 - Planting dates August 16 - February 28:

<b>Common Name of Seed</b>	<b>Rate A</b>	<b>Rate B</b>
Rye Grain	0	1
Common Bermuda (hulled)	0	1.5
Brown Top Millet	5	0
Common Bermuda (unhulled)	0	2.0

**3.3 GROUND PREPARATION**

- A. Bring all areas to proper line, grade and cross section indicated on the plans.
- B. Repair erosion damage prior to commencing seeding operations.
- C. Loosen seed bed to minimum depth of 3".
- D. Remove all roots, clods, stones larger than 1" in any dimension, and other debris.

- E. Conduct soil test to determine pH factor.
  - 1. If pH is not in the range of 6.0 to 6.5, adjust.

### 3.4 APPLICATION OF FERTILIZER

- A. Spread uniformly over areas to be seeded at:
  - 1. Rate of 18 lbs. per 1000 sq. ft. when using 16-4-12.
  - 2. Rate of 25 lbs. per 1000 sq. ft. when using 12-4-8.
  - 3. Use approved mechanical spreaders.
- B. Mix with soil to depth of approximately 3".

### 3.5 SOWING METHODS

- A. General:
  - 1. Perform seeding during the periods and at the rates specified in the seeding schedules.
  - 2. Do not conduct seeding work when ground is frozen or excessively wet.
  - 3. Produce satisfactory stand of grass regardless of period of the year the Work is performed.
- B. Seeding, slopes less than four horizontal to one vertical:
  - 1. Shall conform to Methods EA, WF or WCF as specified hereinafter.
  - 2. Method EA (Emulsified Asphalt):
    - a. Sow seed not more than 24 hours after application of fertilizer.
    - b. Use mechanical seed drills on accessible areas, rotary hand seeders, power sprayers, etc. may be used on steep slopes or areas not accessible to seed drills.
    - c. Cover seed and lightly compact with cultipacker if seed drill does not.
    - d. Within 24 hours following compaction of seeded areas, uniformly apply 0.2 gallons per square yard of emulsified asphalt over the seeded area.
  - 3. Method WF:
    - a. Sow seed as specified for Method EA.
    - b. Within 24 hours following covering of seeds, uniformly apply excelsior fiber at the rate of 100 lbs. per 1000 sq. ft.
    - c. Apply material hydraulically.
    - d. Seeded areas to be lightly rolled to form a tight mat of the excelsior fibers.
  - 4. Method WCF:
    - a. Apply seed, fertilizer and wood fiber mulch using hydraulic equipment.
    - b. Equipment to have built-in agitation system with capacity to agitate, suspend and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed and water.
    - c. Minimum capacity of slurry tank: 1000 gallons.
    - d. Apply fiber mulch at rate of 35 lbs. per 1000 sq. ft.
    - e. Regulate slurry mixture so that amounts and rates of application will result in uniform application of all materials at not less than the specified amounts.
    - f. Apply slurry in a sweeping motion, in an arched stream, so as to fall like rain, allowing the wood fibers to build upon each other.
    - g. Use color of wood pulp as guide, spraying the prepared seed bed until a uniform visible coat is obtained.



C. Seeding, slopes greater than four horizontal to one vertical:

1. Sow seed as specified for Method EA, unmulched.
2. Cover seeded area with erosion control blanket.

### 3.6 SECOND APPLICATION OF FERTILIZER

- A. When plants are established and showing satisfactory growth, apply nitrogen at the rate of 1.0 lb. per 1000 sq. ft.
- B. Apply in dry form unless otherwise directed by the Engineer.
- C. Do not apply to stands of temporary grasses.

### 3.7 MAINTENANCE

- A. Maintain all seeded areas in satisfactory condition until final acceptance of the Work.
- B. Areas not showing satisfactory evidence of germination within six weeks of the seeding date shall be immediately reseeded, fertilized and/or mulched.
- C. Repair any eroded areas.
- D. Mow as necessary to maintain healthy growth rate until final acceptance of the Work.

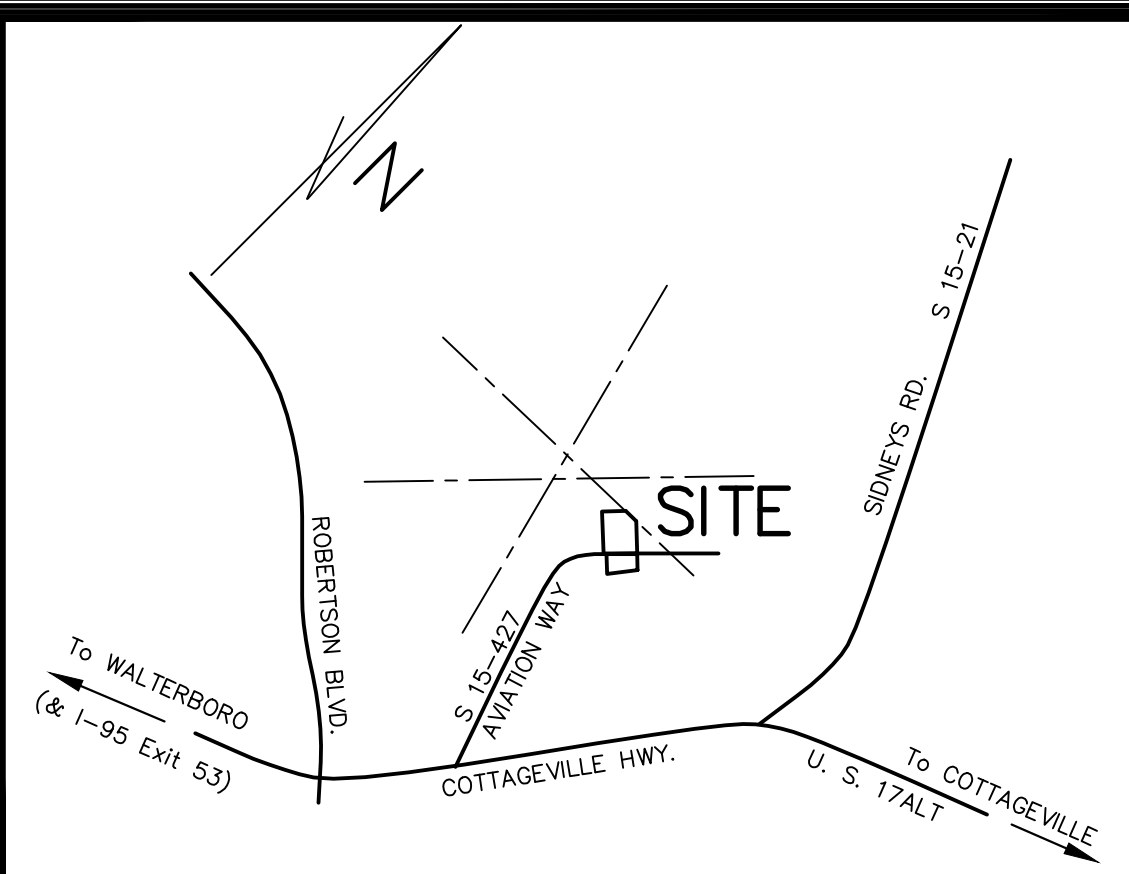
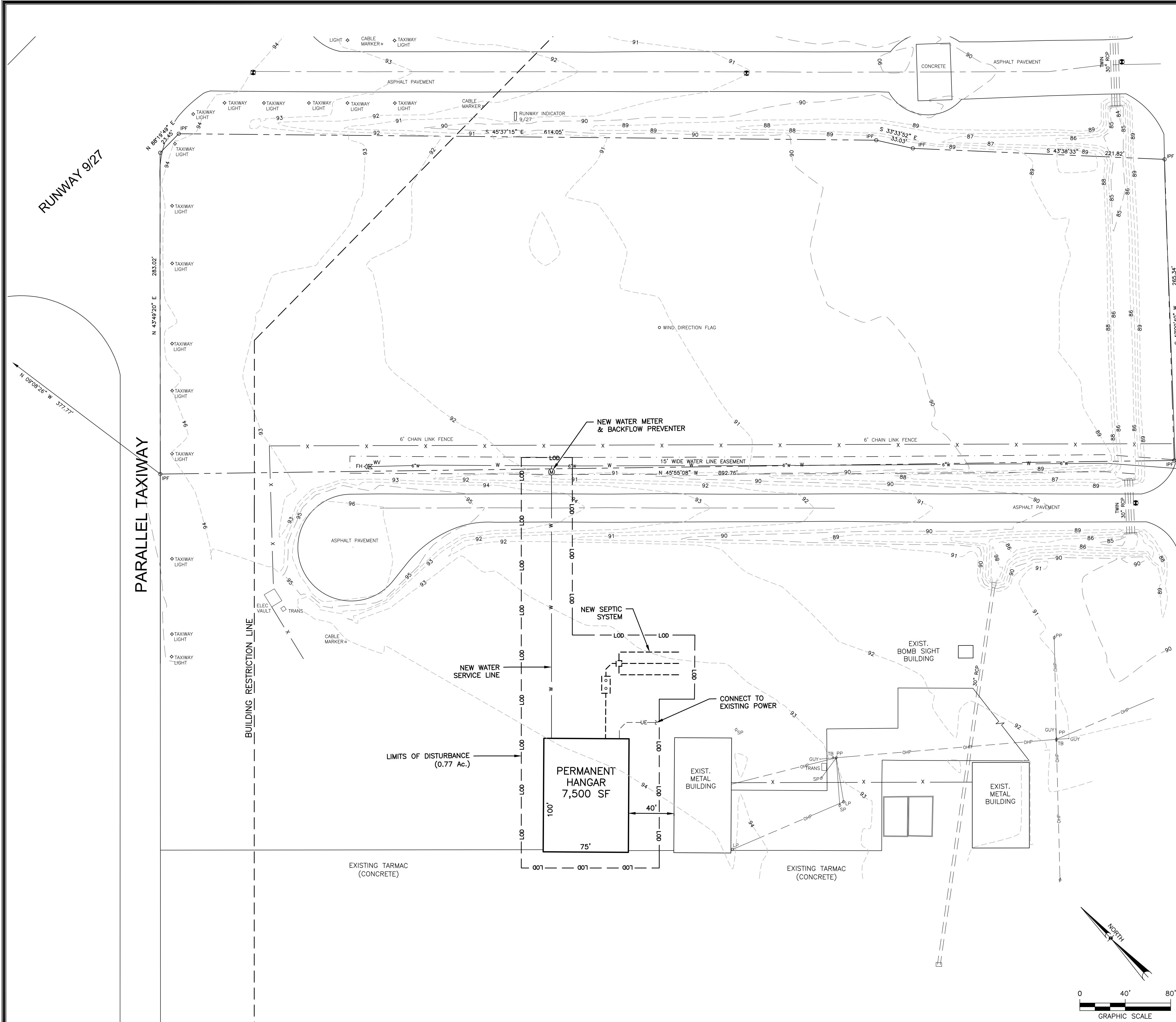
### 3.8 ACCEPTANCE

- A. Permanently seeded areas (Schedule No. 1) will be accepted when the grass attains a height of 2".
- B. No acceptance will be made of temporary seeded areas (Schedule No. 2). Rework and seed with Schedule No. 1.

### 3.9 MEASUREMENT AND PAYMENT

- A. No measurement and payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION



VICINITY MAP  
SCALE: 1" = 2000'

REVISIONS		
NO.	DESCRIPTION	DATE BY

APPROVALS		
PROJECT ENG:	DESIGNED BY:	DRAWN BY:
CCS	CCV	CCV

DATE	SIGNATURE

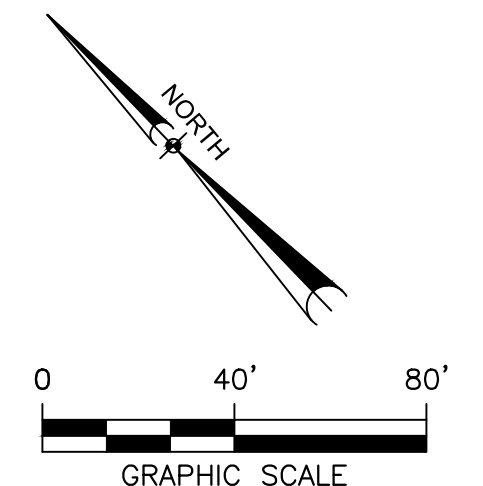
DATE	SIGNATURE

**AECOM**  
101 Research Drive  
Columbia, South Carolina 29203  
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SHEET TITLE  
**SITE PLAN**  
DATE: NOV. 11, 2015 SCALE:

PROJECT 'C'  
**PERMANENT HANGER  
SITE IMPROVEMENTS**  
FOR  
LOWCOUNTRY REGIONAL AIRPORT  
WALTERBORO-COLETON COUNTY SOUTH CAROLINA

**OWNER:** WALTERBORO COLLETON COUNTY AIRPORT COMPANY - TMS 132-00-00-028  
**SITE LOCATION:** LOWCOUNTRY REGIONAL AIRPORT, 537 AVIATION WAY, WALTERBORO, SC  
**WATER & WASTEWATER PROVIDER:** CITY OF WALTERBORO WAYNE CROSBY 242 HAMPTON ST, WALTERBORO, SC 29488 (843) 782-1066  
**SURVEYOR:** FOWLER LAND SURVEYING 769-B NORTH JEFFERIES BLVD. WALTERBORO, SC 29488 (843) 549-2854

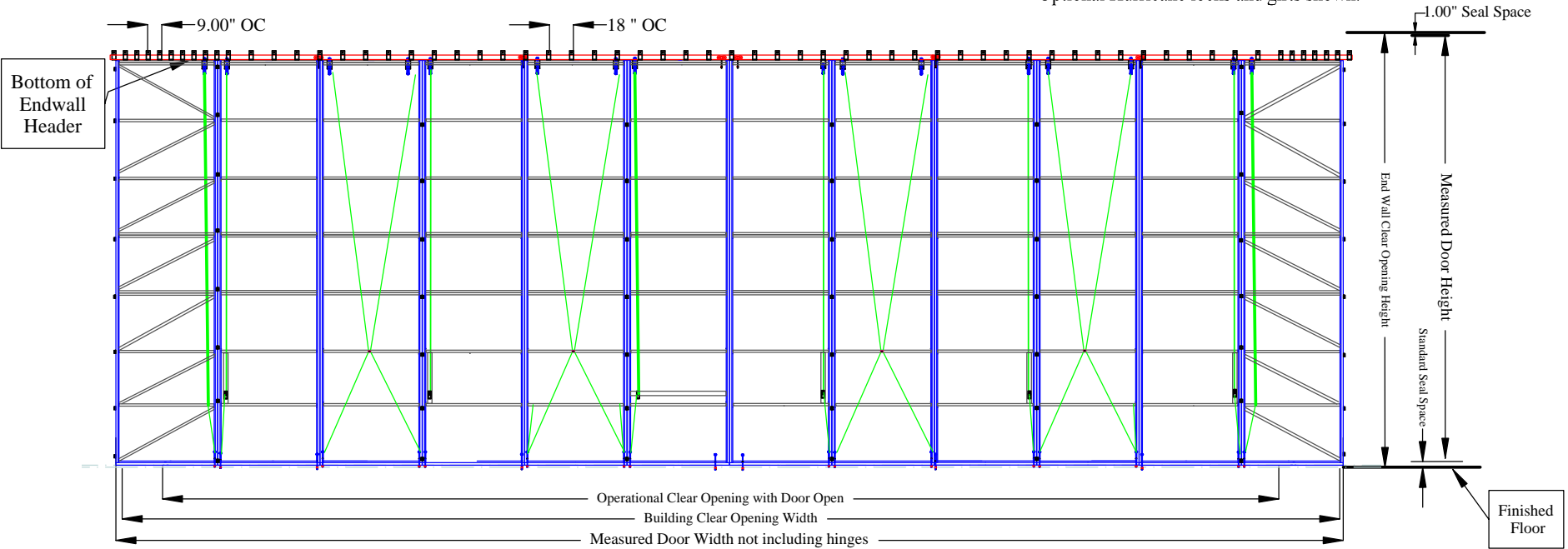


3 DAYS BEFORE DIGGING IN SOUTH CAROLINA  
**South Carolina 811**  
CALL 811 Before You Dig  
PALMETTO UTILITY PROTECTION SERVICE, INC. (PUPS)  
ALL UTILITIES MAY NOT BE A MEMBER OF PUPS. COORDINATE WITH LOCAL UTILITY COMPANIES FOR MARKING OF THEIR UTILITIES ALSO.

.DWG NAME	SHEET
	C1
N.B. NO.	OF
	1
PROJECT NO. 60433388	
FILE NO.	

Not To Scale

Check Actual System for Panel and Girt Quantity Print Shows  
12 Panel w / 7 Girts including Top Rail  
Plus Bottom Rail  
Optional Hurricane locks and girts shown.



Feet	Inches	Specifications for Print Dimensions		
65	0	Building Framed Opening Width	Door Series	CSA-5.0 Plus
17	0	Framed Opening Height	Total Panels	12
5	4.731	Outboard Hinged Panel	Panel Qty	2
5	4.731	Standard Sliding Panel Width	Panel Qty	8
5	8.731	Center Panels	Panel Qty	2
5	2.58	Fold Tite Stack Dimension		
65	5.272	Measured Door Width with 2.75" Lap and 1/2" between center panels		
65	11.072	Overall Width required for door operation		
60	8.49	Operational Clear Opening with Door Open ( overall width minus stack)		
	1.5	Seal Space Under Door		
	6	Space required for Door Installation on Front face of Header		
16	9.51	Measured Door Height		
16	7.5	Sheeting Height (For Covering Supplied By Others) Confirm at Site		
16	7.5	Actual Length of Vertical as shipped		
2	9.04	Horizontal Girt Spacing (Top to Top of Girt)	Girt Qty	6

Rollers for recessed guide supplied, channel in concrete required

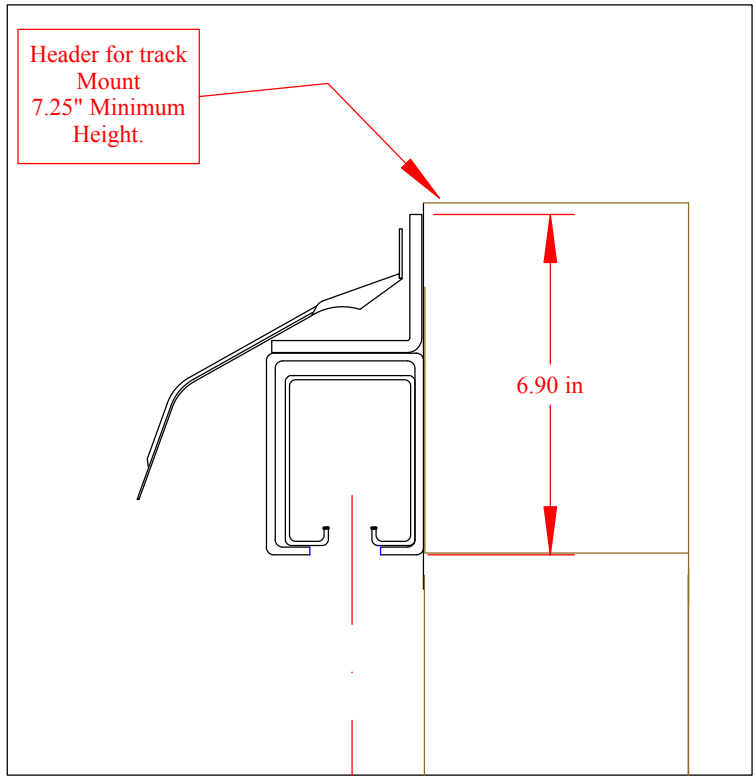
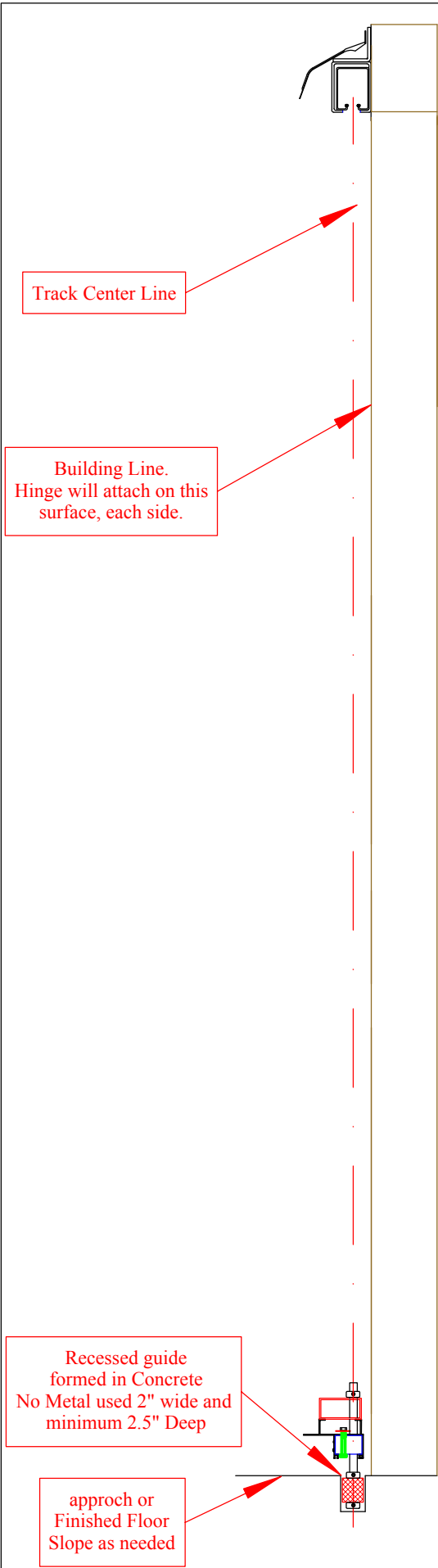
Approved as Is

Date \_\_\_\_\_

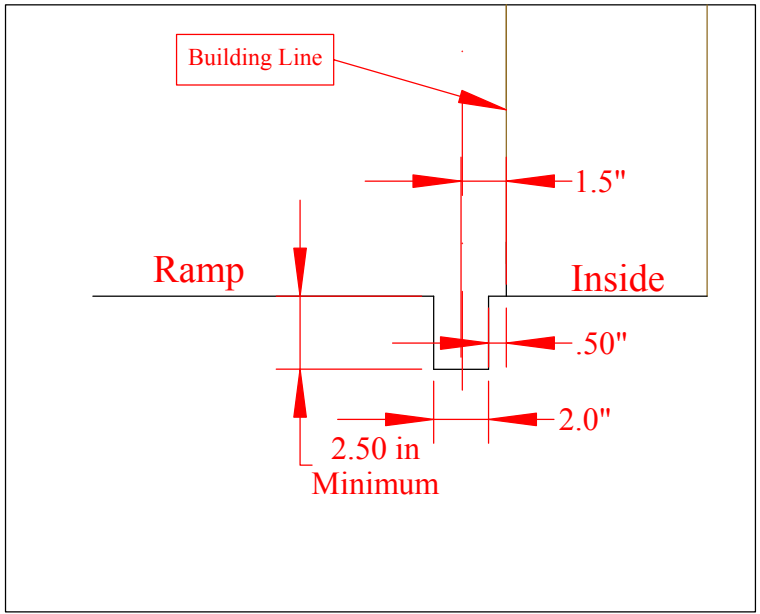
Approved with Changes Noted:

Date: \_\_\_\_\_

<b>Cool-Air, Inc</b>	Fold-Tite Stacker System
Actual System 12 Panel 6 Girt	10/2/2015
Plus Bottom Rail	
Door System CSA-5.0 Plus	SMB_FT6617Q T100215



**Recessed Guide installation  
for Large HD Track and Large CSA-5.0  
panel Fold Tite Stacker Door Systems**



# Load Table

Prepared For SteelMaster Buildings  
 Destination Virginia Beach, VA 23451

10/2/2015

<b>CSA-5.0 Plus</b>	<b>12</b>	<b>Panel</b>	<b>Fold-Tite Stacker</b>	
Door Size	Width	<b>65.48333</b>	Height	<b>17</b>
All weight in pounds			Load Factor	Total Weights
Door Weight	2115			Shipped components
Sheeting Weight	0			Average 0.70# sq. ft.
Total Weight	2115			Sheeting plus Door
Track Weight Supported by Header	386	<b>1</b>		386
Weight Supported by Column	288			
Door weight supported by header	1441			
Weight Suspended on Trolleys	1441	<b>1</b>		1441
Quantity of Trolleys	6	<b>1</b>		240 Weight Per Trolley
Total Weight supported by header	1827	<b>1</b>		1827
Sheeting recommendations for 28 or 29 Gauge Rollformed Steel Sheeting. 26 Gauge can be used but the additional strength is not necessary due to the close spacing of the horizontal door members.				
Extruded "J" trim on Vertical is for 3/4" high rib sheeting. Consult Factory for other sheeting options.				
Maximum weight per trolley is 500# Polycarbonate sheeting if quoted is included in door weight				