FLORENCE COUNTY
SOUTH CAROLINA

INVITATION-TO-BID NO. 32-14/15

COWARD BALL FIELDS

PRE-BID MEETING: Tuesday, June 9, 2015 at 10:00 a.m.

BID OPENING: Thursday, June 18, 2015 at 3:00 p.m.

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COUNTY OF FLORENCE, SOUTH CAROLINA
INVITATION-TO-BID #32-14/15

Florence County, South Carolina is accepting sealed bids from a qualified contractor to provide labor, materials, equipment, and services required to construct two new baseball fields behind the existing ball fields in Coward, SC.

This is an 11.2-acre earthwork project consisting of two baseball fields, a small (0.60-acre) wet pond, approximately 180 feet of storm drainage pipe, and 2,000 linear feet of swales. There is no water & sewer component to this project, and no paving. There will be a small amount of cut and patch repair on an existing gravel parking lot. Fencing, lighting and infield will be installed by others after the field grading is completed.

The project is located at the end of Trash Road in Coward, behind the Coward Waste & Recycling Center. The area has already been cleared of all vegetation and can be seen from the gravel parking lot at the end of Trash Road.

A non-mandatory pre-bid meeting will be held on **Tuesday, June 9, 2015 at 10:00 a.m.** at the site stated above.

Purpose of the Pre-Bid Meeting: The purpose of the pre-bid meeting is to have all interested companies do a site visit, to ask any questions concerning this project, and to give the County any needed feedback.

Attendance at the pre-bid meeting is *not a requirement* as a condition of submitting a bid.

In order to be considered, all bids must be hand carried or mailed in a sealed envelope to the Florence County Procurement Office, County Complex, 180 N. Irby Street – MSC-R, Rm. B-5, Florence, SC 29501-3431 no later than Thursday, June 18, 2015 at 2:45 p.m.

The sealed bids will then be opened and read aloud in Room 210-C at the County Complex at 3:00 p.m. (ET) on Thursday, June 18, 2015 at 3:00 p.m.

The successful respondent must have a minimum Group 2 General Contractors (GC) license in the state of South Carolina to do this type of work.

Each responder, by submission of a bid, agrees to each and every term and condition set forth within this Invitation-To-Bid and associated project documents, including any addendum that may be issued, and to be bound thereby.

All bids and supporting documents will be retained by Florence County for a period of ninety (90) calendar days from the date the bids are opened, and no bid shall be received, nor shall any responder be allowed to withdraw a bid after the opening hour commences.

Florence County under Title VI of the Civil Rights Act of 1964 and related statutes ensures that no person shall on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

This request for bids does not commit Florence County to award a contract; to pay any cost incurred in the preparation of a bid; or, to procure or contract for the services. Florence County reserves the right to accept or reject any or all bids received as a result of this request; to negotiate with any or all qualified proposers; or, to cancel in part or in its entirety this bid invitation, if it is in the best interest of the County to do so.

Florence County reserves the right to accept or reject, in whole or in part, any and all responses as appears in its judgment to be in the best interests of the County, or to waive any and all technicalities and informalities in determining the action of each bid.

IRAN DIVESTMENT ACT- CERTIFICATION (JAN 2015):

1. The Iran Divestment Act List is a list published by the Board pursuant to Section 11-57-310 that identifies persons engaged in investment activities in Iran. Currently, the list is available at the following URL: http://procurement.sc.gov/PS/20150105_SC_IDA_List-Final.pdf Section 11-57-310 requires the government to provide a person ninety days written notice before he is included on the list. The following representation, which is required by Section 11-57-330(A), is a material inducement for the State to award a contract to you.

2. By signing your Offer, you certify that, as of the date you sign, you are not on the then-current version of the Iran Divestment Act List. (c) You must notify the Procurement Officer immediately if, at any time before posting of a final statement of award, you are added to the Iran Divestment Act List. [02-2A077-1]

MINIMUM MANDATORY REQUIREMENTS

The following minimum mandatory requirements shall be met and documented:

1. The successful respondent must at a minimum have a group 2 general contractor (GC) license in the state of South Carolina. No bid will be considered unless the respondent is legally qualified under Title 40, Chapter 11 of the Code of Laws of South Carolina, 1976 as amended.

2. In business for at least the past five (5) years under the current business name without declaring bankruptcy. A letter on company letterhead declaring that the company has been in business for five (5) years + and has not declared bankruptcy can be included with the bid form in lieu of a bid bond. (Include with bid).

3. The successful bidder must provide three (3) references for similar earth moving projects.

4. Copy of Worker's Compensation and General Liability Insurance with Florence listed as additional insured supplied to the Procurement Office prior to contract execution or commencement of any work.

5. The successful vendor must be able to meet all Federal, State, and local regulations required for this project.

INSTRUCTIONS TO BIDDERS

1. TAXES:
   a) Florence County pays SC Sales Taxes in the amount of 8%. **INCLUDE SC SALES TAX WITH YOUR BID.**

2. RECEIPT AND OPENING OF SEALED BIDS:
   a) Sealed bids will be received and opened as specified in this Invitation-To-Bid document.

   b) The Owner will consider as non-responsive any bid not prepared and submitted in accordance with the provisions hereof and may waive any informality or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within ninety (90) calendar days after the actual date of the opening thereof or as provided for the in the bid documents whichever is later.

3. PREPARATION OF BID:
   a) All bids will be evaluated in accordance with procedures and specifications contained herein and Florence County Code. The responsiveness to same determined in accordance to the instructions and criteria in this document. Any bid not providing sufficient information and documentation to comply with the Invitation-To-Bid Evaluation requirements will be considered non-responsive and removed from further consideration.

   b) A bid shall be made in the official name of the firm or individual under which business is conducted (showing the official business address) and must be signed in ink by a person duly authorized to legally bind the person, partnership, company, or corporation submitting the bid.

   c) All information requested of the bidder shall be entered in the appropriate spaces on the provided forms. If additional space is required, attach additional pages as needed within the sealed bid response.

   d) Bidders mailing their bid must allow a sufficient mail delivery period to insure timely receipt of their bid. Florence County is not responsible for bids delayed by mail and/or delivery services of any nature. It is the bidder's sole responsibility to insure that all documents are received by person (or office) at the time indicated in the bid document. No facsimile or email submissions.

   e) Bidders must clearly mark as "Confidential" each part of their offer which they consider to be proprietary information that could be exempt from disclosure under Section 30-4-40, Code of Laws of South Carolina, 1976 as amended (Freedom of Information Act). If any part is designated as "confidential", there must be attached to that part an explanation of how this information fits within one or more categories listed in Section 30-4-40. Florence County reserves the right to determine whether this information should be exempt from disclosure and no legal action may be brought against Florence County or his agents for its determination in this regard.

   f) All information shall be entered in ink or typewritten.

   g) All proposed costs shall be for all licenses, permits, taxes, labor, material, transportation, equipment and any other components/services that are required to complete the work embraced herein this Invitation-To-Bid document.

   h) All addendums in association with this invitation to bid may be obtained from the Florence County Procurement Office located at the City-County Complex, 180 N. Irby Street; Room B-5, Florence, SC 29501, by e-mailing pfletcher@florenceco.org, or by visiting the Florence County public bids web page at the following link for 32-14/15: http://www.florenceco.org/offices/procurement/bids/.

   i) Each bidder shall acknowledge receipt of all addendum(s) by its submission of a bid. It shall be each bidder's responsibility to assure that all addendum(s) have been received.

   j) Each bid must be submitted in a sealed envelope, addressed to the Owner along with the name of the project for which the bid is submitted. The bidder shall also show his name and address, on the outside of the envelope. Failure to show the required information may result in rejection of the response and removal from further consideration. If forwarded by mail or carrier, the sealed envelope containing the bid must be enclosed in another outer envelope. Florence County shall not be responsible for unidentified bids.

4. BIDDER QUALIFICATIONS:
   a) To be acceptable to the Owner, bidders must be skilled and/or licensed, if applicable, in the class of work on which they respond, and no bid will be considered from any bidder who is unable to show that he has actually performed considerable work of similar character to that on which he is bidding.

5. ORDER OF PRECEDENCE
   a) In the event of inconsistent or conflicting provision of this contract and referenced documents, the following descending order of precedence shall prevail: (1) Florence County Procurement Ordinance, as amended (2) Bid

Announcement/Advertisement (3) Instructions to Responders and Vendor Agreements (4) Other provisions of the contract whether incorporated by reference or otherwise, and (5) the Specifications.

6. INTERPRETATIONS OF SPECIFICATIONS:
   a) No binding interpretation of the meaning of the documents or any questions relating to the bid will be made to any bidder orally prior to the receipt of bids. Any request for such interpretation or questions shall be made in writing via e-mail the Florence County Procurement Director (pfletcher@florenceco.org) or his designee. To be given consideration, such requests must be received by 5:00 p.m. Friday, June 12, 2015. Any such interpretations or supplemental instructions will be issued in the form of addendum(s) to the Contract Documents which will be mailed or emailed to persons receiving a set of documents, not later than three days prior to the date for opening of bids. Failure of any bidder to receive such addendum(s) shall not relieve the successful bidder of any obligation under the awarded contract and this Document.

7. POWER OF ATTORNEY:
   a) Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power-of-attorney

8. METHOD OF AWARD:
   a) Purchase Order will be awarded to the bidder whose bid appears to serve the best interest of the owner. The successful bidder will be determined as prescribed herein this Document.

   b) Florence County reserves the right to accept or reject, in whole, in part, together or separately, any and all responses as appears in its judgment to be in the best interests of the County, or to waive any and all technicalities and informalities in determining the action of each bid.

9. OBLIGATION OF BIDDER:
   a) At the time of the opening of bids, each bidder will be presumed to have inspected the site, if applicable, and to have read and to be thoroughly familiar with the Documents (including all addendum(s)). The failure or omission of any bidder to examine any form, instruction or document shall in no way relieve any bidder from any obligation in respect to this Invitation-To-Bid.

VENDOR AGREEMENTS

1. STATEMENT OF RIGHTS
   Florence County reserves the right to obtain clarification or additional information necessary to properly evaluate a bid.

   a) GENERAL TERMS:
      a. Each bidder by submitting a response to Florence County as a result of this Invitation-To-Bid agrees to and acknowledges its acceptance of and agreement with the procedures outlined below and the terms, conditions and requirements of the applicable Florence County Invitation-To-Bid document. Agreement is evident by the submission of a response to Florence County. If a vendor cannot agree to these terms, or violates these procedures, the response will be judged non-responsive and not considered. If the procedures are violated during the evaluation process or prior to the issuance of a contract by Florence County, the offer of the firm in question will be void and Florence County will procure the goods/services in question from other eligible vendors.

   b) SPECIFIC TERMS:
      a. Materials offered shall meet all requirements of the Uniform Commercial Code, if applicable.

      b. Responses submitted are final and complete offers by the vendor. No additions, corrections, modifications, changes or interpretations will be allowed. In the event questions arise on what is meant by an offer, the

Procurement Officer will make a determination as to the county interpretation of the vendor's offer. If, after informing the vendor of the county's opinion, disagreement as to scope of the offer is present, the offer will be declared VOID.

c. Florence County reserves the right to award bids received on the basis of individual items, groups of items, or the entire list of items; to reject any and all bids; and to waive any technicalities. In every case, Florence County reserves the right to make awards deemed to be in the best interest of the County and to negotiate further the offer determined by the County to be in the best interest of the County.

d. Unit prices will govern over extended prices. Prices must be stated per unit and extended for the total quantity.

e. Florence County is not exempt from 8% sales tax, if applicable. Sales, use, or excise tax, as well as any handling and shipping charges, must be shown as separate items. INCLUDE SALES TAX IN YOUR BID.

f. Florence County has a local preference of 5%, which may be applied in bid award determination.

g. Any deviation from specifications in the bid solicitation must be clearly pointed out; otherwise, it will be considered that the items offered are in strict compliance with these specifications, and the successful bidder will be held responsible therefore. Unless otherwise stated, it is understood and agreed that any item offered or shipped on this bid shall be new and suitable for storage or shipment, and that prices include standard commercial packaging and handling.

h. Any attempt by a vendor to influence the opinion of the county staff, or County Council, by discussion, promotion, advertising or any procedure to promote their offer, will constitute grounds to judge such an offer non-responsive. All offers presented to Florence County will be evaluated based on the current County Code and the offer as presented to the county on the date/time specified in the given solicitation.

i. In the event of inconsistent or conflicting provision of this bid document, the following descending order of precedence shall prevail: (1) Florence County Procurement Ordinance, as amended (2) Bid Announcement/Advertisement (3) Instructions to Responders and Vendor Agreements (4) Other provisions of the contract whether incorporated by reference or otherwise, and (5) the Specifications.

j. Florence County reserves the right to make periodic inspections of the manner and means the service is performed or the goods that are supplied.

k. All vendors are informed that the Procurement Officer may exercise the County's option to extend the contract, (purchase order) under the provisions of County Code should such extension be mutually agreeable between the County and the selected vendor.

l. The Bidder agrees to secure at Bidder’s own expense all personnel necessary to carry out Bidder’s obligations under this bid. Such personnel shall not be deemed to be employees of the County nor shall they or any of them have or is deemed to have any direct contractual relationship with the County. The County shall not be responsible for withholding taxes with respect to the Bidder’s compensation hereunder. Bidder shall not hold himself out as an employee of the County, and shall have no power or authority to bind or obligate the County in any manner, except County shall make payment to Bidder for services as herein provided. The Bidder shall have no claim against the County hereunder or otherwise for vacation pay, sick leave, retirement benefits, social security, worker’s compensation, health or disability benefits, unemployment insurance benefits, or employee benefits of any kind. State or Federal governments, including but not limited to Social Security, workmen's compensation, Employment Security, sales or use tax and any other taxes and licenses or insurance premiums required by law. The County shall pay no employee benefits or insurance premiums of any kind to or for the benefit of Bidder or his employees, agents, and servants by reason of this contract. The Bidder will carry liability insurance relative to any service that he performs for the County. A certificate of insurance must

be submitted to the procurement office prior to services performed, with the requested coverage and limits per the County, with Florence County listed as additional insured.

m. The vendor will act in an independent capacity and not as officers or employees of the County. The vendor shall indemnify, defend and hold harmless Florence County, its officers, agents and employees from liability and any claims, suits, judgments, and damages of any nature brought because of, arising out of, or due to breach of the agreement by Vendor, its subcontractors, suppliers, agents, or employees or due to any negligent act or occurrence or any omission or commission of Vendor, its subcontractors, suppliers, agents, or employees.

n. The successful vendor shall indemnify and hold harmless the Florence County, its officers, agents and employees from all suits or claims of any character resulting from patent, trademark or copyright infringement or accidents/injury at any point in the delivery of goods/services.

o. It is the responsibility of the prospective bidder to review the entire invitation for bids packet and to notify the Purchasing Department if the specifications are formulated in a manner that would unnecessarily restrict competition. Any such protest or question regarding the specifications or bidding procedures must be received by the Procurement Department not less than five (5) days prior to the time set for bid opening. These requirements also apply to specifications or instructions that are ambiguous.

p. Should any vendor fail to perform or comply with any provision or terms and conditions of any documents referenced and made part hereof, Florence County may terminate the contract (purchase order), in whole or in part, and may consider such failure or non-compliance a breach/default of contract (purchase order). The County reserves the right to purchase any/all items or service in default on the open market. By submittal of a response all vendors agree to this provision. No additional responses will be considered from a firm in default until the default expenses are paid. No principals of a defaulting firm may submit a response under another organization or individual name until their previous default is settled.

q. Florence County may terminate this agreement with or without cause at any time. In the event of termination by either party, fees due for services satisfactorily performed or goods accepted prior to the termination shall be paid.

r. Unless specifically requested, submit one (1) copy of your response. All submittals become the property of Florence County.

s. In the event no funds are appropriated by Florence County for the goods or services in any fiscal year or insufficient funds exist to purchase goods or services, then the Contract (purchase order) shall expire upon the expenditure of previously appropriated funds or the end of the current fiscal year, whichever occurs first, with no further obligations owed to or by either party.

t. All bids (and supporting documents) will be retained by Florence County for a period of ninety (90) calendar days from the date the bids are opened, and no bid shall be received nor shall any bidder be allowed to withdraw a bid after the opening hour commences.

u. Brand names and numbers, when used, are for reference only to indicate character or quality desired and do not indicate a preference. Equal items will be considered; equal items shall state the brand name or quality; and Florence County's determination of what shall constitute equality shall be final and conclusive.

2. INSURANCE REQUIREMENTS

a. The contractor shall agree to hold harmless, indemnify and defend Florence County, its agents and employees from any claims for property damage or personal injury (including death resulting therefrom). Such claims

include, but are not limited to, actual, consequential, incidental or punitive damages. The contractor shall agree to maintain sufficient comprehensive general liability insurance, naming Florence County as additional insured in the amounts of $1,000,000.00 per occurrence and $1,000,000.00 per person. Proof of such insurance shall be given to the Florence County Procurement Office by an appropriate certificate-of-insurance issued by the contractor's insurance agent.

b. Further, the contractor shall agree to insure prior to commencement of work on the project (job), all subcontractors, agents, assigns or employees of prime contractor and subcontractor shall agree to hold harmless, indemnify and defend the City of Florence, South Carolina, its agents and employees from any claims for property damage or personal injury (including death resulting therefrom). Such claims include but are not limited to, actual, consequential, incidental or punitive damages. Further, prior to commencement of work on the project (job), the contractor shall insure that all subcontractors, agents or assigns of the contractor, maintain sufficient comprehensive general liability insurance, naming the City of Florence, South Carolina, as additional insured, in the amounts of $1,000,000.00 per occurrence and $1,000,000.00 per person. Proof of such insurance shall be given to the Procurement Officer by an appropriate certificate-of-insurance issued by applicable entity's insurance agent.

c. With regards to comprehensive general liability insurance, claims may be made during or after the term or terms of the contract agreement.

d. Vehicle liability insurance with minimum combined single limits of $1,000,000.00 per occurrence shall be maintained by the contractor.

e. The contractor shall obtain and maintain, during the life of the contract agreement, workers' compensation and employer's liability insurance for all employees to be engaged in services on this project under this agreement in an amount not less than the minimum allowed by South Carolina law, and in case any such services are sublet, the contractor shall require the subcontractor(s) similarly to provide workers' compensation and employer's liability insurance for all of the subcontractor's employees to be engaged in such services.

BID BOND (SURETY) REQUIREMENT

Bid Surety acts to protect the County from delays and expenses incurred in the lengthy competitive sealed bidding and competitive sealed bid processes, and provides the County with some financial assurance that should the bidder be awarded the project, the successful bidder will enter into the contract with the County. The successful bidder forfeits its Bid Surety in the event it cannot perform the work required by the invitations-for-bid or request-for-bids.

For all responses submitted with estimated project costs exceeding twenty-five thousand dollars ($25,000.00), Bid Surety in the amount of at least five percent (5%) of the proposed project costs must be submitted with the response. Failure to satisfy this Bid Surety requirement will result in your bid being considered non-responsive and removed from further consideration for award of the subject contract. Bid Surety can be provided as discussed below.

BID SURETY OPTIONS:

Option A:

Bid Surety will not be required from Contractors that have been in business for five (5) consecutive years without filing for bankruptcy. A certificate or statement on business letterhead from the firm stating it meets this qualification will replace the bid surety and must accompany the bid. Bidders not meeting this requirement must furnish Bid Surety as discussed in Option B below.

Option B:

For all bidders not meeting the criteria of "Option A" above, a deposit in the amount of five percent (5%) of the proposed contract price must accompany the bid. These deposits shall take the form of a certified check, cashier's check or a surety bond executed by a corporate surety licensed under the laws of this state. **PERSONAL OR COMPANY CHECKS DO NOT MEET THIS REQUIRMENT**. The cashier's check or certified check shall be deposited to the County's account if the successful bidder fails to enter into the proposed contract. Bid deposits of unsuccessful bidders will be returned as soon as the contract is awarded.

One of the above requirements must be met and submitted with for your response. Failure to satisfy this Bid Surety requirement will result in your response being considered non-responsive and removed from further consideration for award of the subject project's contract.

PAYMENT BOND REQUIREMENT

A Payment Bond must be submitted to the County by the successful responder ("Contractor") once it has been awarded the contract. Payment Bonds encompass the prime Contractor's obligation to pay subcontractor and others for material and labor used in the project. A Payment Bond guarantees that the Contractor will pay certain bills for labor and materials (including those from subcontractors and suppliers), which are associated with the subject contract. The Payment Bond requirement helps assure that the Contractor provides suitable evidence of its financial condition and ability to complete the project without financial difficulty.

For all contracts submitted with costs exceeding twenty-five thousand dollars ($25,000.00), a Payment Bond in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the County. Failure to satisfy this Payment Bond requirement will result in the Contractor being considered non-responsive and possibly removed from consideration for award of future County contracts. Payment Bond guaranty options are discussed below.

PAYMENT BOND GUARANTY OPTIONS:

For all contracts submitted with costs exceeding twenty-five thousand dollars ($25,000.00), a Payment Bond guaranty in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the County. This Payment Bond requirement can be satisfied utilizing one of the two options below:

(1) Option A:

The Contractor with the executed contract must submit a Payment Bond in the required amount discussed above and executed by a corporate surety licensed under the laws of this state. Contractors not meeting this requirement must furnish an alternative Payment Bond Guaranty as discussed in Option B below.

(2) Option B:

For all Contractors not meeting the criteria of "Option A" above, a deposit in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the County. This deposit shall take the form of a certified check, or a cashier's check deposited with the County. **PERSONAL OR COMPANY CHECKS DO NOT MEET THIS REQUIRMENT**. Failure of the Contractor to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of this deposit.

One of the above requirements must be met and submitted by the successful Contractor with its proposed contract to the County. Failure to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of the Payment Bond guaranty.

Responders failing to enter the proposed contract and also post the required Payment Bond may be subject to Debarment or Suspension from future consideration for award of contracts.

PERFORMANCE BOND REQUIREMENT

A Performance Bond must be submitted to the County by the successful responder ("Contractor") once it has been awarded the contract. The Performance Bond insures that the project will be completed even if the prime Contractor defaults or abandons the project. A Performance Bond guarantees contract performance by the Contractor, according to the contract specifications, terms and conditions. The Performance Bond requirement helps assure that the Contractor provides suitable evidence of its financial condition and ability to complete the project without financial difficulty.

For all contracts submitted with costs exceeding twenty-five thousand dollars ($25,000.00), a Performance Bond in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the County. Failure to satisfy this Performance Bond requirement will result in the Contractor being considered non-responsive and possibly removed from consideration for award of future County contracts. Performance Bond guaranty options are discussed below.

PERFORMANCE BOND GUARANTY OPTIONS:

For all contracts submitted with costs exceeding twenty-five thousand dollars ($25,000.00), a Performance Bond Guaranty in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the County. This Performance Bond guaranty requirement can be satisfied utilizing one of the two options below:

(3) Option A:

The Contractor with the executed contract must submit a Performance Bond in the required amount discussed above and executed by a corporate surety licensed under the laws of this state. Contractors not meeting this requirement must furnish an alternative Performance Bond Guaranty as discussed in Option B below.

(4) Option B:

For all Contractors not meeting the criteria of "Option A" above, a deposit in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the County. This deposit shall take the form of a certified check, or a cashier's check deposited with the County. **PERSONAL OR COMPANY CHECKS DO NOT MEET THIS REQUIRMENT**. Failure of the Contractor to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of this deposit.

One of the above requirements must be met and submitted by the successful Contractor with its proposed contract to the County. Failure to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of the Performance Bond Guaranty.
Responders failing to enter the proposed contract and also post the required Performance Bond may be subject to Debarment or Suspension, as prescribed under Section 11-102 of the Florence County Code, from future consideration for award of contracts.

BID SHEET PAGE 1 OF 3

FLORENCE COUNTY, SOUTH CAROLINA, a Body Politic and Corporate and a Political Subdivision of the State of SC	**MAIL TO:** Florence County Procurement 180 N. Irby Street City-County Complex MSC-R Florence, SC 29501	
SEALED BID NO. 32-14/15 **COWARD BALL FIELDS**	**HAND CARRY TO:** Procurement Office, Room B-5 City-County Complex, 180 N. Irby Street Florence, South Carolina 29501	
Bids will be accepted at the Procurement Office, County Complex, 180 N. Irby Street, Rm. B-5 until Thursday, June 18, 2015 at 3:00 p.m. (EST)	TELEPHONE NO. (843) 665-3018 E-MAIL ADDRESS: pfletcher@florenceco.org	
Then Publicly Opened in Room 210-C of the County Complex @ 3:00 p.m. (EST)	**SC General Contractor License No. _____** NOTE: Provide three (3) references for similar earth moving projects.	

NAME:_____

D/B/A IF PPLICABLE:_____

MAILING ADDRESS:_____
LEGAL COMPANY
PHYSICAL ADDRESS:_____

CITY-STATE-ZIP:_____

TELEPHONE NO:_____ **FAX NO:**_____

FEDERAL ID (TAX ID) NO: _____ E-MAIL: _____

AUTHORIZED SIGNATURE: _____

PRINTED NAME:_____

Labor, materials, equipment, taxes, and services required to construct two baseball fields, a small (0.60-acre) wet pond, approximately 180 feet of storm drainage pipe, and 2,000 linear feet of swales. Total disturbed area is approximately 11.2 acres.

TOTAL BID PRICE: $_____

Total Bid Amount in Words _____

COWARD BALL FIELDS

Coward, SC

ITEM	GRADING / SITE-WORK	UNIT	QUANTITY	UNIT PRICE	COST
G2	Rough Grading (Stripping Topsoil, surface work)	SY			
G3	Rough Grading (Cut & Fill)	CY			
G5	Fine Grading (Surface)	SY			
G11	Topsoil (Placement onto fields 4" min thickness)	CY			
G30	Grassing (all disturbed areas except fields)	LS			
G31	Sprigging (grass for fields)	SY			
G32	Site Work Construction Staking (incl pond)	LS			
				SUBTOTAL=	

ITEM	EROSION & SEDIMENT CONTROL	UNIT	QUANTITY	UNIT PRICE	COST
EC1	Construction Entrance	EA			
EC2	Reinforced Silt Fence	LF			
EC3	Type A Inlet Protection	EA			
EC4	Sediment Pond Porous Baffles	LF			
EC5	Sediment Pond 8" Skimmer	EA			
EC7	Pond Topsoil Stripped & Stockpiled	SY			
EC8	Pond Excavation (includes fine grading)	CY			
EC9	Pond Topsoil (Placement from Stockpile)	CY			
EC17	Pond bank grassing	SY			
EC18	Pond enclosure fence (4' chain link w/ gates)	LS			
				SUBTOTAL=	

ITEM	STORM DRAINAGE	UNIT	QUANTITY	UNIT PRICE	COST
SD4	Concrete Catch Basins (30"x30")	EA			
SD7	18" RCP	LF			
SD8	24" RCP	LF			
SD12	Rip-Rap Apron (w/ Filter Fabric)	TON			
SD15	Pond Outfall Structure	EA			
SD16	Drainage Construction Staking	LS			
				SUBTOTAL=	

Total =

Attach Bidders statement of qualification of experience.

Maximum time of completion from receipt of purchase order: _____ Calendar Days.

BID SHEET PAGE 3 OF 3

The Bidder declares their Bid Response is made without any connection with any other individual that may be submitting a Bid Response to this IFB and their Bid Response, in all respects, is fair and in good faith, without collusion or fraud, with another Bidder, representative or agent.

By submission of a response to this Invitation for Bid, the bidder agrees and certifies, to deliver all required services and perform all required work with the strictest conformance to meet or exceed the scope of services, specifications and minimum requirements contained within this Invitation to Bid.

All pricing is firm and will remain firm for at least ninety (90) calendar days from the time and date of the IFB submittal and opening. During this period, the Bidder may only withdraw their Bid Response by submitting a written request to Florence County and Florence County approving said written request.

The bidder agrees to abide by all conditions of this bid and verifies that he is authorized to sign this bid for the offerer. The bidder further states that the company affiliated with this bid currently complies with all applicable federal and state laws and directives relative to non-discriminatory practices in employment.

The Bidder, in compliance with the Invitation-To-Bid, and having examined the Project Documents, and being familiar with all of the conditions surrounding the proposed project, including the availability of materials, labor, and work site environmental conditions, hereby proposes to furnish all permits, labor, materials, supplies, and equipment and to perform the duties in accordance with the contract documents of which this Bid Form is a part.

The Bidder declares that he has read, understands, and accepts the Vendor Agreements and Instructions to Responders which are part of the bid documents.

The Bidder further proposes and agrees, if this Bid is accepted, to contract with Florence County, to furnish all permits, materials, equipment, tools, apparatus, means of transportation, and labor necessary hereto, and to complete the proposed project in full and complete accordance with the Project Documents, to the full and entire satisfaction of the Owner, at the prices listed in the Bid Schedule. The amounts listed on the Bid Schedule section of this Bid Form also include all costs associated with the compliance of all applicable State laws, local ordinances, and the rules and regulations of all authorities and professional association standards having jurisdiction over the project or the materials used throughout, and they will be deemed to be included in the contract the same as though herein written out in full. Unit prices and/or lump sums are shown in the Bid Schedule section below. In case of error in extension, the Unit Price shall govern rather than the Amount. Where Lump Sum Amounts are bid, the amount for each bid item shall govern rather than the total of any several items.

STATE OF SOUTH CAROLINA)
) **SAMPLE CONTRACT NO. 32-14/15**
COUNTY OF FLORENCE)

THIS AGREEMENT (hereinafter the "Agreement" or "Contract") entered into this **XX** day of **XXXXXXX**, 2015 by and between the **COUNTY OF FLORENCE**, South Carolina, a body politic and corporate under the State of South Carolina (hereinafter the "County") and **XXXXXXXXXX,** a Corporation, the address of which is: **XXXXXXXXXXXX, XXXXXXXXX, XX, XXXXX** (hereinafter the "Contractor"), for and in consideration of the mutual covenants herein set forth, and for other good and valuable consideration, the sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

ARTICLE 1
DOCUMENTS INCORPORATED BY REFERENCE

1.1 This Contract includes the specifications and plans for the project identified thereon as such, the County's invitation to Bid. No. 32-14/15, and any addendums thereto, as well as the Contractor's bid submission, including all forms required in the bid documents. All these documents specified in this Article 1 are hereby incorporated herein by reference and made a part hereof (hereinafter collectively referred to as the "Contract" or "Contract Documents"). Change orders issued hereafter and any other amendments properly executed by the County and the Contractor shall become and be a part of this Contract. Documents not included or expressly contemplated in this Article 1 do not, and shall not, form any part of this Contract. The Contract Documents are intended to be complementary, and a requirement in one document shall be deemed to be required in all documents.

1.2 Contractor shall comply with all applicable Federal, State, and Local laws which may be applicable to any aspect of the activities under this Contract. By entering into this Contract, Contractor affirmatively warrants that the Contractor, to the best of its knowledge, information, and belief, is currently in compliance with all applicable Federal, State, and Local laws and further warrants that during the term of this Contract, Contractor shall remain in compliance therewith.

ARTICLE 2
REPRESENTATIONS OF THE CONTRACTOR

In order to induce the County to execute this Contract and recognizing that the County is relying thereon, the Contractor, by executing this Contract, makes the following express representations to the County:

2.1 The Contractor is fully qualified to act as the general contractor for the project and has, and shall maintain throughout the effective term of this Contract, any and all licenses, permits, and other authorizations necessary to act as the general contractor for, and to construct, the project.

2.2 The Contractor has become familiar with the project site and the local conditions under which the project is to be constructed and operated.

2.3 The Contractor has received, reviewed and examined all the documents which make up the Contract, including, but not limited to, all plans and specifications, and has found them, to the best of its knowledge, to be complete, accurate, adequate, consistent, coordinated and sufficient to complete the Project.

ARTICLE 3
SCOPE OF WORK

The Contractor shall perform the work as outlined in the 32-14/15 invitation to bid document, bid plans, and all addendums thereto (if any). All work required, implied, or reasonably inferable from this Contract includes, but is not limited to, the following:

3.1 The Contractor will complete the complete work as described in the contract documents, in accordance with the terms herein, and the specifications/scope of work, all as may be amended from time to time.

3.2 Contractor shall furnish any and all required insurance certificate(s) and endorsement(s) as requested by the County.

3.3 Contractor agrees to perform and furnish all labor, supervision, materials, equipment, transportation and supplies necessary for the **XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX** as stated in the specifications/scope of work of bid no. 32-14/15 and the Contractor's response to bid no. 32-14/15.

3.4 Coordination of the work and administration of this Agreement shall be XXXXXXXXXXXXXXXXXX located at XXXXXXXXXXXXXXX in Florence, SC. (add e-mail address here)

ARTICLE 4
INTENT AND INTERPRETATION

With respect to the intent and interpretation of this Contract, the County and the Contractor agree as follows:

4.1 This Contract (along with its exhibits and all documents incorporated herein by reference), together with the Contractor's and surety bonds for the project, constitute the entire and exclusive agreements between the parties with reference to the project, and said Contract supersedes any and all prior discussions, communications, representations, understanding, negotiations, or agreement.

4.2 Anything that may be required or reasonably inferred by the documents which make up this Contract, or any one or more of them, shall be provided by the Contractor for the Contract Price.

4.3 Nothing contained in this Contract shall create, nor be interpreted to create, privity or any other relationship whatsoever between the County and any person except the Contractor.

4.4 When a word, term or phrase is used in this Contract, it shall be interpreted or construed first, as defined herein; second, if not defined, according to it's generally accepted industry meaning; and third if there is no generally accepted industry meaning, according to its common and customary usage.

4.5 The words "include," "includes," and "including," as used in this Contract, shall be deemed to be followed by the phrase, "without limitation".

4.6 The listing herein of any items as constituting a material breach of this Contract shall not imply that any other, non-listed item will not constitute a material breach of this Contract.

4.7 In the event of any conflict, discrepancy, or inconsistency among any of the documents which make up this Contract, the following shall control:

4.7.1 As between this document and the plans or specifications, this document shall govern.

4.7.2 In the case of any conflict, discrepancy or inconsistency among any of the other Contract documents, the Contractor shall notify the County immediately upon discovery of the same.

ARTICLE 5
CONTRACTOR'S PERFORMANCE

The Contractor shall perform all of the work required, implied or reasonably inferable from this Contract including, but not limited to, the following:

5.1 The Contractor will complete the entire Work described in the Contract Documents, in accordance with the terms herein, and the scope of work, and all addenda thereto, all as may be amended from time to time only by means of a change order agreed upon by both parties.

5.2 Contractor shall furnish any and all required surety bonds and insurance certificate(s) and endorsement(s).

ARTICLE 6
TIME FOR CONTRACTOR'S PERFORMANCE

6.1 The Contractor shall commence the performance of this Contract on the date of execution of this Contract and shall diligently continue its performance to and until Completion of the Project. **The contractor shall accomplish Substantial Completion (as defined below) to the XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX in no more than XXXXXX (XX) days following the execution of the notice to proceed letter which shall commence upon receipt of all necessary permits to begin construction.** By signing this contract, the contractor agrees that the contract time is a reasonable time for accomplishing the completion of the project.

6.2 The term "Substantial Completion," as used herein, shall mean that point at which, as certified in writing by the County, the Project is sufficiently complete in accordance with the Contract Documents so that the County can utilize the work for its intended use.

6.3 The County has the right to impose liquidated damages in the amount of $500 per calendar day for any days after the required date of completion noted above that the project is not substantially complete.

ARTICLE 7
FIXED PRICE AND CONTRACT PAYMENTS

7.1 The County shall pay, and the Contractor shall accept, as full and complete payment for the Contractor's timely performance of its obligations hereunder **in the amount not to exceed XXXXXXXXXXXXXXXXXX Dollars ($XX,XXX.XX).** This price shall constitute the Contract Price.

7.2 Progress billings shall be submitted to the County for payment by the Contractor on a monthly basis no later than the 25th of each month based on the percentage of work completed. The County (or County's representative) shall verify work completed and billed before payment shall occur. When the project is complete and the Contractor is ready for a final review, the Contractor shall notify the County. Thereupon, the County will perform a final site review of the project. If the County concurs that the project is complete and in full accordance with this Contract and that the Contractor has performed all of its obligations to the County thereunder, the County will make final payment of the Contract price to the Contractor.

7.3 Guarantees and equipment warranties required by this Contract shall commence on the date of substantial completion.

ARTICLE 8
DUTIES, OBLIGATIONS, AND RESPONSIBLITIES OF THE CONTRACTOR

In addition to any and all other duties, obligations and responsibilities of the Contractor set forth in the Contract Documents, the Contractor shall have and perform the following duties, obligations and responsibilities to the County:

8.1 The Contractor shall not perform work without adequate plans and specifications. If the Contractor performs work knowing or believing, or if through exercise of reasonable diligence it should have known, that such work involves an error, inconsistency or omission in the Contract without first providing written notice to the County, the Contractor shall be responsible for such work and shall correct same bearing the costs therefore.

8.2 All work shall strictly conform to the requirements of this Contract. To that end the Contractor shall be solely responsible for and have control over the performance of all portions of the Work, unless otherwise specified in the Contract Documents.

8.3 The work shall be strictly supervised the permit the County and its designated representative(s). The Contractor shall bear full responsibility for any and all acts, errors or omissions of those engaged in the work on behalf of the Contractor, including, but not limited to all subcontractors or employees. The Contractor shall provide on-site supervision while any portion of the work is being performed.

8.4 The Contractor hereby warrants that all laborers furnished under this Contract shall be qualified and competent to perform the tasks undertaken, that the product of such labor shall yield only first-class results, that all materials and equipment provided shall be new (unless otherwise specified) and of high

quality, that the completed work will be complete, of high quality, without defects, and that all work strictly complies with the requirements of this Contract. Any work not strictly complying with the requirements of this section shall constitute a breach of the Contractor's warranty.

8.5 The Contractor shall maintain the project site and adjacent areas affected by its work and/or acts of its employees and subcontractors in a reasonably clean condition during the performance of the work. Upon substantial completion, the Contractor shall clean the Project site of all debris, trash and excess materials and equipment. If the Contractor fails to do so, the County may complete the cleanup, by its own forces or by separate contract, and shall be entitled to charge the Contractor for the same through the collection or withholding of funds through the mechanisms provided elsewhere herein.

8.6 At all times relevant to this Contract, the Contractor shall permit the County and its designated representative(s) to enter upon the Project site to review or inspect the work and any materials on the site without formality or other procedure.

8.7 PROTECTION OF PERSONS AND PROPERTY. It shall be the responsibility of the Contractor to initiate, continue and supervise all safety programs and precautions in performance of the terms of this Contract. The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury or loss to its employees, subcontractors, employees of the County and members of the public, the Work itself and unassembled components thereof, and other property at the site or adjacent thereto. As part of the Contractor's obligations hereunder, the Contractor shall erect and maintain safeguards, barriers, signs, warnings, etc.

ARTICLE 9
INDEMNITY

The Contractor hereby expressly agrees to indemnify and hold the County harmless against any and all expenses and liabilities arising out of the performance or default of this Contract or arising from or related to the Work as follows:

9.1 Contractor expressly agrees to the extent that there is a causal relationship between its negligent, reckless or intentionally wrongful action or inaction, or the negligent, reckless or intentionally wrongful action or inaction of any of its employees or any person, firm or corporation directly or indirectly employed or retained by the Contractor, and any damage, liability, injury, loss or expense (whether in connection with bodily injury or death or property damage or loss) that is suffered by the County or its employees or by any member of the public, to indemnify and save the County and its employees harmless against any and all liabilities, penalties, demands, claims, lawsuits, losses, damages, costs, and expenses arising out of the performance or default of this Contract or arising from or related to the Work, regardless of whether such liabilities, penalties, demands, claims, lawsuits, losses, damages, costs, and expenses are caused in part by the County. Such costs are to include, without limitation, defense, settlement and reasonable attorneys' fees incurred by the County and its employees. This promise to indemnify shall include without limitation, bodily injuries, death occurring to Contractor's employees and any person, directly or indirectly employed or retained by the Contractor (including without limitation any employee of any subcontractor), the County's employees, the employees of any other independent contractors, or occurring

to any member of the public. When the County submits notice, Contractor shall promptly defend any aforementioned action.

9.2 The limits of insurance required herein shall not limit the Contractor's obligations under this Article. The terms and conditions contained in this Article shall survive the termination of this Agreement or the suspension of the Work hereunder. The recovery of fees and costs specified herein will also apply to any actions to enforce this Article.

ARTICLE 10
DISCOVERING AND CORRECTING DEFECTIVE OR INCOMPLETE WORK

10.1 In the event that the Contractor covers, conceals or obscures its work in violation of this Contract or in violation of an instruction from the County, such work shall be uncovered and displayed for review by the County upon request, and shall be reworked at no cost in time or money to the County.

10.2 The Contractor shall, at no cost in time or money to the County, correct work rejected by the County as defective or failing to conform to this Contract. Additionally, the Contractor shall reimburse the County for all review, inspections and other expenses incurred as a result thereof.

10.3 In addition to its warranty obligations set forth elsewhere herein and any manufacturer's warranties provided on the project, and in addition to other remedies provide herein or by law to the County, the Contractor shall be specifically obligated to promptly correct any and all defective or nonconforming work, whether obvious or after-discovered, for a period of twelve (12) months following substantial completion upon written direction from the County.

ARTICLE 11
TERMINATION BY THE COUNTY

The County may terminate the Contract in accordance with the following terms and conditions:

11.1 The County may, by written notice, terminate this Contract in whole or in part at any time, for the failure to fulfill the Contract obligations. Upon receipt of such notice, services shall be immediately discontinued unless the notice directs otherwise, and all materials as may have been accumulated in performing this Contract, whether completed or in progress delivered to the County.

11.2 Termination due to the failure to fulfill the Contractor's obligations may cause the County to take over the work and prosecute the same to completion by Contract or otherwise. In such case, the contractor shall be liable to the County for any additional cost occasioned to the County thereby.

11.3 The rights and remedies of the County provided in this Article are in addition to any other rights and remedies provided by law or under this Contract.

11.4 Notwithstanding any other provision contained herein, any violation or breach of terms of this Contract on the part of the Contractor or their subcontractors may result in the suspension or termination of this Contract or such other action that may be necessary to enforce the rights of the parties of this Contract. The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise impose or available by law.

ARTICLE 12
INSURANCE

The Contractor shall have and maintain insurance in accordance with the requirements of the Invitation to Bid Documents

ARTICLE 13
SURETY BONDS

The contractor shall furnish separate performance and payment bonds to the county, as required by the invitation to bid document. Each bond shall set forth a penal sum in an amount not less than the Contract Price. Each bond furnished by the Contractor shall incorporate by reference the terms of this Contract as fully as though they were set forth verbatim in such bonds. The performance and payment bonds furnished by the Contractor shall be in form suitable to the County and shall be executed by a surety, or sureties, reasonably acceptable to the County.

ARTICLE 14
ENTIRE AGREEMENT

Any modification to this Contract must be supported by an additional, articulated consideration, and must either be in writing, executed by the parties hereto, or, if made orally, should be confirmed in writing, which writing should state the consideration which supports the modification. Failure to confirm an oral modification in writing shall constitute a waiver of any claim for additional compensation with regard to the oral modification. Nothing in this Article shall be construed to limit the County's authority to issue changes.

ARTICLE 15
SEVERABILITY

If any term or condition of this Contract or application thereof to any person(s) or circumstances is held invalid, this invalidity shall not affect other terms, conditions or applications which can be give effect without the invalid term, condition, or application. To this end, the terms and conditions of this Contract are agreed to be severable

ARTICLE 16
WAIVER

Waiver of any breach of any term or condition of this Contract shall not be deemed a waiver of any prior or subsequent breach, and shall not entitle any party hereto to any subsequent waiver of any terms hereunder. No term or condition of this Contract shall be held to be waived, modified or deleted except by an instrument, in writing, signed by the parties hereto.

ARTICLE 17
NOTICES

All notices to each party to this Contract shall be in writing, and sent as follows:

To County:

Patrick D. Fletcher, Procurement Director
Florence County
180 North Irby Street, MSC-R
Florence, SC 29501
Telephone: (843) 665-3019 E-mail: pfletcher@florenceco.org
Fax: (843) 664-9668

To Contractor:

XXXXXXXXXXXXXXXX
Attn: XXXXXXXXXXXX
XXXXXXXXXXXXXXXX
XXXXXXXXXX, XX XXXXXX0
Telephone: XXX-XXX-XXXX
E-Mail: XXXXXXXXXXXXXX

All notices, demands, requests, consents or approvals that may or are required to be given by any party to another shall be in writing and shall be deemed given if: (i) served personally by hand delivery; (ii) sent by nationally-recognized overnight courier with return receipt; or (iii) sent by Unites States registered or certified mail, by depositing the same in the United States Mail in the continental United States, postage prepaid, return receipt requested and addressed to such other party at the address specified above or at such other place as such other party may from time to time designate by notice in writing to the other parties hereto. Rejection or other refusal to accept a notice, demand, request or consent, or the inability to deliver because of a changed address, of which no notice was given, shall be deemed to be actual receipt thereof. In the event given by registered or certified mail, such notice, demand, request, or consent so mailed shall be effectively conveyed upon receipt or shall be presumed to have been effectively conveyed and received by the addressee 72 hours after deposit of same in the mail, whichever first occurs.

ARTICLE 18
APPLICABLE LAW

The laws of South Carolina shall govern this Contract. In any litigation arising under this Contract, all such litigation shall be litigated in the Circuit Court within the Twelfth Judicial Circuit Court of Florence County, South Carolina. Without limitation upon the prevailing party's rights to recovery such fees and costs, the relevant provisions of Section 15-37-10 et seq. of the Code of Laws of South Carolina (1976, as amended) shall apply to this Article, as the case may warrant. This Contract is **not** subject to arbitration.

ARTICLE 19
SUCCESSOR AND ASSIGNS

Each party binds itself, it successor, assigns, executors, administrators or other representative to the other party hereto and to successors, assign, executors, administrators or other representatives of such other party in connection with all terms and conditions of this Contract. The Contractor shall not assign this Contract without prior written consent of the County.

IN WITNESS WHEREOF, the parties have executed this Agreement in three originals under their several seals the day and year first written above.

WITNESS: **FOR CONTRACTOR:**

_____ _____

Printed Name: _____ Printed Name: _____

Title: _____ Title: _____

Federal Tax I.D. No.: _____

Contract Number: _____

FOR FLORENCE COUNTY:

_____ _____

Patrick D. Fletcher, CPPB
Procurement Director

K. G. (Rusty) Smith
Florence County Administrator

ALIGNED ENGINEERING
P.O. Box 4167 – Florence, SC 29502 – 843-713-1244

May 29, 2015

RE: **Coward Ball Fields, Bid Ref 32-14-15**
Supplemental Information from the Engineer

This is supplemental information on the Coward Ball Fields project that may be useful for the Bid.

As stated on the Bid Notice, this is an 11.2-acre earthwork project consisting of two baseball fields, a small (0.60-acre) wet pond, approximately 180 feet of storm drainage pipe, and 2,000 linear feet of swales. There is no water & sewer component to this project, and no paving. There will be a small amount of cut and patch repair on an existing gravel parking lot. This is predominantly an earth moving project, as Florence County will be handling fencing, the infield, and lighting.

The site is located at the end of Trash Road in Coward, on Highway 52. The existing ball fields are located behind the Coward Waste & Recycling Center. Follow the road to a gravel parking lot; the proposed new fields are the cleared area to the west.

Please take note of the following:

- Construction startup will be as soon as possible; Florence County Parks & Recreation would like to install the fences, infields and lighting with enough time for grass to fill out before baseball season 2016 (late February/early March).
- The project will be built according to Florence County standards for storm drainage, swales and parking lot. Compaction shall meet the Florence County standards and the plans and specifications.
- The site has been cleared by Florence County Public Works, and all vegetative debris on site at this time has been removed.
- There is very little topsoil available; the contractor shall include in his bid enough clean topsoil to cover the fields and pond sides to a depth of 4 inches. This comes out to approximately 4.0 acres. The Pre-Bid meeting is a good time to assess the topsoil on site.
- Florence County Parks and Recreation has information about the vendor they want to sprig the ball fields. Only the ball field areas will be sprigged. The remainder of the site will be hydroseeded.
- The infield clay and final grading will be done by Florence County Parks & Recreation. Grade and grass the infield per the Grading Plan without clay; Florence County will add that later.
- Bids shall also include a 1-year guarantee on all work and materials.
- Construction staking, and payment therefor, shall be the contractor's responsibility.

If you have any questions, please don't hesitate to give me a call at the numbers below.

Sincerely,

Martin "Ruh" Fox, P.E.
Aligned Engineering, LLC
843/713-1244 (office) 843/618-8869 (mobile)

File: AE007 Coward Ball Field Bid 051215

we are ALIGNED

Technical Specifications
for

Coward Ball Fields
Coward, SC
AE-007

February 9, 2015

Prepared by

Aligned Engineering, LLC
P.O. Box 4167 - Florence, SC 29502
843/662-2142 (office)
843/618-8869 (mobile)
Martin@AlignedEngineering.com

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CIVIL SPECIFICATIONS

END OF SECTION

SECTION 01 30 00 – GENERAL CONDITIONS

PART 1 GENERAL

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1.2 DEFINITIONS

A. Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

Addenda -- Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, drawings and Specifications, by additions, deletions, clarifications or corrections.

Bid --The offer or proposal of the Bidder submitted on the prescribed form, setting forth the prices for the work to be performed.

Bidder -- Any person, firm or corporation submitting a Bid for the work.

Bonds -- Bid, Performance, and Payment Bonds are instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.

Change Order -- A written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.

Contract Documents -- The contract, including Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Change Order, Drawings, Specifications, and Addenda.

Contract Price – The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

Contract Time -- The number of calendar days stated in the Contract Documents for the completion of the work.

Contractor -- The person, firm, or corporation with whom the Owner has executed the Agreement.

Drawings -- The part of the Contract Documents which show the characteristics and scope of the Work to be performed and which have been prepared or approved by the Engineer.

Engineer -- The person, firm or corporation named as such in the Contract Documents.

Field Order -- A written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Engineer to the Contractor during construction.

Notice of Award -- The written notice of the acceptance of the Bid from the Owner to the successful Bidder.

Notice to Proceed -- Written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work.

Owner -- A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the Work is to be performed.

Project -- The under taking to be performed as provided in the Contract Documents.

Resident Project Representative -- The authorized representative of the Owner who is assigned to the Project site or any part thereof.

Shop Drawings -- All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

Specifications -- A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

Subcontractor -- An individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion -- That date, as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it is intended.

Supplemental General Conditions -- Modifications to General Conditions required by a Federal agency for participation in the Project and approved by the agency in writing prior to inclusion in the Contract Documents or such requirements that maybe imposed by applicable state laws.

Supplier -- Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

Work -- All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

Written Notice -- Any notice to any party of this Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the Work.

1.3 SCHEDULES, REPORTS AND RECORDS

A. The Contractor shall submit to the owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the Contract Documents for the work to be performed.

B. Prior to the first partial payment estimate, the Contractor shall submit construction progress schedules showing the order in which he proposes to carry on the Work, including dates at which he will start the various parts of the Work, estimated date of completion of each part and, as applicable:
   1. The dates at which special detail drawings will be required, and
   2. Respective dates for submission of Shop Drawings, the beginning of manufacturer, the testing and the installation of materials, supplies and equipment.

C. The Contractor shall also submit a schedule of payments that he anticipates he will earn during the course of the Work.

1.4 DRAWINGS AND SPECIFICATIONS

A. The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the work in accordance with the Contract documents and all incidental work necessary to complete the project in an acceptable manner, ready for use, occupancy or operation by the Owner.

B. In case of conflict between the Drawings and Specifications, the Drawings shall govern. Figure dimensions on Drawings shall govern over scale dimensions in detail drawings shall govern over general drawings.

C. Any discrepancies found between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately

reported in writing to the Engineer, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

1.5 SHOP DRAWINGS

A. The Contractor shall provide Shop Drawings as may be necessary for the prosecution of the work as required by the Contract Documents. The Engineer shall promptly review all Shop Drawings. The Engineer's approval of any Shop Drawing shall not release the Contractor from responsibility for deviations from the Contract Documents. A Change Order shall evidence the approval of any Shop Drawing of which substantially deviates from the requirement of the Contract Documents.

B. When submitted for the Engineers review, Shop Drawings shall bear the Contractor's certification that he has reviewed, checked and approved the Shop Drawings and that they are in conformance with the requirements of the Contract Documents.

C. Portions of the work requiring a Shop Drawing or sample submission shall not begin until the Engineer has approved the Shop Drawing or submission. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

1.6 MATERIALS, SERVICES AND FACILITIES

A. it is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature and all other services and facilities of any nature whatsoever necessary to execute, complete, and delivered the Work within the specified time.

B. Materials and equipment shall be so stored as to ensure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the Work shall be located so as to facilitate prompt inspection.

C. Manufactured articles, materials and equipment shall be applied, installed, connected, directed, used, cleaned and conditioned as directed by the manufacturer.

D. Materials, supplies and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer.

E. Materials, supplies, or equipment to be incorporated into the Work shall not be purchased by the Contractor or the Subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which interest is retained by the seller.

1.7 INSPECTION AND TESTING

A. All materials and equipment used in the construction of the Project shall be subject to adequate inspection and testing in accordance with generally accepted standards, has required and defined in the Contract Documents.

B. The Owner shall provide all inspection and testing services not required by the Contract Documents.

C. The Contractor shall provide at his expense, the testing and inspection services required by the Contract Documents.

D. If the Contract Documents, laws, ordinances, rules, regulations or order of any public authority having jurisdiction, require any Work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor shall give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval.

E. Inspections, tests or approvals by the Engineer or others shall not relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

F. The Engineer and his representatives will, at all times have access to the Work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof.

G. If any Work is covered contrary to the written instructions of the Engineer, if requested by the Engineer, it must be uncovered for his observation and replaced at the Contractor's expense.

H. If the Engineer considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed in increase in the Contract Price or extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and inappropriate Change Order shall be issued.

I. Any costs associated with location or inspection of utility lines other than those being installed as part of this project will be at the expense of the Contractor, and no separate payment will be made for these expenses.

1.8 SUBSTITUTIONS

A. Whenever a material, article or piece of equipment is identified on the Drawings or Specifications by reference to brand name or catalogue number, it shall be understood that this is reference for the purpose of defining the performance of other salient requirements and that other products of equal capacities, quality and material, article, or piece of equipment of equal substance and function for these referred to in the Contract Documents by reference to brand name or catalogue number and if, in the opinion of the Engineer, such material, article, or piece of equipment is of equal substance and function to that specified, the Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the Contract price and the Contract documents shall be appropriately modified by Change Order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result.

Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract price or Contract time.

1.9 PATENTS

A. The Contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the Owner harmless from loss on account thereof except that the Owner shall be responsible for any such loss when a particular process, design or the product of a particular manufacturer or manufacturers is specified, however, if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Engineer.

1.10 SURVEYS, PERMITS, AND REGULATIONS

A. The Owner shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the Work together with a suitable number of bench marks adjacent to the Work as shown in the Contract Documents. From the information provided by the Owner, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stake for pile locations and other working points, lines, elevations and cut sheets.

B. The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

C. Permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor unless otherwise stated in the Supplemental General Conditions. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in Section 13, Changes in the Work.

1.11 PROTECTION OF WORK, PROPERTY AND PERSONS

A. The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

B. The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury or loss to any property caused, directly or

indirectly, in whole or in part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the Contract Documents or to the acts or omissions of the Owner or the Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault of negligence by the Contractor.

C. In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, shall act to prevent threatened damage, injury or loss. He will give the Engineer prompt WRITTEN NOTICE of any significant changes in the Work or deviations from the Contract Documents caused thereby and a Change Order shall there upon be issued covering the changes and deviations involved.

1.12 SUPERVISION BY CONTRACTOR

A. The Contractor will supervise and direct the Work. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the Supervisor shall be as binding as if given to the Contractor. The Supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the Work.

1.13 CHANGES IN THE WORK

A. The Owner may, at any time as the need arises, order changes within the scope of the Work without invalidating the Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the Work, Change Order shall authorize an equitable adjustment.

B. The Engineer also may, at any time, by issuing a Field Order, make changes in the details of the Work. The Contractor shall proceed with the performance of any changes in the Work so ordered by the Engineer unless the Contractor believes that such Field Order entitles him to a change in the Contract Price or Time or both, in which event he shall give the Engineer WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the Contractor shall document the basis for the change in Contract Price or Time within thirty (30) days. The Contractor shall not execute such changes pending the receipt of any executed Change Order or further instruction from the Owner.

1.14 CHANGES IN CONTRACT PRICE

A. The Contract Price may be changed only by a Change Order. The value of any Work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below:
   1. Unit prices previously approved
   2. An agreed upon sum
   3. The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work.

In addition there shall be added an amount to be agreed upon but not to exceed fifteen (15%)percent of the actual cost of the Work to cover the cost of general overhead and profit.

1.15 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

A. The date of beginning and the time for completion of the Work are essential conditions of the Contract Documents and the Work embraced shall be commenced on a date specified in the Notice to Proceed.

B. The Contractor will proceed with the Work at such rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work.

C. If the Contractor shall fail to complete the Work within the Contract Time or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the Bid for each calendar day the Contractor shall be in default after the time stipulated in the Contract Documents.

D. The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due to the following, and the Contractor has promptly given WRITTEN NOTICE of such delay to the Owner or Engineer.
   1. To any preference, priority or allocation order duly issued by the Owner.
   2. To unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and
   3. To any delays of Subcontractors occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

1.16 CORRECTION OF WORK

A. The Contractor shall promptly remove from the premises all Work rejected by the Engineer for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the Work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all Work of other Contractors destroyed or damaged by such removal or replacement.

B. All removal and replacement Work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected Work within ten (10) days after receipt of WRITTEN NOTICE, the Owner may remove such Work and store the materials at the expense of the Contractor.

1.17 SUBSURFACE CONDITIONS

A. Should the contractor encounter subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or

1. Unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work of the contractor provided for in the Contract Documents.
2. The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the Owner by WRITTEN NOTICE of:

B. The Owner shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for performance of the Work, an equitable adjustment shall be made and the Contract Documents shall be modified by a Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the Owner may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

1.18 SUSPENSION OF WORK, TERMINATION AND DELAY

A. Owner may suspend the Work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by WRITTEN NOTICE to the Contractor and the Engineer, which notice shall fix the date on which work shall be resumed. The Contractor will resume that work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

B. If the Contractor is adjudged as bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment or if he repeatedly fails to make prompt payments to Subcontractors or for labor, materials, or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the Work or if he disregards the authority of the Engineer, or if he otherwise violates any provision of the Contract Documents, then the Owner may, without prejudice to any other right or remedy, and after giving the Contractor and his surety a minimum of ten (10) days from delivery of the WRITTEN NOTICE, terminate the services of the Contractor and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and finish the Work by whatever method he may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor will pay the difference to the Owner. Such costs incurred by the Owner will be determined by the Engineer and incorporated in a Change Order.

C. Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies due the Contractor by the Owner will not release the Contractor from compliance with the Contract Documents.

D. After ten (10) days from delivery of a WRITTEN NOTICE to the Contractor and the Engineer, the Owner may, without cause and without prejudice to any other right or remedy, elect to

abandon the Project and terminate the Contract. In such case, the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit.

E. If, through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days after it is submitted, or the Owner fails to pay the Contractor substantially the sum approved by the Engineer or awarded by arbitrators within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) days from delivery of a WRITTEN NOTICE to the Owner and the Engineer, terminate the Contract and recover from the Owner payment for all work executed and all expenses sustained. In addition, and in lieu of terminating the Contract, if the Engineer has failed to act on a request for payment, or if the Owner has failed to make any payment as aforesaid, the Contractor may, upon ten (10) days WRITTEN NOTICE to the Owner and the Engineer, stop the work until he has been paid all amounts then due, in which event and upon resumption of the work, Change Orders shall be issued for adjusting the Contract Price or extending the Contract Time, or both to compensate for the costs and delays attributable to the stoppage of the work.

F. If the performance of all or any portion of the Work is suspended, delayed, or interrupted as a result of a failure of the Owner or Engineer to act within the time specified in the Contract Documents, or if no time is specified, within a reasonable time an adjustment in the Contract Price or an extension of the Contract Time, or both, shall be made by Change Order to compensate the Contractor for the costs and delays necessarily caused by the failure of the Owner or Engineer.

1.19 PAYMENTS TO CONTRACTOR

A. At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the Engineer a Partial Payment Estimate filled out and signed by the Contractor covering the work performed during the period covered by the Partial Payment Estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the Owner, as will establish the Owner's title to the material and equipment and protect his interest therein, including applicable insurance. The Engineer will, within ten (10) days after receipt of each Partial Payment Estimate, either indicate in writing his approval of payment and present the Partial Payment Estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the Partial Payment Estimate. The Owner will, within ten (10) days of presentation to him of an approved Partial Payment Estimate, pay the Contractor a Progress payment on the basis of the approved Partial Payment Estimate. The Owner shall retain ten percent (10%) of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents. The Owner however, at any time after fifty percent (50%) of the work has been completed, if he finds that satisfactory progress is being made, may reduce retainage to five percent (5%) on the current and remaining estimates. When the work is substantially complete (operational or beneficial for occupancy), the retained amount may be further reduced below five percent (5%) to only that amount necessary to assure completion. On completion and acceptance of a part of the work on which the price is stated separately in the Contract Documents, payment may payment may be made in full, including retained percentages, less authorized deductions.

B. The request for payment may also include an allowance for the cost of such major materials and equipment, which are suitably stored either at or near the site.

C. Prior to substantial completion, the Owner, with the approval of the Engineer and with the concurrence of the Contractor, may use any completed or substantially completed portions of the work. Such use shall not constitute an acceptance of such portions of the work.

D. The Owner shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the work, or the restoration of any damaged work except such as may be caused by agents or employees of the Owner.

E. Upon completion and acceptance of the Work, the Engineer shall issue a certificate attached to the final payment request that the Work has been accepted by him under the conditions of the Contract Documents. The entire balance found to be due the Contractor, including the retained percentages, but except such sums as may be lawfully retained by the Owner, shall be paid to the Contractor within thirty (30) days of completion and acceptance of the work.

F. The Contractor will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and arts thereof, equipment, tools, and all supplies incurred in the furtherance of the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so, the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor’s unpaid compensation, a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

G. If the Owner fails to make payment thirty (30) days after approval by the Engineer, in addition to other remedies available to the Contractor, there shall be added to each such payment, interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the Contractor.

1.20 ACCEPTANCE OF FINAL PAYMENT AS RELEASE

A. The acceptance by the Contractor of final payment shall be and shall operate a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically excepted by the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents or the Performance Bond and Payment Bonds.

1.21 INSURANCE

A. The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of, or result from the Contractor's execution of the work, whether such execution be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:
   1. Claims under workmen's compensation, disability benefit and other similar employee benefit acts;
   2. Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;
   3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;
   4. Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person; and
   5. Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.
      a. Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the work. The Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least fifteen (15) days prior WRITTEN NOTICE has been given to the Owner.

B. The Contractor shall procure and maintain, at his own expense, during the Contract Time, liability insurance as hereinafter specified.
   1. Contractor's General Public Liability and Property Damage Insurance, including vehicle coverage, issued to the Contractor and protecting him from all claims for personal injury including death and all claims for destruction of, or damage to property arising out of, or in connection with any operations under the Contract Documents, whether such operations be by himself or by any subcontractor under him or anyone directly or indirectly employed by the Contractor or by a subcontractor under him. Insurance shall be written with a limit of liability of not less than $500,000 for all damages arising out of bodily injury, including death, at any time resulting there from, sustained by anyone person in any one accident; and a limit of liability of not less than $500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $200,000 aggregate for any such damage sustained by two or more persons in any one accident.
   2. The Contractor shall acquire and maintain, if applicable, Fire and Extended Coverage Insurance upon the project to the full insurable value thereof for the benefit of the Owner, the contractor, and subcontractors as their interest may appear. This provision shall in no way release the Contractor or Contractor's surety from obligations under the Contract Documents to fully complete the project.

C. The Contractor shall procure and maintain, at his own expense during the Contract Time, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the project and in case any work is sublet, the Contractor shall require such subcontractor similarly to provide Workmen's Compensation Insurance,

including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under Workmen's Compensation statute, the Contractor shall provide, and shall cause each subcontractor to provide adequate and suitable insurance for the protection of his employees not otherwise protected.

D. The Contractor shall secure, if applicable, "All Risk" type Builder's Risk Insurance for work to be performed. Unless specifically authorized by the Owner, the amount of such insurance shall not be less than Contract Price totaled in the Bid. The policy shall cover not less than the losses due to fire, explosion, hail, lightening, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the Contract Time, and until the work is accepted by the Owner. The policy shall name as the insured, the Contractor, the Engineer, and the Owner.

1.22 CONTRACT SECURITY

A. The Contractor shall, within ten (10) days after the receipt of the Notice of Award, furnish the Owner with a Performance Bond and a Payment Bond in penal sums equal to the amount of the Contract Price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the Work provided by the Contract Documents. Such bonds shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the state in which the work is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these Bonds shall be borne by the Contractor. If, at any time, a surety on any such bond is declared a bankrupt or loses its right to do business in the state in which the work is to be performed or is removed from the list of Surety Companies accepted on Federal bonds, Contractor shall, within ten (10) days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the Owner.

1.23 ASSIGNMENTS

A. Neither the Contractor nor the Owner shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations there under, without written consent of the other party.

1.24 INDEMNIFICATION

A. The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claims, damage, loss or destruction of tangible property, including the loss of use resulting there from; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and subcontractor or any one directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

B. In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workmen's compensation acts, disability benefit acts or other employee benefits acts.

C. The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or Specifications.

1.25 SEPARATE CONTRACTS

A. The Owner reserves the right to let other contracts in connection with this project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. If the proper execution or results of any part of the Contractor's work depends upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that renders it unsuitable for such proper execution and results.

B. The Owner may perform additional work related to the project by himself or he may let other contracts containing provisions similar to these. The Contractor will afford the other contractors who are parties to such contracts (or the Owner, if he is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his work with theirs.

C. If the performance of additional work by other contractors or the owner is not noted in the Contract Documents prior to the execution of the Contract, WRITTEN NOTICE thereof shall be given to the Contractor prior to starting any such additional work. If the Contractor believes that the performance of such additional work by the Owner or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Section 14 and 15.

1.26 SUBCONTRACTING

A. The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

B. The Contractor shall not award the subcontractor(s), in excess of fifty percent (50%) of the Contract Price without prior written approval of the Owner.

C. The Contractor shall be fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

D. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.

E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and the Owner.

1.27 ENGINEER'S AUTHORITY

A. The Engineer shall act as the Owner's representative during the construction period. He shall decide questions, which may arise as to quality and acceptability of materials furnished and work performed. He shall interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the work is proceeding in accordance with the Contract Documents.

B. The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.

C. The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

D. The Engineer shall promptly make decisions relative to interpretation of the Contract Documents.

1.28 LAND AND RIGHTS-OF-WAY

A. Prior to issuance of NOTICE TO PROCEED, the Owner shall obtain all land and rights of way necessary for carrying out and for the completion of the work to be performed pursuant to the Contract Documents unless otherwise mutually agreed.

B. The Owner shall provide to the Contractor information, which delineates and describes the lands owned and rights of way acquired.

C. The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

1.29 GUARANTY

A. The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one (1) year from the date of substantial completion. The Contractor warrants and guarantees for a period of one (1) year from the date of substantial completion of the system, that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

1.30 ARBITRATION

A. All claims, disputes and other matters in question and arising out of, or relating to the Contract Documents or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 20, shall be decided by arbitration

in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

B. Notice of the Demand for Arbitration shall be filed in writing with the other party to the Contract Documents and with the American Arbitration Association, and a copy shall be filed with the Engineer. Demand for Arbitration shall in no event be made on any claim, dispute or other matter in question, which would be barred by the applicable statute of limitations.

C. The Contractor will carry on the work and maintain the progress schedule during any arbitration proceedings unless otherwise mutually agreed in writing.

1.31 TAXES

A. The Contractor will pay all sales, consumer, use and other similar taxes required by the law of the place where the work is performed.

END OF SECTION

SECTION 01 30 10 – SPECIAL CONDITIONS

PART 1 GENERAL

1.1 SUMMARY

A. SECTION INCLUDES
1. General.
2. Contract Documents.
3. Completion Time.
4. Liquidated Damages.
5. Classification of Earthwork.
6. Special Provisions.
7. Special Attention for Bidders.
8. SC DHEC Stabilization Requirements

1.2 GENERAL

A. Work covered by the Contract Documents consists of improvements as described in the BID Schedule, and as specified herein.

B. All Bids shall include labor, materials, transportation, equipment, services, applicable taxes and other items necessary for a complete and acceptable job in compliance with the Drawings and Specifications.

1.3 CONTRACT DOCUMENTS

A. Documents covering the work under this project consist of the following items:
1. Contract Documents, dated **January 2015** containing:
a. Invitation to Bid
b. Bid
c. Bid Bond
d. Performance and Payment Bond
e. Construction Contract
f. Standard General Conditions of the Construction Contract
g. Specifications
2. Drawings, Sheets **C1 through C10**

B. All Documents are a part of this Contract and the requirements of each part shall apply to the entire project as may be applicable.

1.4 COMPLETION TIME

A. Work on the project shall be commenced with adequate forces, within the time stipulated in the "Bid" and shall be fully completed within **90 days** which shall include Sundays and holidays.

1.5 LIQUIDATED DAMAGES

A. Liquidated damages sustained by the Owner, the Project not being completed within the stipulated time, shall be **$125.00 per day**.

1.6 CLASSIFICATION OF EARTHWORK

A. All excavation and grading shall be unclassified.

1.7 SPECIAL PROVISIONS

A. The following Special Provisions shall be part of this Contract.

B. Any areas on or adjacent to the work site disturbed during the course of construction shall be restored to present or better condition.

C. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymers, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in conformance with instructions and these specifications.

D. Safety and Health Regulations: The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

E. Protection of Property: The operations of the Contractor shall be conducted with full consideration of all the proper and legal rights of the Owner, and of adjacent property owners and the public, and with the least possible amount of inconvenience to them. Contractor shall coordinate all construction activities and schedules with Owner.

F. Construction Staking: Contractor shall perform or provide all construction layout survey and grade staking. Survey control points if required are in place and identified on the plans.

G. Siltation and Erosion Control: Erosion of soil shall be minimized during construction, and any areas on or adjacent to the work site disturbed during construction operations shall be restored to present or better condition. Contractor shall erect silt fences of sufficient strength to prevent silt erosion into main drainage channels and storm drainage structures.

H. Underground Utilities: Sewer and water mains/services, telephone lines, power lines and cables may be encountered and should be anticipated along roadways and rights-of-ways. The Contractor shall contact representatives of all utilities to determine the exact locations of all existing facilities and underground utilities and shall make every effort to avoid damage to such. Any overhead utility lines and power poles, guys, etc., obstructing construction shall be protected from damage or moved by utility company, as necessary.

I. Codes and Standards: Wherever reference is made to codes, standard specifications and regulations, on the Drawings or in these specifications, included but not limited to National Electric codes, Federal Specifications, ASTM, AWWA, ANSI specifications, various institute specifications, etc., it shall be understood that such reference is to the latest edition including addenda and revisions in effect on the date of these Contract Documents.

J. Work Schedule: The Contractor shall submit to the Owner a construction schedule of proposed work sequence, target dates and activities, completely coordinated with the State Department of Transportation officials prior to submittal.

1.8 SPECIAL ATTENTION FOR BIDDERS

A. Submittal of Bids:
   1. Comply exactly with all requirements and especially:
      a. Show license numbers on outside of envelope.
      b. All bids are to be submitted on the extra copy of the Bid Form, included herewith.
      c. Be sure the Bid is signed by a responsible Agent of the Bidder.
      d. Show the receipt of all Addenda.
      e. Include a 5% Certified Check, Bid Bond if required.

B. Taxes: It is to be noted that all applicable taxes are to be included in the Contract prices for all work and equipment.

C. Intent of Specifications: These Specifications specify and show materials deemed most suitable for the service anticipated. However, this is not done to eliminate other products equally as good and efficient. The Contractor shall prepare his bid on the basis of the particular materials specified. The awarding of the contract shall constitute a contractual obligation to furnish the specified materials or approved equal materials.

1.9 SC DHEC STABILIZATION REQUIREMENTS

A. The *NPDES General Permit For Stormwater Discharges From Construction Activities*, dated January 1, 2013, expires December 31, 2017, (AKA the "General Permit") lists out the requirements for stabilization:

"Section 3.2.10.B ***Soil Stabilization****. Permittees are required to initiate stabilization measures as soon as practicable whenever any clearing, grading, excavating, or other earth disturbing activities have permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed as soon as practicable. For areas where initiating stabilization measures is infeasible (e.g. where snow cover, frozen ground, or drought conditions preclude stabilization), initiate vegetative or non-vegetative stabilization measures as soon as practicable."*

The summary is that ***if any land is disturbed, it must be grassed*** or otherwise stabilized before closeout. This includes all disturbed areas such as lots, lawns, easements, shoulders, etc.).

"Section 5: Termination of Coverage
5.1 REQUIREMENTS
A. You may only submit a Notice of Termination (NOT) after one or more of the following conditions have been met:
I. Final stabilization has been achieved on all portions of the construction site for which you are responsible;...."

From *Appendix A: Definitions*,
*""****Final Stabilization****" means that all land-disturbing activities at the construction site have been completed and that all areas not covered by permanent structures, either (1)* ***a uniform (e.g. evenly distributed, without large bare areas) vegetative cover with a density of 70 percent of the natural background vegetative cover has been established*** *excluding areas where no natural background vegetative cover is possible (e.g., on a beach), or (2) equivalent*

permanent stabilization measures (such as the use of landscaping mulch, rip-rap, pavement and gravel) have been implemented to provide effective cover for exposed portions of the construction site not stabilized with vegetation."

END OF SECTION

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes
1. Submittal procedures.
2. Proposed product list.
3. Product data.
4. Use of electronic CAD files of Project Drawings.
5. Shop Drawings.
6. Other submittals.
7. Design data.
8. Test reports.
9. Certificates.
10. Contractor review.
11. Engineer review.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal with cover sheet. Identify: Project, Contractor, Subcontractor and supplier. If necessary, include pertinent Drawing and detail number and/or Specification Section number appropriate to submittal.

B. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

C. Coordinate submission of related items.

D. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.

E. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

F. Allow space on submittals for Contractor and Engineer review stamps.

G. When revised for resubmission, identify changes made since previous submission.

H. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

I. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.3 PROPOSED PRODUCT LIST

A. Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.4 PRODUCT DATA

A. Submit number of copies Contractor requires, plus two copies Engineer will retain.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.5 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
   1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
   2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
   3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
   4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
   5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
   6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.6 SHOP DRAWINGS

A. Shop Drawings: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
   1. Include signed and sealed calculations to support design.
   2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
   3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. Submit electronic submittals via email as PDF electronic files.

1.7 OTHER SUBMITTALS

A. Closeout Submittals: Comply with Section 01 70 00 - Execution and Closeout Requirements.

B. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.

C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.8 TEST REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.9 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.10 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.

B. Contractor: Responsible for:
   1. Determination and verification of materials including manufacturer's catalog numbers.
   2. Determination and verification of field measurements and field construction criteria.
   3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
   4. Determination of accuracy and completeness of dimensions and quantities.
   5. Confirmation and coordination of dimensions and field conditions at Site.

6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

1.11 ENGINEER REVIEW

A. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. "Mass submittals" are defined as six or more submittals or items in one day or 20 or more submittals or items in one week. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.

B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.

C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, or a Construction Change Directive by either the Owner or Engineer.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

1.2 PRODUCTS

A. At minimum, comply with specified requirements and reference standards.

B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.

C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

D. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products according to manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products according to manufacturer's instructions.

B. Store products with seals and labels intact and legible.

C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.

D. For exterior storage of fabricated products, place products on sloped supports aboveground.

E. Provide off-Site storage and protection when Site does not permit on-Site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.

B. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 01 33 00 - Submittal Procedures.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 31 05 13 - SOILS FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Subsoil materials.
2. Topsoil materials.
3. Unsuitable materials.

B. Related Sections:
1. Section 31 05 16 - Aggregates for Earthwork.
2. Section 31 22 13 - Grading.
3. Section 31 23 16 – Excavation.
4. Section 31 23 23 - Fill.
5. Section 31 25 00 – Erosion and Sedimentation Control.
6. Section 31 37 00 - Riprap.
7. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 UNIT PRICES - MEASUREMENT AND PAYMENT

A. Subsoil:
1. Per Sections 31 22 13 – Grading and 31 23 23 – Fill.

B. Topsoil:
1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes supplying topsoil materials, stockpiling on site.
3. Note that topsoil is covered under Section 31 22 13 – Grading and that this category only refers to topsoil imported form off site.

C. Unsuitable Soils:
1. Per Sections 31 22 13 – Grading and 31 22 13 – Excavation.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. South Carolina Department of Transportation (SC DOT):
1. SCDOT 2007 Standard Specifications For Highway Construction, Sections 203 *Roadway and Drainage Excavation*, and 208 *Subgrade*.

C. ASTM International:
1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.4 SUBMITTALS – Not Used

1.5 QUALITY ASSURANCE

A. Furnish each fill/ topsoil material from single source throughout the Work.

B. Perform Work in accordance with SC DOT (South Carolina Department of Transportation) standards.

PART 2 PRODUCTS

2.1 SUBSOIL MATERIALS

A. Subsoil Type: General.
1. Soil material used as fill, backfill, subgrade for structures or pavement embankments, or site grading shall consist of suitable material as found available on-site until such supply of on-site material is depleted.

B. Subsoil Type: General.
1. Excavated and re-used material, or local borrow.
2. Graded.
3. Free of organic material, debris, or deleterious substances.
4. Not more than 15% of the lumps or rocks larger than 2 – 1/2 inches in their greatest dimension.
5. Do not permit rocks having a dimension greater than 1 inch in the upper 6 inches of fill or embankment.

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 MATERIALS

A. Stockpile topsoil separate from other excavated material.

B. Topsoil Type: General.
1. Excavated and reused material. Unclassified.
2. Graded.
3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
a. Screening: Single screened.
4. Use topsoil consisting of material removed from the top 3“ to 6” of existing on-site soils.

C. Topsoil Type: Imported from off-site.
1. Imported borrow.
2. Friable loam.

3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
   a. Screening: Single screened.
4. Acidity range (pH) of 5.5 to 7.5.
5. Containing minimum of 4 percent and maximum of 25 percent inorganic matter.

2.3 UNSUITABLE SOILS (MUCK)

A. Unsuitable Material: Unsuitable Material is defined as earth material unsatisfactory for its intended use and is classified by the soils technicians. 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.

B. Muck: materials unsuitable for foundation because of organic content, saturation to the extent that it is somewhat fluid and must be moved by dragline, dredge, or other special equipment, are designated as muck. No extra payment will be made for muck removal.

2.4 SOURCE QUALITY CONTROL

A. Testing and analysis of subsoil and topsoil materials shall be per the Geotechnical Report and/or the Soils Engineer contracted to perform soil tests on site.

B. When tests indicate materials do not meet specified requirements, change material and retest.

C. Furnish materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXCAVATION

A. Strip topsoil to full depth of topsoil in designated areas. Stockpile topsoil separately from fill in order to re-use it for grassing at the end of the project. Place a line of silt fencing on the downstream side of the stockpile.

B. Excavate subsoil from areas designated. Place a line of silt fencing on the downstream side of the stockpile.

C. Do not excavate wet topsoil.

D. Remove excess excavated materials, subsoil or topsoil not intended for reuse, from site.

E. Remove excavated materials not meeting requirements for subsoil materials from site.

3.2 STOCKPILING

A. Stockpile materials on site at locations indicated by Engineer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Stockpile topsoil 8 feet high maximum.

E. Prevent intermixing of soil types or contamination.

F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials. Place a line of silt fence along the downhill side of the stockpile per SC DHEC Best Management Practices.

G. Stockpile unsuitable or hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of.

3.3 STOCKPILE CLEANUP

A. Leave unused materials in neat, compact stockpile in location designated by the Owner.

B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

3.4 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 inches.

C. Maintain topsoil free of roots, rocks, debris, clods of soil and any other objectionable material which might hinder subsequence grassing or mowing operations.

D. Any surplus materials shall be disposed of in approved areas on the site.

END OF SECTION

SECTION 31 05 16 - AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Coarse aggregate materials.
2. Fine aggregate materials.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 22 13 - Grading.
3. Section 31 23 23 - Fill.
4. Section 31 37 00 - Riprap.
5. Section 33 41 00 - Storm Utility Drainage Piping.
6. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Aggregate:
1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes supplying aggregate materials, stockpiling.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. South Carolina Department of Transportation (SC DOT):
1. SCDOT 2007 Standard Specifications For Highway Construction, Section 305 *Graded Aggregate Base*.

C. ASTM International:
1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
5. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS – Not Used

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

A. Aggregate Type: **GABC** (Graded Aggregate Base Course).
   1. Conforms to SCDOT 2007 Standard Specifications For Highway Construction, Section 305 *Graded Aggregate Base* (Macadam Base Course).
   2. Macadam Base Course mixture (per SC DOT) is as follows:

Sieve Size	Percent Passing
2 inches	100
1 1/2 inches	95 to 100
1 inch	70 to 100
1/2 inch	48 to 75
No. 4	30 to 60
No. 30	11 to 30
No. 200	0 to 12
Liquid Limit	25 max
Plasticity Index	6 max

B. Aggregate Type: **57 Stone**.
   1. Natural stone; angular, washed, free of clay, shale, and organic matter; graded in accordance with ASTM C136 to the following limits:
   2. Minimum Size: 1/4 inch.
   3. Maximum Size: 3/4 inch.

C. Aggregate Type: **Pea Gravel**.
   1. Natural stone with rounded edges; washed, free of clay, shale, organic matter; graded in accordance with ASTM C136 to the following limits:
   2. Minimum Size: 1/4 inch.
   3. Maximum Size: 3/8 inch.

2.2 FINE AGGREGATE MATERIALS

A. Fine Aggregate: **Sand**.

   1. Washed inert natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM C136; within the following limits:

Sieve Size	Percent Passing
No. 4	100
No. 14	10 to 100
No. 50	5 to 90
No. 100	4 to 30
No. 200	0 to 10

2.3 SOURCE QUALITY CONTROL

A. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.

B. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136.

C. When tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations designated by Engineer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.

D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SECTION 31 10 00 - SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Removing surface debris.
2. Removing designated trees, shrubs, and other plant life.
3. Removing abandoned utilities.
4. Stabilization

B. Related Sections:
1. Section 31 05 13 – Soils for Earthwork.
2. Section 31 22 13 - Grading.
3. Section 32-92-19 – Seeding and Stabilization.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Site Clearing:
1. Basis of Measurement: By acre.
2. Basis of Payment: Includes clearing site, loading and removing waste materials from site.

1.3 SUBMITTALS - Not Used

1.4 QUALITY ASSURANCE

A. Conform to applicable State and local codes for disposal of debris, including provisions for burning debris on site.

B. Perform Work in accordance with State of South Carolina standards.

PART 2 PRODUCTS

2.1 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work, looking specifically for the following:
1. Limits of clearing.
2. Wetlands.
3. Easements or off-site access.
4. Property lines, particularly SC DOT boundaries.

B. Where trees or brush exist at the work site, the construction area shall be cleared and stumps grubbed. Only those trees that seriously interfere with construction shall be cut. Care shall be exercised in protecting the entire construction area.

C. Verify existing plant life designated to remain is tagged or identified. Consult with owner if selective clearing is specified on the plans to determine which plant life is to remain.

D. Where wetlands appear on the drawings, verify their locations. Wetlands are typically delineated with pink survey marking tape. Unless otherwise specified on the plans, stay a minimum of ten feet from the wetland boundary.

E. Identify waste area for placing removed materials.

3.2 PREPARATION

A. Call Local Utility Line Information service at 811 (South Carolina) not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. The Contractor shall consult with the Owner and Engineer prior to starting clearing and a full understanding is to be reached as to procedure. Contractor's operations shall be conducted with full consideration of all proper and legal rights of the Owner, adjacent property owners, and the public and with the least amount of inconvenience to them.

3.3 PROTECTION

A. Locate, identify, and protect utilities indicated to remain, from damage.

B. Protect trees, plant growth, and features designated to remain (referred to as "Grand Trees" or "Protected Trees" on the Drawings).

C. Identify wetland areas if delineated on the Drawings. Delineated wetland boundaries are usually marked by pink survey tape on the trees and undergrowth.

D. Protect bench marks, survey control points, and existing structures from damage or displacement.

3.4 CLEARING

A. Clear areas required for access to site and execution of Work as necessary. Typically this means removal of topsoil, depending on site conditions.

B. Areas to be cut or filled. Remove trees and shrubs in areas indicated. Remove stumps, main root ball, and surface rock. Remove topsoil and stockpile per Section 31 05 13 – Soils for Earthwork.

C. Areas within Limits of Disturbance without direct cut or fill. Clear undergrowth and deadwood, without disturbing subsoil.

D. Selective clearing, where indicated, shall be done in areas designated by the Engineer. Selective clearing shall consist of removing vegetation, brush, stumps, etc., from the area. Selected trees shall be left standing and care shall be taken not to damage remaining trees. Grubbing will not be required in areas designated for selective clearing.

E. Minor structures within right-of-way limits and which interfere with construction shall be removed and disposed of, replaced or relocated as directed by the Engineer.

3.5 REMOVAL

A. All stumps, laps, logs and brush resulting from clearing operations shall be completely burned or otherwise disposed of to the Engineers satisfaction.

B. Remove debris, rock, and extracted plant life from site.

C. Remove paving, curbs, and concrete as indicated on the drawings.

D. Burning of cleared material, where allowed, shall be accomplished in strict accordance with all applicable local, state, and federal regulations pertaining to open burning and smoke abatement. Permits shall be secured by the Contractor prior to burning any materials.

E. Where drawings indicate partial removal of paving, curbs, and concrete, neatly saw cut edges at right angle to surface.

F. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.

G. Continuously clean-up and remove waste materials from site to an approved landfill. Do not allow materials to accumulate on site.

H. Do not bury materials on site. Leave site in clean condition.

3.6 STABILIZATION

A. The *NPDES General Permit For Stormwater Discharges From Construction Activities*, dated January 1, 2013, expires December 31, 2017, (AKA the “General Permit”) states that:

*“Section 3.2.10.B **Soil Stabilization**. Permittees are required to initiate stabilization measures as soon as practicable whenever any clearing, grading, excavating, or other earth disturbing activities have permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed as soon as practicable. For areas where initiating stabilization measures is infeasible (e.g. where snow cover, frozen ground, or drought conditions preclude stabilization), initiate vegetative or non-vegetative stabilization measures as soon as practicable.”*

The summary is that ***if any land is disturbed, it must be grassed*** or otherwise stabilized before closeout. This includes all areas where roots have been disturbed or ground cover has been grubbed. See Section 32-92-19 Seeding and Stabilization for more details.

END OF SECTION

SECTION 31 22 13 - GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Excavating topsoil.
2. Excavating subsoil.
3. Cutting, grading, filling, rough contouring, and compacting site for site structures, building pads, drainage structures, roads, infrastructure and slopes.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 05 16 - Aggregates for Earthwork.
3. Section 31 10 00 - Site Clearing.
4. Section 31 23 16 - Excavation.
5. Section 31 23 23 - Fill.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. The category “Grading” overlaps in part with Sections 31 23 16 – Excavation, 31 23 23 – Fill, and 31 05 13 – Soils for Earthwork. Please refer to these Sections for specific descriptions of the categories used for unit prices.
1. In general, “Grading” refers to earth moved between two locations within the site boundaries for purposes of establishing the required elevations and slopes.
2. “Excavation” and “Fill” refer to cubic yard volumes of dirt being brought into, or removed from, the site.

B. Rough Grading (Fields):
1. Basis of Measurement: By square yard.
2. Basis of Payment: Includes removal of existing topsoil and placement in a stockpile on site, and grading area to building pad elevations (by excavation or fill) to a tolerance of +/-1/2 inch. Includes loading, placing, and compacting soil. Structural fill not available on site that must be imported falls under the category of “Fill”. Unsuitable soils that cannot be disposed of on site and must be removed fall under the category of “Excavation”.

C. Rough Grading (Roads, Drives & Swales):
1. Basis of Measurement: By square yard.
2. Basis of Payment: Includes removal of existing topsoil and placement in a stockpile on site, grading to subgrade elevations (by excavation or fill) to a tolerance of +/-1 inch. Includes loading, placing, and compacting soil. Structural fill not available on site that must be imported falls under the category of “Fill”. Unsuitable soils that cannot be disposed of on site and must be removed fall under the category of “Excavation”.

D. Grading (Pond Excavation):
1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes removal of existing topsoil to a stockpile on site, excavation of pond, placement of excess soil on site (including loading, transport

and compaction) and/or removal of excess soil from site. Includes pond berm, banks and earth spillways as well as all areas where excess soil may have been placed. Includes fine grading of pond to a distance of 20 feet beyond the rim in all directions by placement of topsoil to achieve final pond elevations to a tolerance of +/-4 inches.

E. Rough Grading (General):
1. Basis of Measurement: By square yard.
2. Definition: This category includes any area not covered under items 1.2B, C or D above. It includes residential lots, ditches, swales, easements, banks, road shoulders and landscaped areas. It excludes areas filled by pond spoil unless additional fill is required to achieve the necessary elevations.
3. Basis of Payment: Includes removal of existing topsoil and placement in a stockpile on site, and grading to final elevations (by excavation or fill) to a tolerance of +/-4 inches. Includes loading, placing, and compacting soil.

F. Fine Grading:
1. Basis of Measurement: By square yard.
2. Definition: This category includes any area not supporting a structure (road, parking lot, driveway or building pad) that has been rough graded to within a tolerance of +/- 3 inches per items 1.2D & E above.
3. Basis of Payment: Includes breaking dirt clots, placing topsoil, raking, blending grades and fine grading areas to remove low spots and generally drain the area away from structures and toward drainage structures. Prepare area for stabilization per Section 32-92-19 – Seeding and Stabilization.
4. Tolerances: Final grades shall be +/- 2 inches for seeded areas, and +/- 1/2 inch for inverts of ditches, swales and spillways.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:
1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS – Not Used

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C136, ASTM D2419, and ASTM D2434.

B. Perform Work in accordance with State of South Carolina DOT standard.

PART 2 PRODUCTS

2.1 MATERIALS

A. Soil material shall consist of suitable material as found available on-site until such supply of on-site material is depleted. The Owner shall retain the services of a testing laboratory to perform all required soils testing. Where on-site soils are questionable, the soils engineer shall make appropriate tests to ensure that the soil is suitable for fill. These tests will be made at no cost to contractor.

B. Topsoil: as specified in Section 31 05 13.

C. Subsoil Fill: as specified in Section 31 05 13.

D. Structural Fill: Type as specified in Section 31 23 23.

E. Granular Fill: Type as specified in Section 31 23 23.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Site grading shall conform to the grades indicated by the finished contours and spot elevations shown on the drawings the Engineer will provide control points and CAD files. The contractor will be responsible for staking of right-of-way and any elevation hubs required.

C. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

A. Call Local Utility Line Information service at 811 (South Carolina) not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove or relocate utilities.

D. Protect utilities indicated to remain from damage.

E. Protect plant life, lawns, and other features remaining as portion of final landscaping.

F. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 TOPSOIL EXCAVATION

A. Excavation shall be made to the exact elevations, slopes and limits called for in the Drawings.

B. Per Section 31 05 13 – Soils for Earthwork.

3.4 SUBSOIL EXCAVATION

A. Excavation shall be made to the exact elevations, slopes and limits called for in the Drawings.

B. Per Section 31 05 13 – Soils for Earthwork.

3.5 FILLING

A. Fill areas to contours and elevations with unfrozen materials. Refer to Section 31 23 23 – Fill for fill requirements.

B. Fills shall be constructed of material that is reasonably free from grass, roots, rock or other objectionable material. Where natural slopes exceed 3:1, horizontal benches shall be cut to receive fill material. Slopes of less than 3:1 and other areas shall be scarified prior to placing fill material.

C. Fills shall be constructed of acceptable material approved by the Engineer and placed in successive layers of not over 8 inches loose thickness for the full width of section, where practical.

D. Where rock is excavated along with other material, it shall be incorporated in fill sections which are not to support pavement or structures and which do not form dikes. Rock shall be evenly distributed.

E. No organic materials will be allowed in fill.

F. Material for fills shall be spread evenly and the grading equipment routed over the work to obtain uniform compaction. Fills shall be compacted by approved equipment to the following

percentages of Standard Proctor (ASTM D-698 or AASHTO T99) maximum dry density at optimum moisture content:

1. Entire depth of fill the needs all structures - 100%
2. Top 2 feet of fill beneath all roadways - 98%
3. All other structural fill for embankments - 95%

G. Maintain optimum moisture content of fill materials to attain required compaction density.

H. Where topsoil, pavement or other items are shown, the rough grade shall be finished to such depth below finished grade as is necessary to accommodate these items.

3.6 FINE GRADING

A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.

C. Slope grade away from building minimum 5 percent slope for minimum distance of 10 ft, unless noted otherwise.

D. Repair or replace items indicated to remain, that were damaged by excavation or filling.

E. Backfill around structures shall be performed upon completion of the structure, above finished grade, and after all piping has been properly installed and tested.

F. Scarify subsoil to depth of 3 inches in areas where vehicles or construction equipment has compacted sub-soil.

G. Spread topsoil to minimum depth of 4 inches over area to be seeded. Rake until smooth.

3.7 TOLERANCES

A. Rough Grading (as measured at the top surface of subgrade):
   1. Subgrades beneath roads, parking lots or driveways: +/- 1 inch from required elevation.
   2. Building Pads: +/- 1/2 inch from required elevation.
   3. Yards, road shoulders, banks of ditches, ponds or swales, easements and landscaped areas: +/- 4 inches.

B. Fine Grading (as measured at the top surface of grade):
   1. Yards, road shoulders, banks of ditches, ponds or swales, easements and landscaped areas: +/- 2 inch.
   2. Inverts of ditches, spillways or swales: +/- 1/2 inch.

3.8 FIELD QUALITY CONTROL

A. Perform laboratory material tests in accordance with ASTM D698 or AASHTO T180.

B. Perform in place compaction tests in accordance with the following:
   1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.

2. Moisture Tests: ASTM D3017.

C. The Owner will retain the services of a testing laboratory to perform all required soils sampling and testing. These tests will be made at no cost to the Contractor. Areas in which testing reveals compaction below the specified density shall be reworked by the Contractor until specified compaction is attained.

D. Frequency of Tests: per local codes.

3.9 STABILIZATION

A. The *NPDES General Permit For Stormwater Discharges From Construction Activities*, dated January 1, 2013, expires December 31, 2017, (AKA the "General Permit") states that:

"Section 3.2.10.B ***Soil Stabilization****. Permittees are required to initiate stabilization measures as soon as practicable whenever any clearing, grading, excavating, or other earth disturbing activities have permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed as soon as practicable. For areas where initiating stabilization measures is infeasible (e.g. where snow cover, frozen ground, or drought conditions preclude stabilization), initiate vegetative or non-vegetative stabilization measures as soon as practicable."*

The summary is that ***if any land is disturbed, it must be grassed*** or otherwise stabilized before closeout. This includes all areas where roots have been disturbed or ground cover has been grubbed. See Section 32-92-19 Seeding and Stabilization for more details.

END OF SECTION

SECTION 31 23 16 - EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Soil densification.
   2. Excavating for paving, roads, and parking areas.
   3. Excavating for slabs-on-grade.
   4. Excavating for landscaping.
   5. Excavating for drainage structures.

B. Related Sections:
   1. Section 31 05 13 - Soils for Earthwork.
   2. Section 31 05 16 - Aggregates for Earthwork.
   3. Section 31 22 13 - Grading.
   4. Section 31 23 23 - Fill.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. The category “Excavation” overlaps in part with Sections 31 22 13 – Grading and 31 23 23 – Fill. Please refer to these Sections for specific descriptions of the categories used for Unit Pricing.
   1. Note that for utilities such as water, sewer, and manhole installation, excavation is included in the price of installing these materials.

B. Excavating Soil Materials:
   1. Basis of Measurement: By cubic yard.
   2. Basis of Payment: Includes general excavating to required elevations, loading and placing materials in stockpile and/or removing from site.
   3. Over Excavating: Payment will not be made for over excavated work nor for replacement materials.

C. Muck & Fill:
   1. Basis of Measurement: By cubic yard.
   2. Basis of Payment: Includes the removal of unsuitable soil (muck) from below the subgrade elevation of roads, parking lots, driveways or structures. Mucking will be done at the request of the Engineer or Soils Engineer only. The unit price includes loading and placing materials in stockpile and/or removing from site, supplying suitable fill material, placing fill where required, and compacting.

1.3 REFERENCES

A. Local utility standards when working within 24 inches of utility lines.

1.4 SUBMITTALS – Not Used.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with SC DOT (South Carolina Department of Transportation) standards.

1.6 PRODUCTS – Not Used

PART 2 EXECUTION

2.1 PREPARATION

A. Call Local Utility Line Information service at 811 (South Carolina) not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove or relocate utilities. Note that this is also covered under Section 31 22 13 – Rough Grading.

D. Protect utilities indicated to remain from damage.

E. Protect plant life, lawns, and other features remaining as portion of final landscaping.

F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

2.2 EXCAVATION

A. Contractor shall treat all water for removal of silt and debris. The treated water shall be directed to the treatment facility (typically a sediment trap or pond) identified by the Engineer.

B. Underpin adjacent structures which may be damaged by excavation work.

C. Excavate subsoil to accommodate building foundations, slabs-on-grade paving and site structures, and construction operations. Excavate soil and debris to the limits necessary to achieve the required finished excavation elevations as shown in the drawings. Excavation beyond these limits will require approval of the Engineer.

D. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 22 13 – Rough Grading.

E. Slope banks with machine to angle of repose or less until shored.

F. Do not interfere with 45 degree bearing splay of foundations.

G. Grade top perimeter of excavation to prevent surface water from draining into excavation. Final side slopes shall be 4:1 slope unless otherwise indicated on the drawings (maximum allowed slope = 3:1).

H. Trim excavation. Remove loose matter.

I. Remove lumped subsoil, boulders, and rock greater than 6" in greatest dimension. Allowable fill shall not contain more than 15% of the rocks or lumps larger than 2 ½ inches in their greatest dimension.

J. Notify Engineer of unexpected subsurface conditions.

K. Correct areas over excavated with structural fill.

L. Remove excess and unsuitable material from site.

M. Stockpile useable subsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.

N. Repair or replace items indicated to remain damaged by excavation.

2.3 FIELD QUALITY CONTROL

A. Request inspection of excavation and controlled fill operations in accordance with applicable local County code.

B. Request visual inspection of bearing surfaces by Engineer before installing subsequent work.

2.4 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 31 23 23 - FILL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Backfilling site structures to subgrade elevations.
2. Fill under slabs-on-grade.
3. Fill for over-excavation.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 05 16 - Aggregates for Earthwork.
3. Section 31 22 13 - Grading.
4. Section 31 23 16 - Excavation.
5. Section 31 37 00 - Riprap.
6. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. The category “Fill” overlaps in part with Sections 31 22 13 – Grading and 31 23 16 – Excavation. Please refer to these Sections for specific descriptions of the categories used for Unit Pricing.
1. Note that for utilities such as water, sewer, and manhole installation, fill is included in the price of installing these materials.

B. Structural Fill (unclassified):
1. Basis of Measurement: By cubic yard, compacted, in place.
2. Basis of Payment: Includes supplying fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. South Carolina Department of Transportation (SC DOT):
1. SCDOT 2007 Standard Specifications For Highway Construction, Sections 203 *Roadway and Drainage Excavation*, and 208 *Subgrade*.

C. ASTM International:
1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS – Not Used

1.5 QUALITY ASSURANCE

A. The Owner shall retain the services of a testing laboratory to perform all required soils testing. Where on-site soils are questionable, the soils engineer shall make appropriate tests to ensure that the soil is suitable for fill. These tests will be made at no cost to contractor.

B. Perform Work in accordance with SC DOT requirements for fill.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Soil material used as fill, backfill or subgrade for structures shall consist of suitable material or common fill.
   1. Fill shall conform to SCDOT 2007 Standard Specifications For Highway Construction, Section 203, *Roadway and Drainage Excavation*.
   2. Soil material shall consist of suitable material as found available on-site until such supply of on-site material is depleted.
   3. Suitable material or common fill shall consist of granular soil free from organic material, topsoil, debris, frozen soil or other deleterious substances containing no rocks or lumps over 6” in greatest dimension, with not more than 60% of material passing the number 200 sieve and with not more than 15% of the rocks or lumps larger than 2 ½ “ in their greatest dimension.
   4. Do not permit rocks having a dimension greater than 1“ in the upper 6” of fill or subgrade.

B. Where select material or structural fill is indicated on the drawings or specified, it should consist of a mineral soil free of organic material, loam, debris, frozen soil or other deleterious material which may be compressible or which cannot be properly compacted. Material used as select material or structural fill should conform to the following gradation requirements:

US Standard Sieve Size	Percent Passing by Weight
3 inches	100
No. 4	20 to 70
No. 40	5 to 75
No. 200	0 to 40

C. Select fill or structural fill should have a maximum liquid limit of 40% and maximum plasticity index of 10%.

D. Select fill or structural fill should have a maximum dry density of not less than 100 lbs/cubic foot at optimum moisture when tested in accordance with SC-T-29. Do not use any soil for embankment with optimum moisture content greater than 25% as defined in accordance with SC-T-29.

PART 3 EXECUTION

3.1 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with granular fill and compact to density equal to or greater than requirements for subsequent fill material.

C. Scarify subgrade surface to depth of one inch.

D. Proof roll per state or local requirements to identify soft spots; fill and compact to density equal to or greater than these requirements for subsequent fill material.

3.2 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place geotextile fabric over subgrade and between lifts, if specified in the Drawings.

D. Place and compact material in continuous 8 inch lifts.

E. Employ placement method that does not disturb or damage other work.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

H. Slope grade away from building minimum 5 percent slope for minimum distance of 10 ft, unless noted otherwise.

I. Make gradual grade changes. Blend slope into level areas.

J. Remove surplus backfill materials from site.

3.3 TOLERANCES

A. Top Surface of Backfilling Within Building Areas: Plus or minus 1 inch from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

C. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.4 FIELD QUALITY CONTROL

A. Perform laboratory material tests in accordance with ASTM D1557.

B. Perform in place compaction tests in accordance with the following:
   1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
   2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

D. Proof roll compacted fill surfaces under slabs-on-grade and paving.

3.5 PROTECTION OF FINISHED WORK

A. Section 31 25 00 – Erosion and Sediment Controls.

B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Diversion Ditches or Channels.
2. Rock Energy Dissipater (aprons).
3. Rock Barriers (check dams).
4. Sediment Traps.
5. Silt Fence.
6. Catch Basin Inlet Protection.
7. Construction Entrances.
8. Silt Fence.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 05 16 - Aggregates for Earthwork.
3. Section 31 10 00 - Site Clearing.
4. Section 31 23 16 - Excavation.
5. Section 31 23 23 - Fill.
6. Section 31 37 00 - Riprap.
7. Section 32 92 19 – Seeding and Stabilization.
8. Section 33 42 13 - Pipe Culverts.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Erosion and Sediment Control is bid as a lump sum and encompasses all items shown on the construction plans. This includes seeding, stabilization, sediment control structures, erosion control blankets, silt fence, and any other required sediment control materials or items. This lump sum also includes maintenance and replacement, if necessary, due to normal wear and tear.

B. Construction Entrance:
1. Basis of Measurement: By each unit.
2. Basis of Payment: Includes labor and materials for a complete installed construction entrance.

C. The items listed below are for changes or additions not shown on the construction plans and not considered part of the regular maintenance.

D. Diversion Channel:
1. Basis of Measurement: By linear foot.
2. Basis of Payment: Includes excavating, windrowing, compacting, seeding, mulching, and maintenance.

E. Rock Energy Dissipator:
1. Basis of Measurement: By each unit.

2. Basis of Payment: Includes cleaning, excavating, backfilling, placing embankment, placing geotextile fabric, placing rock, required grouting, and maintenance.

F. Rock Barrier (check dam):
1. Basis of Measurement: By cubic yard of rip rap.
2. Basis of Payment: Includes placing rock, coarse aggregate filter blanket, and maintenance.

G. Sediment Trap:
1. Basis of Measurement: By each unit.
2. Basis of Payment: Includes clearing, excavating, forming embankment, placing aggregate or rock and geotextile fabric, seeding, mulching, and maintenance.

H. Silt Fence:
1. Basis of Measurement: By linear foot.
2. Basis of Payment: Includes materials, installation and maintenance.

1.3 REFERENCES

A. South Carolina DHEC (Department of Health and Environmental Control) documents:
1. NPDES General Permit for Stormwater Discharges Form Construction Activities, issued January 1, 2013.
2. SC DHEC BMP (Best Management Practices) Handbook, August 2005.

B. American Association of State Highway and Transportation Officials:
1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.
2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:
1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS

A. Product Data: Submit data on geotextile fabric and Erosion Control Blankets.

1.5 CLOSEOUT SUBMITTALS

A. Per the SC DHEC Stormwater Permit, permanent structures must be surveyed to show final locations, contours and inverts.

B. Removal of temporary erosion and sediment control structures must be approved by SC DHEC or the SWPPP preparer; see Notice of Termination (NOT) requirements.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with State and County requirements as documented on the construction plans and in the approved SWPPP (Storm Water Pollution Prevention Plan).

B. Maintain one copy of the approved SWPPP, the SC DHEC Stormwater Permit, approved stamped construction plans, and inspection reports on site.

1.7 PRE-INSTALLATION MEETINGS

A. Per SC DHEC requirements.

PART 2 PRODUCTS

2.1 ROCK AND GEOTEXTILE MATERIALS

A. Furnish materials in accordance with State of South Carolina Department of Transportation (DOT) standards.

B. Furnish each aggregate material from single source throughout the Work.

C. Rock: As specified in Section 31 37 00 - Riprap.

D. Rock for construction entrances, Aggregate Type: 2” Roadrock
1. Natural stone; angular, washed, free of clay, shale, and organic matter; graded in accordance with ASTM C136 to the following limits:
2. Minimum Size: 2 inch.
3. Maximum Size: 3 inch.

E. Aggregates: As specified in Section 31 05 16 - Aggregates for Earthwork.

F. Backfill: As specified in Section 31 23 23 - Fill.

G. Geotextile Fabric for beneath riprap:
1. Non-biodegradable, non-woven filter fabric.
2. Flow rate (ASTM D4491): 140 gal/min/sq ft minimum.
3. Manufacturer: Mirafi Construction Products.
4. Model: Mirafi N-Series 140NL.
5. Substitutions: Permitted, must be equivalent.

2.2 SILT FENCE

A. Product Description: Silt Fence Fabric.
1. Fabric to be composed of long chain synthetic polymers.
2. Free of treatments or coatings which might adversely alter its physical properties after installation.

3. Free of defects or flaws that significantly affect its physical and/or filtering properties.
4. Minimum width: 36 inches.
5. Flow rate (ASTM D4491): 10 gal/min/sq ft minimum.
6. Manufacturer: Mirafi Construction Products.
7. Model: Mirafi X-Series 100X.
8. Substitutions: Permitted, must be equivalent.

B. Product Description: Silt Fence Support Posts.
1. Configuration: standard “T” section steel posts with metal soil stabilization plate.
2. Minimum Length: 48 inches.
3. Material: high strength steel with minimum yield strength of 50,000 PSI.
4. Weight: 1.25 pounds per foot.

2.3 EROSION CONTROL MATERIALS

A. Product Description: Erosion Control Blanket (ECB) – 12 month.
1. Single net excelsior erosion control matting.
2. Netting: lightweight photodegradable woven net.
3. Matrix: 100% uniform wood excelsior, 80% eight-inch or longer fiber lengths, 0.90 lbs per square minimum.
4. Thread: photodegradable, 2.0” stich spacing.
5. Functional longevity: approximately 12 months.
6. Manufacturer: Kale Enterprises, Inc., Moorsville, NC.
7. Model XCEL R-1 ECB
8. Substitutions: permitted, must be equivalent.

B. Product Description: Weighted Sediment Tube.
1. Size: 24 inch minimum diameter.
2. Length: Channel width plus minimum 24 inches.
3. Matrix: excelsior or coconut fiber.
4. Manufacturer: Filtrexx International, LLC, Grafton OH.
5. Model 24” filtrexx Soxx.
6. Substitutions: permitted, must be equivalent.

2.4 PLANTING MATERIALS

A. As specified in Section 32 92 19 – Seeding and Stabilization.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.

C. Verify gradients and elevations of base or foundation for other work are correct.

3.2 DIVERSION CHANNELS

A. Temporary Diversion Channels
1. For temporary diversion of storm water runoff, 21 days or less.
2. Install temporary channel per State and County standards.
3. Side slopes should be 2:1 or greater wherever possible.
4. Depth: should be less than 36" where possible. Where diversion ditches are greater than 36" in depth, side slopes cannot be less than 3:1 (H:V)
5. Install rock check dams or weighted sediment tubes unless diversion channel drains to a sediment trap. Cost for these items shall be incorporated into the cost for the channel.

3.3 ROCK ENERGY DISSIPATOR (APRONS)

A. Excavate to indicated depth of rock lining or nominal placement thickness as indicated ont eh construction plans. Remove loose, unsuitable material below bottom of rock lining, then replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.

B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope Provide a minimum overlap of two feet. Offset adjacent roll ends a minimum of four feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.

C. Carefully place rock on geotextile fabric to produce an even distribution of pieces, with minimum of voids and without tearing geotextile.

D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

E. Install sediment stake as indicated on plans. Sediment stake is a 48" long timber stake, 2" x 2" minimum, with permanent markings at 12", 18" and 24" height, used to measure accumulation of sediment. Stake must be buried at least 18". Place stake at end of apron, near the pipe outlet, or on upstream side of dissipater.

F. Clean out sediment when it reaches the 12" depth marker.

3.4 ROCK BARRIER (CHECK DAM)

A. Determine length required for ditch or depression slope and excavate, compact and foundation area to firm, even surface.

B. Produce an even distribution of rock pieces, with minimum voids to the indicated shape, height and slope.

C. Construct coarse aggregate filter blanket against upstream face of rock barrier to the indicated thickness.

D. Install sediment stake as indicated on plans. Sediment stake is a 48" long timber stake, 2" x 2" minimum, with permanent markings at 12", 18" and 24" height, used to measure accumulation of sediment. Stake must be buried at least 18". Place stake on upstream side of check dam.

E. Clean out sediment when it reaches the 12" depth marker.

3.5 SEDIMENT TRAPS

A. Clear site, as specified in Section 31 10 00.

B. Construct trap by excavating and forming embankments as specified in Section 31 23 16, and Section 31 23 23.

C. Place coarse aggregate or rock at outlet as indicated on Drawings.

D. Place geotextile fabric, as specified for rock energy dissipater.

E. When required, obtain borrow excavation for formation of embankment, as specified in Section 31 23 16.

F. On entire sediment trap area, apply soil supplements and sow seed as specified in Section 32 92 19.

G. Install sediment stake at outlet. Sediment stake is a 48" long timber stake, 2" x 2" minimum, with permanent markings at 12", 18" and 24" height, used to measure accumulation of sediment. Stake must be buried at least 18". Clean out sediment trap when it reaches the 12" depth marker.

3.6 SITE STABILIZATION

A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.

B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.

C. Stockpile and waste pile heights shall not exceed 8 feet. Slope stockpile sides at 2: 1 or flatter and place a line of silt fencing along the base on the downstream side. If stockpile is to remain for over 14 days without use, the silt fence shall surround the entire pile..

D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
   1. During non-germinating periods, apply mulch at recommended rates.
   2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 32 92 19 (temporary stabilization).
   3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 32 92 19 permanent seeding specifications.

E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.7 FIELD QUALITY CONTROL

A. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.8 CLEANING

A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, or if sediment stake indicates that 12” of sediment has accumulated, remove and dispose of sediment.

B. Do not damage structure or device during cleaning operations.

C. Do not permit sediment to erode into construction or site areas or natural waterways.

D. Clean channels when depth of sediment reaches approximately one half channel depth.

END OF SECTION

SECTION 31 37 00 - RIPRAP

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Riprap placed loose.

B. Related Sections:
1. Section 31 05 16 - Aggregates for Earthwork.
2. Section 31 22 13 - Grading.
3. Section 31 23 23 - Fill.
4. Section 33 42 13 - Pipe Culverts.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Riprap:
1. Basis of Measurement: By ton of riprap.
2. Basis of Payment: Includes supply and placing riprap and geotextile fabric underlay.

1.3 SUBMITTALS – Not Used

1.4 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work in accordance with SC DOT standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. Aggregate: Riprap.
1. Granite type; irregular shaped rock; solid and nonfriable; 8 inch minimum size.
2. Weighs a minimum of 25 lbs to a maximum of 125 lbs.
3. Shall have at least 60% of stone weighing more than 60 lbs.

B. Geotextile Fabric: Non-biodegradable, non-woven filter fabric.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Do not place riprap over frozen or spongy subgrade surfaces.

3.2 PLACEMENT

A. Place geotextile fabric over substrate, lap edges and ends.

B. Place riprap as indicated on Drawings.

C. Hand place rock evenly and carefully into position, keying rock together in a staggered pattern to minimize voids. Place rock in one consistent operation to preclude disturbance or displacement of substrate.

D. Installed Thickness: As indicated on Drawings.

END OF SECTION

SECTION 32 11 23 - AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Aggregate base course.

B. Related Sections:
1. Section 31 05 16 – Aggregates for Earthwork.
2. Section 31 22 13 - Grading.
3. Section 31 23 23 - Fill.
4. Section 31 37 00 - Riprap.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Aggregate Base Course:
1. Basis of Measurement: By the square yard to elevations indicated on Drawings.
2. Basis of Payment: Includes supplying fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.

B. South Carolina Department of Transportation (SC DOT):
1. SCDOT 2007 Standard Specifications For Highway Construction, Section 305 *Graded Aggregate Base*.

C. ASTM International:
1. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
2. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
4. ASTM D2940 - Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.
5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS – Not Used

1.5 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work in accordance with State of South Carolina DOT standards.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIALS

A. Coarse Aggregate: Type **GABC** as specified in Section 32 05 16, Aggregates for Earthwork.

2.2 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, non-biodegradable polypropylene.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify compacted substrate is dry and ready to support paving and imposed loads.
   1. Proof roll substrate with per County and local standards to identify soft spots.
   2. Remove soft substrate and replace with compacted fill as specified in Section 31 23 23.

C. Verify substrate has been inspected, gradients and elevations are correct.

3.2 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

A. Install geotextile fabric over subgrade in accordance with manufacturer's instructions.
   1. Lap ends and edges minimum 6 inches.
   2. Anchor fabric to subgrade when required to prevent displacement until aggregate is installed.

B. Place aggregate equal thickness layers to total compacted thickness indicated on Drawings.
   1. Maximum Layer Compacted Thickness: 8 inches.
   2. Minimum Layer Compacted Thickness: 4 inches.

C. Roller compact aggregate to density indicated on Drawings.

D. Level and contour surfaces to elevations, profiles, and gradients indicated.

E. Maintain optimum moisture content of fill materials to attain specified compaction density.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

A. Maximum Variation From Flat Surface: 1/4 inch measured with 10 foot straight edge.

B. Maximum Variation From Thickness: 1/4 inch.

C. Maximum Variation From Elevation: 1/2 inch.

3.5 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with State, local and County requirements.

B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests: Per local requirements.

3.6 COMPACTION

A. Compact materials to 98 percent of maximum density as determined from test strip, in accordance with ASTM D2940. Testing frequency is per local requirements.

B. Verify compaction with a proof roll test per State or Local requirements.

END OF SECTION

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fence framework, fabric, and accessories.
2. Excavation for post bases.
3. Concrete foundation for posts.
4. Manual gates and related hardware.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Fencing:
1. Basis of Measurement: By linear foot to fence height specified, based on specified post spacing.
2. Basis of Payment: Includes posts, rails, tension wire, fabric, accessories, footings, and walk & drive gates for a full and complete fence as shown on the construction plans.

1.3 REFERENCES

A. ASTM International:
1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
4. ASTM A817 - Standard Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcelled Tension Wire.
5. ASTM A824/A824-01(2007) – Standard Specification for Metallic-Coated Marcelled Tension Wire for Use With Chain Link Fence.
6. ASTM A1011/A1011M-07 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
7. ASTM B429/B429M – Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
8. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
9. ASTM F552 - Standard Terminology relating to Chain Link Fencing.
10. ASTM F567 - Standard Practice for Installation of Chain-Link Fence.
11. ASTM F626 - Standard Specification for Fence Fittings.
12. ASTM F900 - Standard Specification for Industrial and Commercial Swing Gates.
13. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.
14. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

B. Chain Link Fence Manufacturers Institute:
1. CLFMI - Product Manual.

1.4 SYSTEM DESCRIPTION

A. Fence Height: as indicated on Drawings.

B. Line Post Spacing: At evenly spaced intervals not exceeding 10 feet on center.

1.5 SUBMITTALS

A. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.

B. Product Data: Submit data on fabric, posts, accessories, fittings and hardware.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines and easements.

1.7 QUALITY ASSURANCE

A. Supply material in accordance with CLFMI - Product Manual.

B. Perform installation in accordance with ASTM F567.

C. Perform Work in accordance with local and County standards.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing work of this section with minimum three years' experience.

1.9 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

C. Identify each package with manufacturer's name.

D. Store fence fabric and accessories in secure and dry place.

PART 2 PRODUCTS

2.1 MATERIALS

A. Framing (Steel): ASTM A1011/A1011M; hot rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum Grade 50; coating conforming to ASTM F1043 Type B on pipe exterior and interior.

B. Fabric Wire (Steel): ASTM A392 Class 1 zinc coated steel wire.

C. Concrete: ASTM C94/C94M, Option A; Type 1 Portland Cement, 2,500 psi strength at 28 days.

2.2 COMPONENTS

A. Line Posts: 2.38 inch diameter.

B. Corner and Terminal Posts: 3.5 inch.

C. Gate Posts: 4.0" (double gate).

D. Top, Bottom and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.

E. Gate Frame: 2.38 inch diameter for fittings and truss rod fabrication.

F. Fabric: 2 inch diamond mesh interwoven wire, 9 gage thick, top salvage knuckle end closed, bottom selvage knuckle end closed.

G. Tension Wire: 6 gage (5 mm) thick steel, single strand, marcelled, spiraled or crimped, aluminum-coated tension wire conforming to ASTM A824.

H. Tie Wire: Aluminum alloy steel wire.

2.3 ACCESSORIES

A. Caps: Galvanized pressed steel, or malleable iron (galvanized); sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; galvanized steel.

C. Gate Hardware: Fork latch with gravity drop (single gate) or center gate stop and drop rod (double gate); two 180 degree gate hinges for each leaf and hardware for padlock.

2.4 GATES

A. General:
   1. Gate Types, Opening Widths and Directions of Operation: As indicated on Drawings.
   2. Factory assemble gates.
   3. Design gates for operation by one person.

B. Swing Gates:
   1. Fabricate gates to permit 180 degree swing.

2. Gates Construction: ASTM F900 with welded corners. Use of corner fittings is not permitted.

2.5 FINISHES

A. Components and Fabric**:** Galvanized to ASTM A123/A123M for components; ASTM A153/A153M for hardware; ASTM A392 for fabric; 1.8 oz/sq ft coating.

B. Hardware: Galvanized to ASTM A153/A153M, 1.8 oz/sq ft coating.

C. Accessories: Same finish as framing.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install framework, fabric, accessories and gates in accordance with ASTM F567.

B. Set intermediate, terminal, and gate posts plumb, in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff. CONSTRUCTION FENCING: Set posts as temporary posts with sufficient support to stay on site for the duration of the phase or project.

C. Line Post Footing Depth Below Finish Grade: per ASTM F567.

D. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: per ASTM F567.

E. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

F. Install top rail through line post tops and splice with 6 inch long rail sleeves.

G. Install center and bottom brace rail on corner gate leaves.

H. Place fabric on outside of posts and rails.

I. Do not stretch fabric until concrete foundation has cured 28 days.

J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

K. Position bottom of fabric 2 inches above finished grade.

L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

N. Install bottom tension strap stretched taut between terminal posts.

O. Install support arms sloped outward and attach barbed wire; tension and secure.

P. Support gates from gate posts. Do not attach hinged side of gate from building wall.

Q. Install gate with fabric to match fence. Install two hinges on each gate leaf, latch, catches, and drop bolt.

R. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

S. Connect to existing fence at new terminal post.

T. Install posts with 6 inches maximum clear opening from end posts to buildings, fences and other structures.

U. Excavate holes for posts to diameter and spacing indicated on Drawings without disturbing underlying materials.

3.2 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch.

B. Maximum Offset From Indicated Position: 1 inch.

C. Minimum distance from property line: 6 inches.

END OF SECTION

SECTION 32 92 19 – SEEDING AND STABILIZATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Soil Preparation.
2. Fertilizing.
3. Seeding.
4. Hydroseeding.
5. Sod installation.
6. Mulching.
7. Maintenance.

B. Related Sections:
1. Section 31 22 13 - Grading.
2. Section 31 25 00 – Erosion and Sediment Control.
3. Section 32 05 13 - Soils for Earthwork.

C. Regulatory Authority:
1. The *NPDES General Permit For Stormwater Discharges From Construction Activities*, dated January 1, 2013, expires December 31, 2017, (AKA the "General Permit") lists out the requirements for stabilization:

"Section 3.2.10.B ***Soil Stabilization****. Permittees are required to initiate stabilization measures as soon as practicable whenever any clearing, grading, excavating, or other earth disturbing activities have permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed as soon as practicable. For areas where initiating stabilization measures is infeasible (e.g. where snow cover, frozen ground, or drought conditions preclude stabilization), initiate vegetative or non-vegetative stabilization measures as soon as practicable."*

The summary is that ***if any land is disturbed, it must be grassed*** or otherwise stabilized before closeout. This includes all disturbed areas such as lots, lawns, easements, shoulders, etc.).

"Section 5: Termination of Coverage
5.1 REQUIREMENTS
A. You may only submit a Notice of Termination (NOT) after one or more of the following conditions have been met:
I. Final stabilization has been achieved on all portions of the construction site for which you are responsible;…."

From *Appendix A: Definitions*,
*""****Final Stabilization****" means that all land-disturbing activities at the construction site have been completed and that all areas not covered by permanent structures, either (1)* ***a uniform (e.g. evenly distributed, without large bare areas) vegetative cover with a density of 70 percent of the***

natural background vegetative cover has been established *excluding areas where no natural background vegetative cover is possible (e.g., on a beach), or (2) equivalent permanent stabilization measures (such as the use of landscaping mulch, rip-rap, pavement and gravel) have been implemented to provide effective cover for exposed portions of the construction site not stabilized with vegetation."*

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Erosion and Sediment Control (Section 31 25 0) is bid as a lump sum and encompasses all stabilization items (excluding paving) shown on the construction plans. This includes seeding, stabilization, sediment control structures, erosion control blankets, silt fence, and any other required sediment control materials or items. This lump sum also includes maintenance and replacement, if necessary, due to normal wear and tear.

B. The items listed below are for changes or additions not shown on the construction plans and not considered part of the regular maintenance.

C. Grassed Areas (Seed or Hydroseeding):
1. Basis of Measurement: By square foot.
2. Basis of Payment: Includes preparation of topsoil, seeding, watering and maintenance to specified time limit.

1.3 REFERENCES

A. South Carolina DHEC (Department of Health and Environmental Control) documents:
1. NPDES General Permit for Stormwater Discharges Form Construction Activities, issued October 15, 2012.
2. SC DHEC BMP (Best Management Practices) Handbook, August 2005.

B. ASTM International:
1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

C. Turfgrass Producers International:
1. TPI - Guideline Specifications to Turfgrass Sodding

1.4 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.5 CLOSEOUT SUBMITTALS

A. Per the SC DHEC Stormwater Permit, permanent structures must be surveyed to show final locations, contours and inverts.

B. Removal of temporary erosion and sediment control structures must be approved by SC DHEC or the SWPPP preparer; see Notice of Termination (NOT) requirements.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with State and County requirements as documented on the construction plans and in the approved SWPPP (Storm Water Pollution Prevention Plan).

B. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

1.7 QUALIFICATIONS

A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Sod Producer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 MAINTENANCE SERVICE

A. Maintain seeded areas for three months from Date of Substantial Completion.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Furnish materials in accordance with State of South Carolina Department of Health and Environmental Control (SC DHEC).

B. Grass seeding mixtures and requirements are on the construction plans, in the SWPPP (Storm Water Pollution Prevention Plan) on site, and are also available at the SC DHEC web site. Seed mixtures vary by season and geographical location within South Carolina.

2.2 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis.

C. Lime: ASTM C602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.

D. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.

E. Erosion Fabric: per Section 31 25 00 – Erosion and Sediment Control.

F. Stakes: Softwood lumber, chisel pointed.

G. String: Inorganic fiber.

2.3 SOURCE QUALITY CONTROL

A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

B. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

C. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

3.2 PREPARATION OF SUBSOIL

A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.

C. Scarify subsoil to depth of 3 inches in areas where vehicles or construction equipment has compacted sub-soil.

D. Spread topsoil to minimum depth of 4 inches over area to be seeded. Rake until smooth.

E. Place topsoil during dry weather and on dry unfrozen subgrade.

3.3 FERTILIZING

A. Apply lime at application rate recommended by soil analysis. Work lime into top 6 inches of soil.

B. Apply fertilizer at application rate recommended by soil analysis.

C. Apply after smooth raking of topsoil.

D. Do not apply fertilizer at same time or with same machine used to apply seed.

E. Mix fertilizer thoroughly into upper 2 inches of topsoil.

F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.4 SEEDING

A. Apply evenly in two intersecting directions. Rake in lightly. Permanent seeding mixes and rates are available on the SC DHEC web site. Some approved mixes for the Pee Dee Area are:
   1. Browntop Millet (10 lb/acre) and Bahia grass (40 lb/acre)
   2. Rye, Grain or oats (10 lb/acre), Bahia grass (40 lb/acre) and Crimson Clover (5 lb/acre)
   3. Browntop Millet (10 lb/acre), common Bermuda (10 lb/acre) and Sericea Lespedeza (40 lb/acre)
   4. Ryegrass (50 lb/acre)

B. Do not seed areas in excess of that which can be mulched on same day.

C. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

D. Immediately following seeding, apply mulch to thickness of 1/8 inches. Maintain clear of shrubs and trees.

E. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.5 HYDROSEEDING

A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at a rate of approximately 50 lbs of seed per acre evenly in one pass.

B. After application, apply water with fine spray immediately after each area has been hydroseeded. Saturate to 4 inches of soil and maintain moisture levels two to four inches.

3.6 SEED PROTECTION

A. Cover seeded slopes where grade is sloped at 3:1 (H:V) or greater with erosion fabric per Section 31 25 00. Roll fabric onto slopes without stretching or pulling.

B. Lay fabric and stake per manufacturer's recommendations.

C. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

D. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.7 MAINTENANCE

A. Water to prevent grass and soil from drying out.

B. Reseed areas showing bare spots.

C. Repair washouts or gullies.

END OF SECTION

SECTION 33 05 16.13 - PRECAST CONCRETE UTILITY STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes precast concrete utility structures:
   1. Drainage system catch basins.
   2. Drainage system inlets.
   3. Drainage system junction boxes.
   4. Drainage system retention/diversion structures.
   5. End walls.
   6. Pipe ends.
   7. Frames and covers.

B. Related Sections:
   1. Section 31 23 16 - Excavation.
   2. Section 31 23 23 - Fill.
   3. Section 33 42 13 - Pipe Culverts.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Precast Concrete Utility Structures:
   1. Basis of Measurement: By each complete structure.
   2. Basis of Payment: Includes excavating, concrete foundation slab, concrete structure sections, cover frame and cover, to indicated depth, forming and sealing pipe inlets and outlets.

1.3 REFERENCES

A. American Association of State Highway Transportation Officials:
   1. AASHTO M306 - Drainage Structure Castings.
   2. AASHTO S99-HB - Standard Specifications for Highway Bridges.

B. American Concrete Institute:
   1. ACI 318 - Building Code Requirements for Structural Concrete.

C. ASTM International:
   1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
   2. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
   3. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
   4. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   5. ASTM C150 - Standard Specification for Portland Cement.
   6. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
   8. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

9. ASTM C877 – Standard Specification for External Sealing Bands for Concrete pipe, Manholes, and Precast Box Sections.
10. ASTM C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.
11. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
13. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
14. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
16. ASTM C1433 - Standard Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers.
17. ASTM C1504 - Standard Specification for Manufacture of Precast Reinforced Concrete Three-Sided Structures for Culverts, Storm Drains, and Sewers.

D. American Welding Society:
1. AWS D1.1 - Structural Welding Code - Steel.
2. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

E. National Precast Concrete Association:
1. NPCA Quality Control Manual for Precast Plants.
2. NPCA Plant Certification Program.

F. Precast/Prestressed Concrete Institute:
1. PCI MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products.
2. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete.
3. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete

1.4 DESIGN REQUIREMENTS

A. Design structures for minimum loads in accordance with ASTM C857 and ASTM C890.
1. Roof Live Load: Comply with the following loading conditions, including impact load.
a. Heavy Traffic: AASHTO S99-HB; HS20-44, maximum 16,000 lb each wheel.
b. Medium Traffic: AASHTO S99-HB; HS15-44, maximum 12,000 lb each wheel.
c. Light Traffic: AASHTO S99-HB; HS10, maximum 8,000 lb each wheel.
d. Walkway Traffic: ASTM C857; A-0.3, maximum 300 psf.

2. Box Culvert Roof Live Load: AASHTO S99-HB HS20, interstate live loads including impact load.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings:
1. Indicate structure locations, elevations, sections, piping, sizes and elevations of penetrations.
2. Indicate design, construction and installation details, typical reinforcement and additional reinforcement at openings for each type, size and configuration.

C. Product Data:
   1. Submit data for frames and covers, steps, component construction, features, configuration, and dimensions.

D. Design Data:
   1. Submit concrete mix design for each different mix.
   2. Submit design calculations for custom fabrications signed and sealed by professional engineer.

1.6 QUALITY ASSURANCE

A. Where possible, obtain precast concrete utility structures from single source.

B. Perform structural design in accordance with ACI 318.

C. Preform Work in accordance with NPCA Quality Control Manual for Precast Plants.

D. Conform to the following for material and fabrication requirements:
   1. Single Cell Box Culverts: ASTM C1433.
   2. Three Sided Structures: ASTM C1504.
   3. Other Structures: ASTM C913.

E. Perform welding in accordance with the following:
   1. Structural Steel: AWS D1.1.
   2. Reinforcing Steel: AWS D1.4.

F. Perform Work in accordance with State and Local standards.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

B. Design utility structures under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of South Carolina.

C. Welders: AWS qualified within previous 12 months.

1.8 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast structures. Lift structures from designated lifting points.

C. Do not deliver products until concrete has cured 5 days or attained minimum 75 percent of specified 28 day compressive strength.

D. Store precast concrete structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.

E. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

PART 2 PRODUCTS

2.1 PRECAST CONCRETE UTILITY STRUCTURES

A. Materials: Furnish materials in accordance with Florence County, SC standards.

B. Reinforcement: All reinforcing steel shall be shop fabricated in accordance with approved shop drawings.

C. Fabrication Tolerances: Conform to PCI MNL-116.

2.2 CONCRETE MATERIALS

A. Cement: White Portland, conforming to ASTM C150 Type I.

B. Aggregate, Sand, Water, Admixtures: Determined by precast fabricator, as appropriate to design requirements.

C. Reinforcement / Structural Steel: ASTM A36/A36M; galvanized.

2.3 FRAMES AND COVERS

A. Manufacturers:
1. US Foundry, Medley, Florida. www.usfoundry.com
2. Substitutions: Permitted with Engineer's approval.

B. Product Description: Drop Inlet Catch Basin 24" x 24" Frame and Grate.
1. South Carolina Department of Transportation "24x24 Drop Inlet Standard"
2. USF 4171Frame and 6249 Grate.
3. ASTM A48/A48M, Class 30B Cast iron construction, machined flat bearing surface.
4. Restricted grate openings, concave grate.
5. Minimum flow area = 240 sq in.
6. Heavy traffic (H-20 load) rating.

2.4 ACCESSORIES

A. Steps: Formed galvanized steel rungs, vinyl coated; 3/4 inch diameter, 12 inches wide, spaced 16" vertically. Formed integral with structure sections.

B. Inserted and Embedded Items:
1. Structural Steel Sections: ASTM A36/A36M; galvanized.

C. Joint Sealants and Joint Gaskets:
1. Gasket Joints for Circular Concrete Pipe: ASTM C443; standard rubber gaskets.
2. External Sealing Bands: ASTM C877; Type II plastic film and mesh reinforced bands.
3. Preformed Joint Sealants for Concrete Pipe and Box Sections: ASTM C990.

4. Elastomeric Joint Sealants: ASTM C920; silicone; Grade NS, Class 25.

D. Pipe Entry Connectors: ASTM C923.

E. Grout:
1. Cement Grout: Portland cement, sand and water mixture with stiff consistency to suit intended purpose.
2. Non-Shrink Grout: ASTM C1107/C1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

2.5 REINFORCEMENT

A. Install reinforcing by tying or welding to form rigid assemblies. Secure reinforcement to prevent displacement when placing concrete. Maintain concrete cover around reinforcement based on exposure to the environment:
1. Concrete permanently exposed to earth: 3 inches.
2. Concrete exposed to soil, water, sewage, sludge or weather: 2 inches.
3. Concrete not exposed to soil, water, sewage, sludge or weather: 1 inch.

B. Position and secure embedded items to prevent displacement when placing concrete.

C. Ensure reinforcing steel, anchors, inserts, plates, angles, and other cast-in items are embedded and located as indicated on Drawings.

D. Tension reinforcement tendons as required to achieve design load criteria.

E. Fabricate required openings with dimension larger than 10 inches and embed accessories provided by other Sections, at indicated locations.

F. Weld steel fabrications in accordance with AWS D1.1. Weld reinforcing steel in accordance with AWS D1.4. Do not tack weld reinforcing.

2.6 SOURCE QUALITY CONTROL

A. Test and analyze concrete in accordance with PCI MNL-116 and ACI 318.

B. Make test results available to Engineer upon request.

2.7 FINISHING - STEEL

A. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.

2.8 FABRICATION

A. Fabrication procedure to conform to PCI MNL-116, ACI 318, and NPCA Quality Control Manual for Precast Plants.

B. Maintain plant records and quality control program during production of precast members. Make records available upon request.

C. Fabricate precast concrete utility structures to size, configuration, and openings as indicated on Drawings.

2.9 FINISHES

A. Provide initial curing by retaining moisture using one of the following methods:
   1. Cover with polyethylene sheets.
   2. Cover with burlap or other absorptive material and keep continually moist.
   3. Apply curing compound in accordance with manufacturer's instructions.

B. Provide final curing in accordance with manufacturer's standard.

C. Cure members under identical conditions to develop required concrete quality, and minimize appearance blemishes including non-uniformity, staining, or surface cracking.

D. Plant Finish (Finish A): Normal plant finish; surface may contain small surface holes caused by air bubbles, minor chips or spalling at edges or ends, without major discoloration or honeycombing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify items provided by other sections of Work are properly sized and located.

C. Verify correct size and elevation of excavation.

D. Verify subgrade (and bedding, if specified on the drawings) is properly prepared, compacted and ready to receive Work of this section.

3.2 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.

C. Inspect precast concrete structures immediately prior to placement in excavation to verify are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

A. Install underground precast utility structures in accordance with ASTM C891.

B. Lift precast concrete structures at lifting points designated by manufacturer.

C. When lowering structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.

D. Install precast concrete base to elevation and alignment indicated on Drawings.

E. Assemble multi-section structures by lowering each section into excavation.
   1. Clean joint surfaces.
   2. Install watertight joint seals in accordance with manufacturer's instructions.

F. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with grout.

G. Connect pipe to structure and seal watertight. Cut pipe flush with interior of structure.

H. Grout base to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel.

I. Paint interior with 2 coats of bituminous interior coating at rate of 120 square feet per gallon for each coat, unless otherwise specified on Drawings.

J. Set frame and cover level without tipping, to elevations indicated on Drawings.
   1. Set cover 2 inches above finished grade for structures located within unpaved areas to allow area to be graded away from cover beginning 1 inch below top surface of frame.
   2. Connect drain from access hatch frame to storm drainage system.

K. Touch up damaged galvanized coatings.

L. Backfill excavations for structures in accordance with Section 31 23 23 - Fill.

3.4 FIELD QUALITY CONTROL

A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Perform the following tests and inspections for structures:
   1. Vacuum Test for Sewer Manholes: ASTM C1244.
   2. Hydrostatic Exfiltration Test: In accordance with manufacturer's instructions.

END OF SECTION

SECTION 33 42 13 - PIPE CULVERTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Pipe culverts.
2. Accessories.
3. Underground pipe markers.
4. Drainage structures.
5. Bedding and cover materials.

B. Related Sections:
1. Section 31 05 16 - Aggregates for Earthwork.
2. Section 31 23 23 - Fill.
3. Section 31 23 16 - Excavation.
4. Section 31 25 00 - Erosion and Sedimentation Controls.
5. Section 31 37 00 - Riprap.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Pipe Culvert:
1. Basis of Measurement: By the linear foot (including tapered ends if specified), from edge of structure to edge of structure.
2. Basis of Payment: Includes excavating; removing soft subsoil, bedding fill, compacting; pipe, fittings and accessories assembled; repair of damaged coating.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO M86 - Concrete, Sewer, Storm Drain, and Culvert Pipe.
2. AASHTO M170 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
3. AASHTO M198 - Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.
4. AASHTO M259 - Precast Concrete Box Sections for Culverts, Storm Drains, and Sewers.
5. AASHTO M273 - Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers with Less than 2 ft of Cover Subject to Highway Loadings.
6. AASHTO M288 - Geotextiles.
7. AASHTO M294 - Specification for Corrugated Polyethylene Pipe, 305- to 915-mm (12- to 36-In.) Diameter.
8. AASHTO M315 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
9. AASHTO T99 - Standard Specification for the Moisture-Density Relations of Soils Using a 2.5 kg (5.5 lb) Rammer and a 305 mm (12 in.) Drop.
10. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. South Carolina Department of Transportation (SC DOT):

1. SCDOT 2007 Standard Specifications For Highway Construction, SC-M-714 (08/09) *Permanent Pipe Culverts*.

C. ASTM International:
1. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
2. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
3. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
4. ASTM C478 – 12a – Standard Specification for Precast Reinforced Concrete Manhole Sections.
5. ASTM C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.
6. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
7. ASTM C1433 - Standard Specification for Precast Reinforced Concrete Box Section for Culverts, Storm Drains, and Sewers.
8. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
9. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
10. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
11. ASTM F2737-11 – Standard Specification for Corrugated High Density Polyethylene (HDPE) Water Quality Units.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on pipe, fittings and accessories.

C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents:
1. Accurately record actual locations of pipe runs, connections, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with State and County standards.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing work of this section, licensed to work in South Carolina.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Block individual and stockpiled pipe lengths to prevent moving.

C. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.

D. Do not place pipe flat on ground. Cradle to prevent point stress.

E. Store UV sensitive materials out of direct sunlight.

1.9 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate the Work with pond or outfall grading, trenching, and underground utilities.

C. Coordinate unrecorded or variations in site conditions, and corresponding adjustments to construction requirements.

PART 2 PRODUCTS

2.1 PIPE CULVERT

A. Reinforced Circular Concrete Pipe: ASTM C76, Class III.
   1. Furnish materials in accordance with SC DOT Standards.
   2. Bell and spigot joints.
   3. Shape: Circular with nominal diameter of 15 through 60 inches. Typically 18" diameter is used as a minimum unless design constraints or available space force a smaller storm drain size.
   4. Concrete pipe tees and elbows shall conform to all applicable requirements for AASHO M-170 for the class of pipe or elbow specified.
   5. RCP in or adjacent to roadways shall be capable of an H-20 traffic loading.

B. HDPE pipe: ASTM F2737-11
   1. Furnish materials in accordance with SC DOT and SC DHEC standards.
   2. Double-wall corrugated exterior, smooth interior.
   3. Bell and spigot, soil tight joints.

4. Shape: Circular with nominal diameter of 15 through 60 inches. Typically 18" diameter is used as a minimum unless design constraints or available space force a smaller storm drain size.
5. Manufacturer: ADS, product N-12 ST IB or approved equivalent.

2.2 ACCESSORIES

A. Geotextile Fabric: AASHTO M288
   1. Non-biodegradable, non-woven filter fabric.
   2. Flow rate (ASTM D4491): 140 gal/min/sq ft minimum.
   3. Manufacturer: Mirafi Construction Products.
   4. Model: Mirafi N-Series 140NL.
   5. Substitutions: Permitted, must be equivalent.

B. Fill at Pipe Ends: Riprap as specified in Section 31 37 00, where indicated on Drawings.

C. Rubber Gasket Joint Material (RCP bell & Spigot joints): AASHTO M315 and ASTM C443, rubber compression gasket joint per SC DOT SC-M-714.

D. Preformed Flexible Joint Sealant (RCP bell & Spigot joints): conform to AASHTO M198. Use Ram-Nek or approved equal per SC DOT SC-M-714.

2.3 DRAINAGE STRUCTURES

A. Precast Concrete Box Sections: per Section 33 05 16 – Precast Concrete Utility Structures.
   1. Precast reinforced concrete riser sections, monolithic base section, and a conical or flat slab top section as required. Sizes as per Drawings.
   2. Pipe openings shall be provided in base and riser sections as required on the Drawings, and shall be of suitable size to fit the pipe. Lifting holes may be provided in each section for ease of Handling.
   3. Boxes in or adjacent to roadway right-of-ways shall be capable of an H-20 traffic loading.
   4. Joint material: mortar or pre-formed sealant such as Ram-Nek or approved equal.
   5. Castings and steps shall be provided for each catch basin and manhole over three feet in depth. Catch basin and manhole covers, frames, grates and steps shall conform to the details of each type catch basin and manhole on the drawings, or to similar plans differing in detail but of equally good design, provided such castings are approved by the Engineer prior to use.
   6. Covers, grates, and frames shall be machined to provide plane, smooth surfaces for uniform seating and interchangeability of covers. Rings and covers that provide imperfect seating will be rejected.
   7. Castings shall be of cast iron of superior quality, tough and even texture, and of not less than 40% pig. They shall be clear of blow holes, holes, cracks and other defects, properly finished and bituminous coated white-hot.
   8. Masonry cement shall be of the best grade, conforming to ASTM Specification C91, Type II, of a brand approved by the Engineer. It shall be newly manufactured, well housed, kept dry and protected at all times.
   9. Mortar junction boxes and catch basins shall consist of one part Portland cement, one part hydrated lime, and six parts sand; or, two parts Masonry cement and six parts sand. All mortar shall be mixed with the least amount of water required for

workability and shall be used before initial set has occurred. Retempering of mortar will not be permitted.

10. Crushed stone for foundation shall conform to ASTM C33, size No. 67, with the size range of ¼ inch to ¾ inch.

2.4 BEDDING AND COVER MATERIALS

A. Bedding (if required – see Drawings): fine to coarse aggregate as specified in Section 31 05 16 – Aggregates for Earthwork.

B. Cover: as specified in Section 31 05 13 – Soils for Earthwork, or 31 23 23 - Fill.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify that trench cut or excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings. Verify tie-in invert elevation and notify Engineer of any discrepancies.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.

B. Remove large stones or other hard or organic matter capable of damaging piping or impeding consistent backfilling or compacting.

C. Clearing along pipe lines shall be done prior to pipe installation. If required, clearing of trees and brush along pipe lines shall be carefully done so that no damage will occur outside of right-of-way limits.

D. Contractor shall haul pipe and appurtenances to the worksite and distribute them neatly along the trench prior to laying. Pipe shall be carefully handled to prevent damage by using mechanical hoists or other approved methods. All damaged pipe and appurtenances shall be rejected and removed from the worksite.

3.3 EXCAVATION

A. The contractor shall perform all excavation of every description and of whatever substance encountered in the depth shown on the plans are specified for all pipe, appurtenances, and structures.

B. The top portion of trenches may be excavated with sloping or vertical sides to any width which will not cause damage to adjoining structures, roadways, pavements, utilities or private property.

C. The bottom of all trenches, except as otherwise specified shall be rounded to conform to the bottom of the pipe so as to afford full bearing on the pipe barrel. The depth and width required for such shaping shall be directed by the Engineer.

D. Excavate culvert trench in accordance with Section 31 23 17 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

3.4 INSTALLATION - PIPE

A. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.

B. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope. Cradle bottom 20 percent of pipe diameter to avoid point load.

C. Do not displace or damage pipe when compacting.

D. At joints, the pipe ends shall be thoroughly cleaned and sealed with pre-formed sealant such as Ram-Nek or approved equal.

E. Precast catch basin or junction box base sections shall be installed on a firm, stabilized foundation so prepared to prevent settlement and misalignment. Pipe openings shall be exactly aligned to that of the pipe entering and leaving the junction boxes.

3.5 BACKFILLING - PIPE

A. All trenches and excavation shall be backfilled immediately after the pipes are laid therein, unless other protection of the pipeline is directed. The backfilling materials shall be selected and deposited with special reference to the future safety of the pipes. Except where special methods of bedding and tapping or provided for, cleaned earth, sand or rock dust shall be solidly tamped about the pipe up to a level at least two (2) feet above the top of the pipes, it shall be carefully deposited in uniform layers, each layer solidly tamped or ramped with proper tools so as not to injure or disturb the pipeline. The remainder of the backfilling of the trench shall be carried on simultaneously on both sides of the pipes in such a manner that injurious side pressures to not occur.

B. Minimum cover for RCP (round or elliptical) shall be 12” unless approved by the Engineer. Minimum cover for HDPE double wall pipe shall be 24” or as specified by the manufacturer.

C. After placing the backfill up to a level slightly below the natural ground surface, surplus excavation shall be windrowed and maintained in a suitable manner to concentrate and pond surface runoff from rains over the trench. After sufficient settlement has been obtained, in the opinion of the Engineer, the Contractor shall complete the dressing, removal of surplus materials and surface cleanup in accordance with the specifications.

D. All backfilling of excavated portions requiring pavement shall be mechanically tamped in 6 inch layers using heavy-duty tampers such as pneumatic jackhammers with tamping foot attachment. Each layer shall be thoroughly tamped to a density equivalent to at least 95% of a AASHO-T-99-49 Proctor Curve. Settlement in trenches shall be refilled with crushed stone or gravel and such maintenance shall continue until pavement is authorized by the engineer.

E. Walking or working on the complete pipe sewer, except as may be necessary in tamping or backfilling, shall not be permitted until the trench has been backfilled to height of at least two (2) feet over the top of the pipes.

F. Whenever the trenches have not been properly filled, or if settlement occurs, they shall be refilled, smoothed off and finally made to conform to the surface of the ground. Backfilling shall be carefully performed and the original surface restored to the full satisfaction of the Engineer.

G. Backfill of open trenches across sidewalks and in roadways shall be made as above specified, except that fill above pipes shall be deposited in layers not to exceed 6 inches and thoroughly compacted as provided in Section 31 23 17. Surplus materials shall be disposed of as directed by the Engineer.

H. Thoroughly clean out entire length of newly installed pipe culverts. No additional payment will be made for the cleaning out of newly installed pipe culverts. Pipes must be clean and accessible for inspection and acceptance.

3.6 ERECTION TOLERANCES

A. Lay pipe to alignment and slope gradients noted on Drawings; with maximum variation from indicated slope of 1/8 inch in 10 feet.

B. Maximum Variation From Intended Elevation of Culvert Invert: 1/2 inch.

C. Maximum Offset of Pipe From Indicated Alignment: 1 inch.

D. Maximum Variation in Slope of Pipe: 0.01 percent.

3.7 FIELD QUALITY CONTROL

A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Visually inspect 100% of pipe for fractures, cracks, spalling, chips, and breaks during all phases of the installation process. Inspect joints, including tongues and groups. Chipped pipe ends that prevent the full bond between joint sealant/gasket in both pipes may only be installed in drainage structures at the ends of pipe runs where they will be grouted over. Inspect installed joints for missing, damaged, or improperly installed joint sealant or gasket. Verify lined and grade in accordance with the frequencies detailed in the Construction Manual.

C. When improper installation or damage is noted during the construction inspection of the pipe, repairs must be made to the satisfaction of the Engineer. Additional inspections may be performed until confidence is restored that the installation has been performed in accordance with these specifications.

D. Request inspection prior to placing aggregate cover over pipe.

E. Compaction Testing: In accordance with ASTM D1557, ASTM D2922, or ASTM D3017.

F. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

G. Frequency of Tests: per local requirements.

H. The contractor will collect survey data for 100% of installed pipe. Survey data will be collected electronically to establish a pipe inventory. Survey data will include station offset elevation and coordinates of the flow line for each pipe end. Survey data collected will also include at a minimum pipe diameter, pipe material, and description of survey data for drainage structures and end treatments.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.

B. Protect pipe and bedding from damage or displacement until backfilling operation is complete.

END OF SECTION

CONSTRUCTION PLANS

FOR:

TOWN OF COWARD BASEBALL FIELDS

Capital Project Sales Tax II

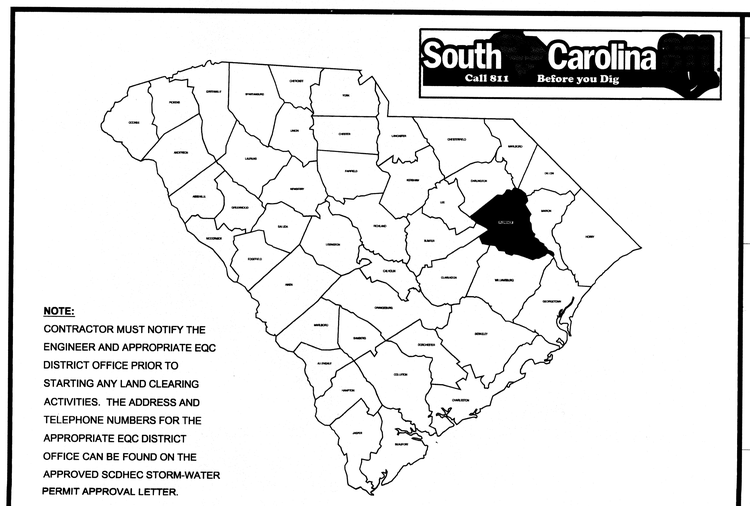
Florence County, South Carolina

PROJECT No. AE007 December, 2014

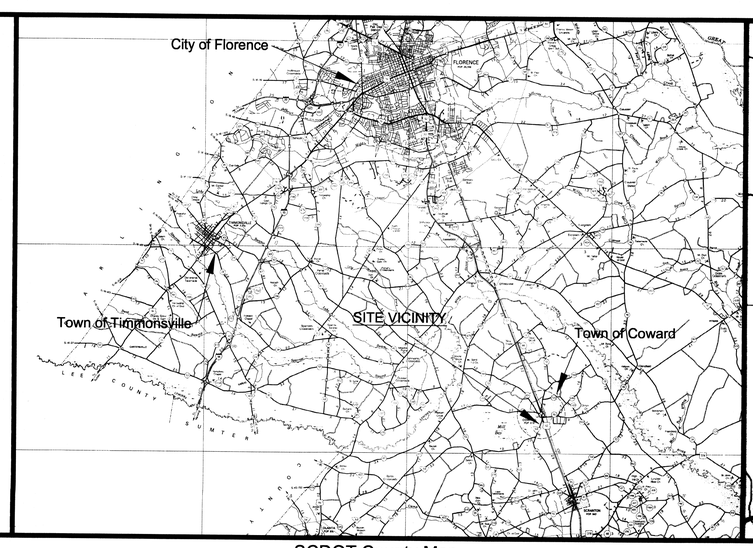
Client:

FLORENCE COUNTY
180 NORTH IRBY STREET, MSC-G
FLORENCE, SOUTH CAROLINA 29501

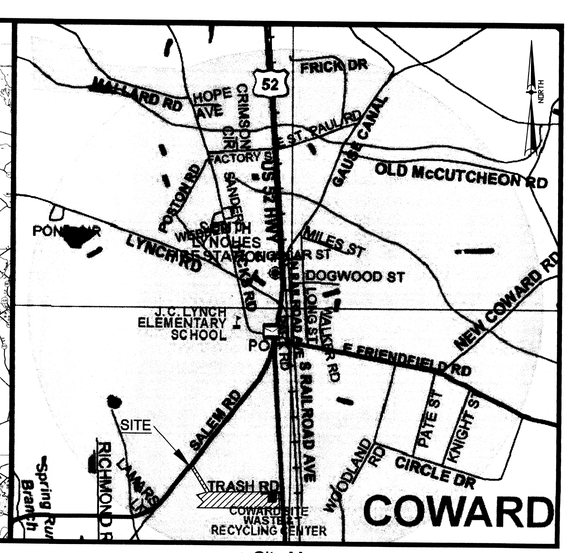
INDEX TO DRAWINGS:



Florence County,
South Carolina



SCDOT County Map
1" = 4 MILES



City Map
NTS

DESIGNED BY: MJF
DRAWN BY: JCS
CHECKED BY: GEW
APPROVED BY: MJF
DATE: Jan 05, 2015
SCALE: AS NOTED
CITY: COWARD
COUNTY: FLORENCE
PROJECT # AE007
DWG # 1 OF 10
CADF: AE007-Dwg 010215.dwg

NO.	DATE	REVISION	BY

SOUTH CAROLINA PROFESSIONAL ENGINEER No.20972 MARTIN JUSTIN FORD 1/5/15

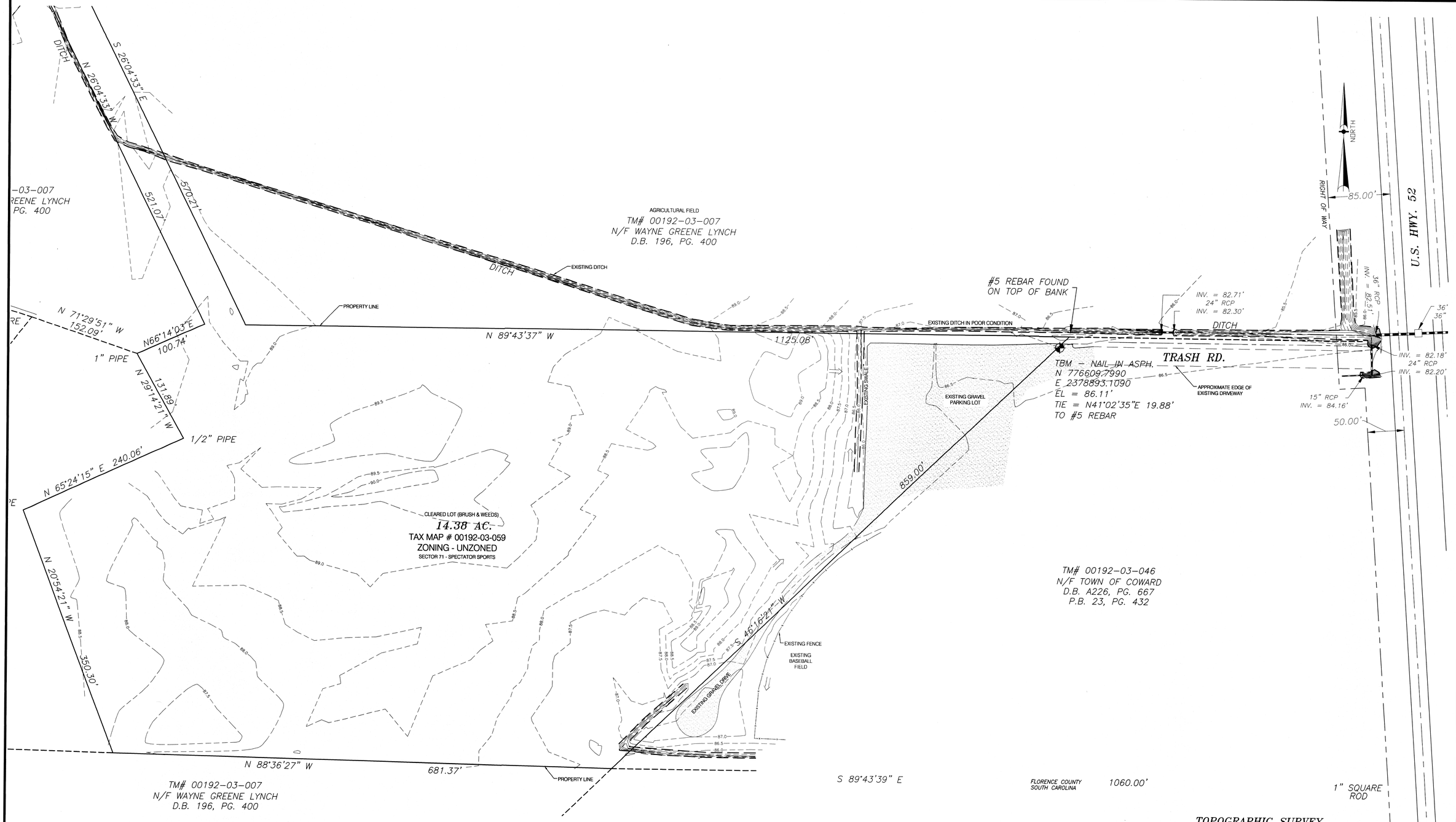
SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING™

CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: COVER SHEET

DESCRIPTION: COVERSHEET

PLAN SET: DESIGN
DATE: Jan 05, 2015
PROJECT: AE007
SHEET: 1 OF 10



GENERAL LEGEND

PROPERTY LINE

EXISTING CONTOUR — 204 —

RIGHT OF WAY

TOPOGRAPHIC SURVEY

OF A TRACT OF LAND LOCATED IN COWARD, FLORENCE COUNTY, SOUTH CAROLINA, BEING THE PROPERTY SHOWN AS TAX PARCEL NUMBER 00192-03-059, BEING FURTHER DESCRIBED IN DEED BOOK B-294, PAGE 1691 AND IN PLAT BOOK 96, PAGE 439. SURVEYED FOR:

FLORENCE COUNTY

I HEREBY STATE TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THE SURVEY SHOWN HEREON WAS MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARDS OF PRACTICE MANUAL FOR SURVEYING IN SOUTH CAROLINA, AND MEETS OR EXCEEDS THE REQUIREMENTS FOR A CLASS "A" SURVEY AS SPECIFIED THEREIN. ALSO THERE ARE NO ENCROACHMENTS, PROJECTIONS, OR SETBACKS AFFECTING THE PROPERTY OTHER THAN THOSE SHOWN. ALSO I HAVE CONSULTED THE FEDERAL INSURANCE ADMINISTRATION FLOOD HAZARD MAP 45041C0360D, EFFECTIVE DATE DECEMBER 16, 2004 AND FOUND THAT THE SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD ZONE. NOTE: THIS PROPERTY IS SUBJECT OF ANY AND ALL RIGHTS-OF-WAY, EASEMENTS, COVENANTS AND RESTRICTIONS, RECORDED OR UNRECORDED, THAT MAY APPLY. UNLESS NOTED HEREON THIS MAP DOES NOT ADDRESS ENVIRONMENTAL CONCERNS OR SUBSURFACE INVESTIGATION.

NESBITT SURVEYING CO., INC.
4340 ALLIGATOR ROAD
U.S. HIGHWAY 76 & ALLIGATOR ROAD
TIMMONSVILLE, S.C. 29161
PHONE (843) 346-3302
FAX (843)-346-5802
EMAIL: jon@nesbittsurveying.com

JONATHAN W. NESBITT
PLS NO 24770

SOUTH CAROLINA CERTIFICATION — NESBITT SURVEYING CO., INC. No C01197 — CERTIFICATE OF AUTHORIZATION

DATE:	NOVEMBER 18, 2014
JOB NO:	14599
DWG. NO:	14599
FLD BK:	
PAGES:	
REF JOB#:	10092
TM#:	00192-03-059

SCALE 1" =60 FT

0 30 60 120 GRAPHIC SCALE

DESIGNED BY:	MJF
DRAWN BY:	JCS
CHECKED BY:	GEW
APPROVED BY:	MJF
DATE:	Jan 05, 2015
SCALE:	1"=60'
CITY:	COWARD
COUNTY:	FLORENCE
PROJECT #	AE007
DWG #	AE007-Dwg 010215.dwg
CADD:	

NO.	DATE	REVISION	BY

SOUTH CAROLINA PROFESSIONAL ENGINEER — No.20879 — JONATHAN W. NESBITT — 11/18/15

SOUTH CAROLINA — ALIGNED ENGINEERING No. 5025 — CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING

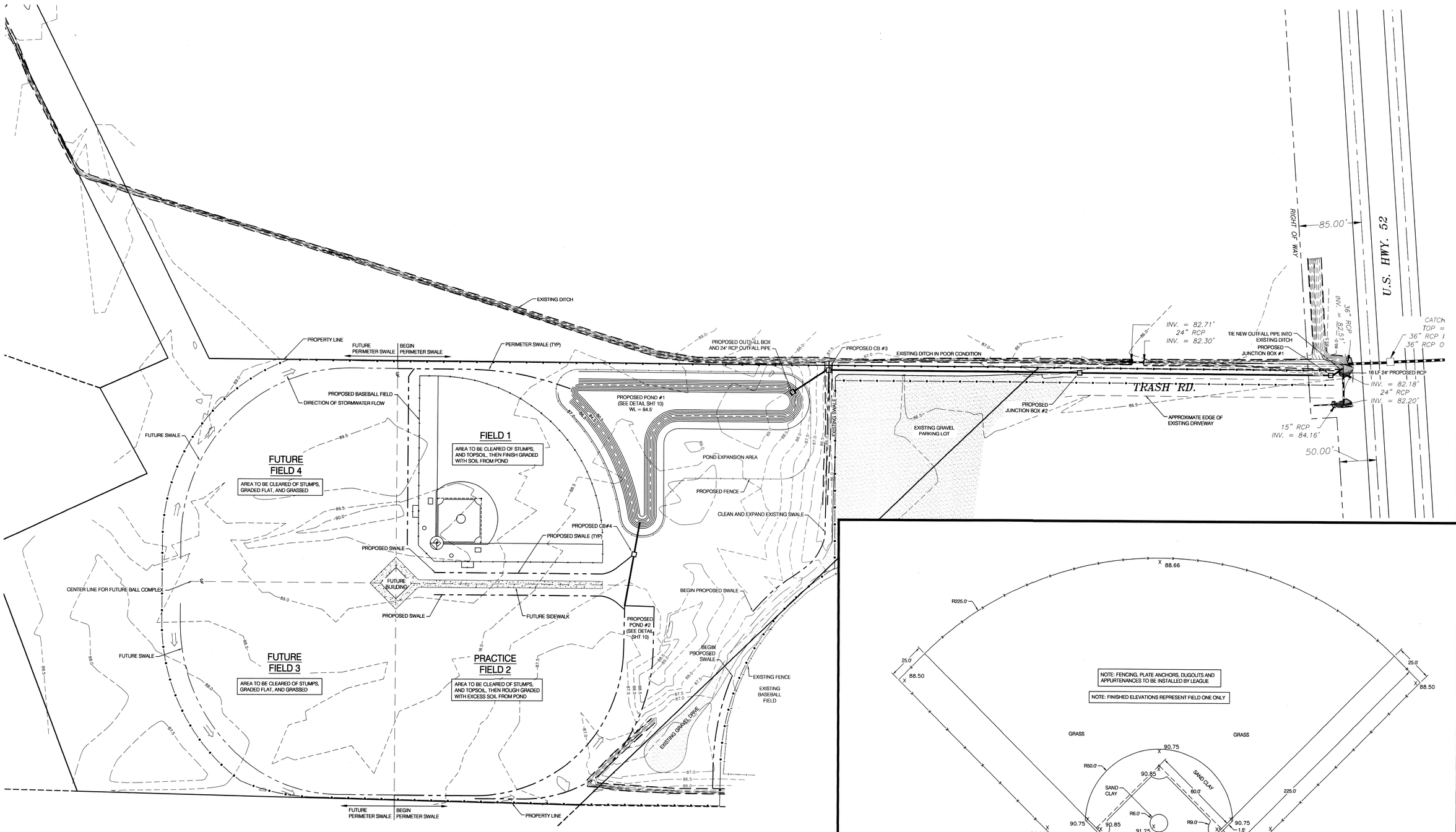
CLIENT: FLORENCE COUNTY, S.C.

PLAN SET: TOWN OF COWARD BASEBALL FIELDS

DESC: EXISTING SITE CONDITIONS

DESCRIPTION: EXISTING SITE CONDITIONS

PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	2 OF 10



60 0 30 60 120 240

1 inch = 60 ft.

GENERAL LEGEND

PROPERTY LINE	
EXISTING CONTOUR	204
PROPOSED FIN. CONTOUR	205
PROPOSED DRAINAGE PIPE	129' — 24" RCP III @ 1.0%
PROPOSED CATCH BASIN	
LIMITS OF DISTURBANCE	

NOTE: DESIGNED USING DIXIE YOUTH STANDARDS 2014 RULES & REGULATIONS. SEE *WWW.DIXIE.ORG/DYB* FOR ADDITIONAL INFORMATION

30 0 15 30 60 120

1 inch = 30 ft.

NO.	DATE	REVISION	BY

DESIGNED BY: MJF
DRAWN BY: JCS
CHECKED BY: GEW
APPROVED BY: MJF
DATE: Jan 05, 2015
SCALE: 1"=60'
CITY: COWARD
COUNTY: FLORENCE
PROJECT # AE007
DWG # 3 OF 10
CADD: AE007 Dwg 310215.dwg

SOUTH CAROLINA PROFESSIONAL ENGINEER No.20870 GREGORY E. WILLIAMS 1/5/15

SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING

CLIENT: FLORENCE COUNTY, S.C.

PLAN SET: TOWN OF COWARD BASEBALL FIELDS

DESC: SITE DEVELOPMENT PLAN

DESCRIPTION: SITE DEVELOPMENT PLAN

PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	3 OF 10

FUTURE FIELD 4

FIELD 1

FUTURE FIELD 3

PRACTICE FIELD 2

POND #1

POND #2

INTERNAL SWALE (4:1 SIDE SLOPES)

PERIMETER SWALE

3:1 SIDE SLOPES ON BOTH SIDES

3:1 SIDE SLOPE ON NORTH BANK

FUTURE SIDEWALK

PROPOSED FENCE W/ VEHICLE ACCESS GATE

SWALE (8:1 SIDE SLOPES)

PERIMETER SWALE EXPANDS INTO POND #2 (SEE DETAIL)

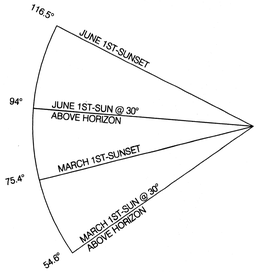
LIMITS OF DISTURBANCE (11.4 ACRES)

2:1 SIDE SLOPES ON BOTH SIDES

NORTH

ANGLE OF SUNLIGHT

LAST HOURS OF DAY, MARCH 1 THROUGH JUNE 1.



1 inch = 30 ft.

DESIGNED BY:	MJF
DRAWN BY:	JCS
CHECKED BY:	GEW
APPROVED BY:	MJF
DATE:	Jan 05, 2015
SCALE:	AS SHOWN
CITY:	COWARD
COUNTY:	FLORENCE
PROJECT #	AE007
DWG. #	4 OF 10
CADD:	AE007-Dwg 010215.dwg

NO.	DATE	REVISION	BY

SOUTH CAROLINA PROFESSIONAL ENGINEER No.20872 MICHAEL J. FOX 1/5/15

SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING

CLIENT: FLORENCE COUNTY, S.C.

PLAN SET: TOWN OF COWARD BASEBALL FIELDS

DESC: DEVELOPMENT DIMENSION PLAN

DESCRIPTION: DEVELOPMENT DIMENSION PLAN

PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	4 OF 10

GENERAL NOTES:
1.) COPIES OF THE FOLLOWING DOCUMENTS ARE TO REMAIN ON THE CONSTRUCTION SITE AT ALL TIMES:
A. STORMWATER POLLUTION PREVENTION PLANS (SWPPP) - (CONSTRUCTION PLANS APPROVED & STAMPED BY SCDHEC)
B. SC DHEC NOTICE OF INTENT (STORMWATER PERMIT APPLICATION)
C. STORMWATER PERMIT
D. GENERAL PERMIT
E. CO-PERMITTEE AGREEMENTS OR CONTRACTOR CERTIFICATION STATEMENTS

2.) LAND-DISTURBING ACTIVITIES SHALL BE CONDUCTED IN A MANNER MINIMIZING EROSION, INCLUDING BUT NOT LIMITED TO THE BEST-MANAGEMENT PRACTICES (BMPs) OUTLINED IN THE SC DHEC BMP HANDBOOK (AUGUST 2005 ISSUE). SEE GENERAL DESIGN PRINCIPLES, BELOW.

DHEC STANDARD NOTES:
1.) IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGATATIVE MATS, IN ADDITION TO HYDROSEEDING, IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.

2.) STABILIZATION MEASURES SHALL INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW:

A. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICAL.
B. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.

3.) ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF PERIODIC INSPECTIONS OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.

4.) PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY FOLLOWING THE UTILITY INSTALLATION. FILL, COVER AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.

5.) ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.

6.) THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM THE PAVEMENT, AS MAY BE REQUIRED.

7.) RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH SC REG. 72-300 ET. SEQ. AND SCR100000. A GENERALIZED INDIVIDUAL LOT PROTECTION PLAN IS PROVIDED ON THIS SHEET.

8.) TEMPORARY BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.

9.) ALL WATERS OF THE STATE (WoS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED WHERE A 50-FOOT BUFFER CANNOT BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WoS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WoS.

10.) LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.

11.) A COPY OF THE SWPPP, INSPECTIONS RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.

12.) INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.

13.) MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

14.) MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WAS WATER, AND OTHER WAS WATERS. WASH WATER MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDED EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE;

15.) MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DE-WATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMP'S (SEDIMENT BASIN, FILTER BAG, ETC.).

16.) THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:

WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;

WASTEWATER FROM WASHOUT AND CLEAN-OUT OF STUCCO, PAINT, FORM RELEASE OILS. CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;

FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

17.) AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.

18.) IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SCS WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.

19.) A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINER PROJECTS THAT DISTURB 10 ACERS OR MORE THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

GENERAL DESIGN PRINCIPLES:
1.) EXPOSURE. ALL LAND DISTURBANCE ACTIVITIES SHALL REMAIN WITHIN THE LIMITS OF CONSTRUCTION. THE ACTIVITY SHALL CONFORM TO EXISTING TOPOGRAPHY AND SOIL TYPE AS TO CREATE THE LOWEST PRACTICAL EROSION POTENTIAL. THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSIVE ELEMENTS SHALL BE KEPT TO A MINIMUM. DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICAL.

2.) VEGETATION. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED. TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT. PERMANENT VEGETATION AND STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED AS SOON AS POSSIBLE.

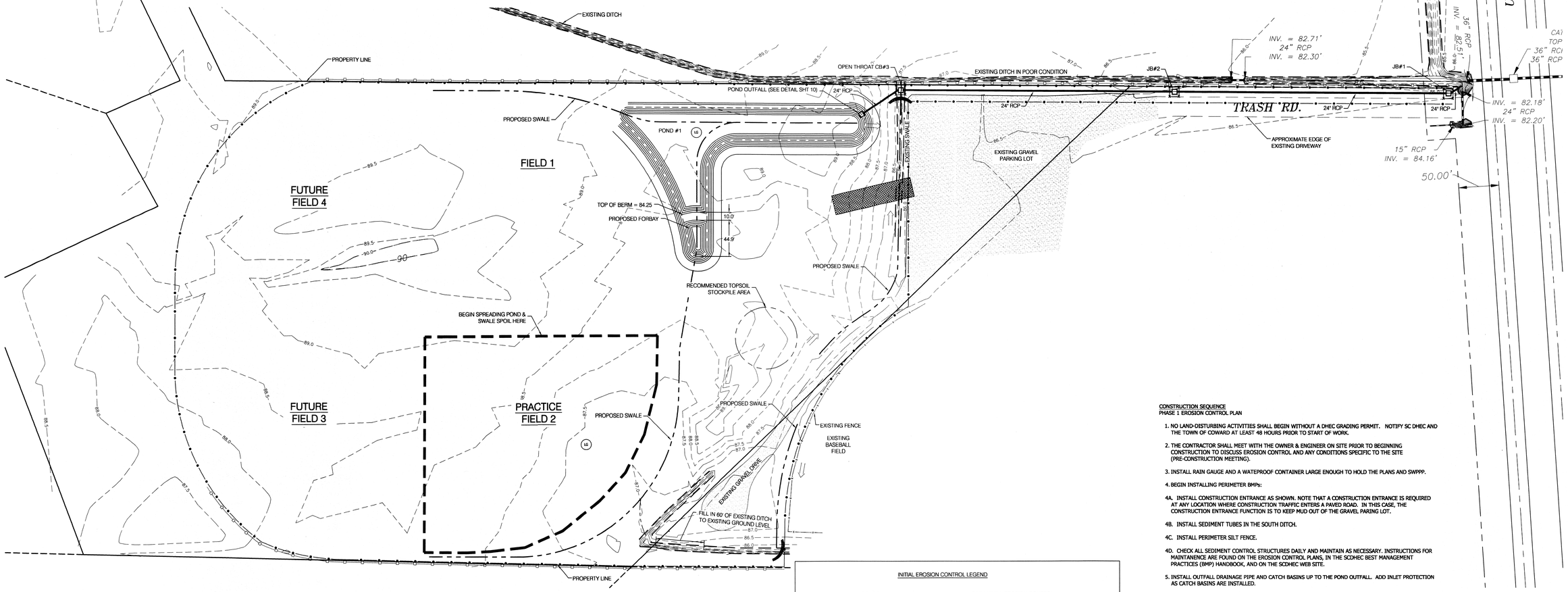
3.) CUT-FILL. CUT-FILL OPERATIONS SHALL BE KEPT TO A MINIMUM. FILLS MAY NOT ENCROACH UPON NATURAL WATERCOURSES OR CONSTRUCTED CHANNELS IN A MANNER SO AS TO ADVERSELY AFFECT OTHER PROPERTY OWNERS. ADEQUATE PROVISIONS MUST BE PROVIDED TO STABILIZE SLOPES AND MINIMIZE DAMAGE FROM SURFACE WATER TO THE CUT FACES OF EXCAVATIONS OR THE SLOPING SURFACE OF FILLS. CUTS AND FILLS MAY NOT ENDANGER ADJOINING PROPERTY. KEEP A 20-FOOT MINIMUM BUFFER FROM THE PROPERTY LINE WHEREVER POSSIBLE.

4.) SEDIMENT CONTROL. TO THE EXTENT NECESSARY, SEDIMENT IN RUNOFF WATER MUST BE TRAPPED BY THE USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, OR SIMILAR MEASURES UNTIL THE DISTURBED AREA IS STABILIZED. NO HAY BALES ARE TO BE USED AS INLET PROTECTION UNLESS IN CONJUNCTION WITH FILTER FABRIC

5.) SILT FENCES. CONSTRUCT SILT FENCES IN LOW AREAS TO TRAP SEDIMENT. STEEL POSTS ARE A MANDATORY DHEC REQUIREMENT. HOG WIRE OR OTHER REINFORCEMENT IS RECOMMENDED, ESPECIALLY IN HIGH RUNOFF AREAS. DO NOT PLACE SILT FENCE IN AREAS OF CONCENTRATED FLOWS. REPLACE ERODED SOIL UNTIL GRASS IS ESTABLISHED.

6.) MAINTENANCE. MAINTENANCE OF ALL SOIL EROSION AND SEDIMENTATION CONTROL PRACTICES, WHETHER TEMPORARY OR PERMANENT, SHALL BE AT ALL TIMES THE RESPONSIBILITY OF THE PERSON AND/OR PROPERTY OWNERS CONDUCTING THE LAND-DISTURBING ACTIVITY. MAINTENANCE PROCEDURES FOR SPECIFIC SEDIMENT CONTROL DEVICES ARE INDICATED ON THE DETAILS, THIS SHEET. FOR MORE INFORMATION, SEE DHEC'S BMP HANDBOOK (AUGUST 2005 EDITION).

7.) THE CONTRACTOR SHALL PROVIDE A TEMPORARY STONE SPLASH PAD AT ALL FIRE HYDRANTS OR OTHER POINTS OF DISCHARGE DURING TESTING OF THE WATER DISTRIBUTION SYSTEM.



INITIAL EROSION CONTROL LEGEND

GENERAL		SEDIMENT & EROSION CONTROL	
PROPERTY LINE		LG	LAND GRADING
EXISTING CONTOUR	204	PS	PERMANENT SEEDING
PROPOSED FIN. CONTOUR	205		TOPSOILING
PROPOSED DRAINAGE PIPE	129' – 24" RCP III @ 1.0%		REINFORCED SILT FENCE
PROPOSED CATCH BASIN			TYPE-A INLET PROTECTION
LIMITS OF DISTURBANCE			RIP-RAP APRON (SEE DETAILS)
			12" SEDIMENT TUBE
			CONSTRUCTION ENTRANCE

CONSTRUCTION SEQUENCE
PHASE 1 EROSION CONTROL PLAN

1. NO LAND-DISTURBING ACTIVITIES SHALL BEGIN WITHOUT A DHEC GRADING PERMIT. NOTIFY SC DHEC AND THE TOWN OF COWARD AT LEAST 48 HOURS PRIOR TO START OF WORK.
2. THE CONTRACTOR SHALL MEET WITH THE OWNER & ENGINEER ON SITE PRIOR TO BEGINNING CONSTRUCTION TO DISCUSS EROSION CONTROL AND ANY CONDITIONS SPECIFIC TO THE SITE (PRE-CONSTRUCTION MEETING).
3. INSTALL RAIN GAUGE AND A WATEPROOF CONTAINER LARGE ENOUGH TO HOLD THE PLANS AND SWPPP.
4. BEGIN INSTALLING PERIMETER BMPs:
4A. INSTALL CONSTRUCTION ENTRANCE AS SHOWN. NOTE THAT A CONSTRUCTION ENTRANCE IS REQUIRED AT ANY LOCATION WHERE CONSTRUCTION TRAFFIC ENTERS A PAVED ROAD. IN THIS CASE, THE CONSTRUCTION ENTRANCE FUNCTION IS TO KEEP MUD OUT OF THE GRAVEL PARING LOT.
4B. INSTALL SEDIMENT TUBES IN THE SOUTH DITCH.
4C. INSTALL PERIMETER SILT FENCE.
4D. CHECK ALL SEDIMENT CONTROL STRUCTURES DAILY AND MAINTAIN AS NECESSARY. INSTRUCTIONS FOR MAINTANENCE ARE FOUND ON THE EROSION CONTROL PLANS, IN THE SCDHEC BEST MANAGEMENT PRACTICES (BMP) HANDBOOK, AND ON THE SCDHEC WEB SITE.
5. INSTALL OUTFALL DRAINAGE PIPE AND CATCH BASINS UP TO THE POND OUTFALL. ADD INLET PROTECTION AS CATCH BASINS ARE INSTALLED.
6. BEGIN INSTALLATION OF POND.
7. AS TOPSOIL IS REMOVED, STOCKPILE WHERE INDICATED. PROTECT SOIL STOCKPILES WITH SILT FENCE (DOWNHILL SIDE). PLACE SILT FENCE AROUND ENTIRE STOCKPILE PERIMETER IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS
8. BEGIN GRUBBING AND CLEARING IN THE AREA INDICATED ON THIS SHEET. AS THE CLEARING AREA EXPANDS, INSTALL SWALE ALONG PERIMETER TO ROUTE RUNOFF TO THE POND AREA.
9. FILL AREA INDICATED WITH DIRT FROM POND EXCAVATION.

60 0 30 60 120 240
1 inch = 60 ft.

BY	REVISION	NO.	DATE

DESIGNED BY: MJF
DRAWN BY: JCS
CHECKED BY: GEW
APPROVED BY: MJF
DATE: Jan 05, 2015
SCALE: 1"=60'
CITY: COWARD
COUNTY: FLORENCE
PROJECT #: AE007
DWG. #: 5 OF 10
CADfile: AE007-Dist 010215.dwg

SOUTH CAROLINA PROFESSIONAL ENGINEER No.20878 MATTHEW J. FLYNN 5/15

SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING™

CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: EROSION CONTROL PH 1

DESCRIPTION: EROSION CONTROL PH 1

PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	5 OF 10

GENERAL CONSTRUCTION NOTES:

1. THE AREA WITHIN THE SITE THAT HAS PROPOSED BUILDINGS, ROADS, UTILITY CONSTRUCTION, OR FILL SHALL BE STRIPPED OF ALL ASPHALT, DEBRIS, TOPSOIL, AND ORGANIC MATERIAL. TOPSOIL SHALL BE STOCK PILED FOR REPLACING ON DISTURBED AREAS.

2. THE SUB-GRADE UNDER THE ROAD SHOULD BE COMPACTED TO 98% OF ASTM DESIGNATION D-698 WITHIN 3% OF ITS OPTIMUM MOISTURE CONTENT.

3. THE AREA UNDER THE ROAD SHALL BE FILLED IN WITH WELL GRADED GRANULAR, NON-EXPANSIVE MATERIAL. IT SHOULD BE PLACED IN LAYERS OF NOT MORE THAN 8 INCHES IN THICKNESS AT OPTIMUM MOISTURE AND COMPACTED TO 98% OF MAXIMUM DRY DENSITY.

4. DRIVES - AFTER THE SUB-GRADE SOILS HAVE BEEN PROPERLY COMPACTED, FINE GRADED AND PROOF-ROLLED, THE GRANULAR BASE COURSE MAY BE PLACED. THIS SHOULD CONSIST OF CRUSHED STONE AGGREGATE WHICH CORRESPONDS TO THE GRADATION REQUIREMENTS OF MACADAM BASE, SECTION 305 OR GABC SECTION 306 OF THE SOUTH CAROLINA HIGHWAY DEPARTMENT SPECIFICATIONS, 2007 EDITION. THE SELECT AGGREGATE BASE SHALL BE COMPACTED TO 100% OF ASTM DESIGNATION D-698 MAXIMUM DRY DENSITY.

5. SEE DETAILS SHEET FOR PAVING, BASE, AND SUB-GRADE THICKNESS.

GRADING & STORM DRAINAGE NOTES:

1.) ALL LAND DISTURBANCE ACTIVITIES ARE TO REMAIN WITHIN THE LIMITS OF CONSTRUCTION AS APPROVED BY SC DHEC AND DELINEATED ON THE GRADING PLANS. THIS SITE WILL BE MASS-GRADED, WITH THE EXCEPTION OF THE SEPTIC LEACH FIELD AREA AND BUFFER WHICH WILL BE LEFT UNDISTURBED.

2.) SEE SEDIMENT & EROSION CONTROL DETAILS SHEET FOR GRASSING AND SEDIMENT CONTROL INFORMATION. CONTRACTOR SHALL SPREAD TOPSOIL ON ROAD SHOULDERS, EASEMENTS, OR OTHER AREAS PRIOR TO GRASSING.

3.) THE CONTRACTOR SHALL RESTORE EXISTING YARD AREAS TO SAME CONDITION AS THAT PRIOR TO CONSTRUCTION. THIS INCLUDES ROAD SHOULDERS, EASEMENTS, LOT GRADES, DITCHES, GRASSED OR VEGETATED AREAS, SILT FENCES OR ANY OTHER SEDIMENT CONTROL STRUCTURE.

4.) THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY KNOWN DRAINAGE, SEWER OR WATER CONFLICTS PRIOR TO START OF WORK. IF ANY UNEXPECTED OR UNUSUAL CONDITIONS ARE ENCOUNTERED THAT MAY OR MAY NOT BECOME A CONFLICT, THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY.

5.) REFER TO MECHANICAL DRAWINGS FOR DETAILS CONCERNING UTILITY LINES. COORDINATE ALL UTILITY SERVICE LINE TIE-INS WITH BUILDING CONTRACTOR.

6.) NO CONSTRUCTION IS TO TAKE PLACE WITHIN EXISTING ROAD RIGHTS OF WAY UNTIL THE APPROPRIATE ENCROACHMENT PERMITS HAVE BEEN RECEIVED FROM SCDOT OR THE APPROPRIATE CITY/COUNTY AUTHORITIES. RESTORATION OF SHOULDERS AND PAVEMENT WITHIN STREET OR HIGHWAY RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED IN THE ENCROACHMENT PERMIT ISSUED BY THE PROPER AUTHORITY.

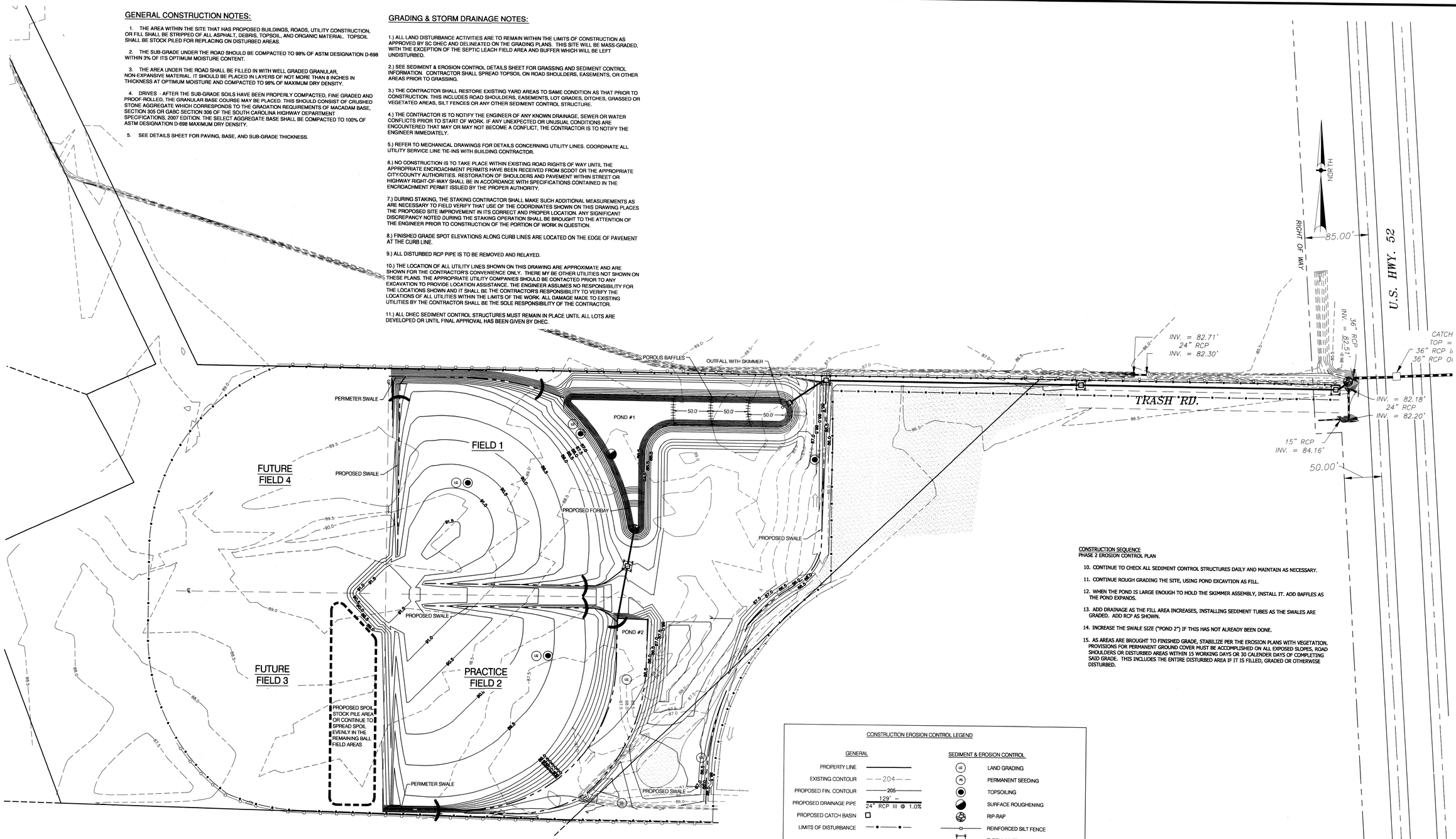
7.) DURING STAKING, THE STAKING CONTRACTOR SHALL MAKE SUCH ADDITIONAL MEASUREMENTS AS ARE NECESSARY TO FIELD VERIFY THAT USE OF THE COORDINATES SHOWN ON THIS DRAWING PLACES THE PROPOSED SITE IMPROVEMENT IN ITS CORRECT AND PROPER LOCATION. ANY SIGNIFICANT DISCREPANCY NOTED DURING THE STAKING OPERATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF THE PORTION OF WORK IN QUESTION.

8.) FINISHED GRADE SPOT ELEVATIONS ALONG CURB LINES ARE LOCATED ON THE EDGE OF PAVEMENT AT THE CURB LINE.

9.) ALL DISTURBED RCP PIPE IS TO BE REMOVED AND RELAYED.

10.) THE LOCATION OF ALL UTILITY LINES SHOWN ON THIS DRAWING ARE APPROXIMATE AND ARE SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE APPROPRIATE UTILITY COMPANIES SHOULD BE CONTACTED PRIOR TO ANY EXCAVATION TO PROVIDE LOCATION ASSISTANCE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

11.) ALL DHEC SEDIMENT CONTROL STRUCTURES MUST REMAIN IN PLACE UNTIL ALL LOTS ARE DEVELOPED OR UNTIL FINAL APPROVAL HAS BEEN GIVEN BY DHEC.



CONSTRUCTION EROSION CONTROL LEGEND

GENERAL		SEDIMENT & EROSION CONTROL	
PROPERTY LINE		LG	LAND GRADING
EXISTING CONTOUR	204	PS	PERMANENT SEEDING
PROPOSED FIN. CONTOUR	205		TOPSOILING
PROPOSED DRAINAGE PIPE	129' — 24" RCP III @ 1.0%		SURFACE ROUGHENING
PROPOSED CATCH BASIN			RIP-RAP
LIMITS OF DISTURBANCE			REINFORCED SILT FENCE
			TYPE-A INLET PROTECTION
			12" SEDIMENT TUBE
			POROUS BAFFLE

CONSTRUCTION SEQUENCE
PHASE 2 EROSION CONTROL PLAN

10. CONTINUE TO CHECK ALL SEDIMENT CONTROL STRUCTURES DAILY AND MAINTAIN AS NECESSARY.
11. CONTINUE ROUGH GRADING THE SITE, USING POND EXCAVTION AS FILL.
12. WHEN THE POND IS LARGE ENOUGH TO HOLD THE SKIMMER ASSEMBLY, INSTALL IT. ADD BAFFLES AS THE POND EXPANDS.
13. ADD DRAINAGE AS THE FILL AREA INCREASES, INSTALLING SEDIMENT TUBES AS THE SWALES ARE GRADED. ADD RCP AS SHOWN.
14. INCREASE THE SWALE SIZE ("POND 2") IF THIS HAS NOT ALREADY BEEN DONE.
15. AS AREAS ARE BROUGHT TO FINISHED GRADE, STABILIZE PER THE EROSION PLANS WITH VEGETATION. PROVISIONS FOR PERMANENT GROUND COVER MUST BE ACCOMPLISHED ON ALL EXPOSED SLOPES, ROAD SHOULDERS OR DISTURBED AREAS WITHIN 15 WORKING DAYS OR 30 CALENDER DAYS OF COMPLETING SAID GRADE. THIS INCLUDES THE ENTIRE DISTURBED AREA IF IT IS FILLED, GRADED OR OTHERWISE DISTURBED.

60 0 30 60 120 240
1 inch = 60 ft.

NO.	DATE	REVISION	BY

DESIGNED BY: MJF
DRAWN BY: JCS
CHECKED BY: GEV
APPROVED BY: MJF
DATE: Jan 05, 2015
SCALE: AS SHOWN
CITY: COWARD
COUNTY: FLORENCE
PROJECT # AE007
SHEET # 6 OF 10
CAD#: AE007-Des 010215.dwg

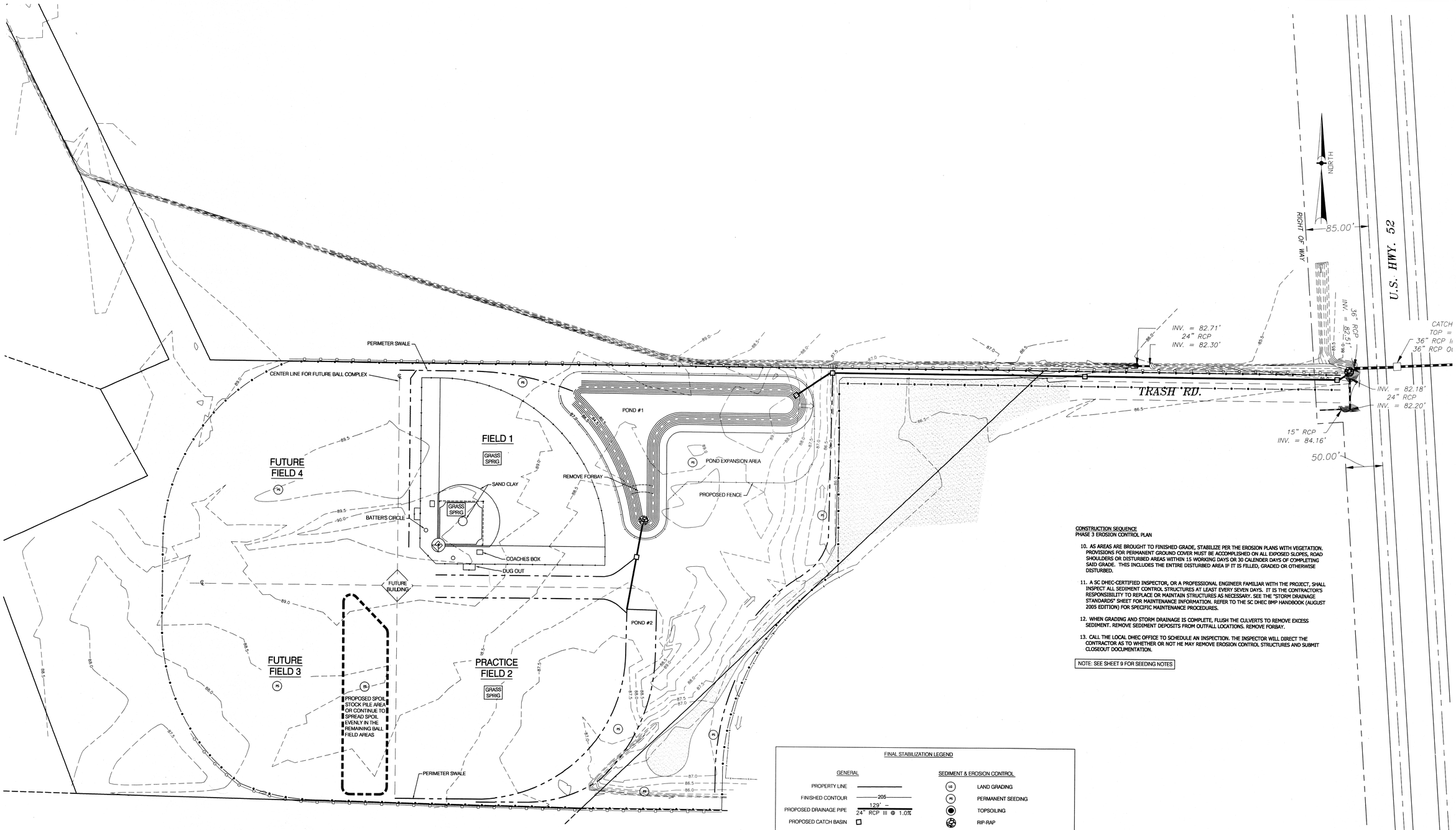
SOUTH CAROLINA PROFESSIONAL ENGINEER No.20872 5/15

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION ALIGNED ENGINEERING No. 5025

ALIGNED ENGINEERING

CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: EROSION CONTROL PH 2

DESCRIPTION: EROSION CONTROL PH 2
PLAN SET: DESIGN
DATE: Jan 05, 2015
PROJECT: AE007
SHEET: 6 OF 10



CONSTRUCTION SEQUENCE
PHASE 3 EROSION CONTROL PLAN

10. AS AREAS ARE BROUGHT TO FINISHED GRADE, STABILIZE PER THE EROSION PLANS WITH VEGETATION. PROVISIONS FOR PERMANENT GROUND COVER MUST BE ACCOMPLISHED ON ALL EXPOSED SLOPES, ROAD SHOULDERS OR DISTURBED AREAS WITHIN 15 WORKING DAYS OR 30 CALENDER DAYS OF COMPLETING SAID GRADE. THIS INCLUDES THE ENTIRE DISTURBED AREA IF IT IS FILLED, GRADED OR OTHERWISE DISTURBED.

11. A SC DHEC-CERTIFIED INSPECTOR, OR A PROFESSIONAL ENGINEER FAMILIAR WITH THE PROJECT, SHALL INSPECT ALL SEDIMENT CONTROL STRUCTURES AT LEAST EVERY SEVEN DAYS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPLACE OR MAINTAIN STRUCTURES AS NECESSARY. SEE THE "STORM DRAINAGE STANDARDS" SHEET FOR MAINTENANCE INFORMATION. REFER TO THE SC DHEC BMP HANDBOOK (AUGUST 2005 EDITION) FOR SPECIFIC MAINTENANCE PROCEDURES.

12. WHEN GRADING AND STORM DRAINAGE IS COMPLETE, FLUSH THE CULVERTS TO REMOVE EXCESS SEDIMENT. REMOVE SEDIMENT DEPOSITS FROM OUTFALL LOCATIONS. REMOVE FORBAY.

13. CALL THE LOCAL DHEC OFFICE TO SCHEDULE AN INSPECTION. THE INSPECTOR WILL DIRECT THE CONTRACTOR AS TO WHETHER OR NOT HE MAY REMOVE EROSION CONTROL STRUCTURES AND SUBMIT CLOSEOUT DOCUMENTATION.

NOTE: SEE SHEET 9 FOR SEEDING NOTES

FINAL STABILIZATION LEGEND

GENERAL		SEDIMENT & EROSION CONTROL	
PROPERTY LINE		LG	LAND GRADING
FINISHED CONTOUR	205	PS	PERMANENT SEEDING
PROPOSED DRAINAGE PIPE	129' – 24" RCP III @ 1.0%		TOPSOILING
PROPOSED CATCH BASIN			RIP-RAP
			REINFORCED SILT FENCE
			TYPE-A INLET PROTECTION
			12" SEDIMENT TUBE
			POROUS BAFFLE

60 0 30 60 120 240
1 inch = 60 ft.

DESIGNED BY:	MJF
DRAWN BY:	JCS
CHECKED BY:	GEW
APPROVED BY:	MJF
DATE:	Jan 05, 2015
SCALE:	1"=60'
CITY:	COWARD
COUNTY:	FLORENCE
PROJECT #	AE007
DWG. #	7 OF 10
CADD:	AE007-Dwg 010215.dwg

NO.	DATE	REVISION	BY

SOUTH CAROLINA PROFESSIONAL ENGINEER No.20879 — 5/5/15

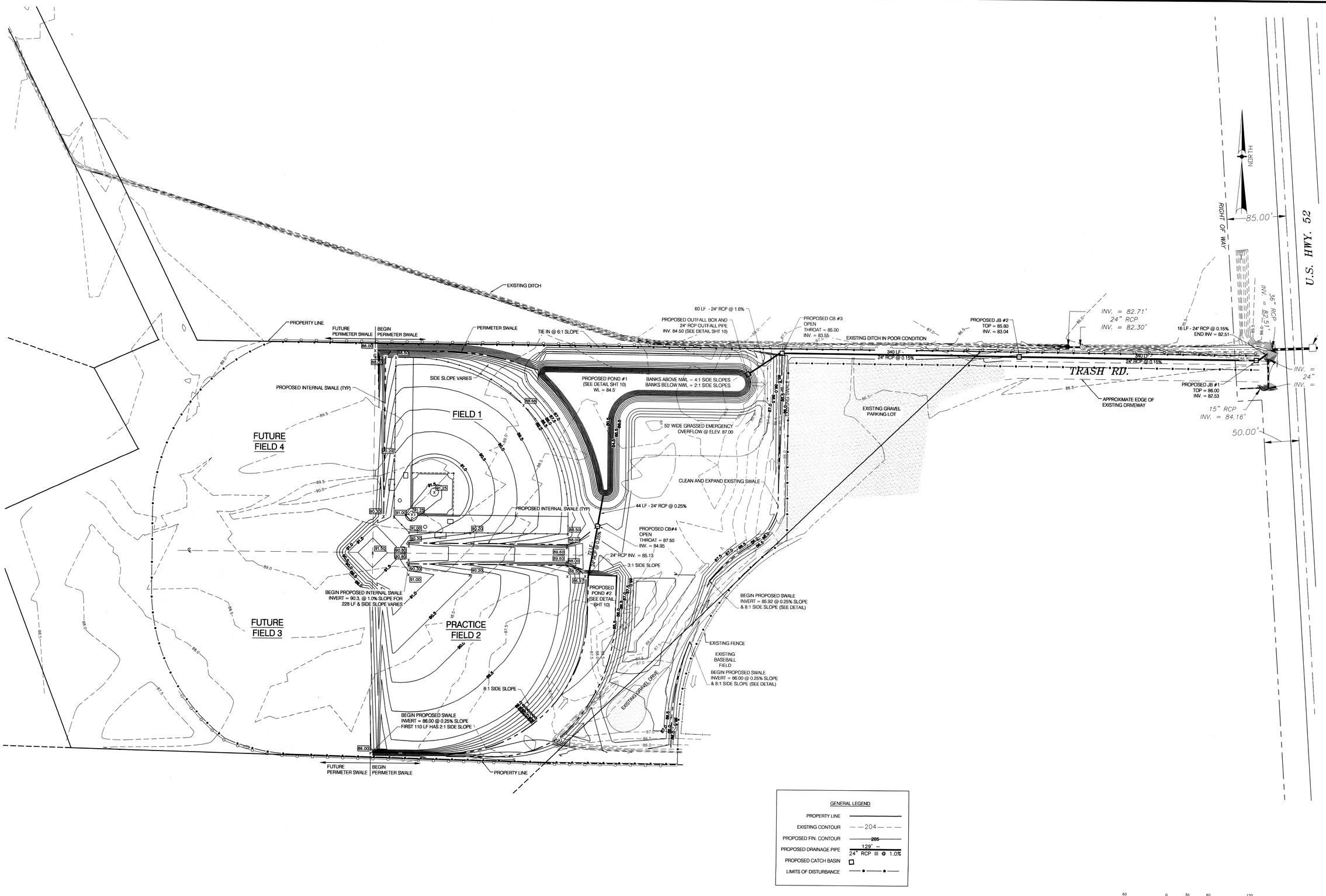
SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING

CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: EROSION CONTROL PH 3

DESCRIPTION: EROSION CONTROL PH 3

PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	7 OF 10



GENERAL LEGEND

PROPERTY LINE	———
EXISTING CONTOUR	— — 204 — —
PROPOSED FIN. CONTOUR	205
PROPOSED DRAINAGE PIPE	129' — 24" RCP III @ 1.0%
PROPOSED CATCH BASIN	□
LIMITS OF DISTURBANCE	—●—●—

60 0 30 60 120 240

1 inch = 60 ft.

NO.	DATE	REVISION	BY

DESIGNED BY: MJF
DRAWN BY: JCS
CHECKED BY: GEW
APPROVED BY: MJF
DATE: Jan 05, 2015
SCALE: 1"=60'
CITY: COWARD
COUNTY: Fflorence
PROJECT # AE007
DWG. # 8 OF 10
CADfile AE007-Dec 010215.dwg

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20812 MATTHEW J. FLOYD 1/5/15

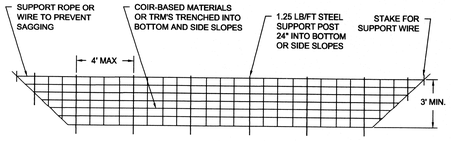
SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING

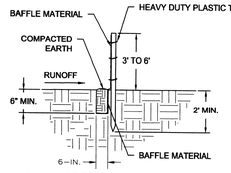
CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: GRADING & DRAINAGE PLAN

DESCRIPTION: GRADING & DRAINAGE PLAN

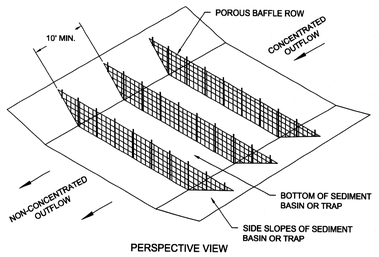
PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	8 OF 10



CROSS SECTION VIEW



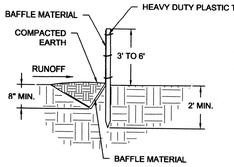
FLAT-BOTTOM TRENCH DETAIL



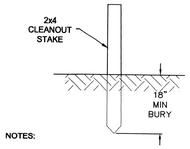
PERSPECTIVE VIEW

POROUS BAFFLES

N.T.S



V-SHAPED TRENCH DETAIL

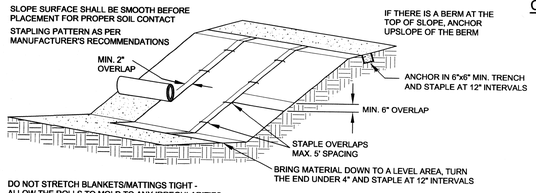


NOTES:

1. MARK EACH STAKE TO INDICATE 12", 18", AND 24" ABOVE THE DESIGN GROUND LEVEL.
2. REMOVE SEDIMENT WHEN IT REACHES THE 18" MARK.
3. REMOVE STAKE AND CLEAN SEDIMENT TO DESIGN LEVEL AT END OF CONSTRUCTION.

SEDIMENT CLEAN-OUT STAKE

N.T.S.



DO NOT STRETCH BLANKETS/MATTINGS TIGHT - ALLOW THE ROLLS TO MOLD TO ANY IRREGULARITIES

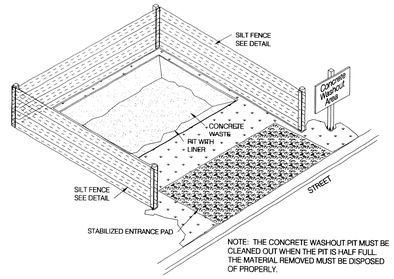
FOR SLOPES LESS THAN 3H:1V, ROLLS MAY BE PLACED IN HORIZONTAL STRIPS

LIME, FERTILIZE AND SEED BEFORE INSTALLATION. PLANTING OF SHRUBS, TREES, ETC. SHOULD OCCUR AFTER INSTALLATION.

SLOPE PROTECTION DETAIL FOR AREAS HYDRO-SEEDED

NTS

"TO BE USED IF NECESSARY"

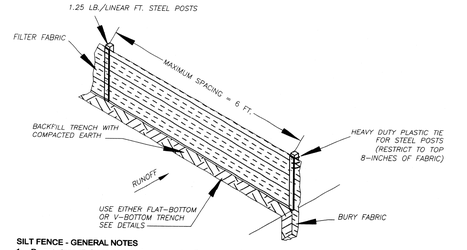


NOTE: THE CONCRETE WASHOUT PIT MUST BE CLEANED OUT WHEN THE PIT IS HALF FULL. THE MATERIAL REMOVED MUST BE DISPOSED OF PROPERLY.

CONCRETE WASHOUT AREA DETAIL

N.T.S.

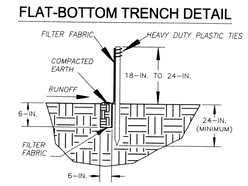
SILT FENCE INSTALLATION



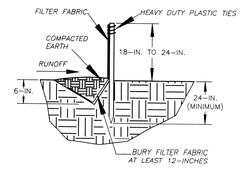
SILT FENCE - GENERAL NOTES

1. Do not place silt fence across channels or in other areas subject to concentrated flows. Silt fence should not be used as a velocity control BMP. Concentrated flows are any flows greater than 0.5 cfs.
2. Maximum sheet or overland flow path length to the silt fence shall be 100-feet.
3. Maximum slope steepness (normal (perpendicular) to the fence line) shall be 2:1.
4. Silt fence joints, when necessary, shall be completed by one of the following options:
   - Wrap each fabric together at a support post with both ends fastened to the post, with a 1-foot minimum overlap;
   - Overlap silt fence by installing 3-feet passed the support post to which the new silt fence roll is attached. Attach old roll to new roll with heavy-duty plastic ties; or,
   - Overlap entire width of each silt fence roll from one support post to the next support post.
5. Attach filter fabric to the steel posts using heavy-duty plastic ties that are evenly spaced within the top 8-inches of the fabric.
6. Install the silt fence perpendicular to the direction of the stormwater flow and place the silt fence the proper distance from the toe of steep slopes to provide sediment storage and access for maintenance and cleanout.
7. Install Silt Fence Checks (Tie-Backs) every 50-100 feet, dependent on slope, along silt fence that is installed with slope and where concentrated flows are expected or are documented along the proposed/installed silt fence.

FLAT-BOTTOM TRENCH DETAIL

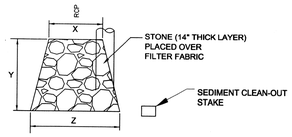


V-SHAPED TRENCH DETAIL



SILT FENCE

N.T.S

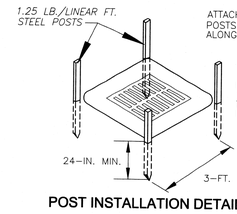


TYPICAL RIP-RAP APRON

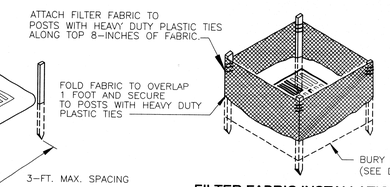
N.T.S.

1.) USE THIS SIZE FOR ALL RIP-RAP APRONS, UNLESS OTHERWISE SPECIFIED
2.) ALL PIPE 36" OR LESS SHALL HAVE FLARED END SECTIONS.
3.) APRON DIMENSIONS ARE FOR EACH INDIVIDUAL PIPE.

APRON #	RCP SIZE	X	Y	Z	STONE SIZE
RRA	18" / 24"	6'	6'	6'	8"



POST INSTALLATION DETAIL



FILTER FABRIC INSTALLATION DETAIL

TEMPORARY SEEDING REQUIREMENTS (SITE SPECIFIC)

TEMPORARY SEEDING MAY BE APPLIED DURING TIMES SHOWN. THE FOLLOWING TYPES OF SEED AND APPLICATION RATES ARE ALLOWED:

SPECIES	Lbs/Ac	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	NOV	DEC
SANDY, DROUGHTY SITES												
BROWNTOP MILLET	40											
RYE, GRAIN	56											
RYEGRASS	50											
WELL DRAINED, CLAYEY/LOAMEY SITES												
BROWNTOP MILLET OR JAPANESE MILLET	40											
RYE, GRAIN OR OATS	56											
RYEGRASS	75											
	50											

1- APPLY A MINIMUM OF 500 POUNDS PER ACRE OF 10-10-10 FERTILIZER (11.5 POUNDS PER 1000 SQUARE FEET) OR EQUIVALENT DURING TEMPORARY SEEDING UNLESS A SOIL TEST INDICATES A DIFFERENT REQUIREMENT. INCORPORATE FERTILIZER AND LIME (IF USED) INTO THE TOP 4-6 INCHES OF THE SOIL BY DISCING OR OTHER MEANS WHERE CONDITIONS ALLOW.

2- LOOSEN THE SOIL SURFACE BEFORE BROADCASTING THE SEED. APPLY SEED EVENLY BY THE MOST CONVENIENT METHOD AVAILABLE FOR THE TYPE OF SEED USED AND THE LOCATION OF THE TEMPORARY SEEDING.

3- COVER APPLIED SEED BY RAKING OR DRAGGING A CHAIN, AND THEN LIGHTLY FIRM THE AREA WITH A ROLLER OR CULTI-PACKER.

4- USE MULCH WITH TEMPORARY SEED APPLICATIONS TO RETAIN SOIL MOISTURE AND REDUCE EROSION DURING THE ESTABLISHMENT OF VEGETATION. TYPICAL MULCH APPLICATIONS INCLUDE STRAW, WOOD FIBER, HYDRO-MULCHES, BFM AND FGM. USE HYDRO-MULCHES WITH A MINIMUM BLEND OF 70% WOOD FIBERS.

5- APPLY THE STRAW MULCH BY HAND OR MACHINE AT THE RATE 1.5-2 TONS PER ACRE (90 POUNDS PER 1000 SQUARE FEET). FREQUENT INSPECTIONS ARE NECESSARY TO CHECK THAT CONDITIONS FOR GROWTH ARE GOOD.

6- SEEDED AREAS SHOULD BE KEPT ADEQUATELY MOIST. IRRIGATE THE SEEDED AREA IF NORMAL RAINFALL IS NOT ADEQUATE FOR THE GERMINATION AND GROWTH OF SEEDLINGS.

7- RE-SEED AREAS WHERE SEEDING DOES NOT GROW QUICKLY, THICK ENOUGH, OR ADEQUATELY TO PREVENT EROSION. INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES ½-INCHES OR MORE OF PRECIPITATION.

1 - APPLY TOPSOIL IF THE SURFACE SOIL OF THE SEEDBED IS NOT ADEQUATE FOR PLANT GROWTH.

2 -IF THE AREA HAS BEEN RECENTLY PLOWED, NO TILLAGE IS REQUIRED OTHER THAN RAKING OR SURFACE ROUGHENING TO BREAK ANY CRUST THAT HAS FORMED LEAVING A TEXTURED SURFACE. DISC THE SOIL FOR OPTIMAL GERMINATION WHEN THE SOIL IS COMPACTED LESS THAN 6-INCHES. IF THE SOIL IS COMPACTED MORE THAN 6-INCHES, SUB-SOILED AND DISC THE AREA.

3-SOIL TESTING IS AVAILABLE THROUGH CLEMSON UNIVERSITY COOPERATIVE EXTENSION SERVICE.

4-UNLESS A SPECIFIC SOIL TEST INDICATES OTHERWISE, APPLY 1½ TONS OF GROUND COURSE TEXTURED AGRICULTURAL LIMESTONE PER ACRE (70 POUNDS PER 1000 SQUARE FEET).

5-APPLY A MINIMUM OF 1000 POUNDS PER ACRE OF A COMPLETE 10-10-10 FERTILIZER (23 POUNDS PER 1000 SQUARE FEET) OR EQUIVALENT DURING PERMANENT SEEDING OF GRASSES UNLESS A SOIL TEST INDICATES A DIFFERENT REQUIREMENT. INCORPORATE FERTILIZER AND LIME (IF USED) INTO THE TOP 4-6 INCHES OF THE SOIL BY DISKING OR OTHER MEANS WHERE CONDITIONS ALLOW. DO NOT MIX THE LIME AND THE FERTILIZER PRIOR TO THE FIELD APPLICATION.

6-LOOSEN THE SURFACE OF THE SOIL JUST BEFORE BROADCASTING THE SEED. EVENLY APPLY SEED BY THE MOST CONVENIENT METHOD AVAILABLE FOR THE TYPE OF SEED APPLIED AND THE LOCATION OF THE SEEDING. TYPICAL APPLICATION METHODS INCLUDE BUT ARE NOT LIMITED TO CYCLONE SEEDERS, ROTARY SPREADERS, DROP SPREADERS, BROADCAST SPREADERS, HAND SPREADERS, CULTI-PACKER SEEDER, AND HYDRO-SEEDERS. COVER APPLIED SEED BY RAKING OR DRAGGING A CHAIN OR BRUSH MAT, AND THEN LIGHTLY FIRM THE AREA WITH A ROLLER OR CULTI-PACKER. DO NOT ROLL SEED THAT IS APPLIED WITH A HYDRO-SEEDER AND HYDRO-MULCH. 7-COVER ALL PERMANENT SEEDED AREAS WITH MULCH IMMEDIATELY UPON COMPLETION OF THE SEEDING APPLICATION TO RETAIN SOIL MOISTURE AND REDUCE EROSION DURING ESTABLISHMENT OF VEGETATION. APPLY THE MULCH EVENLY IN SUCH A MANNER THAT IT PROVIDES A MINIMUM OF 75% COVERAGE. TYPICAL MULCH APPLICATIONS INCLUDE STRAW, WOOD FIBER, HYDRO-MULCHES, BFM AND FGM. USE HYDRO-MULCHES WITH A MINIMUM BLEND OF 70% WOOD FIBERS.

7-APPLY STRAW MULCH BY HAND OR MACHINE AT THE RATE 2 TONS PER ACRE (90 POUNDS PER 1000 SQUARE FEET). FREQUENT INSPECTIONS ARE NECESSARY TO CHECK THAT CONDITIONS FOR GROWTH ARE GOOD.

8-KEEP PERMANENT SEEDED AREAS ADEQUATELY MOIST, ESPECIALLY LATE IN THE SPECIFIC GROWING SEASON. IRRIGATE THE SEEDED AREA IF NORMAL RAINFALL IS NOT ADEQUATE FOR THE GERMINATION AND GROWTH OF SEEDLINGS. WATER SEEDED AREAS AT CONTROLLED RATES THAT ARE LESS THAN THE RATE AT WHICH THE SOIL CAN ABSORB WATER TO PREVENT RUNOFF. RUNOFF OF IRRIGATION WATER WASTES WATER AND CAN CAUSE EROSION.

9-INSPECT PERMANENTLY SEEDED AREAS FOR FAILURE, MAKE NECESSARY REPAIRS AND RE-SEED OR OVER-SEED WITHIN THE SAME GROWING SEASON IF POSSIBLE. IF THE GRASS COVER IS SPARSE OR PATCHY, RE-EVALUATE THE CHOICE OF GRASS AND QUANTITIES OF LIME AND FERTILIZER APPLIED. FINAL STABILIZATION BY PERMANENT SEEDING OF THE SITE REQUIRES THAT IT BE COVERED BY A 70% COVERAGE RATE.

10-INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RE-SEED IMMEDIATELY. CONDUCT A FOLLOW-UP SURVEY AFTER ONE YEAR AND REPLACE FAILED PLANTS WHERE NECESSARY.

11-IF VEGETATIVE COVER IS INADEQUATE TO PREVENT RILL EROSION, OVER-SEED AND FERTILIZE IN ACCORDANCE WITH SOIL TEST RESULTS.

12-IF A STAND OF PERMANENT VEGETATION HAS LESS THAN 40 PERCENT COVER, RE-EVALUATE CHOICE OF PLANT MATERIALS AND QUANTITIES OF LIME AND FERTILIZER.

13-RE-ESTABLISH THE STAND FOLLOWING SEED BED PREPARATION AND SEEDING RECOMMENDATIONS, OMITTING LIME AND FERTILIZER IN THE ABSENCE OF SOIL TEST RESULTS.

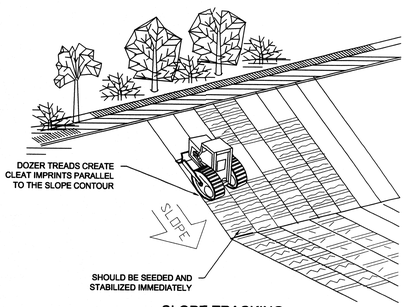
14-IF THE SEASON PREVENTS RE-SOWING, MULCH IS AN EFFECTIVE TEMPORARY COVER.

15-FINAL STABILIZATION OF THE SITE REQUIRES A 70 PERCENT OVERALL COVERAGE RATE. THIS DOES NOT MEAN THAT 30 PERCENT OF THE SITE CAN REMAIN BARE. THE COVERAGE IS DEFINED AS LOOKING AT A SQUARE YARD OF COVERAGE, IN WHICH 70 PERCENT OF THAT SQUARE YARD IS COVERED WITH VEGETATION.

PERMANENT SEEDING REQUIREMENTS (SITE SPECIFIC)

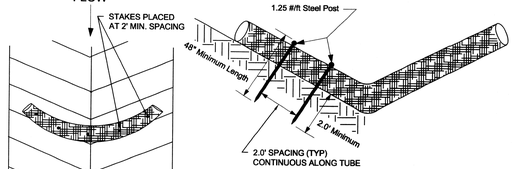
PERMANENT SEEDING MAY BE APPLIED DURING TIMES SHOWN. THE FOLLOWING TYPES OF SEED AND APPLICATION RATES ARE ALLOWED:
PLS - PURE LIVE SEED

SPECIES	Lbs/Ac	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	NOV	DEC
SANDY, DROUGHTY SITES												
BROWNTOP MILLET BAHIAGRASS	10 40											
BROWNTOP MILLET BAHIAGRASS SERICEA LESPEDEZA	10 30 40											
BROWNTOP MILLET ATLANTIC COASTAL PANICGRASS	10 15 PLS											
BROWNTOP MILLET SWITCHGRASS (ALAMO) LITTLE BLUESTEM SERICEA LESPEDEZA BROWNTOP MILLET WEEPING LOVEGRASS	10 8 PLS 4 20 10 8											
WELL DRAINED, CLAYEY/LOAMEY SITES												
BROWNTOP MILLET BAHIAGRASS RYE, GRAIN BAHIAGRASS CLOVER, CRIMSON (ANNUAL)	10 40 10 40 5											
BROWNTOP MILLET BAHIAGRASS SERICEA LESPEDEZA	10 30 40											
BROWNTOP MILLET BERMUDA, COMMON SERICEA LESPEDEZA	10 10 40											
BROWNTOP MILLET BERMUDA, COMMON KOBE LESPEDEZA (ANNUAL)	10 12 10											
BROWNTOP MILLET BAHIAGRASS BERMUDA, COMMON SERICEA LESPEDEZA	10 20 6 40											
BROWNTOP MILLET SWITCHGRASS LITTLE BLUESTEM INDIANGRASS	10 8 PLS 3 PLS 3 PLS											



SLOPE TRACKING

N.T.S

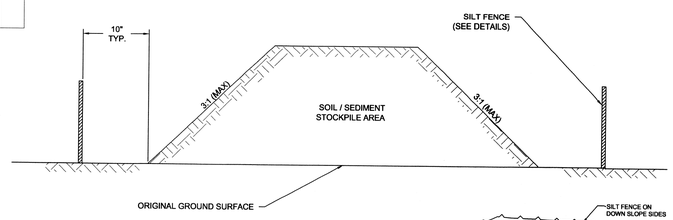


END VIEW OF DITCH

SLOPE	MAX. SEDIMENT TUBE SPACING
LESS THAN 2%	150—FEET
2%	100—FEET
3%	75—FEET
4%	50—FEET
5%	40—FEET
6%	30—FEET
GREATER THAN 6%	25—FEET

SEDIMENT TUBE IN DITCH

N.T.S.

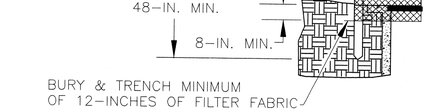


NOTES:

1. SILT FENCE TO EXTEND AROUND ENTIRE PERIMETER OF STOCKPILE, OR IF STOCKPILE AREA IS LOCATED ON/NEAR A SLOP THE SILT FENCE IS TO EXTEND ALONG CONTOURS OF THE DOWN-GRADIENT AREA.
2. IF STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, TEMPORARY STABILIZATION MEASURES MUST BE IMPLEMENTED.
3. SILT FENCE SHALL BE MAINTAINED UNTIL STOCKPILE AREA HAS EITHER BEEN REMOVED OR PERMANENTLY STABILIZED.
4. THE KEY TO FUNCTIONAL TEMPORARY STOCKPILE AREAS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.

SOIL STOCKPILE DETAIL

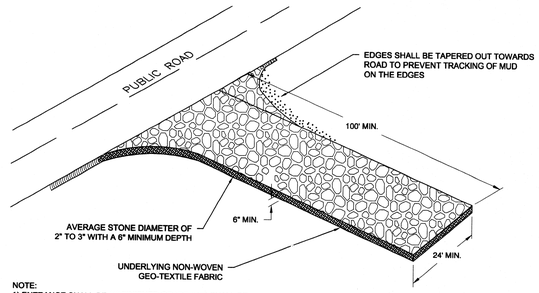
N.T.S.



FILTER FABRIC BURIAL DETAIL

TYPE-A FILTER FABRIC INLET PROTECTION

N.T.S.



NOTE:
1) ENTRANCE SHALL BE AT FINISHED GRADE AND SHALL BE DESIGNATED FOR CONSTRUCTION ACCESS UNTIL SUCH TIME AS ALL SABC BASE HAS BEEN INSTALLED ON REMAINING ROAD.

2) CONSTRUCTION ENTRANCE SHALL BE COMPLETED FIRST AND PRIOR TO TRUCK TRAFFIC EXITING THE SITE.

3) THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO TO THE PAVED ROADWAY FROM CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM THE PAVEMENT AS MAY BE REQUIRED

SPECIFICATION	SIZE
ROCK PAD THICKNESS	6 INCHES
ROCK PAD WIDTH	24 FEET
ROCK PAD LENGTH	100 FEET
ROCK PAD STONE SIZE	D = 2-3 INCHES

CONSTRUCTION ENTRANCE DETAIL

N.T.S.

BY	REVISION	NO.	DATE

DESIGNED BY: M.J.E.
DRAWN BY: J.C.S.
CHECKED BY: G.E.W.
APPROVED BY: M.J.E.
DATE: Jan 05, 2015
SCALE: AS NOTED
CITY: COWARD
COUNTY: FLORENCE
PROJECT #: AE007
DWG. #: 07-02
CADD#: AE007-Dwg 010215.dwg

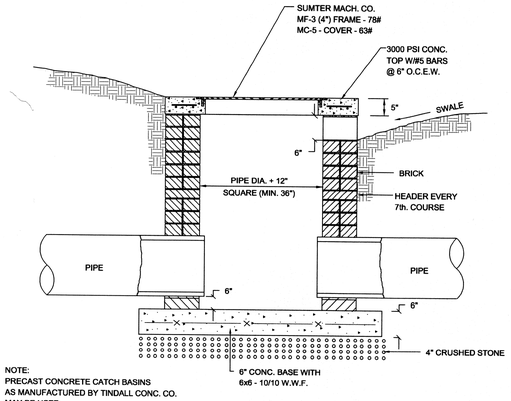
SOUTH CAROLINA PROFESSIONAL ENGINEER No.20972 01/5/15

SOUTH CAROLINA ALIGNED ENGINEERING No. 5025 CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING™

CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: SEDIMENT & EROSION DETAILS

DESCRIPTION: SEDIMENT & EROSION DETAILS
PLAN SET: DESIGN
DATE: Jan 05, 2015
PROJECT: AE007
SHEET: 9 OF 10



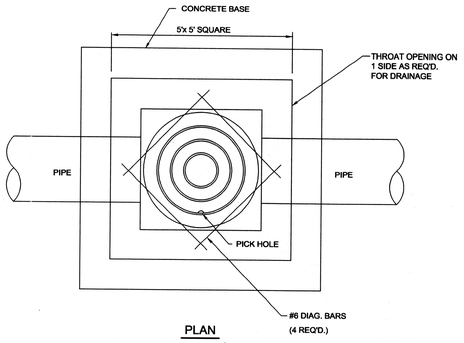
NOTE:
PRECAST CONCRETE CATCH BASINS
AS MANUFACTURED BY TINDALL CONC. CO.
MAY BE USED.

SECTION

OPEN THROAT CATCH BASIN

N.T.S.

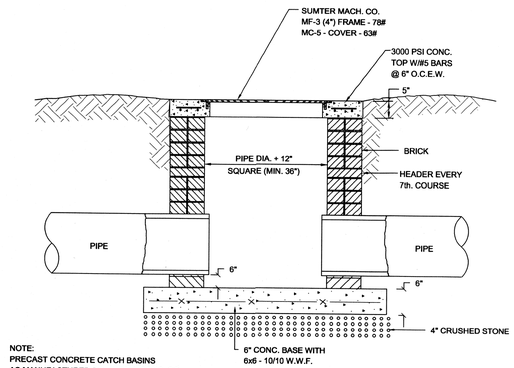
(TO BE USED IN SWALES & OPEN AREAS)



PLAN

OPEN THROAT CATCH BASIN

N.T.S.

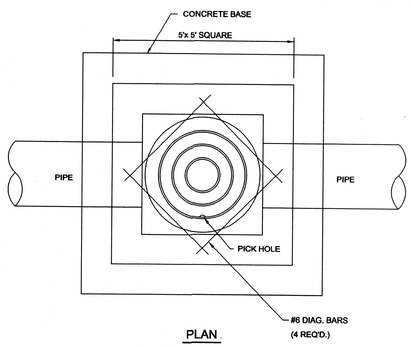


NOTE:
PRECAST CONCRETE CATCH BASINS
AS MANUFACTURED BY TINDALL CONC. CO.
MAY BE USED.

SECTION

JUNCTION BOX

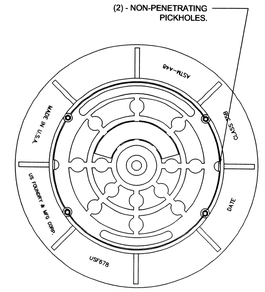
N.T.S.

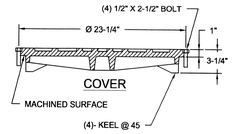


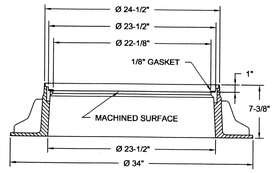
PLAN

JUNCTION BOX

N.T.S.



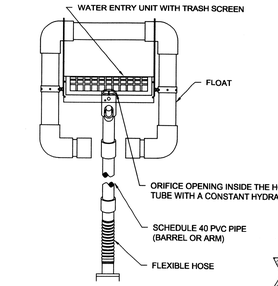




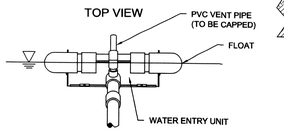
RING

TRAFFIC RATED RING & COVER

MATERIAL: ASTM-A48 — GRAY IRON CLASS: 35B
RING WEIGHT: 200 — COVER WEIGHT: 130



TOP VIEW



END VIEW

J. W. FAIRCLOTH & SON INC.
WWW.FAIRCLOTHSKIMMER.COM
TELEPHONE: (919) 732-1244
FAX: (919) 732-1266
EMAIL: WARREN@FAIRCLOTHSKIMMER.COM

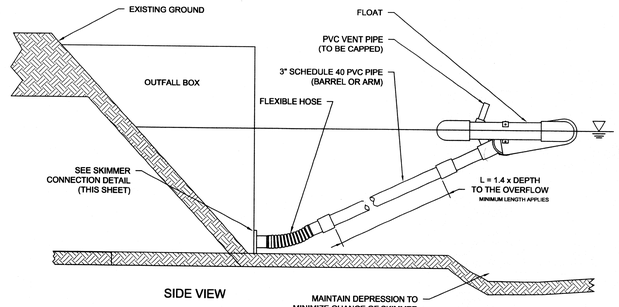
FAIRCLOTH 3" SKIMMER (OR APPROVED EQUIVALENT)
1. QUANTITY=1
2. FLOW: 0.11 CFS OR 9,500 CF PER DAY
3. ATTACHMENT: 3" Ø PIPE FITTING

GENERAL NOTES:

1. PROPER DESIGN MUST BE COMPLETED TO MINIMIZE PIPING AROUND DISCHARGE PIPE.
2. PROPER ORIFICE OPENING MUST BE SELECTED TO ENSURE POND DRAINS IN CORRECT AMOUNT OF TIME. MODIFICATIONS MAY BE REQUIRED IF FIELD CONDITIONS WARRANT A CHANGE.
3. EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
4. EMERGENCY SPILLWAY MUST BE CORRECTLY SIZED AND EROSION PROTECTION INSTALLED.
5. EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
6. INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
7. EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

NOTE TO CONTRACTOR:

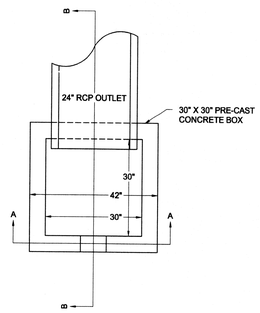
THE SKIMMER DESIGN LIMITS THE INCOMING WATER FLOW. DO NOT ADJUST THE SKIMMER TO MATCH THE WEIR OPENING.



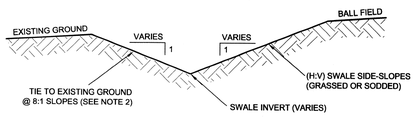
SIDE VIEW

FAIRCLOTH SKIMMER DISCHARGE SYSTEM WITH EMBANKMENT ®

N.T.S.



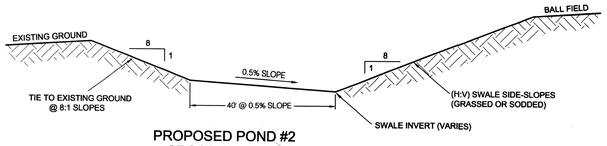
TOP VIEW



PERIMETER SWALE CROSS-SECTION

N.T.S.

1) DEPTH VARIES BASED ON SWALE INVERT
2) SWALE SIDE SLOPES: TIE INTO EXISTING GROUND AT 8:1 IN SOME AREAS (SEE SHEET 4) THE SLOPES ARE STEEPER. DO NOT SLOPE SIDES GREATER THAN 2:1.



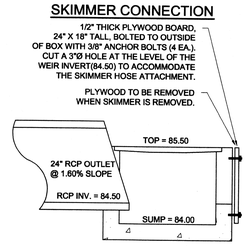
PROPOSED POND #2 CROSS-SECTION

N.T.S.

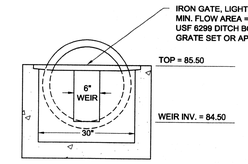
PLACE ORGANIC TOPSOIL ON ALL DISTURBED BANKS AND SOD OR HYDRO-SEED UPON POND COMPLETION

1. PROVIDE CLEAN OUT STAKE 4' BEYOND EACH OUTFALL TO THE POND.
2. PLACE ANOTHER STAKE 4' FROM THE OUTFALL STRUCTURE.
3. MARK EACH STAKE TO INDICATE 12", 18", AND 24" ABOVE THE DESIGN GROUND LEVEL.
4. REMOVE SEDIMENT WHEN IT REACHES THE 18" MARK.
5. REMOVE STAKE AND CLEAN SEDIMENT TO DESIGN LEVEL AT END OF CONSTRUCTION.
6. POND AS-BUILTS TO BE PROVIDED TO ENGINEER PRIOR TO FINAL GRASSING.

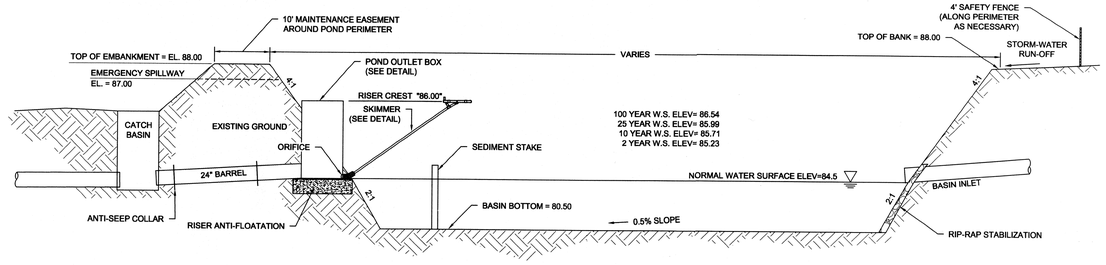
SKIMMER CONNECTION



SECTION-B



SECTION-A

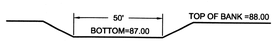


PROPOSED POND #1 CROSS-SECTION

N.T.S.

PLACE ORGANIC TOPSOIL ON ALL DISTURBED BANKS AND SOD OR HYDRO-SEED UPON POND COMPLETION

1. POND AS-BUILTS TO BE PROVIDED TO ENGINEER PRIOR TO FINAL GRASSING.

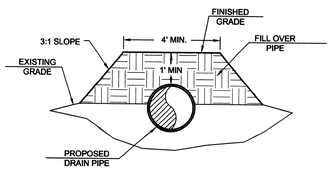


EMERGENCY SPILLWAY CROSS-SECTION

N.T.S.

POND OUTLET STRUCTURE

N.T.S.



DRAIN PIPE COVER REQUIREMENTS DETAIL

N.T.S.

NO.	REVISION	DATE	BY

DESIGNED BY: MJF
DRAWN BY: JCS
CHECKED BY: GEW
APPROVED BY: MJF
FILE: AS NOTED
SCALE: Jan 05, 2015
CITY: COWARD
COUNTY: FLORENCE
PROJECT # AE007
DWG. # 10 OF 10
CADD: AE007-Det 010215.dwg

SOUTH CAROLINA PROFESSIONAL ENGINEER
No.20872
5/15

ALIGNED ENGINEERING
No. 5025
CERTIFICATE OF AUTHORIZATION

ALIGNED ENGINEERING™

CLIENT: FLORENCE COUNTY, S.C.
PLAN SET: TOWN OF COWARD BASEBALL FIELDS
DESC: DRAINAGE DETAILS

DESCRIPTION: DRAINAGE DETAILS

PLAN SET:	DESIGN
DATE:	Jan 05, 2015
PROJECT:	AE007
SHEET:	10 OF 10