

SECTION 00 9112 - ADDENDUM NUMBER 2

PARTICULARS

- 1.01 DATE: **October 15, 2013**
- 1.02 PROJECT: **Colleton County Shell Building 2**
- 1.03 PROJECT NUMBER: **C336**
- 1.04 OWNER: **Colleton County Economic Alliance, Inc.**
- 1.05 ARCHITECT: **Carlisle Associates Inc.**

TO: PROSPECTIVE BIDDERS

- 2.01 This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated 09/20/2013, with amendments and additions noted below.
- 2.02 Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.
- 2.03 This Addendum consists of 3 pages and the following:

A. DOCUMENTS:

- 1. Pre-Bid Meeting Summary dated 10/14/2013.
- 2. Table of Contents dated 10/14/2013.
- 3. Section 00 1114 - Owners Request For Proposal and Instructions to Bidders dated 10/14/2013.
- 4. Section 00 2213 Supplemental Instructions to Bidders - R1 dated 10/14/2013.
- 5. Section 00 4110 Bid Form - R1 dated 10/14/2013.
- 6. Section 00 4321 On-Site Prices Form - Supplement A - R1 dated 10/14/2013.
- 7. Section 00 4322 Off-Site Unit Prices Form - Supplement B - R1 dated 10/14/2013.
- 8. Section 00 4336 Proposed Subcontractors Form - R1 dated 10/14/2013.
- 9. Section 00 4373 Proposed Schedules of Values Form - R1 dated 10/14/2013.
- 10. Section 00 7300 Supplementary Conditions of the Contract for Construction - R1 dated 10/14/2013.
- 11. Section 00 7400 Owners General Instructions to Offerors - R1 dated 10/14/2013.
- 12. Section 01 2100 Allowances - R1 dated 10/14/2013.
- 13. Section 01 2300 Alternates - R1 dated 10/14/2013.
- 14. Section 01 4000 Quality Requirements - R1 dated 10/14/2013.
- 15. Section 01 5000 Temporary Facilities and Controls - R1 dated 10/14/2013.
- 16. Section 01 5713 Temporary Erosion and Sedimentation Control - R1 dated 10/14/2013.
- 17. Section 02 4100 Off-Site Demolition dated 10/14/2013.
- 18. Section 03-3000 Cast-In-Place Concrete - R1 dated 10/14/2013.
- 19. Section 03 4110 Precast Insulated Structural Concrete Panels - R1 dated 10/14/2013.
- 20. Section 05 5000 Metal Fabrications - R1 dated 10/14/2013.
- 21. Section 07 5400 Thermoplastic Membrane Roofing - R1 dated 10/14/2013.
- 22. Section 31 1000 Site Clearing dated 10/14/2013.
- 23. Section 31 2200 Grading dated 10/14/2013.
- 24. Section 31 2316 Excavation dated 10/14/2013.
- 25. Section 31 2323 Fill dated 10/14/2013.
- 26. Section 31 3116 Termite Control dated 10/14/2013.
- 27. Section 31 3700 Riprap dated 10/14/2013.
- 28. Section 32 1100 Removing and Replacing Pavements dated 10/14/2013.
- 29. Section 32 1123 Aggregate Base Course dated 10/14/2013.
- 30. Section 32 1216 Asphalt Paving dated 10/14/2013.

31. Section 32 1313 Portland Cement Concrete Paving dated 10/14/2013.
32. Section 32 1314 Concrete Curb and Gutter, and Sidewalk dated 10/14/2013.
33. Section 32 1713 Parking Bumpers dated 10/14/2013.
34. Section 32 1723.13 Painted Paving Markings dated 10/14/2013.
35. Section 32 9219 Seeding dated 10/14/2013.
36. Section 33 0513 Manholes and Structures dated 10/14/2013.
37. Section 33 0514 Prestressed, Precast Concrete dated 10/14/2013.
38. Section 33 4111 Site Storm Utility Drainage Piping dated 10/14/2013.

B. DRAWINGS

1. URS CAD File: 46422970_CCCC Phase 3.dwg.
2. CAI CIVIL CAD File: C336 - Colleton Shell No. 2 - 131014.

CHANGES TO ADDENDA

3.01 None.

CHANGES TO PROCUREMENT REQUIREMENTS

- 4.01 DELETE Table of Contents and INSERT Table of Contents - R1.
- 4.02 INSERT Section 00 1114 - Owners Request For Proposal and Instructions to Bidders.
- 4.03 DELETE Section 00 2213 - Supplemental Instructions to Bidders and INSERT Section 00 2213 Supplemental Instructions to Bidders - R1.
- 4.04 DELETE Section 00 4110 - Bid Form and INSERT Section 00 4110 Bid Form - R1.
- 4.05 DELETE Section 00 4321 On-Site Prices Form - Supplement A and INSERT Section 00 4321 On-Site Prices Form - Supplement A - R1.
- 4.06 DELETE Section 00 4322 Off-Site Unit Prices Form - Supplement B and INSERT Section 00 4322 Off-Site Unit Prices Form - Supplement B - R1.
- 4.07 DELETE Section 00 4336 Proposed Subcontractors Form and INSERT Section 00 4336 Proposed Subcontractors Form - R1.
- 4.08 DELETE Section 00 4373 Proposed Schedules of Values Form and INSERT Section 00 4373 Proposed Schedules of Values Form - R1.

CHANGES TO THE CONTRACTING REQUIREMENTS

- 5.01 DELETE Section 00 7300 Supplementary Conditions of the Contract for Construction and INSERT Section 00 7300 Supplementary Conditions of the Contract for Construction - R1.
- 5.02 DELETE Section 00 7400 Owners General Instructions to Offerors and INSERT Section 00 7400 Owners General Instructions to Offerors - R1.

CHANGES TO THE SPECIFICATIONS

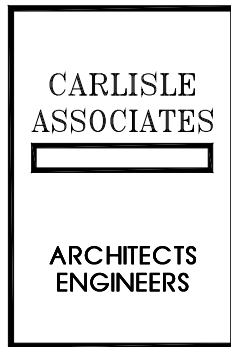
- 6.01 DELETE Section 01 2100 Allowances and INSERT Section 01 2100 Allowances - R1.
- 6.02 DELETE Section 01 2300 Alternates and INSERT Section 01 2300 Alternates - R1.
- 6.03 DELETE Section 01 4000 Quality Requirements and INSERT Section 01 4000 Quality Requirements -R1.
- 6.04 DELETE Section 01 5000 Temporary Facilities and Controls and INSERT Section 01 5000 Temporary Facilities and Controls -R1.
- 6.05 DELETE Section 01 5713 Temporary Erosion and Sedimentation Control and INSERT Section 01 5713 Temporary Erosion and Sedimentation Control -R1.
- 6.06 INSERT Section 02 4100 Off-Site Demolition.
- 6.07 DELETE Section 03-3000 Cast-In-Place Concrete and INSERT Section 03-3000 Cast-In-Place Concrete - R1.

- 6.08 DELETE Section 03 4110 Precast Insulated Structural Concrete Panels and INSERT Section 03 4110 Precast Insulated Structural Concrete Panels - R1.
- 6.09 DELETE Section 05 5000 Metal Fabrications and INSERT Section 05 5000 Metal Fabrications - R1.
- 6.10 DELETE Section 07 5400 Thermoplastic Membrane Roofing and INSERT Section 07 5400 Thermoplastic Membrane Roofing - R1.
- 6.11 INSERT Section 31 1000 Site Clearing.
- 6.12 INSERT Section 31 2200 Grading.
- 6.13 INSERT Section 31 2316 Excavation.
- 6.14 INSERT Section 31 2323 Fill.
- 6.15 INSERT Section 31 3116 Termite Control.
- 6.16 INSERT Section 31 3700 Riprap.
- 6.17 INSERT Section 32 1100 Removing and Replacing Pavements.
- 6.18 INSERT Section 32 1123 Aggregate Base Course.
- 6.19 INSERT Section 32 1216 Asphalt Paving.
- 6.20 INSERT Section 32 1313 Portland Cement Concrete Paving.
- 6.21 INSERT Section 32 1314 Concrete Curb and Gutter, and Sidewalk
- 6.22 INSERT Section 32 1713 Parking Bumpers
- 6.23 INSERT Section 32 1723.13 Painted Paving Markings
- 6.24 INSERT Section 32 9219 Seeding
- 6.25 INSERT Section 33 0513 Manholes and Structures
- 6.26 INSERT Section 33 0514 Pre-Stressed, Pre-Cast Concrete
- 6.27 INSERT Section 33 4111 Site Storm Utility Drainage Piping

CHANGES TO THE DRAWINGS

- 7.01 Electronic AutoCAD files are being supplied for the Bidders use. Any such use or reuse by the Receiver or others, without written verification or CAD adaptation by Carlisle Associates Inc. for the specific purpose intended will be at the Receiver's sole risk and without liability or legal exposure to Carlisle Associates Inc. Furthermore, the Receiver of the machine-readable data shall, to the fullest extent permitted by law, indemnify and hold harmless Carlisle Associates Inc. from all claims, damages, losses, and expenses, including attorney's fees arising out of, or resulting from the misuse of or alterations to the data on the machine-readable data.

END OF SECTION



MEETING SUMMARY

Date: October 15, 2013

Job No: C336

Job Name: Colleton Shell II

Purpose: Pre-Bid Meeting Summary

A Pre-Bid meeting was held at the Main Library in Walterboro, SC on October 10, 2013. See Attached Attendees List for those present at the meeting in addition to those listed below.

Colleton County: *Denis Averkin* **URS:** *Jay Brewton*
Jared Fralix
Kaye Syfrett

Carlisle Associates Inc.: *Ted Zander,(writer)*

The following is a summary of the discussions. Should any additions to or modifications of these minutes be required please contact the Owner within ten days or these shall be considered an accurate account of the meeting.

Item No.	Remarks
1.	J. Fralix introduced the County and Design Team members and the Owner's Representative present at the meeting.
2.	Project Summary: <ul style="list-style-type: none">2.01 The project consists of a new 100,000 SF shell building to be located in the Commerce Center Park adjacent to I-95. The on-site project includes the construction of the shell and all associated civil work for the pad and adjacent site areas. There are no underground utilities associated with the project. The project also includes off-site work to extend the existing entry roadway, establish a new intersection and partial roadways off of this intersection. There will also be work to establish a frontage road along the I-95 exist ramp.2.02 A second off-site project will be added to the scope entailing additional roadway work at a location within five miles of the project site. Additional information concerning this site will be issued by 10/17/13.
3.	T. Zanders brought the following items to the attention of those present: <ul style="list-style-type: none">3.01 Document 00 1114 Advertisement for Bids:<ul style="list-style-type: none">a. Bid Opening: October 24, 2013, 10:00 AM EDST at the County Council Chamber located at 109 Benson Street, Walterboro, SC 29488. Bids may be submitted prior to 9:30 am that morning to the attention of Kaye B. Syfrett at 31 Klein Street, Room 208, Walterboro, SC 29488.b. Construction Schedule: To be submitted by the Contractor as a part of their bid. The timeframe will be evaluated as a part of the Bid Submission.

- 3.02 Bidding Procedures:
- a. AIA Document A701 – 1997 with Section 00 2113, Supplementary Instructions to Bidders and the Owner's form Owner's Request for Proposal and Instruction to Bidders.
 - 1) Para. 2.03-B Substitutions require a substitution Request form along with all data required for Architect to evaluate the request. Must be received by the Architect no later than 7 days before bid due date.
 - 2) Para. 2.04-C Bid Security is required in the amount of 5% of the bid amount. Submit Bid and Bid Security at Bid Due Date and Time.
 - 3) Para. 2.04-E Submit the Proposed Schedule of Values, Bid Form Supplements Cover Sheet, On-Site Unit Prices Form – Supplement A and Off-Site Unit Prices Form – Supplement B, by 4:00 PM EDST on the Bid Due Date.
 - 4) Para. 2.04-F Submit the Proposed Subcontractors Form by 10:00 AM EDST via Fax, or hard copy to Kaye Syfrett.
 - 5) A revised Bid Form, Proposed Schedule of Values Form will be issued to the Bidders with Addenda 2.
 - b. All Bidders present acknowledged they had accessed the County Website without difficulty.
 - c. 00 4110 Bid Form: Please review requirements for Unit Prices, Completion Date Alternates.
 - d. 00 6325, Substitution Request Form: This form may to be used by general contractor after bidding for products that are not listed in the Project Manual. Please review individual sections carefully.
 - 1) Owner will not consider or accept substitutions after bids are received.
 - e. 00 5200 Agreement Form: The AIA form A10-1-2007 will be the form of the Contract for the project.
- 3.03 00 4373 Proposed Schedule of Values Form: This form will be used in the preparation of Project Schedule of Values and monthly applications for progress payments. It has been revised for this Addendum to show the values taken from Schedule A and Schedule B.
- 3.04 Section 00 6537 and Section 00 6538 – Contractor's one-year Guarantee and Contractor's Guarantee on Roofs, Walls and Slabs-on-Grade. The former is a "standard" one year guarantee on the total job, the latter is a three year guarantee on the stated building systems. Please set your bonding requirements and insurance coverage to handle this extended period of time.
- 3.05 00 7210 General Conditions for Construction Contracts AIA Standard Form A201-2007: Review this document thoroughly as most of the administration requirements for this Project are included in the General Conditions.
- 3.06 00 7310 Supplementary Conditions of the Contract for Construction: Specific attention is brought to:
- a. Para. 2.03-C regarding the precedence of the Contract Documents.
 - b. Para. 2.08-B regarding the allowable markups for changes in the work.
 - c. Para. 2.09-A regarding the allowances for weather delays.
- 3.07 Owner's General Instructions to Offerors – Review this section carefully as it modifies both the Bidding and Supplemental Conditions
- 3.08 Section 01 1000 Summary of Work:
- a. Single-Prime contract covering both on-site and off-site work.
 - b. Contract Time set by Contractor as a part of their Bid submission.
 - c. Full-time Superintendent on site.
 - e. Protection against Vandalism.
- 3.09 Section 01 4000 Quality Requirements:
- a. Contractor is responsible for cooperating and supporting the work of the Owner hired Soils and Materials and Special Inspections testing agency.
- 3.10 Section 01 500 Temporary Facilities and Controls:

- a. General Contractor to pay service use charges for water and electric power. Water is available in the park.
 - b. A temporary field office is required and must meet the requirements stated in the Project Manual.
- 3.11 Permits:
- a. The Permit Documents have been submitted to the County for review and approval. Architect will notify successful contractor when the documents have been approved and are ready for permitting.
 - b. Contractor is responsible for obtaining and paying for all permits and fees and coordinating all required inspections. The exception is Tap Fees, these shall be paid for by the Owner. URS Shall handle the County Permitting for the Off-site work.
- 3.12 Inquires and communication during Bidding:
- a. During the bidding process, all questions and correspondence from General Contractors are to be directed to the Architect.
Eric Neiser, RA
Carlisle Associates Inc.
Telephone: 803-252-3232
Fax: 803-799-9054
Email: eneiser@carlisleassociates.com
 - b. To facilitate processing, inquires should be in the form of a fax or email.
 - c. Questions will be answered by addenda which will be posted on the Owner's website. A notification that information has been posted to the website will be emailed to the contact person designated in the sign-in sheet from the Pre-Bid meeting.
4. Questions:
- 4.01. Is a business license required?
No, the sites are not in the city.
 - 4.02 Will the bids be opened publicly?
Yes the bids will be opened and read aloud at the Bid opening.
 - 4.03 Where is the information about the asbestos abatement?
The specifications for abatement are in Appendix A which is at the end of the Project Manual.
 - 4.04 Are the tilt up panels allowed in the alternate bid, required to be insulated?
No, they are not.
 - 4.05 Is there a requirement for slab thickness if the tilt-up panel slabs are left in the building?
Yes, if the slabs are to be left in the building for use as an industrial or warehouse ready slab-on-grade, then the slabs shall have the following minimum characteristics. 6-inch concrete (f'c= 3,500 psi with 33 lbs. per cu.yd. of steel fibers over 10 mil vapor retarder, over 4-inch crush-r-run, over compacted subgrade. Slab-on-grade shall have a flatness/levelness Ff/F1= 60/40, super flat finish.

END OF SUMMARY

MANDATORY PRE-BID MEETING
CC-08 CONSTRUCTION OF SPEC BLDG II

600 HAMPTON STREET

OCTOBER 10, 2013 AT 1:00PM

total (30) (148) 10-10-2013

1. COMPANY NAME Deep Bottom Const. PHONE NO. (843) 909-9990

COMPANY ADDRESS 21845.1 CITY Ruston STATE SC ZIP 29475

REPRESENTATIVES NAME Pat Padgett EMAIL ADDRESS P4PTIGER@Yahoo.com

2. COMPANY NAME Ordner Construction PHONE NO. (1) 678 380 7400

COMPANY ADDRESS 1600 Executive Dr. CITY Duluth STATE GA ZIP 30096

REPRESENTATIVES NAME EDDIE SLAY EMAIL ADDRESS ESLAY@ORDNER.COM

3. COMPANY NAME J.R. Wilson Const. Co. Inc PHONE NO. (803) 943-6523

COMPANY ADDRESS 1505 Yemassee Hwy CITY Varanville STATE S.C. ZIP 29944

REPRESENTATIVES NAME Nathan Wilson EMAIL ADDRESS n.wilson@jrwilsonconstruction.com

4. COMPANY NAME CONST. DYNAMICS / ATRIUM Bldgs PHONE NO. (843) 873-1818

COMPANY ADDRESS 919 W. RICHARDSON AVE CITY SUMMERVILLE STATES S.C. ZIP 29483

REPRESENTATIVES NAME BILL BEAUCHENG EMAIL ADDRESS MISERPOS@SC.RR.COM

5. COMPANY NAME H. G. Reynolds PHONE NO. 803-641-1401
COMPANY ADDRESS P.O. Box 2728 CITY Aiken STATE S.C. ZIP 29802-2728
REPRESENTATIVES NAME Ronnie Wiggins EMAIL ADDRESS estimating@hgreynolds.net
6. COMPANY NAME ~~JH Hiers Construction~~ PHONE NO. ~~843 542 2687~~
COMPANY ADDRESS ~~715 Green Pond Hwy~~ CITY ~~Walterboro~~ STATE ~~SC~~ ZIP ~~29488~~
REPRESENTATIVES NAME ~~William Rhodes~~ EMAIL ADDRESS ~~william@jhiers.com~~
7. COMPANY NAME J.H. Hiers Construction PHONE NO. (843) 542-2687
COMPANY ADDRESS 715 GREEN POND HWY CITY WALTERBORO STATE SC ZIP 29488
REPRESENTATIVES NAME *DAVID WALKER EMAIL ADDRESS david@jhiers.com
8. COMPANY NAME R.B. Baker Construction PHONE NO. (712) 964-6513
COMPANY ADDRESS 100 Morgan Industrial Blvd CITY Gordon City STATE Ga. ZIP 31408
REPRESENTATIVES NAME Vinson Gammage EMAIL ADDRESS vinseg@rbaker.com
9. COMPANY NAME GSZ ENGINEERING PHONE NO. (843) 297-2035
COMPANY ADDRESS 4301 DORCHESTER RD., UNIT 12-A CITY CHARLESTON STATE SC ZIP 29405
REPRESENTATIVES NAME SHAWN 'TIMY' ETIER EMAIL ADDRESS tinyetier@g5engineering.com

10. COMPANY NAME Gulf Stream Construction PHONE NO. (803) 572-4363

COMPANY ADDRESS 3820 Faber Place Suite 200 CITY North Charleston STATE SC ZIP 29405

REPRESENTATIVES NAME Rick Evans EMAIL ADDRESS estimating@gulfstreamconstruction.com

11. COMPANY NAME Willwood Contractors Inc PHONE NO. (843) 549-2575

COMPANY ADDRESS 1706 Hampton St. CITY Walterboro STATE SC ZIP 29488

REPRESENTATIVES NAME Serry Cresby EMAIL ADDRESS willwoodwv1@lowcountry.com

12. COMPANY NAME MARTIN ENGINEERING PHONE NO. (803) 781-1930

COMPANY ADDRESS 127 Stone Hill Rd CITY White Rock STATE SC ZIP 29177

REPRESENTATIVES NAME DENNIS CHILDS EMAIL ADDRESS ~~denis@martin-engineering.com~~ ESTIMATING@MARTINENGINEERINGSC.COM

13. COMPANY NAME Barkwood Construction Inc PHONE NO. (803) 799-5898 / Fax 799-5899

COMPANY ADDRESS 1240 Bluff Rd CITY Columbia STATE S.C ZIP 29201

REPRESENTATIVES NAME Bill Watts EMAIL ADDRESS billwatts@brkwd.com

14. COMPANY NAME BRANTLEY CONSTRUCTION PHONE NO. (843) 552-0150 (ex. 203)

COMPANY ADDRESS 8300 Dorchester Rd. CITY Charleston STATE SC ZIP 29418

REPRESENTATIVES NAME Christina McCRANE EMAIL ADDRESS CHRISTINA@brantleyconstruction.com

15. COMPANY NAME Southcon Building Group PHONE NO. (843) 225-3885
COMPANY ADDRESS 682 Technie Dodds Blvd.
Suite 101 CITY Mt. Pleasant STATE SC ZIP 29464
REPRESENTATIVES NAME Mark Long EMAIL ADDRESS mlong@southconbuilding.com
16. COMPANY NAME AUSTIN CONSTRUCTION CO., INC PHONE NO. (843) 377-7748
COMPANY ADDRESS P.O. Box 277 CITY SUMMERWELL STATE SC ZIP 29484
REPRESENTATIVES NAME John Burbage EMAIL ADDRESS jburbage@austinconstruct.com
17. COMPANY NAME Prestige Heating and Air PHONE NO. (843) 764-0460
COMPANY ADDRESS 1244 Redbank Rd. CITY Goose Creek STATE SC ZIP 29445
REPRESENTATIVES NAME Coleman Hodges EMAIL ADDRESS chodges@prestigeheatingandair.com
18. COMPANY NAME BES, INC PHONE NO. (678) 416 5704
COMPANY ADDRESS 2712 Bull Street CITY BEAUFORT STATE SC ZIP _____
REPRESENTATIVES NAME MICHAEL STRENGTH EMAIL ADDRESS MSTRENGTH@BES-US.COM
19. COMPANY NAME QUERRY + PRITCHARD CON'S PHONE NO. (803) 259-5533
COMPANY ADDRESS P.O. Box 1157 CITY BARNWELL STATE SC ZIP 29812
REPRESENTATIVES NAME ROY H. BEASLEY EMAIL ADDRESS FAX 803-259-4944

20. COMPANY NAME M.B. Kahn Construction, Inc. PHONE NO. (803) 736-2950
COMPANY ADDRESS 101 Flintlake Rd. CITY Columbia STATE SC ZIP 29223

REPRESENTATIVES NAME Richard Andrews EMAIL ADDRESS RAndrews@mbkahn.com

21. COMPANY NAME Kenny Construction PHONE NO. (912) 519-0175

COMPANY ADDRESS 104 Central Blvd CITY Guyton STATE GA ZIP 31312

REPRESENTATIVES NAME Ulysses Eaton EMAIL ADDRESS ueaton@kernco.com

22. COMPANY NAME HIT Contracting Inc. PHONE NO. 843-308-9406

COMPANY ADDRESS 2457 West Aviation Ave CITY No. Charleston STATE SC ZIP 29406

REPRESENTATIVES NAME Hank Kemp EMAIL ADDRESS h.kemp@hitt-gc.com

23. COMPANY NAME Southern Roofing Services PHONE NO. (803) 773-8221

COMPANY ADDRESS 785 N Wise Dr CITY Sumter STATE SC ZIP 29153

REPRESENTATIVES NAME Jerry Bozeman EMAIL ADDRESS jerry@southernroofing.com

24. COMPANY NAME _____ PHONE NO. () _____

COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____

REPRESENTATIVES NAME _____ EMAIL ADDRESS _____

25. COMPANY NAME WATKINS CONST CO. PHONE NO. (843-549-7112)

COMPANY ADDRESS Box 559 CITY WALTER BORO STATE SC ZIP 29488
WALTER BORO

REPRESENTATIVES NAME Carol Brown EMAIL ADDRESS CONSTRUCTION@wconcommunity.com

26. COMPANY NAME Hogan Construction Group PHONE NO. 864 272-1527

COMPANY ADDRESS 127 Kiowa Lane CITY Piedmont STATE SC ZIP 29673

REPRESENTATIVES NAME Chris Bowen EMAIL ADDRESS cbowen@hoganconstructiongroup.com

27. COMPANY NAME IP BUILDERS, INC PHONE NO. (1843-538-2010)

COMPANY ADDRESS PO Box 1667 CITY WALTER BORO STATE SC ZIP 29488

REPRESENTATIVES NAME ANNE PADGETT EMAIL ADDRESS ipbuilders@ymail.com

28. COMPANY NAME _____ PHONE NO. () _____

COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____

REPRESENTATIVES NAME _____ EMAIL ADDRESS _____

29. COMPANY NAME _____ PHONE NO. () _____

COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____

REPRESENTATIVES NAME _____ EMAIL ADDRESS _____

30. COMPANY NAME THS Constructors, Inc PHONE NO. (864) 254-6066
COMPANY ADDRESS 150 Executive Center Drive Greenville SC 29615
REPRESENTATIVES NAME Donna Emberton EMAIL ADDRESS demberton@thsconstructors.com
31. COMPANY NAME DALNETTO CONSTRUCTION GROUP PHONE NO. (7843) 971-7156
COMPANY ADDRESS 2265 CLEMENTS FERRY RD CHARLESTON SC 29492 CITY CHARLESTON STATE SC ZIP 29492
REPRESENTATIVES NAME SKYLAR ASHBY EMAIL ADDRESS BID@PCGLLC.NET
32. COMPANY NAME _____ PHONE NO. () _____
COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____
REPRESENTATIVES NAME _____ EMAIL ADDRESS _____
33. COMPANY NAME _____ PHONE NO. () _____
COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____
REPRESENTATIVES NAME _____ EMAIL ADDRESS _____
34. COMPANY NAME _____ PHONE NO. () _____
COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____

35. COMPANY NAME BEAUFORT CONSTRUCTION INC. PHONE NO. (843) 521-9766

COMPANY ADDRESS 2732 DEBOR RD CITY BEAUFORT STATE SC ZIP 29902

REPRESENTATIVES NAME Marty Miloy EMAIL ADDRESS mrmiloy@isc.net

36. COMPANY NAME Brunson Construction Co. PHONE NO. (803) 943-2619

COMPANY ADDRESS 616 RAILROAD AVE CITY HAMPTON STATE SC ZIP 29924

REPRESENTATIVES NAME WALLIE HIERS EMAIL ADDRESS WALLIE@brunson-construction.com

37. COMPANY NAME Thompson-Turner Const. PHONE NO. (803) 773-8005

COMPANY ADDRESS 100 N. Main St. CITY Sumter STATE SC ZIP 29150

REPRESENTATIVES NAME John May EMAIL ADDRESS JMay@thompsonind.com

38. COMPANY NAME _____ PHONE NO. () _____

COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____

REPRESENTATIVES NAME _____ EMAIL ADDRESS _____

39. COMPANY NAME _____ PHONE NO. () _____

COMPANY ADDRESS _____ CITY _____ STATE _____ ZIP _____

REPRESENTATIVES NAME _____ EMAIL ADDRESS _____

TABLE OF CONTENTS-R1

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 0100	COPYRIGHT NOTICE	1
00 1114	OWNER'S REQUEST FOR PROPOSAL AND INSTRUCTIONS TO BIDDERS	3
00 2113	INSTRUCTIONS TO BIDDERS	1 + Attachment
00 2213	SUPPLEMENTARY INSTRUCTIONS TO BIDDERS – R1	3
00 3100	AVAILABLE PROJECT INFORMATION	1 + Attachment
00 4110	BID FORM – R1	2
00 4301	BID FORM SUPPLEMENTS COVER SHEET	1
00 4321	ON-SITE UNIT PRICES FORM – SUPPLEMENT A – R1	2
00 4322	OFF-SITE UNIT PRICES FORM – SUPPLEMENT B – R1	3
00 4336	PROPOSED SUBCONTRACTORS FORM – R1	1
00 4373	PROPOSED SCHEDULE OF VALUES FORM – R1	2
00 5200	AGREEMENT FORM	1 + Attachment
00 6113	PERFORMANCE AND PAYMENT BOND	1
00 6211	SUBMITTAL TRANSMITTAL FORM	1 + Attachment
00 6315	REQUEST FOR INFORMATION FORM	1 + Attachment
00 6325	SUBSTITUTION REQUEST FORM	2 + Attachment
00 6537	CONTRACTOR'S ONE-YEAR GUARANTEE	1
00 6538	CONTRACTOR'S GUARANTEE ON ROOFS, WALLS AND SLABS ON GRADE	1
00 7200	GENERAL CONDITIONS	1 + Attachment
00 7300	SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION	8
00 7400	OWNER'S GENERAL INSTRUCTIONS TO OFFERORS – R1	8

DIVISION 01 - GENERAL REQUIREMENTS

01 1000	SUMMARY	2 + Attachment
01 2000	PRICE AND PAYMENT PROCEDURES	4
01 2100	ALLOWANCES - R1	3
01 2200	UNIT PRICES	2
01 2300	ALTERNATES – R1	2
01 2600	CONTRACT MODIFICATION PROCEDURES	3
01 3000	ADMINISTRATIVE REQUIREMENTS	4
01 4000	QUALITY REQUIREMENTS – R1	4
01 5000	TEMPORARY FACILITIES AND CONTROLS – R1	2
01 5713	TEMPORARY EROSION AND SEDIMENTATION CONTROL – R1	7
01 5813	TEMPORARY PROJECT SIGNAGE	1
01 6000	PRODUCT REQUIREMENTS	3
01 7000	EXECUTION AND CLOSEOUT REQUIREMENTS	6
01 7800	CLOSEOUT SUBMITTALS	4

DIVISION 02 – EXISTING CONDITIONS

02 4100	OFF-SITE DEMOLITION	3
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DIVISION 03 - CONCRETE

03 3000	CAST-IN-PLACE CONCRETE	6
03 4110	PRECAST INSULATED STRUCTURAL CONCRETE PANELS – R1	6

DIVISION 04 – MASONRY (NOT USED)

DIVISION 05 - METALS

05 1200	STRUCTURAL STEEL FRAMING	4
05 2100	STEEL JOIST FRAMING	2
05 3100	STEEL DECKING	2
05 5000	METAL FABRICATIONS – R1	2

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 1000	ROUGH CARPENTRY	3
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DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 5400	THERMOPLASTIC MEMBRANE ROOFING – R1	5
07 6200	SHEET METAL FLASHING AND TRIM	7
07 7200	ROOF ACCESSORIES	3
07 9005	JOINT SEALERS	4

DIVISION 08 - OPENINGS

08 1113	HOLLOW METAL DOORS AND FRAMES	3
08 3613	SECTIONAL DOORS	3
08 4313	ALUMINUM-FRAMED STOREFRONTS	6
08 6223	TUBULAR SKYLIGHTS	4
08 7100	DOOR HARDWARE	7
08 8000	GLAZING	4

DIVISION 09 - FINISHES

09 9600	HIGH-PERFORMANCE COATINGS	3
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DIVISIONS 10 THROUGH 30 (NOT USED)

DIVISION 31 - EARTHWORK

31 1000	SITE CLEARING	2
31 2200	GRADING	8
31 2316	EXCAVATION	2
31 2323	FILL	3
31	TERMITE CONTROL	2
31 3700	RIPRAP	2

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 1100	REMOVING AND REPLACING PAVEMENTS	2
32 1123	AGGREGATE BASE COURSES	3
32 1216	ASPHALT PAVING	4
32 1313	PORTLAND CEMENT CONCRETE PAVING	1
32 1314	CONCRETE CURB AND GUTTER, AND SIDEWALK	7
32 1713	PARKING BUMPERS	1
32 1723.13	PAINTED PAVEMENT MARKINGS	4
32 9219	SEEDING	3

DIVISION 33 - UTILITIES

33 0513	MANHOLES AND STRUCTURES	2
33 0514	PRESTRESSED, PRECAST CONCRETE	4
33 4111	SITE STORM UTILITY DRAINAGE PIPING	3

SECTION 00 1114 - OWNER'S REQUEST FOR PROPOSAL AND INSTRUCTIONS TO BIDDERS

FROM:

Colleton County Economic Alliance, Inc. (**hereinafter referred to as Owner**):

Procurement Office

Kaye B. Syfrett

31 Klein Street, Room 208

Walterboro, SC 29488

Phone: (843) 782-0504

REQUEST FOR PROPOSAL

Bid Number: CC-08 Construction of Speculative Building II

Colleton County Commerce Center/ I-95 Exit 62

Mandatory Pre-Bid Meeting: 1:00PM, Thursday, October 10, 2013

Council Chambers located at 109 Benson Street

Bids will be accepted until 10:00AM, Thursday, October 24, 2013

Due to the file size of the bid, email Kaye B. Syfrett at ksyfrett@colletoncounty.org to receive file and password.

INSTRUCTIONS TO BIDDERS

1. Submittal must include **one (1) original bid** clearly marked as original, and **three (3) complete copies** of the Offeror's bid along with a **completed W-9 form**. Responses must be in a sealed envelope/package. For identification purposes, all envelopes/packages must contain the solicitation name and number.

The individual signing the response must be an Agent legally authorized to bind the company.

2. Show solicitation number on the outside of mailing package. Colleton County assumes no responsibility for unmarked or improperly marked envelopes.

3. It is the Offeror's sole responsibility to insure that solicitation responses, amendments thereto or withdrawal requests are submitted by the scheduled due date and time.

4. REJECTIONS: Colleton County reserves the right to reject any and all bids, to cancel or withdraw this solicitation, and to waive any technicality if deemed to be in the best interest of the County.

5. WAIVER: The County reserves the right to waive any instructions to Offerors, General or Special Provisions, General or Special Conditions, or specifications deviation if deemed to be in the best interest of the County.

6. RESPONSE PERIOD: All responses shall be good for a minimum period of 60 calendar days.

7. AMENDMENTS: All amendments to and interpretations of this solicitation shall be in writing and issued by the Procurement Director of Colleton County.

8. NON-APPROPRIATION/ SUBSTITUTION PERMITTED: If the Colleton County Council fails to appropriate or authorize the expenditure of sufficient funds to provide the continuation of this contract or if a lawful order issued in, or for any fiscal year during the term of the agreement, reduces the funds appropriated or authorized in such amounts as to preclude making the payments set out therein, the agreement shall terminate on the date said funds are no longer available without any termination charges or other liability incurring to County. Following any such non-

appropriation, the master lease agreement shall contain no limitation on the County's ability to replace the equipment financed with any other equipment.

9. INDEMNIFICATION: Except for expenses or liabilities arising from the negligence of the County, the Offeror 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 any resulting agreement or arising from or related to the Work as follows:

Offer expressly agrees to the extent that there is a causal relationship between its negligence, action or inaction, or the negligence, action or inaction of any of its employees or any person, firm, or corporation directly or indirectly employed by the Offeror, 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 and 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 any resulting agreement or arising from or related to the equipment. Such costs are to include defense, settlement and reasonable attorneys' fees incurred by the County and its employees. This promise to indemnify shall include bodily injuries or death occurring to Offeror's employees and any person, directly or indirectly employed by Offeror (including without limitation any employee of any subcontractor), the County's employees, the employees of any other independent contractor, or occurring to any member of the public. When the County submits notice, Offeror shall promptly defend any aforementioned action.

The prescribed limits of insurance set forth herein shall not limit the extent of the Offeror's responsibility under this Section. The terms and conditions contained in this Section shall survive the termination of any resulting agreement or the suspension of the Work hereunder.

Additionally the County will not provide indemnity to the successful bidder. Failure to comply with this section may result in your bid to be deemed non-responsive.

10. FORCE MAJEURE: The Offeror shall not be liable for any excess costs if the failure to perform the resulting agreement arises out of causes beyond the control and without fault or negligence of the Offeror. Such causes may include, but are not restricted to acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the contractor. If the failure to perform is caused by default of a subcontractor, and if such default arises out of causes beyond the control of both the Offeror and subcontractor and without excess costs for failure to perform, unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the contractor to meet the required delivery schedule.

11. ARBITRATION: Under no circumstances and with no exception will Colleton County act as arbitrator between the Offeror and any sub-contractor.

12. PUBLICITY RELEASES: Offeror agrees not to refer to award of this contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by the County. The Offeror shall not have the right to include the County's name in its published list of customers without prior approval of the County Administrator. With regard to news releases, only the name of the County, type and duration of any resulting agreement may be used and then only with prior approval of the County. The Offeror also agrees not to publish, or cite in any form, any comments or quotes from the County's staff unless it is a direct quote from the Procurement Director.

13. GOVERNING LAWS: Any agreement arising from this solicitation shall be governed by the laws of the State of South Carolina and any and all disputes arising out of said agreement shall, if

litigation is necessary, be litigated only in a Circuit Court for the Fourteenth Judicial Circuit sitting in Colleton County, South Carolina. The prevailing party shall be entitled to attorney's fees and all costs of said litigation.

14. ASSIGNMENT: The Offeror shall not assign in whole or in part any agreement resulting from this Request for Bids without the prior written consent of the County.

The Offeror shall not assign any money due or to become due to him under said agreements without the prior written consent of the County.

15. AFFIRMATIVE ACTION: The successful Offeror will take affirmative action in complying with all Federal and State requirements concerning fair employment and treatment of all employees, without regard or discrimination by reason of race, color, religion, sex, national origin or physical handicap.

16. CONTRACT AWARD:

A. This solicitation and submitted documents, when properly accepted by Colleton County shall constitute an agreement equally binding between the successful Offeror and the County.

No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting agreement. The County shall not be legally bound by any amendment or interpretation that is not fully executed by both parties in writing.

B. The successful Offeror shall be required to execute a formal agreement with the County's Procurement Office **within ten (10) business days after issuance of the Notice of Award.**

17. PURCHASING CARD: By submitting a bid, contractor agrees to accept payment by the Colleton County Purchasing Card for no extra charge. The Purchasing Card is issued by Visa. The purchasing card allows county agencies to make authorized purchases from a vendor, in conjunction with a purchase order.

18. CONTRACT ADMINISTRATION:

END OF DOCUMENT

SECTION 00 2213 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - R1

SUMMARY

- 1.01 "Supplemental Instructions to Bidders", Section 00 2213, shall modify, change, delete from or add to the "Instructions to Bidders," AIA Document A701 - 1997 Edition. Where any article or section in the "General Conditions" is amended, voided, or superceded by any of the following sections, the provision(s) of such article or section not so amended, voided or superceded shall remain in effect.

MODIFICATIONS TO INSTRUCTIONS TO BIDDERS

2.01 ARTICLES 1 - DEFINITIONS

- A. ADD the following Paragraph:
"1.10 Wherever the word "Architect" appears, it shall be understood to mean "Architect/Engineer"."

2.02 ARTICLE 2 - BIDDERS REPRESENTATIONS

- A. Refer to Section 00 7400 - Owner's General Instructions to Offer's for for representations and certifications required under this Contract.

2.03 ARTICLE 3 - BIDDING DOCUMENTS

- A. Paragraph 3.3.2 in the first sentence DELETE "at least ten days" and INSERT "by 5:30 PM seven calendar days" in lieu thereof.
- B. ADD the following Paragraph:
"3.3.2.1 Requests must be in the form of Section 00 6325 - Substitution Request Form. See Section 00 7300 - Supplementary Conditions of the Contract and Section 01 6000 - Product Requirements for substitution requirements."

2.04 ARTICLE 4 - BIDDING PROCEDURES

- A. ADD the following to Paragraph 4.1.7:
".1 One signed original and three executed copies of the bidder's proposal are required."
- B. ADD the following Paragraph:
"4.1.8 Instructions For Subcontractor Listing"
".1 A list of subcontractors specialties for which bidder is required to identify by name the subcontractor(s) Bidder will use to perform the work of each listed specialty. Bidder must identify only the subcontractor(s) who will perform the work and no others.
(a) See South Carolina Code of Laws; Section 40-11-410 for a list of license classifications and subclassifications.
".2 For purposes of subcontractor listing, a Subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site. Material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the bidder or proposed subcontractor(s) are not subcontractors and Bidder should not insert their names in the spaces provided on the bid form. Likewise, Bidder should not insert the names of sub-subcontractors in the spaces provided on the bid form but only the names of those entities with which bidder will contract directly."
".3 Bidder must only insert the names of subcontractors who are qualified to perform the work of the listed specialties as specified in the Bidding Documents and South Carolina Licensing Laws."
".4 If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a specialty listed and Bidder does not intend to subcontractor such work but to use Bidder's own

employees to perform such work, the Bidder must insert its own name in the space provided for that specialty."

".5 If Bidder intends to use multiple subcontractors to perform the work of a single specialty listing, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word "**and**". If Bidder intends to use both his own employees to perform a part of the work of a single specialty listing and to use one or more subcontractors to perform the remaining work for that specialty, Bidder must insert his own name and the name of each subcontractor, preferably separating the name of each with the word "**and**". Owner will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "**or**", a virgule (that is a /), or any separator that the Owner may reasonably interpret as a listing in the alternative."

".6 If Bidder is awarded the contract, bidder must, except with the approval of the owner for good cause shown, use the listed entities to perform the work for which they are listed."

".7 If Bidder is awarded the contract, Bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed except for one or more of the reasons allowed by the SC Code of Laws."

".8 Bidder's failure to insert a name for each listed specialty subcontractor will render the Bid non-responsive."

C. ADD the following to Paragraph .4.2.1:

".1 Each bid shall be accompanied by a Bid Security in the form and amount required.

The cost of the Bid Security shall be included in the base bid.

.2 Bid Security shall be five percent (5) of the bidders Stipulated Sum.

.3 Bidder's license numbers for Bidding and for Contracting, as required by law, must also be listed on the outside of the envelope enclosing the Bid."

D. ADD the following Paragraphs:

"4.3.5 Documents to be submitted at the Bid Due Date:

.1 Form 00 4110 - Bid Form.

.2 Bid Security."

E. ADD the following Paragraphs:

"4.3.6 Documents to be submitted by 4:00 P.M. on the Bid Due Date via fax or other methods:

.1 Section 00 4373 - Proposed Schedule of Values Form."

F. ADD the following Paragraphs:

"4.3.7 Documents to be submitted within twenty-four hours of Bid Due Date and time:

.1 Section 00 4336 - Proposed Subcontractors Form.

.2 Section 00 4301 - Bid Form Supplements Cover Sheet.

.3 Section 00 4321 - On-Site Unit Prices Form - Supplement A.

.4 Section 00 4322 - Off-Site Unit Prices Form - Supplement B."

G. ADD"the following to Paragraph 4.4.1:

"The stipulated time period shall be as indicated in Section 00 4110 - Bid Form, unless changed by "Notice" or "Addendum." "

2.05 ARTICLE 5 - CONSIDERATION OF BIDS

A. No revisions.

2.06 ARTICLE 6 - POST- BID INFORMATION

A. DELETE Paragraph 6.2, "Owner's Financial Capability", in its entirety."

2.07 ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND

A. DELETE Paragraph 7.1 in its entirety and SUBSTITUTE the following in lieu thereof:

"7.1 BOND REQUIREMENTS

7.1.1 Requirements for Bonds, and for qualifications of Surety, are included in Section 00 7200 - AIA Document A201, General Conditions of the Contract for Construction, and in Section 00 7300 - Supplementary Conditions of the Contract of Construction."

B. DELETE Paragraph 7.2 in its entirety.

END OF DOCUMENT

SECTION 00 4110 - BID FORM - R1

TO: Colleton County Economic Alliance, Inc.

The undersigned, having carefully examined the Project Manual entitled "Colleton County Shell Building 2", Architect's File Number C336 dated, 09/20/2013, the applicable Drawings similarly entitled, as listed on the Index to Drawings, each dated as noted, and the following agenda:

Addendum # _____ Dated _____ Addendum # _____ Dated _____
Addendum # _____ Dated _____ Addendum # _____ Dated _____

As well as the premises and conditions affecting the work; proposes to furnish all services, labor, materials and equipment called for by them for the entire work in accordance with said documents, for the following stipulated sum:

TOTAL BASE BID: _____ **Dollars (\$ _____).**

ALLOWANCES:

Included in the Total Stipulated Sum shall be the following allowances (see Specification Section 01 2100):

ALLOWANCE NUMBER 1: Export and Disposal of 30,000 CY Unsuitable Soil:

ADD: _____ Dollars (_____).

ALLOWANCE NUMBER 2: Import of 50,000 CY Suitable Structural Backfill:

ADD: _____ Dollars (_____).

ALTERNATES:

The following Alternates are offered for consideration by the Owner and are not included in the Total Stipulated Sum:

ALTERNATE NUMBER 1: Delete Performance and Payment Bonds:

DEDUCT: _____ Dollars (_____).

ALTERNATE NUMBER 2: Tilt-Up Exterior Concrete Panels in lieu of Precast Insulated Structural Concrete Panels.

ADD/DEDUCT: _____ Dollars (_____).

ALTERNATE NUMBER 3: Deletion of asphalt in lieu of concrete paving at Frontage Road.

ADD/DEDUCT: _____ Dollars (_____).

UNIT PRICES:

See Section 00 4301 - Bid Form Supplements Cover Sheet for unit price items to be included in this Bid.

BID HOLDING TIME AND CONTRACT ACCEPTANCE:

The undersigned hereby agrees that this bid may not be revoked or withdrawn after the time set for the opening of bids, but shall remain open for acceptance for a stipulated time period of sixty (60) days following such time. In case the undersigned is notified in writing by mail, telegraph, or delivery of the acceptance of this bid within sixty (60) days after the time set for opening of bids, he agrees to execute a contract and furnish proper bonds within ten (10) days from date of written notice.

COMMENCEMENT OF THE WORK:

The undersigned agrees to commence actual physical work on the site with an adequate force and equipment within ten (10) days from date of "Notice to Proceed." Contractor is to expect to receive a notice to proceed no later than sixty (60) days after bid submission. Contractor shall continuously man the site with an adequate work force each regular working day until final closeout of the project.

TIME FOR COMPLETION:

The undersigned agrees to substantially complete the work within _____ consecutive calendar days from the date of the "Notice to Proceed." The Contractor shall complete the Contract in all its details for final acceptance by the Owner, within thirty (30) consecutive calendar days after the "Certificate of Substantial Completion" date.

CONTRACTOR RESOURCES:

It is understood that before a proposal is considered for award, Bidder may be requested by the Architect/Engineer to submit a statement of facts in detail as to the company's previous experience in performing similar or comparable work. A request may also be made to substantiate the business and technical organization, financial and physical resources available to be used in performing the contemplated work.

Respectfully submitted,

Bidder's Firm Name _____

Address _____

State Contractor's License No: _____

State Bidder's License No: _____

By: _____

Title: _____

SEAL IF BIDDER IS A CORPORATION.

END OF FORM

SECTION 00 4321 - ON-SITE UNIT PRICES FORM - SUPPLEMENT A - R1

PARTICULARS

The following is the list of Unit Prices referenced in the bid submitted by:

(Bidder) _____

TO (Owner) _____

dated _____ and which is an integral part of the Bid Form.

The following are Unit Prices for specific portions of the Work as listed, and are applicable to authorized variations from the Contract Documents.

These Unit Prices will be used to adjust On-Site portions of the Work only. See Supplement B for Unit Prices associated with Off-Site portions of the Work.

UNIT PRICES:

The following Unit Prices shall be utilized as noted in the Bid Documents to adjust the Contract Sum for the actual quantities of work performed, above or below the Bid quantities listed herein below by the Contractor. (See Specification Section 01 2100 and Section 01 2200):

UNIT PRICE LIST

Item No.	Description	Estimated Quantity	Unit of Measure	Unit Price	Total
1.	Mobilization		LS	\$	\$
2.	Construction Stakes, Lines & Grades		LS	\$	\$
3.	Clearing & Grubbing		AC	\$	\$
4.	Unsuitable Soil Removal & Disposal		CY	\$	\$
5.	Import, Placement & Compaction of Structural Fill		CY	\$	\$
6.	Graded Aggregate Base Course (6" Unif.)		SY	\$	\$
7.	Prime Coat		GAL	\$	\$
8.	Hot Mix Asphalt Surface Course - Type B		TON	\$	\$
9.	Portland Cement Concrete Paving (4" Unif)		SY	\$	\$
10.	Portland Cement Concrete Sidewalk (5-ft Wide)		LF	\$	\$
11.	24" White Solid Lines (Stop Bar) - Thermoplastic 125 Mil.		LF	\$	\$
12.	4" Yellow Solid Double Line (Entrance Centerline) - Dry Paint		LF	\$	\$
13.	4" White Solid Single Line (Parking Stall Stripe)- Dry Paint		LF	\$	\$
14.	4" Blue Solid Single Line (Handicap Parking Stalls) - Dry Paint		LF	\$	\$
15.	Flat Sheet, Type III, Fixed Size & Message Sign		SF	\$	\$
16.	U-Section Post for Sign Supports - 3P		LF	\$	\$

Item No.	Description	Estimated Quantity	Unit of Measure	Unit Price	Total
17.	Precast Concrete Wheel Stop		EA	\$	
18.	Beveled End Section for 24" Circular Pipe		EA	\$	
19.	Headwall for 24" Circular Pipe - 1 Line		EA	\$	
20.	24" RC Pipe Cul.- Class III		LF	\$	
21.	24" HDPE Pipe		LF	\$	
22.	18" HDPE Pipe		LF	\$	
23.	15" HDPE Pipe		LF	\$	
24.	12" HDPE Pipe		LF	\$	
25.	10" HDPE Pipe		LF	\$	
26.	Stormwater Cleanout Assembly		EA	\$	
27.	12" x 15" HDPE Reducing Fitting		EA	\$	
28.	15" x 18" HDPE Reducing Fitting		EA	\$	
29.	10" x 12" HDPE Wye Fitting		EA	\$	
30.	10" x 15" HDPE Wye Fitting		EA	\$	
31.	10" x 18" HDPE Wye Fitting		EA	\$	
32.	10" x 12" HDPE Wye Fitting		EA	\$	
33.	4' Dia. Precast Concrete Junction Box		EA	\$	
34.	Rip Rap (Class B)		TON	\$	
35.	Geotextile for Erosion Control Under Rip Rap (Class 2) Type B		SY	\$	
36.	Sediment Tube, includes maintenace		LF	\$	
37.	Rip Rap Sediment Dam, includes maintenance		TON	\$	
38.	Stone Check Dam, includes maintenance		TON	\$	
39.	Silt Fence, includes maintenance		LF		
40.	Construction Access Road		SY	\$	
41.	Stabilized Construction Entrance		SY	\$	
42.	Temporary Erosion Control Blanket (ECB)		MSY	\$	
43.	Temporary Cover		AC	\$	
44.	Permanent Cover		AC	\$	

TOTAL COST OF SUPPLEMENT A WORK AS BID

\$ _____.

END OF SUPPLEMENT A

SECTION 00 4322 - OFF-SITE UNIT PRICES FORM - SUPPLEMENT B - R1

PARTICULARS

The following is the list of Unit Prices referenced in the bid submitted by:

(Bidder) _____

TO (Owner) _____

dated _____ and which is an integral part of the Bid Form.

The following are Unit Prices for specific portions of the Work as listed, and are applicable to authorized variations from the Contract Documents.

These Unit Prices will be used to adjust Off-Site portions of the Work only. See Supplement A for Unit Prices associated with On-Site portions of the Work.

UNIT PRICES:

The following Unit Prices shall be utilized as noted in the Bid Documents to adjust the Contract Sum for the actual quantities of work performed, above or below the Bid quantities listed herein below by the Contractor. (See Specification Section 01 2100 and Section 01 2200):

UNIT PRICE LIST

Item No.	Description	Estimated Quantity	Unit of Measure	Unit Price	Total
1	Traffic Control		LS	\$	\$
2	Clearing & Grubbing w/n R.O.W.		AC	\$	\$
3	Removal & Disposal of Existing Chain-Linked Fence		LF	\$	\$
4	Removal of Existing Gravel Driveway		SY	\$	\$
5	Remove Existing Culvert (18" X 20')		EA	\$	\$
6	Unclassified Excavation		CY	\$	\$
7	Borrow Excavation		CY	\$	\$
8	Muck Excavation		CY	\$	\$
9	Fine Grading		SY	\$	\$
10	Graded Aggregate Base Course (8" Unif.)		SY	\$	\$
11	Prime Coat		GAL	\$	\$
12	Liquid Asphalt Binder PG64-22		TON	\$	\$
13	Hot Mix Asphalt Surface Coat - Type B		TON	\$	\$
14	Permanent Construction Signs (Ground Mounted)		SF	\$	\$

Item No.	Description	Estimated Quantity	Unit of Measure	Unit Price	Total
15	Pavement Markings (Temporary Paint) 4" Yellow Solid Lines		LF	\$	\$
16	Pavement Markings (Temporary Paint) - 24" White Solid Lines		LF	\$	\$
17	24" White Solid Lines (Stop/Diagonal Lines) - Thermoplastic 125 Mil.		LF	\$	\$
18	4" Yellow Solid Lines (Pvt. Edge Lines) Thermoplastic 90 Mil.		LF	\$	\$
19	Flat Sheet, Type III, Fixed Size & Message Sign		SF	\$	\$
20	U-Section Post for Sign Supports - 3P		LF	\$	\$
21	Headwall for 18" Circular Pipe - 1 Line		EA	\$	\$
22	Headwall for 30" Circular Pipe - 1 Line		EA	\$	\$
23	Headwall for 30" Circular Pipe - 2 Lines		EA	\$	\$
24	Headwall for 36" Circular Pipe - 3 Lines		EA	\$	\$
25	18" RC Pipe Cul. - Class III		LF	\$	\$
26	30" RC Pipe Cul. - Class III		LF	\$	\$
27	36" RC Pipe Cul. - Class III		LF	\$	\$
28	Catch Basin - Type 16		EA	\$	\$
29	36" x 36" Junction Box		EA	\$	\$
30	Concrete Curb & Gutter (1'-6") Vertical Face		LF	\$	\$
31	Concrete Flume		EA	\$	\$
32	Rip Rap (Class B)		TON	\$	\$
33	Geotextile for Erosion Control Under Rip Rap (Class 2) Type B		SY	\$	\$
34	Adjust Water Service Line		EA	\$	\$
35	Permanent Cover		AC	\$	\$
36	Temporary Cover		AC	\$	\$
37	Temporary Erosion Control Blanket (ECB)		MSY	\$	\$
38	Sediment Tubes		LF	\$	\$
39	Inlet Structure Filter - Type F (Weighted)		LF	\$	\$
40	Silt Fence		LF	\$	\$

Item No.	Description	Estimated Quantity	Unit of Measure	Unit Price	Total
41	Repair/Replace Silt Fence		LF	\$	\$
42	Removal of Silt Retained by Silt Fence		LF	\$	\$
43	Inlet Structure Filter - Type A		LF	\$	\$
44	Sediment Dam Riprap		TON	\$	\$
45	Stabilized Construction Entrance		SY	\$	\$
46	Inlet Filter Cleaning		EA	\$	\$

TOTAL COST SUPPLEMENT B WORK AS BID \$ _____.

ALTERNATE 3

Item No.	Description	Estimated Quantity	Unit of Measure	Unit Price	Total
1	Graded Aggregate Base Course (6" Unif.)		SY	\$	\$
2	Portland Cement Concrete Pvm. (6" Unif.)		SY	\$	\$
3	Graded Aggregate Base Course (8" Unif.)		SY	\$	\$
4	Prime Coat		GAL	\$	\$
5	Liquid Asphalt Binder PG64-22		TON	\$	\$
6	Hot Mix Asphalt Surface Course - Type B		TON	\$	\$

TOTAL COST OF ALTERNATE 3 WORK AS BID \$ _____.

END OF SUPPLEMENT B

SECTION 00 4336 - PROPOSED SUBCONTRACTORS FORM - R1

PARTICULARS

1.01 Herewith is the list of Subcontractors referenced in the bid submitted by:

1.02 (Bidder) _____

1.03 To (Owner) **Colleton County Economic Alliance, Inc.**

A. Attn: Contracting Agent

1.04 Dated _____ and which is an integral part of the Bid Form.

1.05 The following work will be performed (or provided) by Subcontractors and coordinated by us:

LIST OF SUBCONTRACTORS

2.01	<u>WORK SUBJECT.....</u>	<u>SUBCONTRACTOR NAME</u>
A.	Grading	_____
B.	Paving	_____
C.	Sitework	_____
D.	Structural Steel	_____
E.	Cast-in-Place Concrete	_____
F.	Precast Concrete	_____
G.	Roofing & Sheet Metal	_____
H.	Doors	_____
I.	Storefront	_____
J.	Painting and Coating	_____

END OF FORM

SECTION 00 4373 - PROPOSED SCHEDULE OF VALUES FORM - R1

PARTICULARS

1.01 The following is a Cost Breakdown referenced in the bid submitted by:

1.02 (Bidder) _____

1.03 **TO (OWNER) Colleton County Economic Alliance**

A. Attn: Contracting Agent

1.04 Dated _____ and which is an integral part of the Bid Form.

1.05 The schedule of values is an accurate representation of the actual prime contract or subcontract amount required to accomplish the Work illustrated in the Contract Documents. No General Contractor overhead or profit is to be included in Sub-Contractor amounts. For work performed by the General Contractor's own forces, include sales tax, labor burden and the percentage of overhead and profit allocated to the percentage of the Sub-Contract as compared to the total General Construction Contract.

ITEM DESCRIPTIONS

2.01 GENERAL CONDITIONS

A. Permits	\$ _____
B. Inspections	\$ _____
C. Bond/Insurance, etc.	\$ _____
D. General Requirements	\$ _____
E. Contractor Overhead and Profit	\$ _____
F. Site Mobilization	\$ _____
G. Construction Stakes, Lines & Grades	\$ _____
H. Traffic Control	\$ _____

2.02 DIVISION 03 - CONCRETE

A. Cast in Place Concrete	\$ _____
B. Precast Structural Concrete	\$ _____

2.03 DIVISION 05 - METALS

A. Structural Steel and Joist Framing	\$ _____
B. Steel Decking	\$ _____
C. Metal Fabrications	\$ _____

2.04 DIVISION 06 - WOOD AND PLASTICS

A. Rough Carpentry	\$ _____
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2.05 DIVISION 07 - THERMAL AND MOISTURE PROTECTION

A. Thermal Insulation	\$ _____
B. Single Ply Membrane Roofing	\$ _____
C. Flashing, Trim & Specialties	\$ _____
D. Sealants	\$ _____

2.06 DIVISION 08 - OPENINGS

A. Steel Doors and Frames & Hardware	\$ _____
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B. Overhead Doors	\$ _____
C. Aluminum Storefront, Window/Curtain Walls & Glazing	\$ _____
2.07 DIVISION 09 - FINISHES	
A. Paintings and Coatings	\$ _____
2.08 DIVISION 26 - ELECTRICAL	
A. Power and Lighting and Mechanical.....	\$ _____
2.09 SUPPLEMENT A- Section 004321	
A. Total	\$ _____
2.10 SUPPLEMENT B-Section 004322	
A. Total	\$ _____
TOTAL CONTRACT AMOUNT	\$ _____

END OF FORM

SECTION 00 7300 - SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - R1

SUMMARY

- 1.01 "Supplementary Conditions of the Contract for Construction", Section 00 7300, shall modify, change, delete from or add to the "General Conditions of the Contract for Construction," AIA Document A201 - 2007 Edition. Where any article or section in the "General Conditions" is amended, voided, or superceded by any of the following sections, the provision(s) of such article or section not so amended, voided or superceded shall remain in effect.

MODIFICATIONS TO GENERAL CONDITIONS

- 2.01 The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.
- 2.02 Wherever the word "Architect" appears in the General Conditions substitute therefor: "Architect/Engineer."
- 2.03 ARTICLE 1 - GENERAL PROVISIONS

- A. In the last sentence of Section 1.1.1 DELETE "the Contractor's bid or proposal."
"The Contractor's Bid or Proposal shall be part of the Contract Documents."
- B. ADD the following Section:
"1.1.9 THE PROJECT MANUAL
The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract, and Specifications."
- C. ADD the following Section:
"1.2.4 In the event of conflict or discrepancies among Contract Documents, interpretations will be based upon the following priorities:
1. The Contract Agreement.
2. Addenda - with those of latest date having precedence over those of earlier date.
3. The Owner's General Instructions to Offerors.
4. Request for Proposal and Instructions to Bidders
5. The Supplementary Conditions.
6. The General Conditions of the Contract for Construction.
7. Drawings and Specifications.
8. In the case of an inconsistency between the Contract Documents or within any document not clarified by addendum, the material or system of equipment of better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation. The Architect's interpretation shall be final and shall be adhered to by the Contractor at no additional cost to the Owner."

2.04 ARTICLE 2 - OWNER

- A. In Section 2.1.1, last line, CHANGE "authorized" to "designated," and add the following:
"The Owner referred to herein is Colleton County Economic Alliance, Inc. and their authorized representative is the Contracting Agent."
- B. DELETE Section 2.2.1 in its entirety.
- C. DELETE Section 2.2.5 in its entirety and SUBSTITUTE the following in lieu thereof:
"2.2.5 The Contractor shall receive one (1) sets of the Drawings and Specifications. Additional sets may be purchased at the cost of reproduction, handling and shipping from ARC, Imaging Technologies, 205 Pickens Street, Columbia, SC 29205, (803) 254-2561."

2.05 ARTICLE 3 - CONTRACTOR

- A. ADD the following to the end of the Section 3.1.1:
"Reference to "General Contractor, Contractor or G.C." shall be understood to mean the Prime Contractor, directly contracted with by the Owner, to accomplish the total scope of work."
- B. ADD the following Section:
"3.3.4 The Contractor shall be solely responsible for properly laying out the Work, and for all lines, elevations and measurements for all of the Work executed under the Contract Documents as set forth in Article 1. The Contractor shall verify the figures shown on the drawings before laying out the Work and will be held responsible for any error or inaccuracies resulting from the Contractor's failure to do so. The Architect or the Architect representatives will in no case assume the responsibility for layout out the work."
- C. ADD the following Sections:
"3.4.2.1 Where quality and other characteristics are very nearly the same, the question of determining equal materials and readily available service sometimes resolves itself to a matter of personal opinion and judgement and in these and all other cases involving the approval of materials, the opinion, judgement and decision of the Architect shall be final and bind all parties concerned.
"3.4.2.2 Requests for written approval to substitute materials or equipment must be accompanied by samples, descriptive literature and engineering information as noted in Section 01 6000 - "Product Requirements."
- D. ADD the following Sections:
"3.5.1 A one (1) year guarantee is required on the entire Work, which guarantee shall be evidenced by the proper execution and submission, with request for final payment of Section 00 6537 - "Contractor's One Year Guarantee," enclosed with these documents.
3.5.2 A three (3) year guarantee shall be required as noted which guarantee shall be evidenced by the proper execution and submission, with request for final payment, of form Section 00 6538 - "Contractor's Guarantee on Roofs, Walls and Floors," enclosed with these documents."
- E. ADD the following Section:
"3.7.1.1 In order that the inspection services of municipal or county building departments might be made available for plumbing, heating, ventilation, process and electrical work, the Contractor shall require that each subcontractor for these specialty contracts apply for, obtain, and pay the cost of permit and inspection fees for that specialty for which they are a subcontractor."
- F. ADD the following Section:
"3.18.3 Contractor shall defend and hold harmless the Architect, Owner and their agents against any claim or liability from pertinent clauses of State Law."

2.06 ARTICLE 4 - ARCHITECT

- A. ADD the following Section:
"4.1.1.1 The Architect referred to herein is Carlisle Associates Incorporated, Architects/Engineers, 1015 Gervais Street, P.O. Box 11528, Columbia, South Carolina 29211. Telephone (803) 252-3232."
- B. MODIFY Section 4.2.1 as follows:
In the first sentence following ".....provide" ADD "general."

- C. DELETE Section 4.2.10 in its entirety and SUBSTITUTE the following in lieu thereof:
"4.2.10 If a Project Representative is provided, the Project Representative's duties, responsibilities and limitations of authority shall be as set forth in DUTIES, RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY OF FULL TIME PROJECT REPRESENTATIVE, AIA DOCUMENT B352, latest edition, a copy of which will be provided to Owner, Contractor and Project Representative when requested."
- D. ADD the following Section:
"4.2.15 In the Specifications or on the Drawings, where the words "as directed," "as required," "as approved," "as permitted" or words of like effect are used, the Contractor shall understand that direction, requirement, approval or permission of the Architect is intended. Similar words "approved," "acceptable," "satisfactory," or words of like import mean approved by, acceptable to or satisfactory to the Architect."

2.07 ARTICLE 5 - SUBCONTRACTORS

- A. ADD the following Section:
"5.3.1 By executing the Contract the Contractor assures the Owner that all agreements between the Contractor and the Contractor's Subcontractors incorporate the provisions of Sections 3.7 and 5.3 preserving and protecting the rights of the Owner and the Architect under the Contract Documents with respect to the Work to be performed by Subcontractors so that the subcontracting thereof will not prejudice such rights."

2.08 ARTICLE 7 - CHANGES IN THE WORK

- A. ADD the following Section:
"7.1.1.1 The delivery of supplemental or revised drawings to the Contractor by either the Architect or the Owner shall not be interpreted by the Contractor as fulfilling the requirements of this Article for a written order to proceed with the Work. The written order must be in addition to such drawings."
- B. ADD the following Sections:
"7.2.2 The allowance for the combined overhead and profit included in the total cost to the Owner, shall not exceed the percentages in the following schedule.
.1 For the Contractor, for Work performed by the Contractor's own forces, ten percent (10%) of the cost.
.2 For the Contractor, for Work performed by the Contractor's Subcontractors, five percent (5%) of the amount due the Subcontractor.
.3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, ten percent (10%) of the cost.
.4 For each Subcontractor, for Work performed by the Subcontractor's Sub-Subcontractors, five percent (5%) of the amount due the Sub-subcontractor.
.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.2.1.
.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that the propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$1,000.00 be approved without such itemization."
- C. At the end of the first sentence in Section 7.3.7, DELETE the words "a reasonable amount for overhead and profit" and SUBSTITUTE, "an allowance for overhead and profit in accordance with the Supplementary Conditions."

2.09 ARTICLE 8 - TIME

A. DELETE Section 8.3.1 in its entirety and SUBSTITUTE the following in lieu thereof:

"8.3.1 The Contract Time may be extended by Change Order to provide one additional work day for each full workday that the Contractor is prevented from working by reason of one or more of the following causes:

.1 Causes beyond the control and without the fault or negligence of the Contractor, it's Subcontractors or agents, including but not limited to, catastrophes and/or acts of God, act of another Contractor in the performance of a separate contract with the Owner, epidemic, quarantine restrictions, labor disputes or freight embargoes.

.2 An unusual amount of severe weather to such an extent as to be definitely abnormal and beyond conditions that may be reasonably anticipated. For the purpose of this contract, the total working days per calendar month listed below shall be anticipated as "normally bad or severe weather," and such time will not be considered justification for an extension of time. Days are not cumulative from month to month.

Average monthly days with precipitation greater than or equal to 0.10-inches:

January: 6	May: 6	September: 6
February 6	June: 8	October: 4
March: 6	July: 9	November: 4
April: 5	August: 8	December: 6

.3 Stoppage of work ordered by Owner or Architect for reasons over which Contractor has no control.

.4 Additional work that may be ordered by Owner, provided such work is over and beyond the scope of Work covered by the original contract, and is of such nature as to materially affect the Contract Time."

B. DELETE Section 8.3.2 in its entirety and SUBSTITUTE the following in lieu thereof:

"8.3.2 The Contractor shall, within five (5) days after the beginning of such delay notify the Owner and Architect in writing of the cause of the delays in accordance with Section 15.1.5. The Architect will then verify the facts and extent of delay, and notify the Contractor within ten (10) days of the Owner's decision in the matter. Notice of delay and requests for extension of time shall also state the number of additional working days contractor desires contract extended. Failure to notify Architect as stated above shall waive Contractor's rights to an extension of time for those days."

C. ADD the following Section:

"8.3.4 No claims for extension of time will be considered when based on delays caused by conditions existing at the time bids were received, and of which the Contractor might be reasonably expected to have full knowledge at the time of bidding, or upon delays caused by failure on the part of the Contractor to anticipate properly the requirements of the work contracted for as to materials, labor, equipment, site conditions and the requirements of the authorities having jurisdiction as they apply to the Contractor's work."

2.10 ARTICLE 9 - PAYMENTS AND COMPLETION:

A. ADD the following Sections:

"9.3.1.3 The Architect will authorize, as provided in Sections 9.4 and 9.6, monthly payments equal to 90 percent of the portion of the contract sum properly allocable to

labor, material and equipment incorporated in the work, and allocable to material and equipment suitably stored.

9.3.1.4 Contractor's Application for Payment shall be on AIA Documents G702 & G703 and shall include the following supplemental statement:

"State of: _____ County of: _____

The undersigned Contractor certifies that the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that the current payment shown herein is now due.

Contractor: _____

By: _____ Date: _____

Subscribed and sworn to before me this _____ day of _____, 20__

Notary Public

My Commission expires: _____"

B. ADD the following Section:

"9.3.2.1 Rental equipment such as, but not limited to, mobile equipment, pans, forms, scaffolding, compressors, etc. shall not be considered stored material."

C. ADD the following Section:

"9.5.4 The Contractor may not stop the progress of the Work as a result of any payment or portion thereof being withheld in accordance with Section 9.5.1 above. If the Contractor does order the work stopped, or if the Work is stopped in whole or in part as a result thereof, the Contractor shall be wholly liable of any damages from delay, or otherwise, which may arise because of such stoppage."

D. ADD the following Sections:

"9.8.3.1 The Architect shall make two (2) site visits to perform the Substantial Completion Inspection. Should the Contractor's work be found not substantially complete, any subsequent site inspections by the Architect to establish Substantial Completion by the Contractor shall be paid for by the Contractor.

9.8.3.2 The Architect shall use its current hourly personnel rates and its current standard charges for travel and other expenses incurred due to the site visit and subsequent generation of reports and punch lists. Charges shall be applied as a deductive Change Order to the Contractor's next application for payment."

E. ADD the following Sections:

"9.10.1.1 When the Contractor is ready for Final Inspection, he shall give notice to the Architect with a copy to the Owner in the following words:

"The Work on the contract for [show name of improvement or project as it appears in the Form of Agreement], having been fully completed, except as stipulated herein below, it is requested that a final inspection be made promptly by the Architect or the Architect's designated representative. The following work is incomplete through no fault or negligence of the Contractor: [list any work the Contractor regards as exceptional and after each item substantiate why its incompleteness is not due to the Contractor's fault or negligence]."

9.10.1.2 No final inspection shall be made until such time as the Architect and the Owner have received a letter in exact form indicated above. Notice shall be on Contractor's letterhead and shall be signed by the Contractor's project manager or an officer of the company.

9.10.1.3 The Architect shall make two (2) site visit to perform the Final Inspection. Should the Contractor's work be found not to be complete, any subsequent site inspections by the Architect to establish final completion by the Contractor shall be paid for by the Contractor. The Architect shall use its current hourly personnel rates and its current standard charges for travel and other expenses incurred due to the site visit and subsequent generation of reports and punch lists. Charges shall be applied as a deductive Change Order to the Contractor's next application for payment."

F. ADD the following Section:

"9.10.2.1 Contractor shall submit to Architect, Contractor's Affidavit of Payment of Debts and Claims on AIA Document G706, latest edition, together with all supporting documents as called for thereon, including (as applicable):

- .1 Consent of Surety to Final Payment of AIA Document G707, latest edition.
- .2 Contractor's Release of Waiver of Liens, conditional upon receipt of final payment. Submit in letter under Contractor's letterhead.
- .3 Separate Releases of Waivers of Liens from all Subcontractors and Materials and Equipment Suppliers on reproduction of form supplied by Architect in Contract Documents. Accompany with a list thereof.
- .4 Contractor's Affidavit of Release of Liens on AIA Document G706A, latest edition."

2.11 ARTICLE 11 - INSURANCE BONDS

A. MODIFY Section 11.1.1 as follows:

In the first sentence following ".....or companies" ADD "acceptable to Owner and".

B. MODIFY Section 11.1.2 as follows:

In the second sentence DELETE "or claims-made"

C. ADD the following Section:

"11.1.3.1 If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G705, Certificate of Insurance , latest edition. If this insurance is written on a Commercial General Liability policy form, ACORD form 25S will be acceptable. The insurer shall be authorized to do business in the state of South Carolina by the State Insurance Board, Department or Commission. All blanks and questions on Certificate or ACORD form must be filled out completely. Incomplete or inadequate Certificate or ACORD form will be returned to Contractor as unsatisfactory and commencement of the Contractor's work will be delayed until satisfactory Certificate or ACORD form is submitted. Such delay will not warrant extension of contract time."

D. ADD the following Sections:

"11.1.5 The insurance required by Section 11.1.1 shall be written for not less than the limits indicated in the Owner's General Instructions to Offerors.

E. DELETE Section 11.2 and SUBSTITUTE the following in lieu thereof:

"11.2 Owner's Liability Insurance The Contractor shall purchase and maintain insurance covering the Owner's contingent liability for claims which may arise from operations under the Contract."

F. DELETE Section 11.4.1 in its entirety and SUBSTITUTE the following in lieu thereof:

"11.4.1 The Contractor shall provide and pay the cost of Performance and Payment Bonds, in the form of AIA Document A312 "PERFORMANCE BOND AND PAYMENT BOND". Each bond shall be in the full amount of the Contract Sum issued by a Surety Company licensed in South Carolina, with an "A" minimum rating of performance as stated in the most current publication of "Best's Key Rating Guide, Property Liability"

which shall show a financial strength rating of at least (5) times the Contract Price. Each bond shall be accompanied by a "Power of Attorney" authorizing the attorney-in-fact to bind the surety and certified to include the date of the Bond.

.1 The Contractor shall deliver the required bonds to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

.2 The bonds shall be dated on or after the date of the Contract."

2.12 ARTICLE 13 - MISCELLANEOUS PROVISIONS:

A. ADD the following Section:

"13.1.1 By executing a contract for the Project the Contractor agrees to submit itself to the jurisdiction of the courts of the State of South Carolina for all matters arising or to arise hereunder, including but not limited to performance of said contract and payment of all licenses and taxes of whatever or nature applicable thereto."

B. ADD the following Section:

"13.8 PERSONS AUTHORIZED TO SIGN DOCUMENTS

Contractor shall, within five (5) days after a notification of award or prior to execution of a contract, whichever is earliest, file with Architect a list of all persons in the Contractor's firm who are authorized to sign documents such as contracts, certificates, and affidavits on behalf of the firm and to fully bind the firm to all the conditions and provisions of such documents, except that in the case of a corporation he shall file with Architect a certified copy of a resolution of the Board of Directors of the corporation in which is listed the personnel of such corporation, with their title, who are authorized to sign documents on behalf of the corporation, and to fully bind the corporation to all the conditions and provisions of such documents."

C. ADD the following Section:

"13.9 NON-DISCRIMINATION

The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin.

.1 During the performance of this contract the contractor will take affirmative action to insure that applicants are employed and employees are treated during employment without regard to their race, color, religion, sex or national origin.

.2 During the performance of this contract, all solicitation or advertisements for employees placed by or on behalf of the contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin."

END OF DOCUMENT

SECTION 00 7400 - OWNER'S GENERAL INSTRUCTIONS TO OFFERORS - R1

SUMMARY

"Owner's General Instructions to Offerors", Section 00 7400, shall modify, change, delete from or add to the "Instructions to Bidders," AIA Document A107- 1997 and "General Conditions of the Contract for Construction," AIA Document A201 - 2007 Edition. Where any article or section in the "Instructions to Bidders" and "General Conditions" is amended, voided, or superseded by any of the following sections, the provision(s) of such article or section not so amended, voided or superseded shall remain in effect.

GENERAL INSTRUCTIONS

AMENDMENTS TO SOLICITATION a) The Solicitation may be amended at any time prior to opening. All actual and prospective Offerors should monitor the following web site for the issuance of Amendments: <<http://www.colletoncounty.org/bids-and-proposal-requests>>. b) Offerors shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date in the space provided for this purpose on Page Two, (3) by letter, or (4) by submitting a bid that indicates in some way that the bidder received the amendment. (c) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

BID/PROPOSAL AS OFFER TO CONTRACT By submitting Your Bid or Proposal, You are offering to enter into a contract with Colleton County Government. Without further action by either party, a binding contract shall result upon final award. Any award issued will be issued to, and the contract will be formed with, the entity identified as the Offeror on the Cover Page. An Offer may be submitted by only one legal entity; "joint bids" are not allowed.

BID IN ENGLISH & U.S. DOLLARS Offers submitted in response to this solicitation shall be in the English language and in US dollars, unless otherwise permitted by the Solicitation.

CERTIFICATION REGARDING DEBARMENT AND OTHER RESPONSIBILITY MATTERS

(a)(1) By submitting an Offer, Offeror certifies, to the best of its knowledge and belief, that-

(i) Offeror and/or any of its Principals-

(A) Are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any state or federal agency;

(B) Have not, within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

(b) Offeror shall provide immediate written notice to the Procurement Officer if, at any time prior to contract award, Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) If Offeror is unable to certify the representations stated in paragraphs (a) (1), Offer must submit a written explanation regarding its inability to make the certification. The certification will be considered in connection with a review of the Offeror's responsibility. Failure of the Offeror to furnish additional information as requested by the Procurement Officer may render the Offeror nonresponsive.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly or in bad faith rendered an erroneous certification, in addition to other remedies available to the County, the Procurement Officer may terminate the contract resulting from this solicitation for default.

DRUG FREE WORK PLACE CERTIFICATION By submitting an Offer, Contractor certifies that, if awarded a contract, Contractor will comply with all applicable provisions of The Drug-free Workplace Act, Title 44, Chapter 107 of the South Carolina Code of Laws, as amended.

ETHICS ACT By submitting an Offer, You certify that You are in compliance with South Carolina's Ethics, Government Accountability, and Campaign Reform Act of 1991, as amended. The following statutes require special attention: (a) Offering, giving, soliciting, or receiving anything of value to influence action of public employee - Section 8-13-790, (b) Recovery of kickbacks - Section 8-13-790, (c) Offering, soliciting, or receiving money for advice or assistance of public official - Section 8-13-720, (d) Use or disclosure of confidential information - Section 8-13-725, and (e) Persons hired to assist in the preparation of specifications or evaluation of bids - Section 8-13-1150.

REJECTION/CANCELLATION The County may cancel this solicitation in whole or in part. The County may reject any or all proposals in whole or in part. [SC Code Section 11-35-1710 & R.19-445.2065.]

RESPONSIVENESS / IMPROPER OFFERS

(a) Bid as Specified. Offers for supplies or services other than those specified will not be considered unless authorized by the Solicitation.

(b) Responsiveness. Any Offer which fails to conform to the material requirements of the Solicitation may be rejected as nonresponsive. Offers which impose conditions that modify material requirements of the Solicitation may be rejected. If a fixed price is required, an Offer will be rejected if the total possible cost to the County cannot be determined. Offerors will not be given an opportunity to correct any material nonconformity. Any deficiency resulting from a minor informality may be cured or waived at the sole discretion of the Procurement Officer. [R.19-445.2070 and Section 11-35-1520(13)]

(c) Price Reasonableness: Any offer may be rejected if the Procurement Officer determines in writing that it is unreasonable as to price. [R. 19-445.2070].

(d) Unbalanced Bidding. The County may reject an Offer as nonresponsive if the prices bid are materially unbalanced between line items or subline items. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the State even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advance payment.

RESTRICTIONS APPLICABLE TO OFFERORS Violation of these restrictions may result in disqualification of your offer, suspension or debarment, and may constitute a violation of the state Ethics Act. (a) After issuance of the solicitation, you agree not to discuss this procurement activity in any way with Colleton County or its employees, agents or officials. All communications must be solely with the Procurement Officer. This restriction may be lifted by express written permission from the Procurement Officer. This restriction expires once a contract has been formed. (b) Unless otherwise approved in writing by the Procurement Officer, you agree not to give anything to any Colleton County representative or its employees, agents or officials prior to award.

SIGNING YOUR OFFER Every Offer must be signed by an individual with actual authority to bind the Offeror. (a) If the Offeror is an individual, the Offer must be signed by that individual. If the Offeror is an individual doing business as a firm, the Offer must be submitted in the firm name, signed by the individual, and state that the individual is doing business as a firm. (b) If the Offeror is a partnership, the Offer must be submitted in the partnership name, followed by the words "by its Partner," and signed by a general partner. (c) If the Offeror is a corporation, the Offer must be submitted in the corporate name, followed by the signature and title of the person authorized to sign. (d) An Offer may be submitted by a joint venturer involving any combination of individuals, partnerships, or corporations. If the Offeror is a joint venture, the Offer must be submitted in the name of the Joint Venture and signed by every participant in the joint venture in the manner prescribed in paragraphs (a) through (c) above for each type of participant. (e) If an Offer is signed by an agent, other than as stated in subparagraphs (a) through (d) above, the Offer must state that it has been signed by an Agent. Upon request, Offeror must provide proof of the agent's authorization to bind the principal.

SUBMITTING CONFIDENTIAL INFORMATION: (An overview is available at www.procurement.sc.gov <<http://www.procurement.sc.gov>>) For every document Offeror submits in response to or with regard to this solicitation or request, Offeror must separately mark with the word "CONFIDENTIAL" every page, or portion thereof, that Offeror contends contains information that is exempt from public disclosure because it is either (a) a trade secret as defined in Section 30-4-40(a)(1), or (b) privileged and confidential, as that phrase is used in Section 11-35-410. For every document Offeror submits in response to or with regard to this solicitation or request, Offeror must separately mark with the words "TRADE SECRET" every page, or portion thereof, that Offeror contends contains a trade secret as that term is defined by Section 39-8-20 of the Trade Secrets Act. For every document Offeror submits in response to or with regard to this solicitation or request, Offeror must separately mark with the word "PROTECTED" every page, or portion thereof, that Offeror contends is protected by Section 11-35-1810. All markings must be conspicuous; use color, bold, underlining, or some other method in order to conspicuously distinguish the mark from the other text. Do not mark your entire response (bid, proposal, quote, etc.) as confidential, trade secret, or protected! If your response or any part thereof, is improperly marked as confidential or trade secret or protected, the County may, in its sole discretion, determine it nonresponsive. If only portions of a page are subject to some protection, do not mark the entire page. By submitting a response to this solicitation or request, Offeror (1) agrees to the public disclosure of every page of every document regarding this solicitation or request that was submitted at any time prior to entering into a contract (including, but not limited to, documents contained in a response, documents submitted to clarify a response, and documents submitted during negotiations), unless the page is conspicuously marked "TRADE SECRET" or "CONFIDENTIAL" or "PROTECTED", (2) agrees that any information not marked, as required by these bidding instructions, as a "Trade Secret" is not a trade secret as defined by the Trade Secrets Act, and (3) agrees that, notwithstanding any claims or markings otherwise, any prices, commissions, discounts, or other financial figures used to determine the award, as well as the final contract amount, are subject to public disclosure. In determining whether to release documents, the State will detrimentally rely on Offeror's marking of documents, as required by these bidding instructions, as

being either "Confidential" or "Trade Secret" or "PROTECTED". By submitting a response, Offeror agrees to defend, indemnify and hold harmless the County, its officers and employees, from every claim, demand, loss, expense, cost, damage or injury, including attorney's fees, arising out of or resulting from the County withholding information that Offeror marked as "confidential" or "trade secret" or "PROTECTED". (All references to S.C. Code of Laws.)

BANKRUPTCY: (a) Notice. In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to Colleton County. This notification shall be furnished within five (5) days of the initiation of the proceedings relating to the bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of all County contracts against which final payment has not been made. This obligation remains in effect until final payment under this Contract. (b) Termination. This contract is voidable and subject to immediate termination by the County upon the contractor's insolvency, including the filing of proceedings in bankruptcy.

EQUAL OPPORTUNITY: Contractor is referred to and shall comply with all applicable provisions, if any, of Title 41, Part 60 of the Code of Federal Regulations, including but not limited to Sections 60-1.4, 60-4.2, 60-4.3, 60-250.5(a), and 60-741.5(a), which are hereby incorporated by reference.

ILLEGAL IMMIGRATION & PUBLIC CONTRACTS: In accordance with the South Carolina Illegal Immigration Reform Act, 2008, Act No. 280. Section 3 of this Act added to Chapter 14 to Title 8 of the South Carolina Code of Laws prohibits covered persons from entering into covered contracts unless the contractor agrees either (a) to verify all new employees through the federal work authorization program [and requires the same from subcontractors and sub-subcontractors] or (b) to employ only qualifying workers. Effectively, the Act also requires contractors to agree to provide any documentation required to establish either (a) that the Act does or does not apply to the contractor, subcontractor, or sub-subcontractor; or (b) that the contractor, and any subcontract or sub-subcontractor, are in compliance with Section 3 of the Act.

TAXES: Any tax the contractor may be required to collect or pay upon the sale, use or delivery of the products shall be paid by the State, and such sums shall be due and payable to the contractor upon acceptance. Any personal property taxes levied after delivery shall be paid by the County. It shall be solely the County's obligation, after payment to contractor, to challenge the applicability of any tax by negotiation with, or action against, the taxing authority. Contractor agrees to refund any tax collected, which is subsequently determined not to be proper and for which a refund has been paid to contractor by the taxing authority. In the event that the contractor fails to pay, or delays in paying, to any taxing authorities, sums paid by the County to contractor, contractor shall be liable to the State for any loss (such as the assessment of additional interest) caused by virtue of this failure or delay. Taxes based on Contractor's net income or assets shall be the sole responsibility of the contractor.

FIXED PRICING REQUIRED: Any pricing provided by contractor shall include all costs for performing the work associated with that price. Except as otherwise provided in this solicitation, contractor's price shall be fixed for the duration of this contract, including option terms. This clause does not prohibit contractor from offering lower pricing after award.

PUBLICITY: Contractor shall not publish any comments or quotes by County employees or its agents, or include the County in either news releases or a published list of customers, without the prior written approval of the Procurement Officer.

TERMINATION DUE TO UNAVAILABILITY OF FUNDS: Payment and performance obligations for succeeding fiscal periods shall be subject to the availability and appropriation of funds therefore. When funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period, the contract shall be canceled. In the

event of a cancellation pursuant to this paragraph, contractor will be reimbursed the resulting unamortized, reasonably incurred, nonrecurring costs. Contractor will not be reimbursed any costs amortized beyond the initial contract term.

THIRD PARTY BENEFICIARY: This Contract is made solely and specifically among and for the benefit of the parties hereto, and their respective successors and assigns, and no other person will have any rights, interest, or claims hereunder or be entitled to any benefits under or on account of this Contract as a third party beneficiary or otherwise.

WAIVER: The County does not waive any prior or subsequent breach of the terms of the Contract by making payments on the Contract, by failing to terminate the Contract for lack of performance, or by failing to strictly or promptly insist upon any term of the Contract. Only the Procurement Officer has actual authority to waive any of the County's rights under this Contract. Any waiver must be in writing.

CONTRACTOR'S LIABILITY INSURANCE: (1) Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in South Carolina such insurance as will protect the contractor from the types of claims set forth below which may arise out of or result from the contractor's operations under the contract and for which the contractor may be legally liable, whether such operations be by the contractor or by a subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable: (a) claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the work to be performed; (b) claims for damages because of bodily injury, occupational sickness or disease, or death of the contractor's employees; (c) claims for damages because of bodily injury, sickness or disease, or death of any person other than the contractor's employees; (d) claims for damages insured by usual personal injury liability coverage; (e) claims for damages, other than to the work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; (f) claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; (g) claims for bodily injury or property damage arising out of completed operations; and (h) claims involving contractual liability insurance applicable to the Contractor's obligations under the provision entitled Indemnification - Third Party Claims.

(2) Coverage shall be written on an occurrence basis and shall be maintained without interruption from date of commencement of the work until date of final payment. Coverage must include the following on a commercial basis: (i) Premises - Operations, (ii) Independent Contractor's Protective, (iii) Products and Completed Operations, (iv) Personal and Advertising Injury, (v) Contractual, including specific provision for contractor's obligations under the provision entitled Indemnification - Third Party Claims, (vi) Broad Form Property Damage including Completed Operations, and (vii) Owned, Non-owned and Hired Motor Vehicles.

(3) The insurance required by this paragraph shall be written for not less than the following limits of liability or as required by law, whichever coverage is greater:

COMMERCIAL GENERAL LIABILITY:

General Aggregate (per project) \$1,000,000

Products/Completed Operations \$1,000,000

Personal and Advertising Injury \$1,000,000

Each Occurrence \$1,000,000

Fire Damage (Any one fire) \$ 50,000

Medical Expense (Any one person) \$ 5,000

BUSINESS AUTO LIABILITY (including All Owned, Non-owned, and Hired Vehicles):

Combined Single Limit \$1,000,000

OR

Bodily Injury & Property Damage (each) \$750,000

WORKER'S COMPENSATION:

State Statutory

Employers Liability \$100,000 Per Acc.

\$500,000 Disease, Policy Limit; \$100,000 Disease, Each Employee

(4) Required Documentation. (a) Prior to commencement of the work, contractor shall provide to the state a signed, original certificate of liability insurance (ACORD 25). The certificate shall identify the types of insurance, state the limits of liability for each type of coverage, include a provision for 30 days notice prior to cancellation, name every applicable using governmental unit (as identified on the cover page) as a Certificate Holder, provide that the general aggregate limit applies per project, and provide that coverage is written on an occurrence basis. (b) Prior to commencement of the work, contractor shall provide to the state a written endorsement to the contractor's general liability insurance policy that (i) names every applicable using governmental unit (as identified on the Cover Page) as an additional insured, (ii) provides that no material alteration, cancellation, non-renewal, or expiration of the coverage contained in such policy shall have effect unless the named governmental unit(s) has been given at least thirty (30) days prior written notice, and (iii) provides that the Contractor's liability insurance policy shall be primary, with any liability insurance of the state as secondary and noncontributory. (c) Both the certificate and the endorsement must be received directly from either the contractor's insurance agent or the insurance company.

(5) Contractor shall provide a minimum of thirty (30) days written notice to every applicable using governmental unit of any proposed reduction of coverage limits (on account of revised limits or claims paid under the General Aggregate) or any substitution of insurance carriers.

(6) The County's failure to demand either a certificate of insurance or written endorsement required by this paragraph is not a waiver of contractor's obligations to obtain the required insurance.

DEFAULT:

(a)(1) The County may, subject to paragraphs (c) and (d) of this clause, by written notice of default to the Contractor, terminate this contract in whole or in part if the Contractor fails to-

(i) Deliver the supplies or to perform the services within the time specified in this contract or any extension;

(ii) Make progress, so as to endanger performance of this contract (but see paragraph (a) (2) of this clause); or

(iii) Perform any of the other material provisions of this contract (but see paragraph (a) (2) of this clause).

(2) The County's right to terminate this contract under subdivisions (a) (1) (ii) and (1) (iii) of this clause, may be exercised if the Contractor does not cure such failure within 10 days (or more if authorized in writing by the Procurement Officer) after receipt of the notice from the Procurement Officer specifying the failure.

(b) If the County terminates this contract in whole or in part, it may acquire, under the terms and in the manner the Procurement Officer considers appropriate, supplies or services similar to those

terminated, and the Contractor will be liable to the State for any excess costs for those supplies or services. However, the Contractor shall continue the work not terminated.

(c) Except for defaults of subcontractors at any tier, the Contractor shall not be liable for any excess costs if the failure to perform the contract arises from causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (1) acts of God or of the public enemy, (2) acts of the State in either its sovereign or contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather. In each instance the failure to perform must be beyond the control and without the fault or negligence of the Contractor.

(d) If the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either, the Contractor shall not be liable for any excess costs for failure to perform, unless the subcontracted supplies or services were obtainable from other sources in sufficient time for the Contractor to meet the required delivery schedule.

(e) If this contract is terminated for default, the County may require the Contractor to transfer title and deliver to the County, as directed by the Procurement Officer, any (1) completed supplies, and (2) partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (collectively referred to as "manufacturing materials" in this clause) that the Contractor has specifically produced or acquired for the terminated portion of this contract. Upon direction of the Procurement Officer, the Contractor shall also protect and preserve property in its possession in which the State has an interest.

(f) The County shall pay contract price for completed supplies delivered and accepted. The Contractor and Procurement Officer shall agree on the amount of payment for manufacturing materials delivered and accepted and for the protection and preservation of the property; if the parties fail to agree, the Procurement Officer shall set an amount subject to the Contractor's rights under the Disputes clause. Failure to agree will be a dispute under the Disputes clause. The County may withhold from these amounts any sum the Procurement Officer determines to be necessary to protect the County against loss because of outstanding liens or claims of former lien holders.

(g) If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for convenience of the County, be the same as if the termination had been issued for the convenience of the County. If, in the foregoing circumstances, this contract does not contain a clause providing for termination for convenience of the County, the contract shall be adjusted to compensate for such termination and the contract modified accordingly subject to the contractor's rights under the Disputes clause.

(h) The rights and remedies of the State in this clause are in addition to any other rights and remedies provided by law or under this contract.

DEFAULT - SHORT FORM: The County may terminate this contract, or any part hereof, for cause in the event of any default by the contractor, or if the contractor fails to comply with any contract terms and conditions, or fails to provide the County, upon request, with adequate assurances of future performance. In the event of termination for cause, the County shall not be liable to the contractor for any amount for supplies or services not accepted, and the contractor shall be liable to the state for any and all rights and remedies provided by law. If it is determined that the County improperly terminated this contract for default, such termination shall be deemed a termination for convenience.

PURCHASING CARD: Contractor agrees to accept payment by the Colleton County Purchasing Card for no extra charge. The Purchasing Card is issued by Visa. The purchasing card allows county agencies to make authorized purchases from a vendor, in conjunction with a purchase order.

END OF DOCUMENT

SECTION 01 2100 - ALLOWANCES - R1

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

1.02 SECTION INCLUDES

- A. Inspecting and testing allowance.
- B. Test pit exploration allowance.
- C. Export and disposal of unsuitable soil allowance.
- D. Import of suitable structural backfill allowance.

1.03 RELATED REQUIREMENTS

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.
- B. Section 01 2600 - Contract Modification Procedures: Procedures for submitting and handling Change Orders for allowances.
- C. Section 01 4000 - Quality Requirements: Procedures governing the use of allowances for Testing and Inspection
- D. Divisions 2 through 35 Sections for items of Work covered by allowances.

1.04 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

1.05 SUBMITTALS

- A. Submit proposal for purchase of products or systems included in allowances in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.06 COORDINATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work. Furnish templates as required to coordinate installation.

1.07 EXPORT AND DISPOSAL OF UNSUITABLE SOIL ALLOWANCE

- A. Costs Included in Export and Disposal of Unsuitable Soil Allowance:
 - 1. Excavating and exporting 30,000 in-place cubic yards of unsuitable soil within the building pad to a point 10' outside of the exterior walls.
 - 2. Transporting and disposing of the soil at an approved offsite location.
 - 3. Permitting required, (if necessary), for the offsite disposal location.

- B. Costs Not Included in the Export and Disposal of Unsuitable Soil Allowance:
 - 1. Costs of testing services used by Contractor separate from Contract Document requirements.
 - 2. Cost of services not required by the Contract Documents.
- C. Contractor Responsibilities:
 - 1. Coordinate with the Owner hired inspection and testing agency to document the volume of in-place unsuitable backfill exported from the site.
 - 2. Ensure the offsite disposal area is permitted for the activities if required by SCDHEC.
 - 3. Ensure erosion and sediment control practices are installed as required by the land disturbance permit at the offsite disposal area.
 - 4. Ensure the offsite disposal area is stabilized at the conclusion of the project for the area of the disposal utilized for this project.
- D. Payment Procedures:
 - 1. The Owner's inspection and testing firm will record the volume of unsuitable, in-place exported soil.
 - 2. Differences in the allowance volume and the actual volume removed will be adjusted by Change Order according to the Unit Price established in Section 01-2200.

1.08 IMPORT OF SUITABLE STRUCTURAL BACKFILL ALLOWANCE

- A. Costs Included in Import of Suitable Structural Backfill Allowance:
 - 1. Cost of importing 50,000 compacted in-place cubic yards of suitable structural backfill soil to raise the building subgrade to the elevations shown on the drawings from an approved offsite borrow pit.
 - 2. Placing and compacting the soil to the specified requirements on the site.
 - 3. Permitting required, (if necessary) for the offsite borrow area.
- B. Costs Not Included in the Import of Suitable Structural Backfill Allowance:
 - 1. Costs of testing services used by Contractor separate from Contract Document requirements.
 - 2. Cost of services not required by the Contract Documents.
- C. Contractor Responsibilities:
 - 1. Coordinate with Owner hired Geotechnical Engineer to test the soil from the offsite borrow pit.
 - 2. Coordinate with the Owner hired inspection and testing agency to document the volume of compacted, in-place backfill imported from the offsite borrow pit.
 - 3. Ensure the offsite borrow pit is permitted for mining activities if required by SCDHEC, or has a land disturbance permit for the activities at the site.
 - 4. Ensure erosion and sediment control practices are installed as required by the mining or land disturbance permit at the offsite borrow pit.
 - 5. Ensure the offsite borrow pit reclamation plan is executed at the conclusion of the project for the area of the borrow pit utilized for this project.
- D. Payment Procedures:
 - 1. The Owner's inspection and testing firm will record the volume of compacted, in-place imported soil.
 - 2. Differences in the allowance volume and the actual volume placed will be adjusted by Change Order according to the Unit Price established in Section 01-2200.

1.09 ALLOWANCES SCHEDULE

A. Allowance Number 1:

1. Export and Disposal of Unsuitable Soil Allowance: Include a lump sum cost for payment of items specified in this Section.

B. Allowance Number 2:

1. Import of Suitable Structural Backfill Allowance: Include a lump sum cost for payment of items specified in this Section.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2300 - ALTERNATES - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of alternates.
- B. Procedures for pricing alternates.
- C. Documentation of changes to Contract Sum and Contract Time.

1.02 RELATED REQUIREMENTS

- A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for alternatives.
- B. Document 00 5200 - Agreement Form: Incorporating monetary value of accepted alternatives.

1.03 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each alternate.

1.04 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 - Performance and Payment Bond:
 - 1. Base Bid Item: Section 00 6113 - Performance and Payment Bond
 - 2. Alternative Item: Section 01 2300 - Alternates.
 - a. Delete the requirement for a performance and payment bond and credit the amount to the Owner as a DEDUCT.
- B. Alternate No. 2 - Exterior Tilt-Up Concrete Panels in Lieu of Precast Insualted Structural Concrete Panels:
 - 1. Base Bid Item: Section 03 4000 and Drawing number A200 including S201.
 - 2. This alternate shall include all costs to supply and install Tilt-Up Concrete Panels in lieu of Precast Concrete Panels as shown on Sheet A200 & S201. Alternate shall include the following:
 - a. All materials and labor including tilt-up panel design, detailing and engineering by registered South Carolina Engineer.
 - b. All overhead and profit.
 - c. All taxes, fees, permit costs, etc.
 - d. All costs for modifications to foundations.
 - e. All costs for modifications to the steel frame.
 - f. all painting, caulking and finishing costs.
 - g. All excavation and earthwork costs.
 - h. All sheet metal and flashing costs.
 - i. An allowance of \$10,000.00 for redesign and drafting by Carlisle Associates.
- C. Alternate No. 3 - Frontage Road Paving:
 - 1. Base Bid Item: Section 32 1216 - Asphalt Paving and URS Design Drawings.
 - 2. Alternate Item: Section 32 2313 - Portland Cement Concrete Paving and plans and paving sections shown on URS Design Drawings for the Frontage Road.
 - 3. This alternate shall include all costs to supply and install Concrete Paving in lieu of Asphalt Paving. Alternate shall include the following:
 - a. All materials, labor, overhead, profit, taxes, and fees.
 - b. Deduct the following materials:

- 1) Graded Aggregate Base Course.
 - 2) Prime Coat.
 - 3) Liquid Asphalt Binder PG64-22.
 - 4) Hot mix Asphalt Surface Course - Type B.
- c. Add for the following materials:
- 1) Graded Aggregate Base Course (6-inch Unif.).
 - 2) Portland Cement Concrete Pavement (8-inch Unif.).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 4000 - QUALITY REQUIREMENTS - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance submittals.
- B. Mock-ups.
- C. Control of installation.
- D. Tolerances.
- E. Testing and inspection services.
- F. Manufacturers' field services.

1.02 RELATED REQUIREMENTS

- A. Section 00 3100 - Available Project Information: Soil investigation data.
- B. Section 00 7200 - General Conditions: Inspections and approvals required by public authorities.
- C. Section 01 3000 - Administrative Requirements: Submittal procedures.
- D. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008.
- B. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2011c.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2012.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged Construction Inspection and/or Testing; 2011.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2009.

1.04 SUBMITTALS

- A. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, and for Owner's information.
- B. Test Reports: After each test/inspection, promptly submit one copy of report to Architect, one copy to Owner and one copy to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.

- i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
- 2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.
- G. Certified Erosion Prevention and Sediment Inspections, (CEPSCI), Reports: Submit weekly reports to the Owner and the Architect. Submit monthly reports to South Carolina Department of Health and Environmental Control, (SCDHEC), the Owner and the Architect. See Section 01 5713 - Temporary Erosion and Sediment Control for additional information.

1.05 REFERENCES AND STANDARDS

1.06 TESTING AND INSPECTION AGENCIES

- A. Owner will employ services of an independent testing agency to perform specified testing and inspection; see applicable sections for description of services included in allowance.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be a comparison standard for the remaining Work.
- D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests and inspections required by Architect.
 - 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.

2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, and installation as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers, enclosures, and fencing.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Field offices.

1.02 RELATED REQUIREMENTS

- A. Section 01 5813 - Temporary Project Signage.

1.03 TEMPORARY UTILITIES - See Section 01 5100

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. Telephone Lines: One line, minimum; Dedicated to the site and available for use by visitors to the site.
 - 2. Internet Connections: Minimum of one; DSL modem or faster.
 - 3. Email: Account/address reserved for project use.
 - 4. Facsimile Service: Minimum of one dedicated fax machine/printer, with dedicated phone line or fax-to-email software on personal computer.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 FENCING

- A. Construction: Contractor's option.
- B. Provide 6 foot (1.8 m) high fence around construction site; equip with vehicular and pedestrian gates with locks.

- C. Contractor to determine extent of fencing required to meet security and barrier requirements.

1.08 SECURITY

- A. Provide security and facilities to protect Work, and Owner's operations from unauthorized entry, vandalism, or theft.

1.09 VEHICULAR ACCESS AND PARKING - See Section 01 5500

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.10 WASTE REMOVAL

- A. See Section 01 7419 - Waste Management, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site weekly.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.11 PROJECT SIGNS - See Section 01 5813

1.12 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Locate offices a minimum distance of 30 feet (10 m) from existing and new structures.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet (600 mm). Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 5713 - TEMPORARY EROSION AND SEDIMENTATION CONTROL - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

- A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
- B. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.
- C. Section 31 3700 - Riprap: Temporary and permanent stabilization using riprap.
- D. Section 32 1123 - Aggregate Base Courses: Temporary and permanent roadways.
- E. Section 32 9219 - Seeding: Permanent turf for erosion control.
- F. Section 03 3000 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.

1.03 REFERENCE STANDARDS

- A. ASTM D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2007.
- B. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2009).
- C. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2011.
- D. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2008.
- E. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2012.
- F. ASTM D4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2002 (Reapproved 2009).
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.
- H. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 2009.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2003 Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Comply with requirements of State of South Carolina Erosion and Sedimentation Control Manual.
- C. Conform to South Carolina Department of Health and Environmental Control regulations.

- D. Runoff Calculation Standard for Urban Areas: USDA NRCS TR-55, Urban Hydrology for Small Watersheds.
- E. Follow the SCDHEC OCRM Approved Erosion and Sedimentation Prevention Plan.
- F. Follow the sequence of construction on the approved Erosion and Sedimentation Control Plan.
- G. Timing: The installation of the perimeter controls is the first item to be installed before disturbance of surface cover and before precipitation occurs.
 - 1. Follow sequence of construction on the Erosion and Sediment Control Plan included in the construction drawings.
- H. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- I. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- J. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- K. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- L. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- M. Open Water: Prevent standing water that could become stagnant.
- N. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

- C. Inspection reports to be filed in approved SWPPP. SWPPP Document must be kept at the project site for review by SCDHEC OCRM, Colleton County, and Carlisle Associates, Inc.
- D. Inspector to contact Engineer for any modifications to be made to the SWPPP Document.
- E. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Crushed Stone:
 - 1. Provide #57 crushed stone for temporary sediment barriers around inlets and for temporary stone check dams.
 - 2. Provide 1-inch to 3-inch D50 stone for temporary construction entrance and exit.
- B. Mulch: Use one of the following:
 - 1. Straw or hay.
 - 2. Wood waste, chips, or bark.
 - 3. Erosion control matting or netting.
- C. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
 - 1. Comply with Section 32 9219 - Seeding
- D. Silt Fence Fabric: Mirafi 100x filter fabric (or approved equal) geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with galvanized wire mesh fence or industrial netting. Metal posts shall be placed 6'-0" O.C.
 - 1. Woven wire shall conform to the requirements of ASTM A 116, Class I zinc coating for wire. Each woven square shall measure 5.33-inches X 12-inches. The top and bottom wires shall be 10-gauge. All other wires shall be 12-1/2 gauge.
 - a. Securely attach woven wire to posts with wire ties.
 - 2. Silt fences should be continuous and transverse to the flow. The silt fence should follow the contours of the site as closely as possible. Place the fence such that the water cannot runoff around the end of the fence.
- E. Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:
 - 1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot (1.98 kg per linear m).
- F. Riprap: See Section 31 3700.
- G. Erosion Control Blanket
 - 1. Use erosion control blanket S150, from North American Green or approved equal.
 - a. Use Biostakes where staples are required or indicated on the drawings for stabilization.
 - 1) Staple in pattern recommended by blanket manufacturer.
 - b. Staple locations must be clearly marked on the blanket when stakes are used.
- H. Sediment Tubes:
 - 1. Use sediment tubes as designated on the plans to control erosion along contours, around inlets, and in drainage conveyance swales.
 - 2. Use sediment tubes manufactured by an experienced manufacturer producing tubes for erosion control.

3. Tube fill is to be composed of 100% weed free materials consisting of a mix of some or all of the following: curled excelsior wood, natural coconut fibers, hardwood mulch and agricultural straw.
4. Tubular netting is to be constructed of a flexible outer netting that will contain the fill materials and sediment. Netting is to be constructed from seamless high density polyethylene, polyester, and/or ethyl vinyl acetate, photo-degradeable materials, treated with ultraviolet stabilizers.
5. Tubes are to be minimum 20-inches in diameter, with minimum weight of 3.2-lbs per foot +/- 10%. Minimum tube length is 10-feet. Netting weight is to be 0.35-oz. per foot minimum.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. Construct and maintain erosion and sediment control measures until the substantial completion of the project.
- B. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- C. Construction Entrances: As specified on the construction drawings and documents.
 1. Construct a stone area or pad at points where vehicles enter and leave a construction site.
 2. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade and place stone to the grade and dimensions shown on the plans.
 3. Construct drainage channels to carry water to a sediment trap or other suitable outlet.
 4. Use geotextile fabrics to improve stability of the foundation.
 5. Maintain the stone pad in a condition to prevent mud or sediment from leaving the construction site by periodic top dressing with two inches of stone.
 6. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary.
 7. Immediately remove objectionable materials spilled, washed, or tracked onto public roadways.
- D. Linear Sediment Barriers: Made of silt fences.
 1. Provide linear sediment barriers as shown on the construction drawings.
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 - b. Along utility construction parallel to the disturbed trench where perpendicular sheet flow runoff occurs on disturbed areas with slopes greater than 4%.
 2. Space sediment barriers as shown on the construction drawings.
 3. Construct temporary sediment barriers of filter fabric, buried at the bottom, stretched and supported by posts and install below small disturbed areas as indicated on the drawings to retain sediment by reducing the flow velocity to allow sediment deposition.
- E. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:

1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
- F. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- G. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- H. Soil Stockpiles: Protect using one of the following measures:
 1. Cover with polyethylene film, secured by placing soil on outer edges.
 2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.
- I. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
 1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.
- J. Temporary Seeding: Use where temporary vegetated cover is required.
 1. Provide a temporary cover for erosion control on disturbed areas that will remain unstabilized for a period of more than 30-days in accordance with Section 32 9219 - Seeding.
 2. This practice applies to cleared areas, diversions, dams, temporary sediment basins, temporary road banks, and topsoil stockpiles where vegetation is needed for less than one (1) year.
 3. Provide grassing on slopes 5% or greater within 14-days of disturbance. Comply with Section 32 9219 - Seeding
- K. Erosion Control Blanket:
 1. Provide on areas as shown on the plans or on all embankments with slopes equal to or steeper than 2-1/2:1.
- L. Temporary Stone Check Dams
 1. Utilize temporary stone check dams as indicated on the plans or as directed by Engineer.
 2. Provide temporary stone check dams constructed of both rip-rap and #57 stone, as illustrated on the plans.
- M. Sediment Tubes
 1. Construct small U-shaped trench that is 20% of depth of tube perpendicular to stormwater flow pattern.

3.04 INSTALLATION

A. Silt Fences:

1. Store and handle fabric in accordance with ASTM D4873.
2. Install with top of fabric at nominal height and embedment indicated on drawings, with galvanized wire mesh fence or industrial netting.
3. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches (460 mm), with extra post.
4. Fasten fabric to steel posts as directed on the construction drawings.
5. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches (300 mm) high with post spacing not more than 4 feet (1220 mm).

B. Mulching Over Large Areas:

1. Dry Straw and Hay: Apply 2-1/2 tons per acre (6350 kg per hectare); anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
2. Wood Waste: Apply 6 to 9 tons per acre (15,200 to 20,800 kg per hectare).
3. Erosion Control Matting: Comply with manufacturer's instructions.

C. Mulching Over Small and Medium Areas:

1. Dry Straw and Hay: Apply 4 to 6 inches (100 to 150 mm) depth.
2. Wood Waste: Apply 2 to 3 inches (50 to 75 mm) depth.
3. Erosion Control Matting: Comply with manufacturer's instructions.

D. Temporary Seeding:

1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft (0.5 kg per 100 sq m).
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft (6 to 8 kg per 100 sq m).
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep (12 to 25 mm) deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

E. Sediment Tubes

1. Anchor tube in trench according to manufacturers recommendations.
2. Compact the upstream soil surface adjacent to the tube.
3. Backfill sediment tube with coarse filter material on the upstream side.
4. Follow manufacturers recommendations on installation.

3.05 MAINTENANCE

- A. Inspect preventive measures weekly, and within 24 hours after the end of any storm that produces 0.5 inches (13 mm) or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.

C. Silt Fences:

1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
4. Monitor site frequently and place additional silt fencing should evidence indicated that erosion is about to occur at locations other than those shown on plan.

D. Inlet Protection:

1. Inspect structure after each rainfall and repair as required.
2. Remove sediment when trap reaches one-half capacity.
3. Remove structure when protected areas have been stabilized.

E. Sediment Tubes

1. Maintain, repair, and/or replace sediment tubes as required to maintain their effectiveness throughout the project.

F. Clean out temporary sediment control structures weekly.

G. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.
- D. Remove any sediment accumulated in existing stormwater management basin. Re-seed and mulch any areas disturbed by Work.

END OF SECTION

SECTION 02 4100 - OFF-SITE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.
- C. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- B. Section 01 5713 - Temporary Erosion and Sediment Control.
- C. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- D. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- E. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 QUALITY ASSURANCE

- A. Comply with the International Building Code with due regard to the protection of the public and the provision of safeguards during the performance of the work.
- B. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner.
- C. Comply with requirements of governmental agencies having jurisdiction.
- D. Contractor is responsible for being aware of and complying with Asbestos NESHAP regulations, as well as other applicable codes, laws and regulations.
 - 1. The Owner is to be notified immediately upon discovery of asbestos material.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

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

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. General:
 - 1. Prior to start of demolition, carefully study the Drawings and these Specifications.
 - 2. In company with the Owner's representative, visit the site and verify the extent of demolition to be performed under this Contract.
- B. Demolished material shall be considered to be property of the Contractor and shall be completely removed from the job site.
- C. Use means necessary to prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- D. Use any means necessary to protect the public safety during the demolition process.

- E. Use whatever means necessary to protect the adjacent structures from damage during demolition.
- F. Protection of trees: It may become desirable to save certain trees in areas where cut or fill is eighteen inches or less and in parking areas. Consequently, the Contractor shall obtain approval from Architect prior to removal of significant trees from such areas. The Contractor shall protect existing trees to remain during construction by constructing barricades around such trees as directed.
- G. Erosion Control: Construct and maintain erosion control as shown on the Drawings and in accordance with the local County's requirements.
- H. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Use of explosives is not permitted.
 - 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 5. Provide, erect, and maintain temporary barriers and security devices.
 - 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 8. Do not close or obstruct roadways or sidewalks without permit.
 - 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 - 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- I. Do not begin removal until receipt of notification to proceed from Owner.
- J. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 3000 - CAST-IN-PLACE CONCRETE - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Floors and slabs on grade.
- B. Concrete foundations for column and wall footings.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Miscellaneous concrete elements, including equipment pads, light pole bases, flagpole bases, thrust blocks, and manholes.
- F. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Section 07 9005 - Joint Sealers: Sealants for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010.
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.
- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.
- H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2011.
- J. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.
- K. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- L. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Billet-Steel Bars for Concrete Reinforcement; 2012.
- M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2011a.
- N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2012a.
- O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2012.
- P. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2012.
- Q. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.

- R. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- S. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- T. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2012.
- U. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- V. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2012.
- W. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2012.
- X. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2011.
- Y. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 1999 (Reapproved 2008).
- Z. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2011.
- AA. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2012.
- AB. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2011.
- AC. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 2011.
- AD. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2010.
- AE. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).
- AF. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
- AG. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Samples: Submit samples of underslab vapor retarder to be used.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.

- B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
 - 1. Form: Flat Sheets.
 - 2. Mesh Size and Wire Gage: As indicated on drawings.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage (1.5 mm).
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class F.

2.03 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.

2.04 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class B; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
 - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 28 Days: 6,000 psi (41 MPa).

2.05 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059 Type II.
- B. Slab Isolation Joint Filler: 1/2 inch (13 mm) thick, height equal to slab thickness, with removable top section that will form 1/2 inch (13 mm) deep sealant pocket after removal.

2.06 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.

- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound, that dissipates within 3 to 5 weeks; complying with ASTM C309.
- C. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
 - 1. Solids by Mass: 25 percent, minimum.
- D. Moisture-Retaining Sheet: ASTM C171.
- E. Water: Potable, not detrimental to concrete.

2.07 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- D. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
 - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 - 3. Water-Cement Ratio: Maximum 50 percent by weight.
 - 4. Maximum Slump: 4 to 5 inches (100 to 125 mm).

2.08 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
 - 1. Use latex bonding agent only for non-load-bearing applications.
- B. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
 - 1. Granular Fill Over Vapor Retarder: Cover vapor retarder with compactible granular fill as shown on the drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement, inserts, and embedded parts will not be disturbed during concrete placement.
- E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch (5 mm) thick blade and cut at least 1 inch (25 mm) deep but not less than one quarter (1/4) the depth of the slab.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Measure F(F) and F(L) in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- B. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

- A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.08 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.

3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd (76 cu m) or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.10 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.11 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

3.12 SCHEDULE - CONCRETE TYPES AND FINISHES

- A. Column and Wall Footings: 3,000 pounds per square inch (20.7 MPa) 28 day concrete, form finish.
- B. Floor Slabs-on-Grade: 4,000 pounds per square inch (20.7 MPa) 28 day concrete, finish as noted above.

END OF SECTION

SECTION 03 4110 - PRECAST INSULATED STRUCTURAL CONCRETE PANELS - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast prestressed insulated wall panels.
- B. Grout packing.
- C. Connection and supporting devices.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 05 1200 - Structural Steel Framing.
- C. Section 05 2100 - Steel Joist Framing.
- D. Section 05 3100 - Steel Decking.
- E. Section 07 9005 - Joint Sealers: Perimeter joints with sealant and backing.

1.03 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2011.
- B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2008.
- C. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- D. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- E. ASTM A416/A416M - Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestress Concrete; 2012.
- F. ASTM A 497/A 497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2007.
- G. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2012.
- H. ASTM C150 - Standard Specification for Portland Cement; 2012.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2010.
- J. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; American Welding Society; 2011.
- K. PCI MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products; Precast/Prestressed Concrete Institute; 1999, Fourth Edition.
- L. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute; Seventh Edition, 2010.
- M. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; Precast/Prestressed Concrete Institute; 1998, Second Edition.
- N. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction; Precast/Prestressed Concrete Institute; 2000.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a pre-installation conference one week prior to commencing work of this section.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate layout, unit locations, fabrication details, unit identification marks, reinforcement, connection details, support items, dimensions, openings, and relationship to adjacent materials. Indicate design loads, deflections, cambers, bearing requirements, and special conditions.
- C. Design Data: Submit design data reports indicating calculations for loadings and stresses of fabricated, designed framing.
- D. Thermal Performance: Provide calculations complying with ASHRAE/IESNA Standard 90.1 and confirming the effective thermal resistance for the concrete sandwich wall system.
 - 1. Sandwich panel system is designed and configured to eliminate "thermal bridging" resulting from penetrations of insulation layer by highly conductive or non-insulating materials.
 - 2. Sandwich wall connecting system shall not reduce the thermal resistance of the wall assembly by more than two percent (2%) when R-value is calculated using the series parallel path method of calculation according to ASHRAE Fundamentals Handbook.
- E. Provide documentation for Designer, Fabricator, Erector, and Welder qualifications.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design precast concrete members under direct supervision of a Professional Structural Engineer experienced in design of precast concrete and licensed in South Carolina.
- B. Fabricator Qualifications: Company specializing in manufacturing products specified in this section, with not less than five (5) years of documented experience.
- C.
- D. Erector Qualifications: Company specializing in erecting products of this section with minimum three (3) years of documented experience.
- E. Welder Qualifications: Qualified within previous 12 months in accordance with AWS D1.1 and AWS D1.4.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle precast members in position consistent with their shape and design. Lift and support only from support points.
- B. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
- C. Protect members to prevent staining, chipping, or spalling of concrete.
- D. Mark each member with date of production and final position in structure.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Design components to withstand the design loads in the configuration indicated on the drawings.
- B. Thermal Performance: As a minimum, provide insulated concrete sandwich panels meeting the insulation requirements of ANSI/ASHRAE/IESNA Standard 90.1-2007. Panels to have an Assembly Maximum Value of $U=0.123$ and an Insulation Minimum Value of $R=13$ (static), including all blocking and solid zones within the space between finished floor and roof.

1. Panels must be constructed to maintain the effective acceptable R-value of the panels with less than one percent (1%) reduction due to penetrations and connection detailing. The reduction in thermal performance must be calculated using the Isothermal planes method of R-value calculation.
2. Insulated panels with solid zones will not be permitted above the finished floor and below the finished ceiling. Solid zones are permitted below slab on grade, in the plenum space and above the roof provided the thermal performance criteria is met. Otherwise, insulation shall be continuous between wythes and furred out to meet roof insulation in accordance with the referenced standards.

2.02 MANUFACTURERS

- A. Structural Precast Concrete:
 1. Any manufacturer holding a PCI Group C Plant Certification for the types of products specified; see www.pci.org/find/manufacturer.
 2. Substitutions: See Section 01 6000 - Product Requirements.

2.03 PRECAST UNITS

- A. Precast Structural Concrete Units: Comply with PCI MNL-116, PCI MNL-120, PCI MNL-123, PCI MNL-135, ACI 318 and applicable codes.
 1. Design components to withstand dead loads and design loads in the configuration indicated on the drawings.
 2. Calculate structural properties of framing members in accordance with ACI 318.
 3. Design members exposed to the weather to provide for movement of components without damage, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to seasonal or cyclic day/night temperature ranges.
 4. Design system to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.

2.04 MATERIALS

- A. Cement: Gray portland type, conforming to ASTM C 150, Type I.
- B. Aggregate, Sand, Water, Admixtures: Determined by precast fabricator as appropriate to design requirements and PCI MNL-116.

2.05 REINFORCEMENT

- A. Tensioning Steel Tendons: ASTM A 416/A 416M, Grade 250 (1720) or 270 (1860); seven-wire stranded steel cable; low-relaxation type; full length without splices; uncoated.
- B. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
 1. Plain billet-steel bars.
 2. Unfinished.
- C. Steel Welded Wire Reinforcement: ASTM A 185/A 185M plain type or ASTM A 497/A 497M deformed type; in flat sheets; unfinished.
- D. Supports: Manufacturer's bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place according to CRSI's "Manual of Standard Practice," PCI MNL 116 and as follows:
 1. For thermally efficient panels provide glass-fiber and vinyl-ester polymer connectors.

2.06 STEEL CONNECTION MATERIALS

- A. Connecting and Supporting Devices: Plates, angles, items cast into concrete, and inserts as follows:

1. Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
2. Materials:
 - a. Carbon-Steel Shapes and Plates: ASTM A36 (A 36M).
 - b. Carbon-Steel Head Studs: ASTM A 108, AISI 1018 through AISI 1020, cold finished; AWS D1.1, Type A or B, with arch shield.
 - c. Malleable Steel Castings: ASTM A 47 (A 47M).
 - d. Deformed-Steel Wire of Bar Anchors: ASTM A 496 or ASTM A 706 (A 706M).
 - e. Carbon-Steel Bolts and Studs: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); carbon-steel, heavy hex bolts and studs; carbon-steel nuts; and flat, unhardened steel washers.
 - f. Carbon-Steel Bolts and Studs: ASTM A 325 (A 325M), Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers.
3. Finish: For exterior steel items, steel in exterior walls, and items indicated for galvanizing, apply zinc coating by hot-dip process according to ASTM A 123 (A 123M) after fabrication, and ASTM A 153 (A 153M), as applicable.
 - a. Galvanized Repair Paint: High-zinc-duct-content paint with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035A or SSPC-Paint 20.

2.07 ACCESSORIES

- A. Connecting and Supporting Devices: Plates, angles, items cast into concrete, and items connected to steel framing members, and inserts as follows:
 1. Design: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
 2. Material: Carbon steel conforming to ASTM A 36/A 36M.
- B. Rigid Insulation Board: Provide either Expanded-Polystyrene, Extruded-Polystyrene or Polyisocyanurate Board in the thickness shown on drawings to meet the R-Value minimum.
- C. Wythe Connectors: Manufactured to connect wythes of precast concrete panels.
 1. For thermally efficient panels provide glass-fiber and vinyl-ester polymer connectors.
- D. Grout:
 1. Non-shrink, non-metallic, minimum yield strength of 7,000 psi (48 MPa) at 28 days.
- E. Bearing Pads: High density plastic, Vulcanized elastomeric compound molded to size, Neoprene (Chloroprene), or Tetrafluoroethylene(TFE); Shore A Durometer 25; 1/8 inch (3 mm) thick, smooth both sides.
- F. Bolts, Nuts and Washers: High strength steel type recommended for structural steel joints.
- G. Prime Paint: Zinc rich alkyd type.

2.08 FABRICATION

- A. Conform to fabrication procedures specified in PCI MNL-116.
- B. Maintain plant records and quality control program during production of precast members. Make records available upon request.
- C. Ensure reinforcing steel, anchors, inserts, plates, angles, and other cast-in items are embedded and located as indicated on Drawings.
- D. Provide required openings with a dimension larger than 10 inches (250 mm) and embed accessories provided under other sections of the specifications, at indicated locations.

2.09 FINISHES

- A. Ensure exposed-to-view finish surfaces of precast concrete members are uniform in color and appearance.
- B. Cure members under identical conditions to develop required concrete quality, and minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
- C. Finish members to PCI MNL-116 Finish B grade.
- D. Plant Finish: Normal plant finish: Surface may contain small surface holes, less than 1/4-inch (6mm), caused by air bubbles, minor chips or spalling at edges or ends, without major discoloration.
- E. Exposed-to-View Finish: Grind edges and remove fins and protrusions.
 - 1. Exterior Faces: Normal plant bed finish.
 - 2. Interior Faces: Light trowel finish.
 - 3. Edges: Sack Rubbed finish.

2.10 FABRICATION TOLERANCES

- A. Conform to fabrication tolerances specified in PCI MNL-135 .

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and field measurements are as shown on Drawings.

3.02 PREPARATION

- A. Prepare support equipment for the erection procedure, temporary bracing, and induced loads during erection.

3.03 ERECTION

- A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
- B. Align and maintain uniform horizontal and vertical joints, as erection progresses.
- C. Maintain temporary bracing in place until final support is provided. Protect members from staining.
- D. Provide temporary lateral support to prevent bowing, twisting, or warping of members.
- E. Install bearing pads.
- F. Grout base of wall panels.
- G. Secure units in place. Perform welding in accordance with AWS D1.1.

3.04 TOLERANCES

- A. Erect members level and plumb within allowable tolerances.
- B. Conform to PCI MNL-135 for erection tolerances.
- C. When members cannot be adjusted to conform to design or tolerance criteria, cease work and advise Architect. Execute modifications as directed.

3.05 PROTECTION

- A. Protect members from damage caused by field welding or erection operations.

3.06 CLEANING

- A. Clean weld marks, dirt, or blemishes from surface of exposed members.

3.07 SCHEDULES

END OF SECTION

SECTION 05 5000 - METAL FABRICATIONS - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items.

1.02 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing: Steel framing for ladders.
- B. Section 05 2100- Steel Joist Framing: Joists and Joist Girders.
- C. Section 05 3100 - Steel Decking: Metal Decking.

1.03 REFERENCE STANDARDS

- A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2008.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength; 2012.
- E. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2010.
- F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010a.
- G. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2007.
- H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2012.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.
- J. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).
- K. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A500, Grade B cold-formed structural tubing.
- C. Plates: ASTM A36.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, plain.

- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

- A. Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; prime paint finish.
- B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

2.04 FINISHES - STEEL

- A. Prime paint all steel items unless noted otherwise on the drawings.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.

END OF SECTION

SECTION 07 5400 - THERMOPLASTIC MEMBRANE ROOFING - R1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mechanically attached system with thermoplastic roofing membrane.
- B. Adhered system with thermoplastic roofing membrane.
- C. Insulation, flat.
- D. Flashings.
- E. Roofing cant strips.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.
- B. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashings, reglets, .
- C. Section 07 7200 - Roof Accessories: Roof-mounted units; prefabricated curbs.
- D. Section 08 6223 - Tublar Skylights.

1.03 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2010.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2012.
- C. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing; 2011a.
- D. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011.
- E. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation; 2007.
- F. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association; Fifth Edition, with interim updates.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
- C. Specimen Warranty: For approval.
- D. Shop Drawings: Indicate joint or termination detail conditions and conditions of interface with other materials.
- E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section:
 - 1. With minimum 5 years documented experience.
 - 2. Approved by membrane manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- B. Store products in weather protected environment, clear of ground and moisture.
- C. Protect foam insulation from direct exposure to sunlight.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 - 1. Warranty Term: 15 years.
 - 2. For repair and replacement include costs of both material and labor in warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Thermoplastic Polyolefin Membrane Materials:
 - 1. Carlisle Roofing Systems, Inc; Sure-Weld TPO: www.carlisle-syntec.com.
 - 2. Firestone Building Products, LLC: www.firestonebpco.com.
 - 3. GAF; EverGuard TPO: www.gaf.com.
 - 4. GenFlex Roofing Systems, LLC: www.genflex.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation:
 - 1. Atlas Roofing Corporation: www.atlasroofing.com.
 - 2. Carlisle SynTec: www.carlisle-syntec.com.
 - 3. GAF; EnergyGuard PolyIso Insulation: www.gaf.com.
 - 4. Owens Corning Corp: www.owenscorning.com.
 - 5. Dow Chemical Co; www.dow.com.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ROOFING - UNBALLASTED APPLICATIONS

- A. Thermoplastic Membrane Roofing: One ply membrane, fully adhered, over insulation.
- B. Roofing Assembly Requirements:
 - 1. Solar Reflectance Index (SRI): 78, minimum, calculated in accordance with ASTM E1980.
 - a. Field applied coating may not be used to achieve specified SRI.
 - 2. Factory Mutual Classification: Class I and windstorm resistance of I-90, in accordance with FM DS 1-28.
 - 3. Insulation Thermal Value (R), minimum: R20 (U-0.048); provide insulation of thickness required.
- C. Acceptable Insulation Types - Constant Thickness Application:

1. Minimum 2 layers of polyisocyanurate board.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Membrane:

1. Material: Thermoplastic polyolefin (TPO) complying with ASTM D6878.
2. Reinforcing: Internal fabric.
3. Thickness: 0.045 inch (1.1 mm), minimum.
4. Sheet Width: Factory fabricated into largest sheets possible.
5. Solar Reflectance: .95, minimum, initial, and 0.65, minimum, 3-year, certified by Cool Roof Rating Council.
6. Color: White.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Membrane Fasteners: As recommended and approved by membrane manufacturer.

1. Disc Washers and Screws: as recommended by manufacturer.

D. Flexible Flashing Material: Same material as membrane.

2.04 INSULATION

A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289, Type II, Class 1, cellulose felt or glass fiber mat both faces; Grade 1 and with the following characteristics:

1. Compressive Strength: 16 psi (110 kPa)
2. Board Size: 48 x 96 inch (1220 x 2440 mm).
3. Board Thickness: 3.5 inch (88.9 mm); use 2-inch and 1-1/2-inch layers.
4. Thermal Resistance: R-value of R20.
5. Board Edges: Square.

2.05 ACCESSORIES

A. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.

B. Membrane Adhesive: As recommended by membrane manufacturer.

C. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

D. Insulation Adhesive: As recommended by insulation manufacturer.

E. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

F. Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

- F. Coordinate the work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

3.02 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips, nailing strips, and reglets are in place.

3.03 INSULATION - UNDER MEMBRANE

- A. Attachment of Insulation:
 - 1. Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.
 - 2. Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.
- B. Lay subsequent layers of insulation with joints staggered minimum 6 inch (150 mm) from joints of preceding layer.
- C. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- E. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches (450 mm).
- F. Do not apply more insulation than can be covered with membrane in same day.

3.04 MEMBRANE APPLICATION

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Fully Adhered Application: Apply adhesive to substrate at rate of ____ gal/square (____ L/sq m). Fully embed membrane in adhesive except in areas directly over or within 3 inches (75 mm) of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches (75 mm). Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:
 - 1. Extend membrane over cant strips and up a minimum of 8 inches (203 mm) onto vertical surfaces.
 - 2. Fully adhere flexible flashing over membrane and up to nailing strips.
 - 3. Secure flashing to nailing strips at 4 inches (100 mm) on center.
 - 4. Insert flashing into reglets and secure.
- F. Around roof penetrations, seal flanges and flashings with flexible flashing.
- G. Coordinate installation of roof drains and gutters, edge trimmings and related flashings.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field quality control and inspection.
- B. Require site attendance of roofing and insulation material manufacturers daily during installation of the Work.

3.06 CLEANING

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

3.07 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 31 1000 - SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Sequencing and staging requirements.
- C. Section 01 5713 - Temporary Erosion and Sediment Control.
- D. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- E. Section 31 2200 - Grading: Topsoil removal.
- F. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- G. Section 31 2323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 QUALITY ASSURANCE

- A. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner.
- B. Comply with requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 AREA INCLUDED:

- A. All streets, parking areas, building pads, and any other areas as indicated on the Drawings.

3.02 PROCEDURES

- A. Clearing and grubbing: The entire area within the limit lines described above shall be cleared and grubbed. Remove all vegetation, trees, brush, stumps, etc., from the area. All debris from this operation shall be burned if allowed by local regulations or shall otherwise be disposed of off the Owner's property.
- B. Selective clearing 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 trees to be left. All debris from this operation shall be burned if allowed by local regulations or shall otherwise be disposed of off the Owner's property. Grubbing will not be required in areas designated for selective clearing.
- C. Removal of trees and shrubs: All trees to be removed shall be felled in such a manner as to avoid injury to remaining trees and to other features nor proposed for removal. Trees shall be cut up and the trunks, limbs, and other debris shall be removed from the site. Undesirable shrubs and small trees shall be selectively removed as directed.
- D. Stumps and roots: All stumps and roots larger than 2" in diameter shall be completely removed by grubbing except in areas of building site, parking areas and drives, they may be cut off not less than 18" below any subgrade. The area of operation then shall be cleared of resulting

debris and matted roots, weeds, and other extraneous matter and such be hauled away from the site. Generally, all material that cannot be compacted to 90% maximum density in lawn areas and 95% of maximum density elsewhere shall be removed.

- E. Erosion Control: Construct and maintain erosion control as shown on the Drawings and in accordance with Section 01 5713 - Temporary Erosion and Sedimentation Control.

3.03 SITE CLEARING

- A. Comply with other requirements specified in Section 01 7000.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.04 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.05 VEGETATION

- A. Do not remove or damage vegetation beyond the limits indicated on drawings.
- B. Install fences to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits, (limits of disturbance).
 - 2. Silt fencing may serve this purpose.
- C. Vegetation Removed: Do not burn, bury, landfill, or leave on site.
- D. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.06 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 2200 - GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal and storage of topsoil.
- B. Rough grading the site for site structures, building pads, and stormwater conveyance.

1.02 RELATED REQUIREMENTS

- A. Document 00 3100 - Available Project Information: Geotechnical Exploration for Colleton County Shell Building II prepared by S&ME, Inc. and dated September 21, 2012.
- B. Section 31 1000 - Site Clearing.
- C. Section 31 2316 - Excavation.
- D. Section 31 2316.13 - Trenching: Trenching and backfilling for utilities.
- E. Section 31 2323 - Fill: Filling and compaction.
- F. Section 32 9219 - Seeding: Finish ground cover.

1.03 DEFINITIONS

- A. Open areas: Open areas shall be those areas that do not include building sites, paved areas, street right-of-way and parking areas.
- B. Maximum density: Maximum weight in pounds per cubic foot of a specific material.
- C. Optimum moisture: Percentage of water in a specific material at maximum density.
- D. Muck: Materials unsuitable for foundation because of organic content, saturation to the extent that it is somewhat fluid and must be removed by dragline, dredge or other special equipment, are designated as muck.
- E. Unsuitable material: Unsuitable material is defined as earth material unsatisfactory for its intended use and as classified by the soils technician. In addition to organic matter, sod, muck, roots and rubbish, highly plastic clay soils of the CH and MH descriptions, and organic soils of the OL and OH descriptions, as defined in the Unified Soil Classification System shall be considered as unsuitable material.
- F. Suitable material: Where the term suitable material is used in specification sections pertaining to earthwork, it means earth or materials designated as being suitable for their intended use by soils technicians or the Engineer. Suitable material shall be designated as meeting the requirements of the Unified Soil Classification System types SW, GW, GC, SC, SM, ML, CL or as designated in these specifications.
- G. Select material: Select material is defined as granular material to be used where indicated on the drawings or where specified herein consisting of soils conforming to the Unified Soil Classification types SW, SM, GW or GM or as otherwise approved by the Engineer as select fill. Select material shall contain no stones or rubble larger than 1-1/2" in diameter.
- H. Crushed stone (gravel): Crushed stone shall be No. 57 aggregate or equal conforming to ASTM C-33.
- I. Excavation: Excavation is defined as unclassified excavation of every description regardless of materials encountered.
- J. Unclassified Excavation: Unclassified excavation consists of the excavation of and proper disposal of any type of material that is encountered during the progress of the work.

1.04 SUBMITTALS

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

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with Colleton County, and South Carolina Department of Health and Environmental Control standards.
- B. A testing laboratory retained by the Owner will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts of fill material and shall keep the laboratory informed of his progress. The cost of the initial tests shall be paid for by the Owner. Subsequent tests required as a result of improper compaction shall be paid for by the Contractor.

1.06 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01 6000 - Product Requirements

1.07 JOB CONDITIONS

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

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: See Section 31 2323.
- B. Soil Materials:
 - 1. Soil material used as fill, backfill, subgrade for structures or pavements, embankments, or site grading shall consist of suitable material as found available on site until such supply of on-site material is depleted.
 - a. Provide suitable material free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than 15% of the rocks or lumps larger than 2-1/2" in their greatest dimension.
 - b. Do not permit rocks having a dimension greater than 1" in the upper 6" of fill or embankment.
 - 2. Should the quantity of suitable on-site material be insufficient to complete the work, suitable borrow material as approved by the Engineer shall be provided by the Contractor in accordance with allowances set for the project. See Section 01 2100.
 - 3. 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.
- C. Other Fill Materials: See Section 31 2323.
- D. Weed Killer

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

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- E. Erosion and Sediment Control: All necessary erosion and sediment control measures should be in place before grading operations begin.
- F. Clearing and grubbing: Clear and grub areas to be graded prior to commencement of the grading operations.
- G. Where so directed by the Owner, protect and leave standing designated desirable trees.
- H. Complete any demolition and/or removal work as may be required prior to grading operations.
- I. Dispose of all clearing, grubbing and demolition debris and other deleterious material off the project site. Vegetation, roots, brush, rubbish, stumps, etc. may be burned on-site where permitted by local authorities and regulations and approved by the Engineer.
- J. Topsoil: Strip topsoil to a depth of 4" to 12" (See Boring Logs as provided within Geotechnical Services, See Section 00 3100 - Available Project Information) without contamination from the subsoil and stockpile topsoil separate from other excavated materials.
 1. Transport and deposit topsoil in storage piles convenient to areas that are to receive topsoil or in other locations as indicated or approved by the Engineer.
 2. Deposit topsoil in areas that are already graded and will not be disturbed by on-going construction.
 3. Dispose of unsuitable or unusable stripped material off-site or as otherwise directed by the Engineer.
- K. Sampling and preliminary testing:
 1. Prior to beginning the grading operations, the Contractor shall submit to the Engineer his proposed sequence of excavation operations.
 2. Based upon the sequence of excavation, samples of the fill materials will be obtained as excavation proceeds and tested for grain size permeability and moisture density relationship using the Standard Proctor Method (ASTM D698, Method A).
- L. Allow sufficient time for completion of laboratory tests before any fill operations begin, using the soils being tested.

3.03 GENERAL PROCEDURES

- A. Existing utilities:
 - 1. Unless shown to be removed, locate and protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.
 - 2. If active utility lines are encountered and are not shown on the drawings or otherwise made known to the Contractor, promptly notify the Engineer and take necessary steps to assure that service is not interrupted.
 - 3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
 - 4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.
 - 5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.
- B. Protection of persons and property:
 - 1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.
 - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 - 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.
- C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- D. Maintain access to adjacent areas at all times.
- E. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

3.04 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- C. When excavating through roots, perform work by hand and cut roots with sharp axe.
- D. See Section 31 2323 for filling procedures.
- E. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.
- F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.05 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpile subsoil to be re-used on site; remove remainder from site.

3.06 EXCAVATING (CUTS)

- A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades and elevations indicated and specified herein.
- B. Suitable excavated materials:

1. Use all suitable materials removed from the excavation as far as practicable in the formation of the embankments, subgrades, shoulders, building sites and other places as directed.
 2. Surplus suitable materials from excavations shall be wasted on the site as indicated, spreading and leveling as directed.
- C. Unsuitable excavated material: Remove from the site and dispose of all unsuitable material unless otherwise approved by the Engineer.

3.07 FILLING AND BACKFILLING

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

4. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the Engineer.
- G. Compaction requirements:
 1. Compact soils to not less than the following percentages of maximum dry density as determined in accordance with ASTM D698, Method A (Standard Proctor).
 2. Fill beneath structures and beneath an area extending 10' beyond the limits of the foundation:
 - a. Top 12" of subgrade 100%
 - b. All other fill material 98%
 3. Fill beneath roadway:
 - a. Top 12" of subgrade 100%
 - b. All other fill material 95%
 4. Embankments:
 - a. Top 12" of subgrade 98%
 - b. All other fill material 95%
 5. Fill beneath walkways:
 - a. Top 12" of subgrade 95%
 - b. All other fill material 90%
 6. Lawn and unpaved open areas:
 - a. All other fill material 90%

3.08 FINISH GRADING

- A. Before Finish Grading:
 1. Verify building and trench backfilling have been inspected.
 2. Verify subgrade has been contoured and compacted.
 3. Verify subgrade has been inspected by geotechnical engineer.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch (13 mm) in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches (75 mm).
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches (75 mm).
- E. Place topsoil in areas where seeding are indicated.
- F. Place topsoil where required to level finish grade.
- G. Place topsoil to the following compacted thicknesses:
 1. Areas to be Seeded with Grass: 6 inches (150 mm).
- H. Place topsoil during dry weather.
- I. Remove roots, weeds, rocks, and foreign material while spreading.
- J. Near plants spread topsoil manually to prevent damage.
- K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- L. Lightly compact placed topsoil.

3.09 PLACING TOPSOIL

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

3.10 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot (30 mm) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 1/2 inch (13 mm).

3.11 FIELD QUALITY CONTROL

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

- 3.12 Unstable, soft or otherwise unsuitable materials revealed by the proofrolling shall be removed and replaced with satisfactory materials, compacted as specified herein.

3.13 MAINTENANCE

- A. Protection of newly graded areas:
 - 1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.
 - 2. Repair and re-establish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

3.14 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.15 FIELD QUALITY CONTROL

- A. See Section 31 2323 for compaction density testing.

3.16 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade area to prevent standing water after stockpile is removed.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 31 2316 - EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for building foundations.
- B. Excavating for slabs-on-grade, paving, site structures, landscaping, and as otherwise specified.
- C. Trenching for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Document 00 3100 - Available Project Information: Geotechnical Exploration for Colleton County Shell Building II prepared by S&ME, Inc. and dated September 21, 2012.
- B. Section 01 5713 - Temporary Erosion and Sedimentation Control: Slope protection and erosion control.
- C. Section 01 7000 - Execution and Closeout Requirements: General requirements for dewatering of excavations and water control.
- D. Section 31 2200 - Grading: Grading.
- E. Section 31 2323 - Fill: Fill materials, filling, and compacting.

1.03 PROJECT CONDITIONS

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 2200 for additional requirements.
- C. Notify Palmetto Utility Protection Service 811 or (888) 721-7877 (1-800-922-0983) to locate utilities.
- D. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.03 EXCAVATING

- A. Underpin adjacent structures that could be damaged by excavating work.
- B. Excavate to accommodate construction operations.
- C. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- D. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Cut utility trenches wide enough to allow inspection of installed utilities.
- G. Hand trim excavations. Remove loose matter.
- H. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

- I. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- J. Remove excavated material that is unsuitable for re-use from site.
- K. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2323.
- L. Remove excess excavated material from site.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

3.05 PROTECTION

- A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

SECTION 31 2323 - FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building perimeter and site structure backfilling to subgrade elevations.
- B. Filling, backfilling, and compacting for filling existing holes and pits.
- C. Backfilling and compacting for utilities outside the building to utility main connections.
- D. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.
- E. Consolidation and compaction as scheduled.

1.02 RELATED REQUIREMENTS

- A. Document 00 3100 - Available Project Information: Geotechnical Exploration for Colleton County Shell Building II prepared by S&ME, Inc. and dated September 21, 2012.
- B. Section 01 5713 - Temporary Erosion and Sedimentation Control: Slope protection and erosion control.
- C. Section 03 3000 - Cast-in-Place Concrete.
- D. Section 31 2200 - Grading: Site grading.
- E. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.

1.04 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 2010.
- B. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
- C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012.
- D. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
- E. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
- F. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- C. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site, as quantities and quality of existing material dictates. Supplement with off site borrow. Fill material to be approved by Engineer.
 1. Graded.
 2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), and debris.
- B. Granular Fill - Gravel - Fill Type #57: Pit run washed stone; free of shale, clay, friable material and debris.
 1. Graded in accordance with ASTM D2487 Group Symbol GW.
- C. Topsoil - Fill Type Topsoil: On-soil as available and supplement with Friable loam; imported borrow.
 1. Select.
 2. Graded.
 3. Free of roots, rocks larger than 1/2 inch (12 mm), subsoil, debris, large weeds and foreign matter.
 4. Acidity range (pH) of 5.5 to 7.5.
 5. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.
 6. Conforming to ASTM D2487 Group Symbol OH.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 2200 for additional requirements.
- D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- E. Verify structural ability of unsupported walls to support imposed loads by the fill.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches (150 mm) to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.

- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches (203 mm) loose depth.
- F. Slope grade away from building minimum 2 inches in 10 ft (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- G. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 95 percent of maximum dry density.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.
- H. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving and similar construction: 100 percent of maximum modified proctor dry density.
 - 2. At walkways: 95 percent of maximum dry density.
 - 3. At other locations under lawn or unpaved areas: 95 percent of maximum dry density.
- I. Reshape and re-compact fills subjected to vehicular traffic.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.

3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch (25 mm) from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch (25 mm) from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 1557 ("modified Proctor").
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- D. Proof roll compacted fill at surfaces that will be under slabs-on-grade and paving.

3.07 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 3116 - TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Chemical soil treatment.

1.02 REFERENCE STANDARDS

- A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; United States Code; 1947 (Revised 2001).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
- C. Test Reports: Indicate regulatory agency approval reports when required.
- D. Manufacturer's Application Instructions: Indicate caution requirements.
- E. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.
- F. Certificate of compliance from authority having jurisdiction indicating approval of toxicants.
- G. Record moisture content of soil before application.
- H. Maintenance Data: Indicate re-treatment schedule.
- I. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing this type of work and:
 - 1. Having minimum of 2 years documented experience.
 - 2. Approved by manufacturer of treatment materials.
 - 3. Licensed in South Carolina.

1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year installer's warranty against damage to building caused by termites.
 - 1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat. Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Owner, in the form of a standard yearly (or other period) continuing service agreement starting on the date of Substantial Completion. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Manufacturers:
 - 1. Bayer Environmental Science Corp: www.backedbybayer.com/pest-management.
 - 2. FMC Professional Solutions: www.fmcprosolutions.com.
 - 3. Syngenta Professional Products: www.syngentaprofessionalproducts.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Toxicant Chemical: EPA approved; synthetically color dyed to permit visual identification of treated soil.
- C. Diluent: Recommended by toxicant manufacturer.

2.02 MIXES

- A. Mix toxicant to manufacturer's instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- B. Verify final grading is complete.

3.02 APPLICATION

- A. Comply with requirements of U.S. EPA and applicable state and local codes.
- B. Apply toxicant in accordance with manufacturer's instructions.
- C. Apply toxicant at following locations:
 - 1. Under Slabs-on-Grade.
 - 2. At Both Sides of Foundation Surface.
- D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.
- E. At foundation walls, apply toxicant immediately after finish grading work outside foundations.
- F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.
- G. Re-treat disturbed treated soil with same toxicant as original treatment.
- H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION

- A. Do not permit soil grading over treated work.

END OF SECTION

SECTION 31 3700 - RIPRAP

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Riprap .
- B. Geotextile Fabric

1.02 RELATED REQUIREMENTS

- A. Section 31 2323 - Fill: Aggregate requirements.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with State of South Carolina Highways standard, and as indicated on the drawings.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Stone for Hand Placed Riprap
 - 1. Provide in accordance with State of South Carolina Highways standards
 - 2. Provide riprap which:
 - a. Has thickness of 12" minimum.
 - b. Weighs as minimum of 25 lbs. to a maximum of 150 lbs.
 - c. Has at least 60% of stone weighing more than 60 lbs.
- B. Geotextile Fabric:
 - 1. Provide fabric woven from isolactic polypropylene monofilament, non-biodegradeable, resistant to chemicals and treated to withstand exposure to ultraviolet degradation.
 - 2. Fabric shall have to following properties:

a.	Grab Tensile Strength	315 lb.
b.	Grab Elongation	15%
c.	Mullen Burst Strength	600 psi
d.	Trapezoid Tear Strength	120 lb.
e.	Apparent Opening Size (AOS)	.425 mm - 40 (U.S. Sieve)
f.	Permittivity	0.05 Sec-1
g.	Flow Rate	4.0 gal/min/ft ²
h.	Thickness	25 mils
i.	Weight	6.0 oz./sq. yd.
j.	Ultraviolet Stability	70% @ 500 hours
 - 3. Provide Mirafi 600X or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not place riprap over frozen or spongy subgrade surfaces.

3.02 PLACEMENT

- A. Place geotextile fabric over substrate, lap edges and ends.
 - 1. Install filter fabric, lapping sides 12".
 - 2. Being placing in a trench at least 2' below the toe of the slope.
 - 3. Firmly imbed against the slope and the adjoining piece with the sides in contact and with broken joints.
- B. Place riprap at culvert pipe ends and as indicated on drawings.
 - 1. Where thickness is not shown on plans, it shall be 12".
 - 2. The slope upon which this riprap is to be placed shall conform with the cross section shown on the plans or as directed by the Engineer.
 - 3. Properly compact depressions that may be filled in trimming and shaping the slope.
 - 4. Fill the spaces between the larger pieces with spalls of suitable size, thoroughly ram into place.
- C. The finished surface shall present an even, tight surface true to line, grade and section.

END OF SECTION

SECTION 32 1100 - REMOVING AND REPLACING PAVEMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Removal and replacement of existing pavements for installation of utility lines, as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.
 - 2. Section 31 2316 - Excavation.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods for proper performance of the work of this Section.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01 3000 - Administrative Requirements.

1.04 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01 6000 - Product Requirements.

1.05 WARRANTY

- A. All remove and replace pavement work within the South Carolina Department of Transportation (SCDOT) rights-of-way shall be warranted for two years beginning on the date of acceptance by the SCDOT.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Comply with Section 32 1313, using strength specified herein.

2.02 ASPHALTIC CONCRETE

- A. Comply with Section 32 1216
- B. All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.

2.03 AGGREGATE BASE COURSE WITH PRIME

- A. Comply with Section 32 1123
- B. All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.

PART 3 - EXECUTION

3.01 GENERAL

- A. Remove to neat lines and dispose of as directed.
- B. Replace with bases and pavements similar to type removed, unless otherwise indicated.

3.02 CUTTING

- A. Concrete pavement or base:

1. Cut on straight and true lines, to a minimum depth of 2", using powered concrete saw.
 2. Shear off remaining depth with pneumatic tools.
- B. Concrete sidewalks shall be removed back to the nearest joint on each side of the crossing.
- C. Asphaltic concrete pavements: Cut to straight and true lines with powered concrete saw.

3.03 REPLACEMENT

- A. Concrete pavements:
1. Use 4000 psi concrete.
 2. Replace to 6" below existing slab and undercut each edge 6" to form shelf.
 3. Finish surface to match existing surface.
- B. Concrete sidewalks:
1. Replace with 4000 psi concrete.
 2. Depth shall be equal to existing section removed, but not less than 4".
 3. Finish surface to match existing sidewalk.
- C. Flexible pavements (Ditch Line) – Secondary and Primary Roads:
1. Compact subgrade thoroughly.
 2. Undercut each edge 6" to form a shelf.
 3. Place 8" 2500 psi concrete leaving surface rough and depressed 2".
 4. Top with 2" of asphaltic concrete.
- D. Flexible pavements (Ditch Line) - Driveways:
1. Compact subgrade thoroughly.
 2. Place 8" deep aggregate base course with prime.
 3. Top with 2" of asphaltic concrete.
- E. Flexible pavements (Resurfacing):
1. In some instances where utilities are installed within existing pavements, resurfacing of the entire width of the original pavement will be required.
 2. Replace pavement in ditch line as specified above.
 3. Prime and resurface with 2" of asphaltic concrete.
 4. Taper resurfacing to existing pavement evenly for a distance of 50 feet beyond repaired area.
 5. Comply with Section 02513.

3.04 MEASUREMENT AND PAYMENT

- A. Ditch line replacements:
1. Length will be measured along center line of the utility from center to center of manholes or fittings.
 2. No measurement of width will be made.
 3. Payment will be made at the unit price per linear foot stated in the Bid Form.
- B. Resurfacing:
1. Length will be measured from end to end of the resurfaced area.
 2. Width will be measured as the average width.
 3. Area will be determined from length and width measurements.
 4. Payment will be made at the unit price per square yard as stated in the Bid Form.

END OF SECTION

SECTION 32 1123 - AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Provide crushed stone base (with prime) constructed on the compacted subgrade where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200 - Grading: Preparation of site for base course.
- B. Section 31 2323 - Fill: Compacted fill under base course.
- C. Section 32 1216 - Asphalt Paving: finish asphalt courses.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Certificates, signed by materials producer, stating that materials meet the specified requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 01 6000 - Product Requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.
- B. Coarse Aggregate: All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.
- C. Blended Aggregate (Composite Mixture): All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.
- D. Fine Aggregate: All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.
- E. Prime Asphalt: All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications For Highway Construction," latest edition with revisions and supplements.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of aggregate materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 PREPARATION OF SUBGRADE

- A. Proof roll all areas to receive crushed stone paving.
 - 1. Make not less than three passes over the full area, using a 35 to 50 ton rubber tired roller.
- B. Remove all soft, unstable or unsuitable material that will not compact readily.
 - 1. Remove to full depth of unsuitable material, or to a depth of 30", whichever is less.
 - 2. Replace with satisfactory materials.
- C. Fill all holes, ruts or depressions which develop in the subgrade with approved on-site material, bringing subgrade to indicated line and grades.
- D. Compact subgrade using suitable construction procedures to provide not less than 95% Standard Proctor Maximum Dry Density.
- E. Seal roll the subgrade surface with a steel wheel roller, sealing the surface against excessive water infiltration.

3.04 PLACING PRIME COAT

- A. Allow base course to season sufficiently to permit uniform penetration.
- B. Do not apply to wet surfaces or when the temperature is below 60°F in the shade and falling, or below 55°F in the shade and rising.
- C. Clean surfaces of all dust, dirt, clay, etc. using mechanical brooms, etc.
- D. Apply prime material, using pneumatic mounted distributors, at a rate of 0.25 to 0.30 gallon per square yard.
- E. Permit no traffic on primed surfaces until bituminous material has penetrated and dried sufficiently that it does not pick up under traffic.

3.05 PLACING AND MIXING OF PAVING MATERIAL

- A. Place aggregates using spreader boxes or other approved spreaders uniformly on one operation.
- B. Take care to avoid segregation of the fine from the coarse aggregate during handling, spreading or shaping operations.
- C. Mix, while at proper moisture, with motor grader or other equipment and maintain to required section and grade until thoroughly compacted.

3.06 ROLLING AND COMPACTING

- A. Perform using 3-wheel steel wheel roller weighing not less than 10 tons, tandem roller weighing at least 8 tons, or other rollers approved by the Engineer.
- B. Start rolling at edges and proceed toward the center, continue rolling until aggregates are firmly keyed or set.
- C. When initial compaction is completed, should voids remain, place fine aggregates on the surface in an amount only sufficient to fill the voids.
- D. Broom, wet and roll until coarse aggregate is set, bonded and thoroughly compacted for full width and depth.

3.07 TOLERANCES

- A. Flatness: Maximum variation of 3/8 inch (9.5 mm) measured with 10 foot (3 m) straight edge.
 - 1. Measurement to be parallel to the center line of the roadway not more than 1/2 inch (12.8 mm) from a template conforming to the cross sections shown on the plans.
- B. Scheduled Compacted Thickness: Within 1/2 inch (12.8 mm).
 - 1. Depth measurements will be made by digging through the base at intervals no closer than 250', nor greater than 500' apart.
 - 2. Where thickness is less than depth specified minus 1/2", it shall be corrected as directed by the Engineer.
- C. Deviations: Correct by removing materials, replacing with new materials, and reworking or recompact as required.

END OF SECTION

SECTION 32 1216 - ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single course bituminous concrete paving.
- B. Double course bituminous concrete paving.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200 - Grading: Preparation of site for paving and base.
- B. Section 31 2323 - Fill: Compacted subgrade for paving.
- C. Section 32 1123 - Aggregate Base Courses: Aggregate base course.
- D. Section 32 1713 - Parking Bumpers: Concrete bumpers.
- E. Section 32 1723.13 - Painted Pavement Markings: Pavement Striping and Markings

1.03 REFERENCE STANDARDS

- A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types; The Asphalt Institute; 1994.
- B. AI MS-19 - A Basic Asphalt Emulsion Manual; The Asphalt Institute; Third Edition.
- C. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction; 2009a.
- D. SCDOT - South Carolina Department of Transportation Standard Specifications, latest edition.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with SCDOT standards, latest edition.
- B. Mixing Plant: Conform to SCDOT standards, latest edition.
- C. Obtain materials from same source throughout.

1.05 SUBMITTALS

- A. Comply with pertinent provisions of Section 01 3000 - Administrative Requirements.
- B. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Certificates, signed by the materials producer and the asphalt paving Subcontractor, stating that materials meet or exceed the specified requirements.

1.06 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01 6000 - Product Requirements.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for paving work on public property.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: All materials and products used shall comply with pertinent sections of the South Carolina Department of Transportation's (SCDOT) "Standard Specifications for Highway Construction" and latest revisions and supplements.

- B. Asphaltic Concrete Mixture (Binder Course): Materials and composition of mixture shall comply with Section 402 of the SCDOT's "Standard Specifications for Highway Construction" and latest revisions and supplements.
 - 1. Provide hot plant mixed asphaltic concrete paving materials.
 - a. Temperature leaving the plant: 290°F minimum, 320°F maximum.
 - b. Temperature at time of placing: 280°F minimum.
- C. Asphaltic Concrete Mixture (Surface Course): Materials and composition of mixture shall comply with Section 403 of the SCDOT's "Standard Specifications for Highway Construction" and latest revisions and supplements.
 - 1. Provide hot plant mixed asphaltic concrete paving materials.
 - a. Temperature leaving the plant: 290°F minimum, 320°F maximum.
 - b. Temperature at time of placing: 280°F minimum.
- D. Equipment: Comply with requirements of Section 401 of SCDOT's "Standard Specifications" and latest revisions and supplements.
- E. Tack Coat: Materials shall comply with Section 403 of the SCDOT's "Standard Specifications for Highway Construction" and latest revisions and supplements.

2.02 SOURCE QUALITY CONTROL

- A. Test mix design and samples in accordance with SCDOT standards, latest edition.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
 - 1. Sweep primed surfaces if needed.
 - 2. Adjust frames and covers if needed.

3.03 WEATHER RESTRICTIONS

- A. Do not apply asphalt mixtures to a wet or frozen surface or when air temperature is below 40°F in the shade and falling, or below 35°F in the shade and rising.

3.04 SPREADING AND FINISHING

- A. On arrival at point of use, dump directly into mechanical spreader.
- B. Immediately spread and strike off true to the line, grade and cross section indicated, to such loose depth that when work is completed, the indicated thickness or weight per square yard will be secured.
- C. Correct irregularities while the mixture is still hot.
- D. At locations not readily accessible to mechanical spreaders, acceptable hand spreading methods may be used.
- E. Finished surfaces placed adjacent to curbs, gutters, manholes, etc., shall be approximately 1/4" above the edges of these structures.

3.05 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions, and in accordance with South Carolina Highways standards, latest edition.
- B. Apply tack coat to contact surfaces of curbs, gutters, and in accordance with South Carolina Highways standards, latest edition.
- C. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.06 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with State of South Carolina Highways standards, latest edition.
- B. Place asphalt within 24 hours of applying primer or tack coat, and in accordance with South Carolina Highways standards, latest edition.
- C. Place to compacted thickness as indicated on the construction drawings.

3.07 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Place asphalt binder course within 24 hours of applying primer or tack coat.
- B. Place to compacted thickness as indicated on the construction drawings.
- C. Place wearing course within two hours of placing and compacting binder course.
- D. Place to compacted thickness as indicated on the construction drawings.

3.08 COMPACTION

- A. Perform initial rolling with 3-wheel steel roller or a steel wheel 2-axle tandem roller.
- B. Follow initial rolling with at least four complete coverages by a pneumatic tired roller.
- C. Complete rolling with steel wheel 2-axle tandem roller.
- D. Rolling shall start longitudinally at the sides and proceed gradually toward the center of the pavement, overlapping on successive trips approximately 1/2 the width of the roller.
- E. Use hand or mechanical tampers in areas not accessible to powered rollers.
- F. Surface mixture after compaction shall be smooth and true to the established crown and grade.
- G. Finished paving smoothness tolerance:
 - 1. Free from birdbaths.
 - 2. No deviations greater than 1/8" in 6'.

3.09 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch (6 mm) measured with 10 foot (3 m) straight edge.
- B. Compacted Thickness: Within 1/4 inch (6 mm) of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/2 inch (12 mm).

3.10 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with SCDOT Standards, latest edition.
- C. Flood Test: Flood the entire asphaltic concrete paved area with water by use of a tank truck or hoses.
 - 1. If a depression is found where water ponds to a depth of more than 1/8" in 6', fill or otherwise correct to provide proper drainage.

2. Feather and smooth the edges of fill so that the joint between fill and original surface is invisible.

3.11 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury 3 days or until surface temperature is less than 140 degrees F (60 degrees C), in accordance with SCDOT standards, latest edition.

END OF SECTION

SECTION 32 1313 - PORTLAND CEMENT CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Portland cement concrete pavement where shown on the Drawings, as specified herein, and as needed for a complete and proper installation. All work shall comply with Section 501 and subsections of the SCDOT's "Standard Specifications for Highway Construction" and latest revisions and supplements.

END OF SECTION

SECTION 32 1314 - CONCRETE CURB AND GUTTER, AND SIDEWALK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide cast-in-place concrete, including formwork, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 03 3000 - Cast-in-Place Concrete.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Reference standards: Comply with the following codes, specifications and standards, except as otherwise shown or specified:
 - 1. American Concrete Institute (ACI) Publications:
 - a. ACI 305 Recommended Practice for Hot Weather Concreting
 - b. ACI 306 Recommended Practice for Cold Weather Concreting
 - 2. American Society for Testing and Materials (ASTM) Publications:
 - a. A 185 Welded Steel Wire Fabric for Concrete Reinforcement
 - b. C 31 Making and Curing Concrete Test Specimens in the Field
 - c. C 33 Concrete Aggregates
 - d. C 39-72 Compressive Strength of Cylindrical Concrete Specimens
 - e. C 94 Ready-Mixed Concrete
 - f. C 150 Portland Cement
 - g. C 260 Air-Entraining Admixtures for Concrete
- C. Testing agency: A testing laboratory will be retained by the Owner to perform material evaluation tests required by these specifications.
- D. Qualifications of contractors performing concrete work: Minimum of two (2) years experience on comparable concrete projects.
- E. Plant qualification: Plant equipment and facilities shall meet all requirements of the Check List for Certification of Ready Mixed Concrete Production Facilities of the National Ready Mixed Concrete Association and ASTM C 94.

1.03 SUBMITTALS

- A. Comply with the pertinent provisions of Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Within 15 calendar days after receiving the Owner's Notice to Proceed, submit proposed mix designs for approval.
 - 1. Proportions shall be determined by means of laboratory tests of concrete made with the cement and aggregate proposed for use.
 - 2. Provide report in detail from an approved testing laboratory showing 7-day and 28-day strengths obtained using materials proposed.
 - 3. Required average strength above specified strength:

- a. Determinations of required average strength above specified strength (f'_c) shall be in accordance with ACI 318 and ACI 301.
- 4. Cost of this work shall be borne by the Contractor.
- C. Manufacturer's data: Submit manufacturer's specification with application instructions for proprietary materials and items, including curing compound, form release agents, admixtures, patching compounds, and others as required by the Engineer.

1.04 PRODUCT HANDLING

- A. Comply with the pertinent provisions of Section 01 6000 - Product Requirements.

PART 2 - PRODUCTS

2.01 FORMS

- A. Use form materials conforming to ACI 347.
- B. Form coatings: Form release coating shall be neat oil with surface wetting agent or chemical release agent which effectively prevents absorption of moisture, prevents bonding with concrete, is non-staining to concrete and leaves the concrete with a paintable surface.
 - 1. On surfaces to receive an applied coating, use a residual free chemical form release agent that is compatible with the applied coating and will not prevent the applied finish from satisfactorily bonding to the concrete.

2.02 SIDEWALK REINFORCEMENT

- A. Fiber reinforcing:
 - 1. Use fiber reinforcing where indicated on the drawings.
 - 2. Provide polypropylene or co-polymer fibers as manufactured by High Tech Fibers, Inc., Fibermesh Company or an approved equal.
 - 3. Where required, use fiber reinforcing at a rate of 2.0 lbs. per cubic yard unless another rate is indicated on the drawings.
- B. Provide welded wire mesh for sidewalk reinforcement in compliance with ASTM A 185.

2.03 PREMOLED JOINT FILLERS

- A. In concrete pavements (exterior) and concrete sidewalks, use self-expanding cork joint fillers complying with ASTM 1752, Type III.

2.04 CONCRETE MATERIALS

- A. Cement: Use portland cement: ASTM C 150, Type I, Type I-P or Type II, low alkali.
- B. Aggregates:
 - 1. Fine aggregate: Conform to ASTM C 33.
 - 2. Coarse aggregate: Conform to ASTM C 33, Size #57.
- C. Water: Clean and potable and free from injurious amounts of deleterious materials.
- D. Admixtures:
 - 1. Air entraining admixture: ASTM C 260.
 - 2. Water reducing, set controlling admixture: Conform to ASTM C 494.
 - a. Type A - water reducing.
 - b. Type D - water reducing and retarding.
 - 3. Do not use admixtures containing calcium chloride.

E. Curing compounds:

1. On all vertical and formed surfaces and construction joints, use a non-residual, non-staining curing compound conforming to ASTM C 309 Type 1 and 1D. Acceptable products are:
 - a. L&M Cure by L&M Construction Chemicals, Inc.
 - b. Horn WB-75 by A.C. Horn Company.
 - c. Sonosil by Sonneborn, Inc.
 - d. Approved equal.

2.05 CONCRETE MIXES

- A. Provide concrete with the compressive strength of 4000 psi for a 28-day strength as minimum:
- B. Entrained air: 4000 psi concrete, 5% \pm 1%.
- C. Slump: 4000 psi concrete, 4" \pm 1".
- D. Production of concrete:
 1. General: Concrete shall be ready mixed and shall be batched, mixed and transported in accordance with ASTM C 94 except as otherwise indicated.
 2. Monitor time and mix proportions by plant delivery slips.
 3. Air-entraining admixtures: Add air-entraining admixture into the mixture as a solution and measure by means of an approved mechanical dispensing device.
 4. Water reducing and retarding admixture: Add water reducing and retarding admixture and measure as recommended by the manufacturer.
 5. Addition of water to the mix upon arrival at the job site shall not exceed that necessary to compensate for a 1" loss in slump, nor shall the design maximum water-cement ratio be exceeded. Water shall not be added to the batch at any later time.
 6. Weather conditions: Control temperature of mix as required by ACI 306 "Cold Weather Concreting" and by ACI 305 "Hot Weather Concreting".

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. Water, mud, organic, and other detrimental material shall be removed from excavations before concrete is deposited.
- C. Notify the Engineer prior to placing concrete and place no concrete until the formwork, reinforcing and embedded items have been inspected by the Engineer.

3.02 FORMWORK

- A. General:
 1. Construct forms in conformance with ACI 347.
 2. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement.
 3. Coat form contact surfaces with approved form coating compound prior to placing reinforcing steel.
- B. Formwork reuse: Reuse only forms that are in good condition and which maintain a uniform surface texture on exposed concrete surfaces.
 1. Apply a light sanding as necessary to obtain a uniform texture.

C. Removal of forms:

1. Do not disturb or remove forms until the concrete has hardened sufficiently to permit form removal with complete safety.
2. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged and that corners are true, sharp and unbroken.
3. Whenever the formwork is removed during the curing period, continue to cure the exposed concrete by one of the methods specified herein.

3.03 PLACING CONCRETE

A. Preparation:

1. Remove foreign matter accumulated in the forms.
2. Rigidly close openings left in the formwork.
3. Wet wood forms sufficiently to tighten up cracks. Wet other material sufficiently to maintain workability of the concrete.
4. Use only clean tools.
5. Provide and maintain sufficient tools and equipment on hand to facilitate uninterrupted placement of the concrete.
6. Before commencing concrete, inspect and complete installation of formwork and wire mesh.

B. Conveying:

1. Transport and handle concrete from the truck to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients to maintain the quality of the concrete.
2. Provide equipment for lifting, dumping, chuting, pumping or conveying the concrete, of such size and design as to ensure a practically continuous flow of concrete at the delivery and without separation of materials.
3. Do not use concrete that is not placed within 1½ hours after water is first introduced into the mix unless the slump is such that it meets the specified limits without the addition of water to the batch.

C. Placing:

1. Deposit concrete as nearly as practicable in its final location so as to avoid separation due to rehandling and flowing.
2. Place concrete at such a manner that concrete upon which fresh concrete is deposited is still plastic.

D. Hot weather placement: Place concrete in hot weather in accordance with ACI 305 "Hot Weather Concreting" and as specified herein.

1. Do not place concrete whose temperature exceeds 100°F.
2. Thoroughly wet forms and reinforcing prior to placement of concrete.
3. Use additional set retarder as necessary to increase set time.
4. Start curing as soon as the concrete is sufficiently hard to permit without damage.

E. Cold weather placement: Place concrete in cold weather in accordance with ACI 306 and as specified herein.

1. Do not place concrete when the atmospheric temperature is below 40°F.
2. Do not add salts, chemicals, or other materials to the concrete mix to lower the freezing point of the concrete.

F. Consolidation:

1. Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators supplemented by hand spading, rodding, or tamping.
 - a. Use vibrators having a 2" head diameter and a minimum frequency of 8000 vibrations per second.
 - b. Provide sufficient number of vibrators to properly consolidate the concrete, keeping up with placement operations.
 - c. Provide at least one spare vibrator on site.
2. Insert and withdraw vibrators at points approximately 18" apart.
3. Do not vibrate forms.
4. Do not use vibrators to transport concrete inside the forms.

3.04 PROTECTION

- A. Protect the surface finish of newly placed concrete from damage by rainwater or construction traffic.
- B. Do not apply design loads to structures until the concrete has obtained the specified strength.

3.05 CURING

- A. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures and mechanical injury.
- B. Curing compound: Apply curing compound immediately after completion of the finish on unformed surfaces and within two hours after removal of forms on formed surfaces.
 1. Spray the entire surface with two coats of liquid curing compound, applying the second coat in the direction of 90° to the first coat.
 2. Apply compound in accordance with the manufacturer's instructions to cover the surface with a uniform film that will seal thoroughly.

3.06 CONCRETE FINISHING

- A. Finish schedule: Unless otherwise indicated on the drawings, finish all concrete surfaces in accordance with the following schedule:
 1. Form finish: Formed surfaces not ordinarily exposed to view, including the underside of slabs not exposed to view.
 2. Broom finish: Exterior, outdoor slabs exposed to view including:
 - a. Outdoor floor slabs and walkways.
 - b. Other floors which may become wet or otherwise require a non-skid surface.
 - c. Sidewalks and concrete pavements.
 3. Edge finish: Exposed edges of slabs not receiving chamfer including:
 - a. Sidewalk edges and joints.
 - b. Pavement edges and joints.
 - c. Other slab edges not chamfered.
- B. Finishing procedures:
 1. Form finish:
 - a. Repair defective concrete.
 - b. Fill depressions deeper than 1/4".
 - c. Fill tie holes.
 - d. Remove fins exceeding 1/8" in height.
 2. Broom finish:
 - a. Float finish as specified herein.
 - b. Provide a scored texture by drawing a broom across the surface.
 3. Edge finish: Tool slab edges and joints with a 1/4" radius edging tool.

3.07 SURFACE REPAIR

- A. Patching mortar:
 - 1. Make a patching mortar consisting of 1 part portland cement to 2-1/2 parts sand by damp loose volume.
 - 2. Mix the mortar using one part acrylic bonding admixture to two parts water.
- B. Surface defects:
 - 1. Remove all defective concrete down to sound solid concrete.
 - 2. Chip edges perpendicular to the concrete surface or slightly undercut, allowing no feathered edges.
 - 3. Dampen surfaces to be patched.
 - 4. Patch defects by filling solidly with repair mortar.
- C. Allow the Engineer to inspect the work before placing the patching mortar.
- D. Repair defective areas greater than 1 sq. ft. or deeper than 1-1/2" as directed by the Engineer using materials approved by the Engineer at no additional expense to the Owner.

3.08 JOINTS

- A. Construction joints:
 - 1. Unless otherwise approved by the Engineer, provide construction joints every ten (10) feet, or as shown on the drawings.
 - 2. Continue all reinforcing across construction joints and provide 1-1/2 " deep keyways unless indicated otherwise on the drawings.
- B. Expansion joints:
 - 1. Provide 1/2" expansion joints with premolded joint filters every thirty (30) feet.

3.09 FIELD QUALITY CONTROL

- A. Concrete cylinder tests:
 - 1. During construction, prepare test cylinders for compressive strength testing, using 6" diameter by 12" long single use molds, complying with ASTM C 31.
 - a. Make a set of three test cylinders from each pour.
 - b. Identify each and tag cylinder as to date of pour and location of concrete which it represents.
 - c. Deliver cylinders to testing lab selected by the Owner.
 - d. Cost for preparation and delivery of cylinders shall be borne by the Contractor. Cost for testing cylinders will be borne by the Owner.
 - 2. Should strengths shown by test cylinders fail to meet specified strengths for the concrete represented, then:
 - a. Engineer shall have the right to require changes in the mix proportions as he deems necessary on the remainder of the work.
 - b. Additional curing of those portions of the structure represented by the failed test cylinders shall be accomplished as directed by the Engineer.
 - c. Upon failure of the additional curing to bring the concrete up to specified strength requirements, strengthening or replacement of those portions of the structure shall be as directed by the Engineer.
 - d. The Engineer may require additional testing of concrete in question by either non-destructive methods such as the Swiss Hammer, Windsor Probe or Ultrasonics or by coring and testing the concrete in question in accordance with ASTM C 42. Such testing shall be performed at no additional cost to the Owner.

- B. Other field concrete tests:
 - 1. Slump tests: Either the Engineer or a testing laboratory representative will make slump tests of concrete as it is discharged from the mixer.
 - a. Slump test may be made on any concrete batch at the discretion of the Engineer.
 - b. Failure to meet specified slump requirements will be cause for rejection of the concrete.
 - 2. Temperature: The concrete temperature may be checked at the discretion of the Engineer.
 - 3. Entrained air: Air content of the concrete will be checked by a representative of the testing laboratory at the discretion of the Engineer.
- C. Coordination of laboratory services: The Contractor shall be responsible for coordination of laboratory services.
 - 1. Maintain a log recording quantities of each type of concrete placed, date and location of pour.
 - 2. Inform the testing laboratory of locations and dates of concrete placement and other information as required to be identified in the laboratory's test reports.
- D. Tests required because of extensive honeycombing, poor consolidation of the concrete or any suspected deficiency in the concrete will be paid for by the Contractor.
- E. Dimensional tolerances for allowable variations from dimensions or locations of concrete work, including the locations of embedded items shall be as given in ACI 301.
- F. Concrete which fails to meet strength requirements, dimensional tolerances, watertightness criteria, or is otherwise deficient due to insufficient curing, improper consolidation or physical damage shall be replaced or repaired as instructed by the Engineer at no expense to the Owner.

END OF SECTION

SECTION 32 1713 - PARKING BUMPERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast concrete parking bumpers and anchorage.

1.02 REFERENCE STANDARDS

- A. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2012.
- B. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2011a.
- C. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- D. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Parking Bumpers: Precast concrete, conforming to the following:
 - 1. Profile: Manufacturer's standard.
 - 2. Cement: ASTM C150, Portland Type I - Normal; white color.
 - 3. Concrete Materials: ASTM C33 aggregate, water, and sand.
 - 4. Reinforcing Steel: ASTM A615/A615M, deformed steel bars; unfinished finish, strength and size commensurate with precast unit design.
 - 5. Air Entrainment Admixture: ASTM C260.
 - 6. Concrete Mix: Minimum 5000 psi (34 MPa), 28 day strength, air entrained to 5 to 7 percent.
 - 7. Use rigid molds, constructed to maintain precast units uniform in shape, size and finish. Maintain consistent quality during manufacture.
 - 8. Embed reinforcing steel, and drill or sleeve for two dowels.
 - 9. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
 - 10. Minor patching in plant is acceptable, providing appearance of units is not impaired.
- B. Dowels: Steel, unfinished; 1/2 inch (12 mm) diameter, 24 inch (600 mm) long, pointed tip.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install units without damage to shape or finish. Replace or repair damaged units.
- B. Install units in alignment with adjacent work.
- C. Fasten units in place with 2 dowels per unit.

END OF SECTION

SECTION 32 1723.13 - PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. On-Site parking lot markings, including parking bays, crosswalks, arrows, handicapped symbols, and curb markings.
- B. Off-Site asphaltic concrete and/or concrete traffic or parking surface markings, including 24" wide, white stop lines at all stop signs; white parking spaces; edge of pavement roadway markings; centerline roadway markings; median markings; and dashed roadway markings.

1.02 RELATED REQUIREMENTS

- A. Section 32 1216 - Asphalt Paving.

1.03 REFERENCE STANDARDS

- A. FS TT-B-1325 - Beads (Glass Spheres); Retro-Reflective; Rev. D, 2007.
- B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.
- C. FHWA MUTCD - Manual on Uniform Traffic Control Devices for Streets and Highways; U.S. Department of Transportation, Federal Highway Administration; <http://mutcd.fhwa.dot.gov>; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 6000 - Product Requirements, for delivery, storage and handling procedures.
- B. Deliver paint in containers of at least 5 gallons (18 L) accompanied by batch certificate.
- C. Deliver glass beads in containers suitable for handling and strong enough to prevent loss during shipment accompanied by batch certificate.
- D. Store products in manufacturer's unopened packaging until ready for installation.
- E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 ON-SITE PAINT MATERIALS

- A. Line and Zone Marking Paint: MPI No. 97 Latex Traffic Marking Paint; color(s) as indicated.
 - 1. Parking Lots: Yellow.
 - 2. Handicapped Symbols: Blue.
- B. Reflective Glass Beads: FS TT-B-1325, Type I (low index of refraction), Gradation A (coarse, drop-on); with silicone or other suitable waterproofing coating to ensure free flow.

2.02 OFF-SITE PAINT MATERIALS

- A. Provide a waterborne acrylic product conforming to U.S. Bureau of Public Roads' colors and meeting Federal Specifications TT-P-1952B, Type I or approved equal.
- B. Provide paint with the following minimum characteristics:
 - 1. Curing mechanism: Coalescence.
 - 2. VOC: Ca 150 gms/Hr., 1.25 lbs./gal.
 - 3. Volume Solids: 45% min.
 - 4. Weight Solids: 65% min.
 - 5. Weight/Gallon: 12.4 min.
- C. Provide colors as indicated on the plans and details or follow SCDOT standard specifications, if not shown on plans.
- D. Provide reflective striping as specified or indicated on the plans containing properly graded glass spheres or beads.

2.03 REFLECTIVE GLASS BEADS

- A. Reflective glass spheres shall be properly graded and meet SCDOT "Standard Specifications for Highway Construction," Section 710.17, 1986 Edition .

2.04 PERMANENT RAISED PAVEMENT MARKERS

- A. Provide permanent raised pavement markers in accordance with SCDOT "Standard Specifications for Highway Construction," Section 605, Latest Edition.

2.05 ROADWAY SIGNAGE AND STRIPING

- A. Provide roadway signage and striping in accordance with SCDOT "Manual on Uniform Traffic Control Devices for Streets and Highways, Latest Edition.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. New asphalt surfaces are to be adequately cured before application of paint. Apply a test stripe in an inconspicuous area and allow for complete drying to determine readiness for painting.

3.02 PREPARATION

- A. Allow new pavement surfaces to cure for a period of not less than 30 days before application of marking materials.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Clean surfaces thoroughly prior to installation.
 - 1. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.
- D. Where oil or grease are present, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application; after cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint.
- E. Establish survey control points to determine locations and dimensions of markings; provide templates to control paint application by type and color at necessary intervals.

3.03 INSTALLATION

- A. Begin pavement marking as soon as practicable after surface has been cleaned and dried.
- B. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F (10 degrees C) or more than 95 degrees F (35 degrees C) or when the relative humidity is above 85% or when the dew point is within 5 degrees F of the surface temperature.
- C. Apply in accordance with manufacturer's instructions using an experienced technician that is thoroughly familiar with equipment, materials, and marking layouts.
- D. Comply with FHWA MUTCD manual (<http://mutcd.fhwa.dot.gov>) for details not shown.
- E. Apply markings in locations determined by measurement from survey control points; preserve control points until after markings have been accepted.
- F. Apply uniformly painted markings of color(s), lengths, and widths as indicated on the drawings true, sharp edges and ends.
 - 1. Apply paint in one coat only.
 - 2. Wet Film Thickness: 0.015 inch (0.4 mm), minimum.
 - 3. Width Tolerance: Plus or minus 1/8 inch (3 mm).
- G. Roadway Traffic Lanes: Use suitable mobile mechanical equipment that provides constant agitation of paint and travels at controlled speeds.
 - 1. Conduct operations in such a manner that necessary traffic can move without hindrance.
 - 2. Place warning signs at the beginning of the wet line, and at points well in advance of the marking equipment for alerting approaching traffic from both directions. Place small flags or other similarly effective small objects near freshly applied markings at frequent intervals to reduce crossing by traffic.
 - 3. If paint does not dry within expected time, discontinue paint operations until cause of slow drying is determined and corrected.
 - 4. Skip Markings: Synchronize one or more paint "guns" to automatically begin and cut off paint flow; make length of intervals as indicated.
 - 5. Use hand application by pneumatic spray for application of paint in areas where a mobile paint applicator cannot be used.
 - 6. Distribute glass beads uniformly on the paint lines within ten seconds without any waste, applied at rate of 6 pounds per gallon (720 g per L) of paint; if the marking equipment does not have a glass bead dispenser, use a separate piece of equipment adjusted and synchronized with the paint applicator; remove and replace markings having faulty distribution of beads.
 - 7. Distribute glass spheres uniformly on the paint lines within ten seconds without any waste, applied at rate of 6 pounds per gallon (720 g per L) of binder paint
 - 8. Glass spheres shall be applied, immediately after the striping paint has been applied, through a pressurized glass gun set 1" to 4" behind the spray gun. Other methods may be acceptable if approved by the Engineer.
- H. PERMANENT RAISED PAVEMENT MARKERS
 - 1. Install permanent raised pavement markers in accordance with SCDOT "Standard Specifications for Highway Construction," Section 605, Latest Edition.
- I. Parking Lots: Apply parking space lines, entrance and exit arrows, painted curbs, and other markings indicated on drawings.
 - 1. Mark the International Handicapped Symbol at indicated parking spaces.
 - 2. Hand application by pneumatic spray is acceptable.

- J. Symbols: Use a suitable template that will provide a pavement marking with true, sharp edges and ends, of the design and size indicated.

3.04 DRYING, PROTECTION, AND REPLACEMENT

- A. Protect newly painted markings so that paint is not picked up by tires, smeared, or tracked.
- B. Provide barricades, warning signs, and flags as necessary to prevent traffic crossing newly painted markings.
- C. Allow paint to dry at least the minimum time specified by the applicable paint standard and not less than that recommended by the manufacturer.
- D. Remove and replace markings that are applied at less than minimum material rates; deviate from true alignment; exceed length and width tolerances; or show light spots, smears, or other deficiencies or irregularities.
- E. Remove markings in manner to avoid damage to the surface to which the marking was applied, using carefully controlled sand blasting, approved grinding equipment, or other approved method.
- F. Replace removed markings at no additional cost to Owner.

END OF SECTION

SECTION 32 9219 - SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Seeding, mulching and fertilizer.
- D. Maintenance.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- B. Section 31 2323 - Fill: Topsoil material.

1.03 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.05 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.
 - 1. Deliver to site each variety of seed individually packaged and tagged to show name, net weight, origin and lot number.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 6000 - Product Requirements, for delivery, storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.01 SEED MIXTURE

- A. Seed Mixture:
 - 1. As indicated on drawings.
 - 2. Free from noxious weed seeds, and recleaned.
 - 3. Grade A recent crop seed.
 - 4. Treated with appropriate fungicide at time of mixing.
 - 5. Temporary Seed Mixture: Provide certified grass-seed blends or mixes, proportioned by weight, as provided in the SC DHEC Stormwater Management BMP Handbook - Appendix C.

6. Permanent Seed Mixture: Provide certified grass-seed blends or mixes, proportioned by weight, as provided in the SC DHEC Stormwater Management BMP Handbook - Appendix C.

2.02 SOIL MATERIALS

- A. Topsoil: Excavated from site supplemented with offsite soil as needed and free of weeds.

2.03 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. Wood Cellulose Fiber: Provide wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer. Material to be heat processed so as to contain no germination or growth inhibiting factors and dyed (non-toxic) an appropriate color to facilitate metering.
- C. Excelsior Fiber Mulch: To consist of 4" to 6", average length, wood fibers cut from sound green timber. Cuts to be made in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood.
- D. Lime: Provide agricultural grade, standard ground limestone conforming to current "Rules, Regulations and Standards of the Fertilizer Board of Control" as issued by Clemson University. Bag tags or delivery slip for bulk loads shall indicate brand or trade name, calcium carbonate equivalent, and other pertinent data to identify the lime.
- E. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.
- F. Erosion Fabric: Jute matting, open weave. Shall be North American Green S150 Erosion Control Blanket, or approved equal.
- G. Stakes: Softwood lumber, chisel pointed.
- H. String: Inorganic fiber.
- I. Fertilizer: FS O F 241, Type I, Grade A; recommended for grass, with fifty percent (50%) of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the following proportions: Nitrogen sixteen percent (16%), phosphoric acid four percent (4%), soluble potash eight percent (8%).

2.04 TESTS

- A. Provide analysis of topsoil fill under provisions of Section 01 4000 - Quality Control.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

3.02 PREPARATION

- A. Prepare subgrade in accordance with Section 31 2200.
- B. Place topsoil in accordance with Section 31 2200.

3.03 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions. Based upon the soil analysis conducted in Paragraph 2.04.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches (50 mm) of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.04 SEEDING

- A. Apply seed at the manufacturer's specified rate.
- 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 during windy periods.
- D. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches (3 mm). Maintain clear of shrubs and trees.
- E. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches (100 mm) of soil.
- F. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches (100 by 100 mm).

3.05 HYDROSEEDING

- A. Apply seed at the manufacturer's specified rate.
- B. Do not hydroseed area in excess of that which can be mulched on same day.
- C. Immediately following seeding, apply mulch to a thickness of 1/8 inches (3 mm). Maintain clear of shrubs and trees.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches (100 mm) of soil.
- E. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches (100 by 100 mm).

3.06 PROTECTION

- A. Cover seeded slopes where grade is 4 inches per foot (333 mm per m) or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6 inch (150 mm) deep excavated topsoil trench. Provide 12 inch (300 mm) overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36 inch (900 mm) intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches (150 mm).

END OF SECTION

SECTION 33 0513 - MANHOLES AND STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Modular precast concrete manhole sections with tongue-and-groove joints with masonry transition to lid frame, covers, anchorage, and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures; American Concrete Institute International; 2009.
- B. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2008).
- C. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections; 2009.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate manhole locations, elevations, piping sizes and elevations of penetrations.
- C. Product Data: Provide manhole covers, component construction, features, configuration, and dimensions.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C478 (ASTM C478M), with resilient connectors complying with ASTM C923 (ASTM C923M).
- B. Concrete: As specified in Section 03 3000.

2.02 COMPONENTS

- A. Lid and Frame: ASTM A 48/A 48M, Class 30B Cast iron construction, machined flat bearing surface, removable lid, closed lid design; H-20 live load rating 25,000 psf (1,200 kPa); lid molded with identifying name ;.
- B. Manhole Steps: Formed FRP rungs; 3/4 inch (19 mm) diameter. Formed integral with manhole sections.
- C. Concrete (poured in place): Air entrained Portland Cement Concrete having a minimum 28 day compressive strength of 3000 psi.
- D. Joint Sealant: Butyl Rubber Sealant conforming to AASHTO M-198, Type B - butyl rubber, suitable for application temperatures between 10 and 100 degrees F.

- E. Precast Grade Rings: Shall be no less than 4 inches thick and shall meet all the requirements of ASTM C478.

2.03 CONFIGURATION

- A. As indicated on drawings.
- B. Clear Inside Dimensions: As indicated.
- C. Design Depth: As indicated.
- D. Clear Lid Opening: As indicated.
- E. Steps: As indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify items provided by other sections of Work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify excavation for manholes is correct.

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 MANHOLES

- A. Place concrete base pad, trowel top surface level.
- B. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.
- C. Form and place manhole cylinder plumb and level, to correct dimensions and elevations. As work progresses, build in fabricated metal items.
- D. Cut and fit for pipe.
- E. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.
- F. Set cover frames and covers level without tipping, to correct elevations.
- G. Coordinate with other sections of work to provide correct size, shape, and location.

END OF SECTION

SECTION 33 0514 - PRESTRESSED, PRECAST CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide prestressed, precast concrete where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 2. Section 03 3000 – Cast-in-Place Concrete.

1.02 QUALITY ASSURANCE

- A. Referenced manufacturer is Tindall Concrete Products, Inc. and is named to establish standards of quality.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Qualifications of manufacturer: Demonstrate capability to make and provide the specified quality products by attestation of the Prestressed Concrete Institute under the Plant Certification Program.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01 3000 - Administrative Requirements..
- B. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Manufacturer's certifications and laboratory test reports as required.
 - 4. Shop drawings, prepared in accordance with pertinent provisions of Section 01340 of these Specifications and showing complete information for fabrication and erection of the work of this Section including, but not necessarily limited to:
 - a. Member dimensions and cross-sections; locations, size and type of reinforcement, including special reinforcement and lifting devices necessary for handling and erection.
 - b. Erection procedures, sequence of erection, and required handling equipment.
 - c. Layout, dimensions, and identification of each precast unit corresponding to the sequence and procedure of installation.
 - d. Welded connections, indicated by AWS standard symbols.
 - e. Details of inserts, connections, and joints, including accessories and construction at openings in the precast units.
 - f. Location and details of anchorage devices that are to be embedded in other construction.

1.04 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01 6000 - Product Requirements.

- B. Delivery, storage and handling:
 - 1. Deliver the work of this Section to the job site in such quantities and at such times as to assure the continuity of construction.
 - 2. Store units at the job site in a manner to prevent cracking, distortion, warping, staining and other physical damage, and in a manner to keep markings visible.
 - 3. Lift and support the units only at designated lifting points or supporting points as shown on the approved Shop Drawings.

1.05 MANUFACTURER

- A. Not less than five years experience in the manufacture of units similar to the ones specified herein and indicated on the Drawings.
- B. The manufacturer shall be approved by the Engineer prior to the submission of shop drawings.
- C. Plant to be certified under the P.C.I. Plant Certification Program.

PART 2 - PRODUCTS

2.01 DESIGN

- A. Panels to be 6" thick.
- B. Design for a uniform superimposed load of 116 lbs.
- C. Modification:
 - 1. Provide complete design, calculations, and drawings as called for under Article 1.3 above.
 - 2. Maintain the general design concept as shown, without decreasing or increasing sizes of members and without altering profiles and alignment, except as approved by the Engineer.
 - 3. Make necessary provisions in the design to accommodate stresses to be encountered.
- D. Standards:
 - 1. Design in accordance with pertinent recommendations contained in:
 - a. ACI 301.
 - b. ACI 304.
 - c. ACI 311.
 - d. ACI 318.
 - e. ACI 347.
 - f. CRSI "Manual of Standard Practice".
 - g. PCI 116.
 - 2. Comply with requirements of governmental agencies having jurisdiction.
 - 3. In the event of conflict between or among standards, the more stringent provision shall govern unless directed otherwise by the Engineer.

2.02 MATERIALS

- A. Concrete:
 - 1. Design mixes:
 - a. Prepare design mixes for each type of concrete required, and secure the Engineer's approval of the proposed design mix.
 - b. Pay costs for securing the design mix.
 - c. Have mixes prepared either by the testing agency selected in accordance with Section 01410 of these Specifications, or by qualified precast concrete manufacturing personnel approved by the Engineer.
 - d. Proportion mixes either by laboratory trial batch or field experience methods, using materials to be employed on the Work for each type of concrete required, and complying with ACI 211.1.

2. Design strength: Unless otherwise indicated on the Drawings or approved by the Engineer, design the mix and proportion the concrete to attain a minimum compressive strength of 5000 psi when cured and tested at 28 days in accordance with ASTM C 39.
- B. Reinforcement:
 1. Prestressing tendons:
 - a. High tensile strength steel, uncoated, 7 wire strand.
 - b. Conform to ASTM Specification A 416.
 2. Mild Reinforcing Steel: Conform to ASTM Specification A 615.
 3. Wire Mesh Reinforcing: Conform to ASTM Specification A 185.
- C. Connections:
 1. Each unit shall be provided with welding anchors as indicated on the manufacturer's approved shop drawings.
 2. The prestressed manufacturer, subject to the Engineer's approval, may be permitted to modify any details shown on the Engineer's drawings provided such modifications will be equal or more efficient and more consistent with the latest recommended practices of the Prestressed Concrete Institute and incur no additional cost to the Owner.
 3. All embedded, cast-in connections components shall be designed with positive anchorage attached to or around reinforcing steel where possible.
 4. Roof panel connections shall be designed such that the roof will act as a diaphragm to resist 110 mph wind loading or Zone 2 earthquake loading.
- D. Caulking: Caulk system to be expanded polyethylene rod backup and one part polysulfide sealant, DAP One-Part Flexiseal, or approved equal. Sealant shall be white. Prime joint as recommended by sealant manufacturer.

2.03 FABRICATION

- A. General:
 1. Fabricate the work of this Section to the sizes and shapes indicated.
 2. Provide finished units that are straight, true to size and shape, and within the specified casting tolerances.
 3. Make exposed edges sharp, straight, and square. Make flat surfaces into a true plane.
 4. Warped, cracked, broken, spalled, stained and otherwise defective units will not be acceptable.
 5. Place and secure in the forms all anchors, clips, stud bolts, inserts, lifting devices, shear ties, and other devices required for handling and installing the precast units and for attachment of subsequent items as indicated or specified.
 6. All units shall be machine cast on long production lines in smooth, tight, rigid forms and cut or formed to the lengths and shapes as required by the approved shop drawings.
- B. Curing:
 1. Form cure the work of this Section for a minimum of 20 hours.
 2. Keep wet continuously for not less than six days after being removed from the forms.
 3. Following the curing period, allow the units to air dry for at least four days before being erected.
- C. Casting tolerances: Maintain casting, bowing, warping, and dimension tolerances with the following maximums:
 1. Overall dimension for height and width of units:
 - a. Plus zero of unit dimension to minus 3/32" for 10'0" and over.
 2. Make thickness of units $\pm 1/8$ " maximum.

3. Bowing or warping: Do not exceed $1/360$ of the span.
4. Insert locations: Place within $\pm 1/4"$ in each direction.
5. Opening dimensions to figured dimensions: Accurate within a tolerance of plus $1/8"$ to minus zero.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. No cracked, chipped, stained or otherwise damaged panels shall be installed.

3.02 COORDINATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.03 INSTALLATION

- A. Install the work of this Section in strict accordance with the original design, the approved Shop Drawings, pertinent requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as approved by the Engineer, anchoring all components firmly into position for long life under hard use.
- B. Lifting devices shall be cut off below the finish surface and the hole patched with a grout that matches the finish of the panel.
- C. Units shall be erected true to line, elevation and in strict accordance with the approved shop drawings.
- D. Bearing pads:
 1. Provide flexible bearing pads where indicated on the approved Shop Drawings.
 2. Set pads on level and uniform bearing surfaces. Maintain in correct position until all precast units are in place.
- E. Welding: Comply with AWS D1.0 and D12.1, including prequalification of welders.
- F. Caulking: Caulk panels on exterior face only.
- G. Powder actuated fasteners: Do not use powder actuated fasteners for surface attachment of accessory items except as specifically approved by the Engineer and specifically accepted by the precast unit manufacturer.

END OF SECTION

SECTION 33 4111 - SITE STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Storm drainage piping, fittings, and accessories.
- B. Catch basins.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete for cleanout base pad construction.
- B. Section 31 2316 - Excavation: Excavating of trenches.
- C. Section 31 2323 - Fill: Bedding and backfilling.
- D. Section 33 0513 - Manholes and Structures.

1.03 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.04 REFERENCE STANDARDS

- A. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe; 2012a.
- B. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets; 2012.
- C. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2012.
- D. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.
- E. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2008.
- F. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material; 2012.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating pipe, pipe accessories, and structures.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents:
 - 1. Record location of pipe runs, connections, catch basins, cleanouts, and invert elevations.
 - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for materials and installation of the Work of this section.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS AND ACCESSORIES

- A. Concrete Pipe: Reinforced, ASTM C76 (ASTM C76M), Class II with Wall type A; mesh reinforcement; inside nominal diameter of 15 to 48 inches (380 to 1,200 mm), bell and spigot end joints.
- B. Reinforced Concrete Pipe Joint Device: ASTM C443 (ASTM C443M) rubber compression gasket joint.
- C. Plastic Pipe: ASTM D3350, High Density Polyethylene (HDPE) corrugated wall pipe with integrally formed smooth liner; inside nominal diameter of _____ inch, meeting the requirements of AASHTO M252, Type S, for diameters between 3 inches (75 mm) and 10 inches (250 mm) and AASHTO M294, Type S, for diameters between 12 inches (300 mm) and 60 inches (1500 mm), soil-tight, bell and spigot joints with rubber gaskets, with pipe and fittings manufactured from virgin PE compounds with cell classification 3254420C.

2.02 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.03 CATCH BASIN, CLEANOUT, AND AREA DRAIN COMPONENTS

- A. Lids and Drain Covers: As indicated on drawings.
- B. Concrete Catch Basin:
 - 1. Normal-Traffic, Precast Concrete Catch Basins: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.
 - 2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
 - 3. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
 - 4. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top is indicated. Top of cone of size that matches grade rings.
 - 5. Gaskets: ASTM C 443, rubber.
 - 6. Steps: Fiberglass, individual steps or ladder. Include width that allows worker to place both feet on one step and is designed to prevent lateral slippage off step. Cast steps or anchor ladder into base, riser, and top section sidewalls at 12- to 16-inch intervals. Omit steps for catch basins less than 60-inches deep.
- C. Frames and Grates: ASTM A536, Grade 60-40-18, ductile iron designed for heavy-duty service. Include flat grate with small square or short-slotted drainage openings.
 - 1. Size: 24 by 24 inches minimum, unless otherwise indicated.
 - 2. Grate Free Area: Approximately 50 percent, unless otherwise indicated.

2.04 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 2316.
- B. Cover: As specified in Section 31 2316.

PART 3 EXECUTION

3.01 TRENCHING

- A. Hand trim excavation for accurate placement of pipe to elevations indicated.

- B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
 - 1. Plastic Pipe: Also comply with ASTM D2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch (3 mm) in 10 feet (3 m).
- D. Connect to building storm drainage system, foundation drainage system, and on-site ditch drainage system.

3.03 INSTALLATION - CATCH BASINS AND CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.
- C. Establish elevations and pipe inverts for inlets and outlets as indicated.
- D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.04 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.05 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

