PROJECT MANUAL FOR:

NEW ONE-BAY SAND BLASTING SHED & CONTAINMENT AREA

MANNS HARBOR, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

FERRY DIVISION
CONTRACT ID# 11407920
SCO ID# 13-10648-01A

Designer :

FACILITIES DESIGN
GENERAL SERVICES DIVISION, NCDOT
1 SOUTH WILMINGTON STREET
RALEIGH, NORTH CAROLINA 27601

July 29, 2014

SET NO._____

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INFORMAL CONTRACT

FOR

North Carolina Department of Transportation, Ferry Division
One-bay Sand Blasting Shed, Dare County
SCO ID# - 13-10648-01A

SCOPE OF WORK

The successful bidder will be responsible for construction of a new, single-bay bulk material storage facility. The building is constructed of reinforced cast in place concrete walls bearing on shallow foundation, with wood truss roof. There is no plumbing, mechanical, or electrical work included in this project.

NOTICE TO BIDDERS

Sealed proposals for this work will be received by:

N.C. Department of Transportation
Attn: Barry Hobbs, PE
113 Airport Drive, Suite 100
Edenton, NC 27932

up to **2:00 PM**, on **September 3, 2014** and immediately thereafter publicly opened and read aloud. A **MANDATORY** pre-bid meeting will be held for all interested bidders at **10:00 AM,** on **August 19, 2014** at the project site. The address of the project site is: **8550 Shipyard Road, Manns Harbor, NC 27953**.

Construction documents will not be distributed in paper format. Complete plans and project manual can be obtained from the following address: https://connect.ncdot.gov/letting/Pages/default.aspx All questions during the bid are to be directed to Michael Mountcastle, in the form of an RFI, via email to mdmountcastle@ncdot.gov. All documentation during the bid period will be sent via email to the address provided during the pre-bid meeting. However, it is the responsibility of all participating in the bid to check before the bid to verify they have all RFI's and Addenda that may have been issued. The list of general contractors attending the pre-bid will be available after the pre-bid meeting.

Digital documents will be forwarded to the Associated General Contractors, Carolinas Branch, Charlotte, the local North Carolina offices of McGraw-Hill Dodge Corporation, and the Eastern Regional Office of Reed Construction Data in Norcross, GA, and to the following Minority Plan Rooms:

1. Hispanic Contractors Association of the Carolinas in the Winston-Salem, Charlotte, and Raleigh Areas (877-227-1680).
2. East Coast Digital – Minority Plan Room Provider, 703 SE Greenville Blvd, Greenville, NC 27858 (252-758-1616)

Contractors are hereby notified that they must have proper license under the State laws governing their respective trades and that North Carolina General Statute 87 will be observed in receiving and awarding contracts. General Contractors must have general license classification, at minimum, for Building-Limited.

A bid bond is not required. Performance bonds, payment bonds, and insurance must be provided by the contractor.

No bid may be withdrawn after the opening of bids for a period of 45 days. The Owner reserves the right to reject any or all bids and waive informalities. Proposals shall be made only on the form provided herein with all blank spaces for bids properly filled in and all signatures properly executed.

Please note on the envelope – **Bid Proposal: Attn**: _____

(Project Name)
(Bid Date)
(Contractor)
(License Number)

GENERAL CONDITIONS

GENERAL

It is understood and agreed that by submitting a bid that the Contractor has examined these contract documents, drawings and specifications and has visited the site of the Work, and has satisfied himself relative to the Work to be performed.

MATERIALS, EQUIPMENT AND EMPLOYEES

The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, sanitary facilities and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied there from, all in accordance with the contract documents.

All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.

No changes shall be made in the Work except upon written approval and change order of the Designer/Owner. Change orders shall be subject to provisions in the current North Carolina Construction Manual.

Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed.

However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Substitution of materials, items or equipment of equal or equivalent design shall be submitted to the architect or engineer for approval or disapproval; such approval or disapproval shall be made by the architect or engineer prior to the opening of bids.

If at any time during the construction and completion of the work covered by these contract documents, the conduct of any workman of the various crafts be adjudged a nuisance to the Owner or if any workman be considered detrimental to the work, the Contractor shall order such parties removed immediately from the site.

The contractor shall designate a foreman/superintendent who shall direct the work.

CODES, PERMITS AND INSPECTIONS

The Contractor shall obtain the required permits, if required, give all notices, and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the Contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the Designer in writing. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the Owner, he shall bear all cost arising there from.

All work under this contract shall conform to the current North Carolina Building Code and other state and national codes as are applicable

Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to county or municipal building codes and may not be subject to inspection by county or municipal authorities. The Contractor shall, however, cooperate with the county or municipal authorities by obtaining building permits. Permits may be obtained by the contractor at no cost to the owner.

SAFETY REQUIREMENTS

The Contractor shall be responsible for the entire site and the construction of the same and provide all the necessary protections as required by laws or ordinances governing such conditions and as required by the Owner or Designer. He shall be responsible for any damage to the Owner's property, or that of others on the job, by himself, his personnel or his subcontractors, and shall make good such damages. He shall be responsible for and pay for any claims against the Owner arising from such damages.

The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926 published in Volume 39, Number 122, Part 11, June 24, 1974 Federal Register), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.

The Contractor shall provide all necessary safety measures for the protection of all persons on the work, including the requirements of the AGC Accident Prevention Manual in Construction as amended, and shall fully comply with all state laws or regulations and North Carolina Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.

TAXES

Federal Excise Taxes do not apply to materials entering into State work (Internal Revenue Code, Section 3442(3)).

Federal Transportation Taxes do not apply to materials entering into State work (Internal Revenue Code, Section 3475 (b) as amended).

North Carolina Sales Taxes and Use Tax do apply to materials entering into State Work (N.C. Sales and Use Tax Regulation No. 42, Paragraph A), and such costs shall be included in the bid proposal and contract sum.

Local Option Sales and Use Taxes do apply to materials entering into State work as applicable (Local Option Sales and Use Tax Act, Regulation No. 57), and such cost shall be included in the bid proposal and contract sum.

ACCOUNTING PROCEDURES FOR REFUND OF COUNTY SALES & USE TAX

Contractors for State owned projects shall provide the owner a signed statement containing the information listed in G.S. 105-164.14(e) for all materials purchased for the project.

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

EQUAL OPPORTUNITY

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to Equal Employment Opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the Secretary of Labor, are incorporated herein. The Contractors agree not to discriminate against any employees or applicant for employment because of physical or mental handicap in regard to any position for which the employees or applicant is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices.

INSURANCE

The Contractor shall not commence work until he has obtained all insurance required, and the Owner has approved such insurance, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been obtained.

The Contractor shall provide and maintain during the life of this contract Workmen's Compensation Insurance for all employees employed at the site of the project under his contract.

The Contractor shall provide and maintain during the life of this contract such Public Liability and Property Damage Insurance as shall protect him and any subcontractor performing work covered by this contract, from claims for damage for personal injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operation be by the Contractor himself or by any subcontractor, or by anyone directly or indirectly employed by either of them and the amounts of such insurance shall be as follows:

Public Liability Insurance in an amount not less than $300,000 for injuries, including accidental death, to any one person and subject to the same limit for each person, in amount not less than $500,000 on account of one accident; and Property Damage Insurance in an amount not less that $100,000/$300,000.

The Contractor shall furnish such additional insurance as may be required by General Statutes of North Carolina, including motor vehicle insurance in amounts not less than statutory limits.

Each Certificate of Insurance shall bear the provision that the policy cannot be canceled, reduced in amount or coverage eliminated in less than fifteen (15) days after mailing written notice to the insured and/or the Owner of such alteration or cancellation, sent by registered mail.

The Contractor shall furnish the Owner with satisfactory proof of carriage of the insurance required before written approval is granted by the Owner.

INVOICES FOR PAYMENT

No partial payment will be made unless agreed to in advance. Final payment will be made lump sum within forty-five (45) consecutive days after acceptance of the work and the submission both of notarized contractor's affidavit and four copies of invoices which are to include the contract, account and job order numbers.

The contractor's affidavit shall state: "This is to certify that all costs of materials, equipment, labor, and all else entering into the accomplishment of this contract, including payrolls, have been paid in full."

Executed contract documents, insurance certifications and, upon completion and acceptance of the work, invoices and other information requested are to be sent to:

Michael Mountcastle
NCDOT, Facilities Design Unit
1525 Mail Service Center
Raleigh, NC 27699
919-707-4547

It is imperative that contract documents, invoices, etc., be sent only to the above address in order to assure proper and timely delivery and handling.

CLEANING UP

The Contractor shall keep the sites and surrounding area reasonably free from rubbish at all times and shall remove debris from the site from time to time or when directed to do so by the Owner. Before final inspection and acceptance of the project, the Contractor shall thoroughly clean the sites, and completely prepare the project and site for use by the Owner.

GUARANTEE

The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the final acceptance of the work and shall replace such defective materials or workmanship without cost to the owner.

Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.

Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor, which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.

Guarantees for roofing workmanship and materials shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

CONTRACTOR-SUBCONTRACTOR RELATIONSHIPS

The Contractor agrees that the terms of these contract documents shall apply equally to a subcontractor as to the Contractor, and that the subcontractor is bound by those terms as an employee of the Contractor.

SUPPLEMENTARY GENERAL CONDITIONS

TIME OF COMPLETION

The Contractor shall commence work to be performed under this Contract on a date to be specified in written order from the Designer and shall fully complete all work hereunder within (120) consecutive calendar days from the Notice to Proceed for base bid contract. For each day in excess of the above number of days, the Contractor shall pay the Owner the amount of two-hundred dollars ($200) as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified.

If the Contractor is delayed at anytime in the progress of his work by any act or negligence of the Owner, his employees or his separate contractor, by changes ordered in the work; by abnormal weather conditions; by any causes beyond the Contractor's control or by other causes deemed justifiable by Owner, then the contract time may be reasonably extended in a written order from the Owner upon written request from the contractor within ten days following the cause for delay.

INVOICES FOR PAYMENT

Contractor may make monthly draws with 5% retainage as specified in Section 01200 of the Specifications.

ROOFING GUARANTEE

The following paragraph is hereby added and shall become a part of the Guarantee of the General Conditions of the Contract. The substitution of an equal or longer term manufacturer's warranty in lieu of this requirement will not be accepted.

"The Roofing Contractor shall warrant the materials and workmanship of the roofing system against leakage and against defects due to faulty materials, workmanship and contract negligence for a period of two (2) years following acceptance of the project by the Owner."

UTILITIES

Power and water are currently available on the property. The distance from both to the new building site will be discussed during the pre-bid meeting.

SECURITY

The contractor is responsible for the security of their tools and construction materials.

USE OF SITE

Coordination with the Owner's work hours will be established at the preconstruction conference.

PERFORMANCE AND PAYMENT BONDS

Contractor shall furnish a Performance Bond and Payment Bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be executed in the form bound with these specifications (Forms 307 & 308). An authorized agent of the bonding company who is licensed to do business in North Carolina shall countersign all bonds.

SECTION 01100

SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: One-Bay Sand Blasting Shed.

B. Owner's Name: State of North Carolina, through the North Carolina Department Of Transportation.

C. Architect's Name: Facilities Design Section, NCDOT (Michael Mountcastle, PE, Engineer).

D. The Project consists of the following: construction of a new one-bay storage shed for bulk sand blasting media (approximately 902 SF) and concrete work/containment area (approximately 4283 SF).

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Notice to Bidders.

1.03 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

B. Utility Outages and Shutdown:
   1. Prevent accidental disruption of utility services to other facilities.
   2. Coordinate necessary shut-offs with Owner.

C. Contractor can connect to Owner's site utilities as determined during pre-bid meeting with local owner representative.

END OF SECTION

SECTION 01151

CONSTRUCTION AND DEMOLITION MATERIALS RECYCLING REQUIREMENTS

PART 1GENERAL

1.01 SUMMARY

A. Section includes: Requirements and procedures for ensuring optimal diversion of demolition and construction waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.
   1. State of North Carolina Executive Order 156, Section 1.b, states that "...all state agencies are to maximize their efforts to...reduce and recycle material recoverable from solid waste originating...from the construction and renovation of new facilities..."
   2. The Waste Reduction Goal of this Contract is that a minimum of 50% by weight of the construction and demolition materials generated in the Work be diverted from landfill disposal through a combination of re-use and recycling activities.
   3. Contractor's quantitative reports for construction waste materials as a condition of approval of progress payments submitted to the Architect

1.02 1.02 DEFINITIONS

A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations.

B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous. This term includes, but is not limited to, Portland cement concrete, lumber, cardboard and other associated packaging, roofing material, and steel. This will also include other jobsite materials such as cardboard packaging, sheet vinyls, plastic bottles, white paper, and aluminum cans.

C. C&D Recycling Center. A facility that receives C&D material that has been separated for reuse. Recycling facilities are often part of the overall County waste management facilities.

D. Disposal. Final deposition of construction and demolition material

E. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.

F. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.

G. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.

H. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation, for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.

I. Waste Hauler: A company that possesses a valid permit from the [local waste management authority to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal in [the locality].

1.03 SUBMITTALS

A. Contractor's Reuse, Recycling, and Disposal Report
   1. Submit Contractor's Reuse, Recycling, and Disposal Report on the form provided (Section

01151B) with each application for progress payment. Failure to submit the form and its supporting documentation will render the application for progress payment incomplete and delay progress payments. If applicable, include manifests, weight tickets, receipts, and invoices specifically identifying the Project for re-used and recycled materials:

a. Reuse of building materials or salvage items on site
b. Salvaging building materials for reuse
c. Recycling source separated materials on site, with approval
d. Recycling source separated material at an off site recycling center
e. Delivery of soils or mixed inerts to an inerta landfill for disposal (inert fill).
f. Disposal at a landfill or transfer station (where no recycling takes place).
g. Other (describe).

B. Contractor's Reuse, Recycling, and Disposal Report must quantify all materials generated in the Work, disposed in landfills, or diverted from disposal through recycling. Indicate zero (0) if there is no quantity to report for a type of material. As indicated on the form:
   1. Report disposal or recycling either in tons or in cubic yards: if scales are available at disposal or recycling facility, report in tons; otherwise, report in cubic yards. Report in units for salvage items when no tonnage or cubic yard measurement is feasible.
   2. Indicate locations to which materials are delivered for reuse, salvage, recycling, accepted as daily cover, inert backfill, or disposal in landfills or transfer stations.
   3. Provide legible copies of weigh tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.
      a. Indicate project title, project number, progress payment number, name of the company completing the Contractor's Report and compiling backup documentation, the printed name, signature, and daytime phone number of the person completing the form, the beginning and ending dates of the period covered on the Contractor's Report, and the date that the Contractor's Report is completed.

PART 2PRODUCTS

2.01 (Not used.)

PART 3EXECUTION

3.01 SALVAGE, RE-USE, RECYCLING AND PROCEDURES

A. Identify re-use, salvage, and recycling facilities.

B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor's Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.
   1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
   2. Source separate new construction, excavation and demolition materials including, but not limited to the following types:
      a. Asphalt.
      b. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
      c. Metal (ferrous and non-ferrous).
      d. Miscellaneous Construction Debris.
      e. Paper or cardboard.
      f. Soils.
      g. Wood studs
      h. Other
   3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source

separated to a mixed materials recycling facility.

3.02 DISPOSAL OPERATIONS AND WASTE HAULING

A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.

B. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority.

C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials. NCDOT General Services Division will work with the General Contractor on identifying sites that will accept recycled materials.

D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.

E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

3.03 REVENUE

A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to the General Contractor. Accounting of revenues or savings is for the Owner's tracking purposes only.

END OF SECTION

SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. See also INVOICES FOR PAYMENT, page 4 of GENERAL CONDITIONS.

1.02 SCHEDULE OF VALUES

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

B. Forms filled out by hand will not be accepted.

C. Schedule of values shall accurately reflect amount for each item and will be used as the basis of payment for in-place work and materials on site.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

C. Forms filled out by hand will not be accepted.

D. Execute certification by signature of authorized officer.

E. Submit five originals of each Application for Payment.

F. Submit County Sales and Use Tax forms (see page 3 of the GENERAL CONDITIONS) with each application for payment.

G. Submit "MBE Documentation for Contract Payments" form with final application for payment.

END OF SECTION

SECTION 01300

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preconstruction meeting.

B. Progress meetings.

C. Construction progress schedule.

D. Submittals for review, information, and project closeout.

E. Submittal procedures.

F. Quality assurance.

1.02 RELATED REQUIREMENTS

A. General Conditions

B. Supplementary General Conditions

C. Section 01700 - Execution and Closeout Requirements: Additional coordination requirements.

D. Section 01780 - Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION

A. Project Coordinator: General Contractor.

B. Cooperate with the Owner's Representative in allocation of mobilization areas of site; for field offices and sheds, for vehicular access, traffic, and parking facilities.

C. Coordinate with Owner's procedures for submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts. Any discrepancies noted in the contract documents is to be reported to the engineer.

D. Coordinate temporary utilities and construction facilities w/owner.

E. Make the following types of submittals directly to the engineer:
   1. Requests for interpretation.
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Manufacturer's instructions and field reports.
   6. Applications for payment and change order requests.
   7. Progress schedules.
   8. Coordination drawings.
   9. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Attendance Required:
   1. NC DOT (Owner).
   2. Designer.
   3. Contractor.
   4. Major Subcontractors.

5. State Construction Office.

B. Agenda:
   1. Distribution of Contract Documents.
   2. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   3. Designation of personnel & emergency personal representing the parties to Contract, State Construction Office, and Architect.
   4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Designer, NC DOT, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

A. The architect will administer meetings throughout progress of the Work at monthly intervals.

B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Owner, Architect and State Construction Monitor.

C. Agenda:
   1. Review minutes of previous meeting.
   2. Review of Work progress- one month look-ahead.
   3. Field observations & issues.
   4. Review of submittals schedule and status of submittals.
   5. Progress schedule.
   6. Corrective measures to regain project schedule, if necessary.
   7. Planned progress during succeeding work period.
   8. Outstanding RFI's/RFP's.

D. Architect will record minutes and distribute copies after the meeting to participants.

E. Owner or engineer will also be on site weekly for an informal jobsite visit.

3.03 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date established in Notice to Proceed, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 7 days.

C. Submit updated schedule at each monthly meeting if there is a change.

3.04 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with the contract documents.

C. Samples will be reviewed for color and finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 - CLOSEOUT SUBMITTALS.

3.05 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Other types indicated.

B. Submit for Designer's knowledge as contract administrator or for NC DOT. No action will be taken.

3.06 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

B. Submit for NC DOT's benefit during and after project completion.

3.07 SUBMITTAL PROCEDURES

A. Transmit each submittal with AIA Form G810.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, SCO ID Number, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. The submittal will be rejected by the Architect without this verification.

E. Schedule submittals to expedite the Project, and coordinate submission of priority and related items.

F. For each submittal for review, allow 15 days excluding delivery time.

G. Identify variations from Contract Documents and Product or system limitations.

H. Provide space for Contractor and Architect review stamps.

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

J. Architect will distribute copies of reviewed submittals.

3.08 SOILS AND MATERIALS QUALITY ASSURANCE

A. Quality assurance will be provided by Owner or testing agency employed by Owner.

B. General Contractor will notify the Owner and testing agency 48 hours in advance to schedule the Owner's testing agent on site.

C. Testing will include soil and gravel compaction testing, and slump and strength testing for all concrete (footing, slab, walls).

D. Visual inspection of all structural elements will be done by the owner and engineer.

END OF SECTION

SECTION 01400

QUALITY ASSURANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. References and standards.

B. Quality assurance submittals.

C. Control of installation.

D. Testing and inspection services.

1.02 RELATED REQUIREMENTS

A. Section 01300 - Administrative Requirements: Submittal procedures.

B. Section 01600 - Product Requirements: Requirements for material and product quality.

1.03 SUBMITTALS

A. Contractor to submit concrete mix design and any additional information required elsewhere in the specifications.

B. Testing Agency Qualifications:
   1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.

C. Test Reports: After each test/inspection, promptly submit report to Architect and to Contractor.

D. 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.

1.04 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 EXECUTION

2.01 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 manufacturer's instructions, including each step in sequence.

C. Should manufacturer's instruction 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 person 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.

2.02 TESTING AND INSPECTION

A. Site inspections will be by state construction monitor, state electrical inspector, and designers of record.

B. Contractor Responsibilities:
   1. Deliver to owner at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Notify Architect and Owner 48 hours prior to expected time for operations requiring testing/inspections services.

2.03 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

01-4100 Statement of Special Inspections

Project: New One-Bay Sand Blasting Shed and Containment Area
SCO ID#: 13-10648-01A
Location: Manns Harbor, NC
Owner's Representative: Charlie Fearing, Ferry Division
Owner's Address: 748 Oyster Creek Road, Swan Quarter, NC 27885

Structural Engineer of Record: Michael Mountcastle

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection requirements of the 2012 North Carolina State Building Code. It includes a Schedule of Special Inspection Services applicable to this project as well as the name of the Special Inspector and the identity of other approved agencies intended to be retained for conducting these inspections.

The Special Inspector shall keep records of all inspections and shall furnish inspection reports to the State Construction Office, Structural Engineer and Architect of Record. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the State Construction Office, Structural Engineer and Architect of Record. The Special Inspections program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the State Construction Office, Owner, Structural Engineer and Architect of Record.

Interim Report Frequency: Monthly

A Final Report of Special Inspections documenting completion of all required Special Inspections and correction of any discrepancies should be submitted prior to issuance of a Certificate of Use and Occupancy.

Job Site safety and means and methods of construction are solely the responsibility of the Contractor.

Statement of Special Inspections Prepared by (Structural Engineer of Record):

Michael D. Mountcastle, P.E.
(Type or print name)

Mike Mountcastle 7-30-14
Signature Date

Owner's Authorization

Signature Date

Accepted for the SCO by:

Signature Date

Schedule of Special Inspection Services

The following sheets comprise the required schedule of special inspections for this project. The construction divisions which require special inspections for this project are as follows.

- ☐ Structural Steel
- ☐ Cold-Formed Steel Framing
- ☐ Cast-in-Place Concrete
- ☐ Masonry
- ☐ Wood Construction
- ☐ Soils
- ☒ Wind Requirements
- ☐ Special Foundations (Piles or Piers)
- ☐ Wall Panels/Veneer
- ☐ Sprayed Fire Resistant Material
- ☐ Exterior Insulation & Finish System
- ☐ Smoke Control
- ☐ Seismic Requirements
- ☐ Fire Rated Penetrations

Inspection Agents	Qualifications	Address
1. Special Inspector	SI	
2. Structural Engineer of Record Michael D. Mountcastle	SER	1 South Wilmington Street 1525 Mail Service Center Raleigh, NC 27699-1525
3. Testing Laboratory	ITL	
4. Architect of Record Mark D. Gibson	A	1 South Wilmington Street 1525 Mail Service Center Raleigh, NC 27699-1525

Note: The inspection and testing agent shall be engaged by the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the State Construction Office, prior to commencing work.

Seismic Design Category: B

Basic Wind Speed: 130 mph

Wind Exposure Category: B

Schedule of Special Inspection Services

Wind Requirements (Section 1706)

Item	Qualifications	Scope
1. Bolting, nailing, and other fastening of the main wind force resisting system components.	SER SI	• Periodic inspection of nailing, bolting, and other means of attachment for main structural members. • Periodic inspection of roof truss tie-down. • Periodic inspection of roof and wall bracing.
2. Wall cladding.	Architect SER	• Periodic inspection of fiber-cement siding attachment.
3. Roof cladding.	SER SI Architect	• Periodic inspection of roof panel attachment.

END OF SECTION

SECTION 01525

FIELD OFFICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary field office for use of Contractor.

1.02 RELATED REQUIREMENTS

A. Section 01100 - Summary: use of premises and responsibility for providing field offices.

PART 2 PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

A. Materials, Equipment, Furnishings: Serviceable, new or used, adequate for required purpose.

2.02 CONSTRUCTION

A. Portable or mobile buildings, securely fixed to foundations, with steps and landings at entrance doors.

B. Construction: Structurally sound, secure, weather tight enclosures for office. Maintain during progress of Work; remove when no longer needed- can make use of Owner's site utilities for connection.

C. Fire Extinguishers: Appropriate type fire extinguisher at each office.

2.03 Contractor OFFICE AND FACILITIES

A. Size: For Contractor's needs- project meetings will be held at Owner's County Maintenance Building.

B. Toilet: Provide toilet in office or portable toilet facility on site.

PART 3 EXECUTION

3.01 PREPARATION

A. Fill and grade sites for temporary structures to provide drainage away from buildings.

3.02 INSTALLATION

3.03 MAINTENANCE AND CLEANING

A. Maintain approach walks free of mud, water, and snow.

END OF SECTION

SECTION 01550

VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 02310 - Grading: Specifications for earthwork and paving bases.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 PARKING

A. Parking and staging areas on site will be coordinated at the preconstruction conference.

3.02 NEW PERMANENT PAVEMENTS

A. Prior to Substantial Completion the base for permanent roads and parking areas may be used for construction traffic.

3.03 MAINTENANCE

A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, waste material, mud, snow and ice..

B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.04 REMOVAL, REPAIR

A. Repair existing facilities damaged by use, to original condition.

B. Repair damage caused by installation.

3.05 MUD FROM SITE VEHICLES

A. Provide means of removing mud from vehicle wheels before entering streets.

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations and procedures.

1.02 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

C. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.

3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.

D. Substitution Submittal Procedure:
1. Submit one copy of request for substitution for consideration. Limit each request to one proposed substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

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

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

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

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

F. Prevent contact with material that may cause corrosion, discoloration, or staining.

G. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

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

END OF SECTION

SECTION 01700

EXECUTION & CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Surveying for laying out the work.

D. Cleaning and protection.

E. Starting of systems and equipment.

F. Demonstration and instruction of NC DOT personnel.

G. Closeout procedures, except payment procedures.

1.02 RELATED REQUIREMENTS

A. Section 01100 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01300 - Administrative Requirements: Submittals procedures.

C. Section 01780 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Survey work: Staking and grading is to be done per contract document information, with General Contractor's Surveyor prior to starting work; Contractor is to alert Designer to any discrepancies.
   1. Submit surveys and survey logs for the project record.

1.04 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in North Carolina.

B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in North Carolina.

1.05 PROJECT CONDITIONS

A. Grade site as shown on Contract document. Maintain excavations free of water. Provide, operate, and maintain pumping equipment if necessary.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. As work progresses, ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. General contractor to coordinate completion and clean-up of work of subcontractors.

D. After Owner occupancy of premises, Owner's representative will coordinate access to site for correction of warranty work.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01600.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Designer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Designer.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Patching:

1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.08 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

D. Clean filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.09 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Notify Designer when work is considered ready for Substantial Completion.

C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Designer's review.

D. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

E. Notify Designer when work is considered finally complete.

F. Complete items of work determined by Designer's final inspection.

END OF SECTION

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 00700 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01300 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Section 01700 - Execution Requirements: Contract closeout procedures.

D. Individual Product Sections: Specific requirements for operation and maintenance data.

E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: ("As Built" mark-up set) Submit documents to Designer with claim for final Application for Payment.

B. Operation and Maintenance Manual:
   1. For equipment, or component parts of equipment put into service during construction and operated by NC DOT, submit completed documents with acceptance of work.
   2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   3. Submit three sets of final documents at the final inspection.
   4. Operation and Maintenance manuals shall be loose leaf notebook with "tabs" to separate sections.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with NC DOT's permission, submit documents with acceptance of work.
   2. Make other submittals at the final Application for Payment.
   3. For all the work, the date of warranty will be the date of the final inspection.

PART 2 EXECUTION

2.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings, Project manual.
   2. Addenda, Bulletin drawings.
   3. Change Orders and other modifications to the Contract.
   4. Reviewed / approved shop drawing submittals, product data, and samples.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record the information as construction progresses.

E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.
   3. All subcontractors are to mark on the same record set.

2.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

2.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. Provide for Each Product, applied material, and finish.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

2.04 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined. All warranties and bonds must be submitted at (or by) the final inspection.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

SECTION 02310

GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of topsoil.

B. Rough grading the site for building pads.

C. Finish grading.

1.02 RELATED REQUIREMENTS

A. Section 02315 - Excavation.

B. Section 02316 - Fill and Backfill: Filling and compaction.

PART 2 EXECUTION

2.01 GRADING

A. Contractor shall provide rough and final grading for this project. See geotechnical report included herein.

B. Contractor to provide structural, drainable base for concrete slabs.

C. Contractor to finish grade to achieve elevations shown and shall weather in to existing grades to remain.

D. Verify grades and elevations with Owner prior to construction.

END OF SECTION

SECTION 02315

EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for footings, slabs-on-grade, paving, and utilities within the building.

B. Trenching for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

A. Section 02310 - Grading: Grading.

B. Section 02316 - Fill and Backfill: Fill materials, filling, and compacting.

PART 2 EXECUTION

2.01 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

2.02 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

D. Excavate and pour in 45 degree bearing splay of foundations at connection to existing building in one day.

E. Cut utility trenches wide enough to allow inspection of installed utilities.

F. Hand trim excavations. Remove loose matter.

G. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 02316.

H. Grade top perimeter of excavation to prevent surface water from draining into excavation.

I. Stockpile excavated material that is unsuitable for re-use to location on owner's site (owner will direct).

J. Stockpile excess excavated material on owner's site, as directed.

END OF SECTION

SECTION 02316

FILL AND BACKFILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for building volume below grade.

B. Most grading and fill will be provided by owner prior to construction. This section covers backfill for construction excavations and unforeseen conditions.

1.02 RELATED REQUIREMENTS

A. Section 02310 - Grading: Site grading.

B. Section 02315 - Excavation: Removal and handling of soil to be re-used.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Compaction Density Test Reports.

PART 2 EXECUTION

2.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

2.02 PREPARATION

A. Scarify subgrade surface to a depth of 6 inches 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.

2.03 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. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

G. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into existing grade/sidewalk/curb.

H. 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. Upper 12" compacted to 98 percent of maximum dry density.
   2. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.

I. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.

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

2.04 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor").

D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

END OF SECTION

FROEHLING & ROBERTSON, INC.

March 26, 2014

Report of
Geotechnical Study

NCDOT Ferry Division
New Sand Blasting Storage Shed
8550 Shipyard Road
Manns Harbor, North Carolina 27953
WBS: 36057.115

Prepared For:

North Carolina Department of Transportation
1592 Mail Service Center
Raleigh, North Carolina 27699

F&R Record No. 61R-3142

Report of Geotechnical Study

NCDOT Ferry Division Repair Facility
New Sand Blasting Storage Shed
8550 Shipyard Road
Manns Harbor, North Carolina 27953
WBS: 36057.115

Prepared For:
North Carolina Department of Transportation
1592 Mail Service Center
Raleigh, North Carolina 27699

By:
Froehling & Robertson, Inc.
Greenbrier Commerce Park
833 Professional Place, W.
Chesapeake, Virginia 23320

March 26, 2014

SINCE
1881

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March 26, 2014

F&R Record No. 61R-3142
F&R Report Serial No. 61R3142-GE01

North Carolina Department of Transportation
1592 Mail Service Center
Raleigh, North Carolina 27699

Attn: Mr. Mike Mountcastle, P.E., Facilities Design

Re: **Report of Geotechnical Study**
New Sand Blasting Storage Shed
8550 Shipyard Road
Manns Harbor, NC 27953
WBS: 36057.115

Dear Mr. Mountcastle:

The enclosed report presents the results of the subsurface exploration program and geotechnical engineering evaluation undertaken by Froehling & Robertson, Inc., in connection with the referenced project. Our services were performed in general accordance with F&R Proposal No. 1461-0568G dated February 3, 2014, and authorization to proceed received February 19, 2014.

The report presents our understanding of the project, reviews our exploration procedures, describes the general subsurface conditions at the boring locations, and presents our evaluations, conclusions, and recommendations. There are important limitations to this and all geotechnical reports. Some of these limitations are discussed in the information prepared by ASFE, Inc., provided in Appendix I of this report. We ask that you review the referenced ASFE information.

We have enjoyed working with you on this project, and we are prepared to assist you with the recommended quality assurance monitoring and testing services during construction. Please contact us if you have any questions regarding this report or if we may be of further service.

Sincerely,

FROEHLING & ROBERTSON, INC.

Marving L. Farmer, P.E.
Branch Manager, Senior Engineer

John P. Sensabaugh, P.E.
Senior Geotechnical Engineer

MLF/JPS

Email Distribution: mdmountcastle@ncdot.gov

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EXECUTIVE SUMMARY

This Executive Summary is provided as a brief overview of our geotechnical engineering evaluation for the project is not intended to replace more detailed information contained elsewhere in this report. As an overview, this summary inherently omits details that could be very important to the proper application of the provided geotechnical design recommendations. This report should be read in its entirety prior to implementation into design and construction.

F&R performed three exploratory borings to a depth of 20 feet below the ground surface near the footprint of the planned location of the new sand blasting storage shed at the Ferry repair Facility in Manns Harbor, North Carolina. Standard Penetration Tests were performed in each boring and three soil samples were then selected for further testing at our laboratory to obtain a more detailed understanding of the soil properties encountered at the site.

The proposed project consists of the construction of a new one-bay shed for storage of sand blasting material and includes an attached sand blasting containment area. The new construction will be located at the present location of the sand blasting area on the Manns Harbor Facility. Finish floor elevation of the new construction will approximate the current site grades.

The ground surface of the existing sand blasting area is partially paved and partially covered with surficial soil. Both asphalt and surficial soil at the sand blasting area are overlain by steel plates used to contain the sand blasting grit. Asphalt and surficial soil will require removal prior to construction of the new sand blasting storage shed. Based on the subsurface data, a stripping depth on the order of up to six inches below existing site grades is anticipated with deeper stripping possible in isolated areas.

The proposed new building addition is planned to be supported by a wall and column shallow foundation system. Wall loads of 3,000 pounds per linear foot and column loads of 30 kips were used to evaluate allowable bearing capacity and settlement. F&R recommends the shallow foundations for the building to have a maximum net allowable bearing pressure of 2,000 pounds per square foot. Based on the boring data as well as the assumed grading and structural load information, we estimate total settlements to be 1-inch or less, with differential settlement of one-half the estimated total settlement.

1.0 PURPOSE & SCOPE OF SERVICE

The purposes of Froehling & Robertson's, Inc. (F&R's) involvement on this project were to 1) perform a subsurface exploration and testing, 2) provide general descriptions of the subsurface soil conditions at the location of the new shed, 3) provide design recommendations for shallow foundation bearing capacity, and 3) comment on geotechnical aspects of the proposed construction. In order to accomplish these objectives, we undertook the following scope of services:

- Visited the site to observe existing surface conditions and mark the proposed boring locations for North Carolina 811 and facility personnel utility clearances.
- Reviewed and summarized readily available geologic and subsurface information relative to the project site.
- Executed the requested subsurface exploration program consisting of three Standard Penetration Test (SPT) borings. The borings were advanced to termination depth of 20 feet below the existing ground surface.
- Performed a laboratory testing program consisting of three sets of soil classification tests (ASTM D422 without hydrometer, D2488, and D2216).
- Provided a seismic site classification. A 100-foot deep boring or shear wave velocity study were not performed.
- Evaluated the findings of the test borings and lab test results.
- Preparation of this written report to summarize our work on the project, providing descriptions of the subsurface conditions encountered, presenting shallow foundation design recommendations, and discussing geotechnical related aspects of the proposed construction. Copies of the boring logs and laboratory test results are included.

F&R's services did not include topographic or field surveying, development of quantity estimates, preparation of plans and specifications, or the identification and evaluation of wetlands or other environmental aspects of the project site.

2.0 PROJECT INFORMATION

2.1 Project Information and Proposed Construction

Initial project information was provided by Mr. Michael D. Mountcastle, P.E., to F&R via email and email attachment on January 28, 2014.

The proposed project consists of the construction of a new one-bay shed for storage of sand blasting material and includes an attached sand blasting containment area. The new construction will be located at the present location of the sand blasting area on the Manns Harbor Facility.

The storage bay is expected to store up to a 10-foot high pile of blasting material that weighs approximately 75 pcf. The blasting area adjacent to the shed will not store much material. Both the storage bay and containment area will have a 6-inch reinforced concrete floor slab on a compacted granular base. The basting area will have front-end loaders and other traffic crossing the slab.

Footprint dimensions of 41'-0" by 85'-0" are planned for the new shed and adjacent sand blasting area. Structural loading conditions other than that previously mentioned have not been provided. F&R has assumed shallow foundations with wall loads of 3,000 pounds per linear foot and column loads of 30 kips for our evaluations.

The finished floor elevation of the new sand blasting shed will approximate the elevation of the existing pavement at the site.

2.2 Site Location and Description

Manns Harbor, North Carolina, is located east of the intersection of US 64 and US 264 along the eastern bank of the Croatan River in Dare County. The NCDOT Ferry Repair Facility is located at the southern terminus of Shipyard Road.

Access to the Ferry Repair Facility is gained through the gated road and parking lot located at the end of Shipyard Road. The sand blasting area is south of the Paint Building, past the Transfer Table, and east of Platen No. 4.

The general location of the site and surrounding area are shown on the Site Vicinity Map, Drawing No. 1, included in Appendix II

The sand blasting area is partially paved with a heavy asphalt pavement section and partially underlain by soil. Steel plates to contain sand blast grit cover both asphalt and soil in the area. Existing containment walls for the sand blasting area are barge pontoons that are approximately 3 feet in diameter.

3.0 EXPLORATION PROCEDURES

3.1 Subsurface Exploration

The subsurface exploration program consisted of three Standard Penetration Test (SPT) borings that were performed on March 11, 2014. Borings B-1 through B-3 were each advanced to the termination depth of 20 feet below the existing surface at the approximate locations identified on the Subsurface Exploration Plan included in Appendix II as Drawing No. 2. F&R personnel by estimating distances from the existing site features marked boring locations at the site. As such, the boring locations should be considered approximate.

SPT tests were performed continuously from the existing ground surface to a depth of 10 feet in general accordance with ASTM D1586. Thereafter, boreholes were advanced and SPT performed at approximate five-foot depth intervals to their planned termination depths.

Soil samples were obtained with a standard 1.4" I.D., 2" O.D., and 30" long split-spoon sampler with each SPT being driven with a 140-lb automatic hammer falling 30 inches. The number of blows required to drive the sampler each 6-inch increment of penetration was recorded and are shown on the boring logs. The sum of the second and third penetration increments is termed the SPT value, "N". The first six-inch increment is used to seat the sampler, and the sampler was driven a fourth increment (after the SPT is completed) in order to obtain additional information used to stratify the soils. A representative portion of each disturbed split-spoon sample was collected with each SPT, placed in a glass jar, and returned to our laboratory for review.

The recovered split-spoon samples were visually classified in general accordance with the ASTM D2488 by an F&R engineer at the time of drilling. Recovered split spoon samples were again reviewed in-house by F&R engineers. The boring logs provided in Appendix III show the subsurface conditions encountered on the dates and at the approximate locations indicated.

The drill rig used for this project was an ATV-mounted, CME 55 equipped with an automatic hammer. Research has shown that the Standard Penetration Resistance (N-value) determined by the automatic hammer is different from the N-value determined by the safety hammer method. Most correlations that are published in technical literature are based on the N-value determined by the safety hammer method. This is commonly termed N_{60} as the rope and cathead with a safety hammer delivers roughly 60 percent of the theoretical energy delivered by a 140-pound hammer falling 30 inches.

Because an automatic hammer was used to perform the SPT tests, the sample blows recorded during drilling (N_{field}) have been corrected to equivalent N_{60} safety hammer values. The N_{60} values reported on the boring logs included in this report were determined from the following equation:

$$N_{60} = N_{field} \times C_E$$

where N_{field} is the value recorded in the field, and C_E is the drill rod energy ratio for the hammer used. A value of 1.27 was used for C_E based on calibration of the drill rig's automatic hammer on February 22, 2014.

By the nature of the work performed, the drilling activities result in disturbances to the site. The completed boreholes performed were backfilled upon completion and the asphalt cold patched. Although care was taken to plug the boreholes and patch the asphalt, the boreholes backfill may subside at some time following our work. F&R assumes no responsibility for borehole subsidence after completion of the field exploration and departing the site. For continued safety, others should occasionally observe the boreholes with any needed additional backfilling then being performed.

3.2 Laboratory Testing

For geotechnical considerations, split-spoon samples from the soil test borings were subjected to laboratory classification testing. This testing included natural water content determinations (ASTM D2216), sieve analysis (ASTM D422 without hydrometer), and Atterberg limits tests (ASTM D4318). Based on the results of these tests, the soil samples were then classified in general accordance with Unified Soil Classification System (ASTM D2487).

Laboratory test results for soil samples classified in general accordance with AASHTO and USCS procedures are provided in Appendix IV.

4.0 SUBSURFACE CONDITIONS

4.1 Regional Geology

The project site lies within the Outer Coastal Plain, also known as the Tidewater physiographic province, of North Carolina, which extends from the Fall Zone eastward to the Atlantic Ocean. The Outer Coastal Plain is extremely flat, averages less than 20 feet above sea level and contains large swamps and lakes indicative of poor drainage conditions.

Numerous transgressions and regressions of the Atlantic Ocean have deposited marine, lagoonal, and fluvial (stream lain) sediments. The regional geology is very complex, and generally consists of interbedded layers of varying mixtures of sands, silts, and marine clays.

4.2 Subsurface Conditions

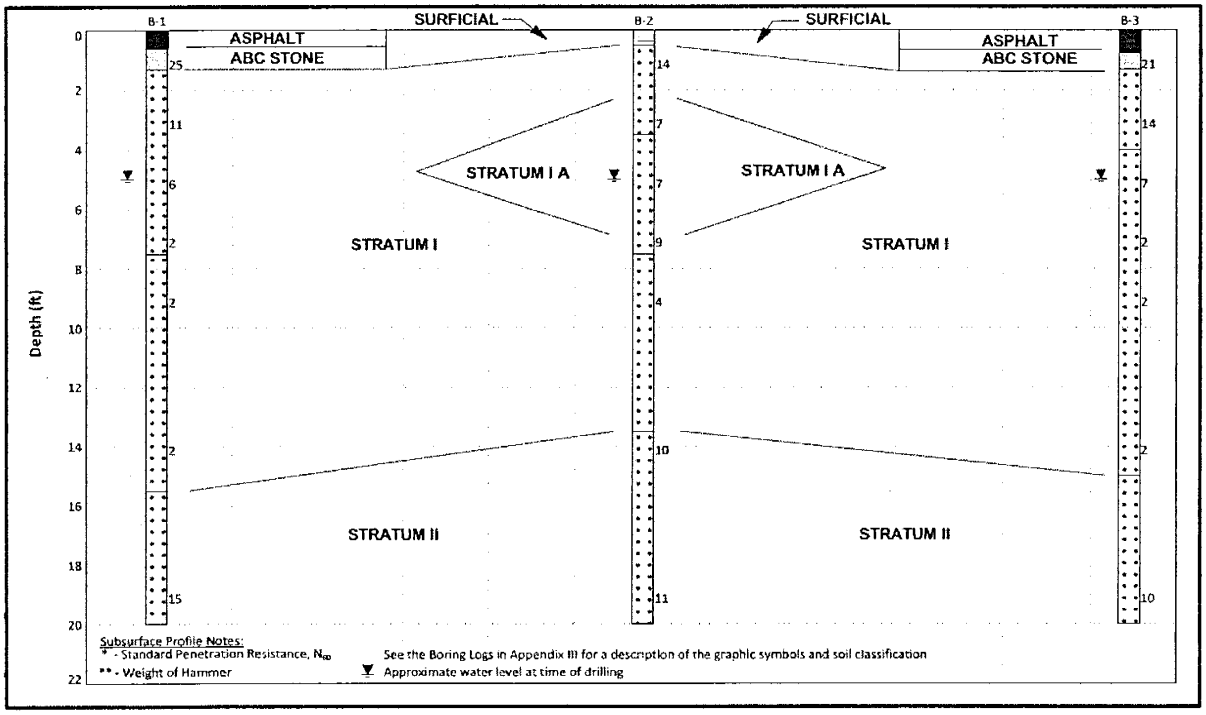
The subsurface conditions discussed in the following sections and those shown on the attached boring logs and profiles represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments.

Strata breaks designated on the boring logs and profiles represent approximate boundaries between soil types. The transitions between different soil strata are usually less distinct than those shown on the boring logs. Although an individual soil test boring is representative of the subsurface conditions at the test locations on the dates shown, they are not necessarily indicative of subsurface conditions at other locations or at other times. Data from the specific soil test borings are shown on the attached boring logs in Appendix III.

4.2.1 Subsurface Profile

Subsurface data obtained by the soil borings are presented in the following Composite Subsurface Profile and in Appendix III.

Figure 4.2.1: Composite Subsurface Profile



Composite Profile Notes

- SURFICIAL: Brown, Silty Fine SAND with varying amounts of organics, moist.
- STRATUM I: Medium Dense to Very Loose, Brown to Dark Brown, Fine SAND with trace silt, moist to wet (A-3).
- STRATUM IA: Loose, Dark Brown, Fine SAND with trace silt, trace roots and organics, moist to wet (A-3).
- STRATUM II: Medium Dense, Fine to Coarse SAND with trace silt, wet (A-3).

4.3 Surficial Soils

Surficial soils are typically a dark-colored soil material containing roots, fibrous matter, and/or other organic components, and are generally unsuitable for engineering purposes. We note that no laboratory testing has been performed to determine the organic content or horticultural properties of the observed surficial soil materials. Therefore, the term "surficial soils" is not intended to indicate suitability for landscaping and/or other purposes. The surficial

soil depths provided in this report are based on driller observations and should be considered approximate. Actual surficial soils depths should be expected to vary across the site.

4.4 Groundwater Data

F&R did not obtain long-term/stabilized groundwater level readings at the soil boring locations, as the boreholes were backfilled with soil cuttings, drilling fluid, and soil plug upon completion. The groundwater level was evaluated at each boring location by visually judging the moisture content of the recovered split-spoon soil samples.

Groundwater was judged to have been encountered at a depth of approximately 5 feet below the existing ground surface. Groundwater levels fluctuate with seasonal changes, periods of heavy or little rainfall, tidal fluctuations, and other factors. Therefore, our evaluations of the groundwater level do not reveal the actual year-round groundwater conditions.

5.0 DESIGN RECOMMENDATIONS

5.1 General

The following findings and recommendations are based on our observations at the site, interpretation of the field and laboratory data obtained during our subsurface exploration, and our experience with similar subsurface conditions and projects. Soil penetration data has been used to evaluate the subsurface conditions based on established correlations. Subsurface conditions in unexplored locations may vary from those encountered. If the proposed building location is changed, F&R requests that we be advised so that our design recommendations can be re-evaluated.

Determination of an appropriate shallow foundation system for a given structure is dependent on the proposed structural loads, soil conditions, and construction constraints such as proximity to other structures, etc. The subsurface exploration aids the geotechnical engineer in determining the soil stratum appropriate for structural support. This determination includes considerations with regard to both allowable bearing capacity and compressibility of the soil strata. In addition, since the method of construction greatly affects the soils intended for structural support, consideration must be given to the implementation of suitable methods of site preparation, fill compaction, and other aspects of construction. Please refer to the Construction Recommendations included in Section 6 of this report.

5.2 Shallow Foundation Design Recommendations

Based on the available project information and our evaluations, a conventional shallow foundation system bearing in approved Stratum I or IA soils or compacted structural fill placed in accordance with requirements in Section 6 may be used to support the new sand blasting storage shed.

We recommend that shallow wall and column foundations be designed for a maximum net allowable bearing pressure of 2,000 pounds per square foot (psf), for foundations bearing in approved subgrade soils. Continuous wall foundations should have a minimum width of 18 inches and column foundations should have a minimum width of 24 inches to reduce the possibility of a "punching" shear failure. The structural elements should be centered on the foundations to provide uniform load transfer, unless the foundations are proportioned for eccentric loads.

Shallow, lightly loaded foundations should bear at a depth of at least 18 inches below the finish exterior site grades to lessen the potential for damage from frost penetration and for bearing capacity considerations.

All foundation subgrades should be observed, evaluated, and verified for the design bearing pressure by a representative of the geotechnical engineer after excavation and prior to reinforcement steel placement. Where low consistency/relative density soils are encountered during foundation construction, localized undercutting and/or in-place stabilization of foundation subgrades may be required. The actual need for, and extent of, undercutting should be based on field observations made by a representative of the geotechnical engineer at the time of construction.

5.3 Estimated Settlements

Based on the boring data as well as the assumed grading and structural load information discussed in the project information section of this report, we estimate total settlements of 1-inch or less. Differential settlement is estimated to be one-half the estimated total settlement.

Actual settlements experienced by the structure and the time required for these soils to settle will be influenced by undetected variations in subsurface conditions, preloading of the site and uniformity of the preloading, actual structural loads, final grading plans, and the quality of fill placement and foundation construction.

Due to the potential high floor loads from stored sand blasting material in the storage shed area, F&R recommends that expansion joints be constructed in the floor and walls between the storage shed area and sand blasting area. The expansion joints would reduce potential for cracking between the storage shed and sand blasting area.

5.4 Expansive Soil Evaluation

The existing subgrade soils encountered by the soil borings were evaluated for shrink-swell (expansion) potential within the active zone, which generally extends to a depth of approximately three feet below the ground surface in the region of the proposed project site. The soils typically encountered within the active zone are visually classified as fine Sand with trace to little silt (SP, SP-SM) per the Unified Soil Classification System. The observed soils in the active zone are classified as non-plastic soils. Based on correlations provided in geotechnical literature, the soils encountered within the active zone are judged to have low potential for shrink-well activity. As a result, it appears that the proposed construction will not be influenced by expansive soil conditions.

5.5 Concrete on Slabs-On-Grade

Concrete slabs not structurally supported as part of the building may be placed on properly compacted controlled structural fill or on an approved soil subgrade following subgrade preparation as discussed in Section 6.3. A standard modulus of subgrade reaction ("k") of 200 pci may be used for the design of the slabs-on-grade. Slabs should be structurally isolated (float freely) from the foundations to allow for differential movement between the slabs and the structure.

Settlements associated with the slabs are anticipated to be 1-inch or less, provided the slab area is prepared and controlled structural fill material is placed and compacted as recommended.

A six-inch thick layer of open graded coarse aggregate No. 57 or No. 78 or clean sand (A-3 per AASHTO or SP per Unified Soil Classification System) should be placed beneath the floor slab. This granular base would function as a leveling and load distributing material as well as a capillary break beneath the slab.

The subgrade soil identified by the borings is classified as a clean A-3 sand. After stripping is performed and clean sand confirmed to be visually uniform across the new sand blasting

storage shed area, the Owner may opt to allow this material to become the leveling material and capillary break beneath the slab. Otherwise, a coarse aggregate leveling material and capillary break should be provided.

A vapor retarder should be used beneath slabs that will be covered by tile, wood, carpet, impermeable coatings, and/or if other moisture-sensitive equipment or materials will be in contact with the slab. However, the use of vapor retarders may result in excessive curling of concrete slabs during curing. We refer the concrete slab designer to ACI 302.1R-96, Sections 4.1.5 and 11.11, for further discussion on vapor retarders, curling, and the means to lessen potential concrete shrinkage and curling.

Proper jointing of the concrete slabs-on-grade is also essential to reduce cracking. ACI suggests that unreinforced, plain concrete slabs may be jointed at spacing of 24 to 36 times the slab thickness, up to a maximum spacing of 15 feet. Slab construction should incorporate isolation joints along walls and column locations to allow minor movements to occur without damage. Utility or other construction excavations in the prepared subgrade should be backfilled to a controlled fill criterion to provide uniform support.

5.6 Seismic Site Classification

The following recommendations are based on Section 1613 of the 2009 International Building Code (IBC). Our scope of services did not include a 100-foot deep boring or a site specific soil shear wave velocity study.

IBC state that when the soil properties of a site are not known in sufficient detail to determine the site class, Site Class D shall be used unless the building official or geotechnical data determines that Site Class E of F soil is likely to be present on the site. Soil conditions for a Site Class E or F were not encountered in the borings; therefore, a soil Site Class D is judged appropriate for this site.

We note that the above provided soil Site Classification is based on information available at the time this report was written. Should this classification be so onerous to the project cost that further study is warranted, we can perform a site-specific geo-physical survey to attain sufficient detail to further define the project's soil Seismic Site Class Definition. This additional testing would be beyond the currently authorized scope of services for this project.

6.0 CONSTRUCTION RECOMMENDATIONS

6.1 General

The principal purpose of this section is to comment in general on the items related to earthwork and associated geotechnical engineering aspects of construction that should be expected for this project. It is recommended that the geotechnical engineer be retained to provide soil-engineering services during the construction phases of the project and perform appropriate evaluations to help assure that conditions encountered during construction are similar to conditions encountered in the borings. The geotechnical engineer can also assist in interpretation of differing subsurface conditions that may be encountered and recommend remedial work, if needed.

6.2 Site Preparation

The near surface silty sands can lose stability if the soils become saturated and are then subjected to construction traffic. As a result, site preparation should be performed during an extended period of dry weather. Undercutting may be necessary if the exposed subgrade soils become unstable during construction. Any fill materials, aggregate, and/or concrete should be placed as soon as possible over the approved subgrade in order to reduce exposure of the subgrade to weather and construction activity. It is important to stress that if site preparation/construction is performed during the winter months, additional undercutting may be required if the subgrade is not properly prepared/protected.

Site drainage will be important during site work operations. During site work, positive drainage away from the area should be maintained to reduce potential for deterioration of the exposed soil subgrade.

The proposed building pad areas should be stripped of asphalt, surficial soils and cleared of surface vegetation, organic materials, trees, tree stumps/roots, debris and any existing improvements to be abandoned. Stripping should be performed to a horizontal distance of three to five feet in plan dimension beyond the planned structure areas, depending on planned foundation widths and accessibility.

Based on the subsurface data, the site is partially covered by asphalt pavement with a gravel base and surficial soil, both beneath steel plates. The asphalt varies in thickness and should be saw cut prior to removal. Stripping depth on the order of up to six inches below existing site

grades for the non-paved areas to remove surficial soils is anticipated with deeper stripping possible in isolated areas.

Upon completion of stripping operations and prior to installing fill to the planned elevations, the geotechnical engineer should observe proofrolling of the building pad areas. Proofrolling should be performed with a loaded 15-ton to 20-ton dump truck or other pneumatic-tired vehicle of similar size and weight during a time of good weather and not while the site is wet as a result of recent rain or snow. The purpose of proofrolling is to detect any isolated soft areas and to evaluate the general stability of the near surface subgrade soils. Any areas that deflect (pump) during proofrolling should be over-excavated to firm material and be replaced with compacted structural fill, as recommended by the geotechnical engineer and as directed by the Owner.

To improve the uniformity of subgrade support, the exposed subgrade in the planned storage shed pad area should be compacted. Two to four passes over the exposed subgrade using a minimum 8- to 12-ton vibratory roller should be performed to compact the surface of the exposed subgrade. Compaction of the exposed subgrade should be observed by the geotechnical engineer.

A contingency should be included in the contract documents and project budget to address possible undercut excavation of unsuitable soils and replacement with imported controlled structural fill, as necessary.

6.3 Shallow Foundation Construction

Foundation subgrades should be observed, evaluated, and verified for the design bearing pressure by the geotechnical engineer or his representative after excavation and prior to reinforcement steel placement.

If low consistency soils are encountered during foundation construction, localized undercutting of foundation subgrades may be required. The actual need for, and extent of, undercutting should be based on field observations made by the geotechnical engineer at the time of construction. Any over-excavated material may be replaced with Controlled Structural Fill to the planned foundation bearing level. Placement and compaction of Controlled Structural Fill should be in accordance with the recommendations provided in the Controlled Structural Fill Section of this report. Graded #57 crushed stone seated in-place with the excavator bucket

may be used in-lieu of Controlled Structural Fill. The undercut excavations should be backfilled on a daily basis.

Excavations for foundations should be made in such a way to provide bearing surfaces that are firm and free of loose, soft, wet, or otherwise disturbed soils. If such materials are allowed to remain below foundations, settlements will increase. Foundation excavations should be concreted as soon as practical after they are excavated. If an excavation is left open for an extended period, a thin mat of lean concrete should be placed over the bottom to minimize damage to the bearing surface from weather or construction activities. Water should not be allowed to pond in any excavation. Foundation concrete should not be placed on frozen or saturated subgrades.

6.4 Controlled Structural Fill

Controlled Structural Fill material, if needed, should be non-expansive and free of organic matter, debris, and particles larger than two inches in size. Proposed fill material should be subjected to laboratory tests consisting of, but not necessarily limited to, moisture density determinations (ASTM D698), natural moisture content (ASTM D2216), Atterberg limits (ASTM D4318), and sieve analysis (ASTM D422 without hydrometer). These tests are needed for quality control during compaction and to determine if the fill material is acceptable. Controlled Structural Fill should classify as A-3 per AASHTO or as SW, SP, SP-SM or SM per the Unified Soil Classification System (USCS) with a maximum of 15 percent fines passing the No. 200 sieve. Coal combustion by-products are not suitable for use as Controlled Structural Fill.

Fill materials should be placed in horizontal lifts with maximum height of 8 inches loose measure and compacted to at least 95 percent of the maximum dry density as defined the Standard Proctor (ASTM D698). In confined areas such as utility trenches or behind foundation walls, portable compaction equipment and thin lifts of 4 inches to 6 inches may be required to achieve specified degrees of compaction.

New fill should be adequately keyed into stripped and scarified subgrade soils and should, where applicable, be benched into the existing slopes. During fill operations, positive surface drainage should be maintained to prevent the accumulation of water.

In general, we recommend that the moisture content of fill soils be maintained within three percentage points of the optimum moisture content as determined from the Standard Proctor

test. Excessively wet or excessively dry soils should not be used as fill material without proper drying or wetting. We recommend that the contractor have equipment on site during earthwork for both drying and wetting of fill soils.

Each lift of fill should be tested in order to confirm that the recommended degree of compaction is attained. Field density tests to verify fill compaction should be performed at an appropriate frequency for the area being tested, with a minimum of three tests per lift. In confined areas, such as trench backfill, a greater frequency may be required. Testing areas may be increased and the frequencies reduced based on the size of the structure and discretion of the geotechnical engineer.

6.5 Reuse of Existing Soils for Controlled Structural Fill

The Stratum I and IA soils classify as A-3 (SP and SP-SM per USCS). These material soils meet the classification requirements for Controlled Structural Fill.

It is recommended that provisions be provided in the contract for off-site borrow meeting the recommendations for Controlled Structural Fill as outlined in Section 6.4, if sufficient onsite borrow materials are unavailable.

6.6 Groundwater Conditions for Excavations

Groundwater for the purposes of this report is defined as water encountered below the existing ground surface. Based on the data obtained during our exploration program, groundwater was encountered at a depth of approximately 5 feet below the existing ground surface at the time of the exploration. Groundwater elevation will vary based on time of year, precipitation, pumping from wells, and other factors. The contractor should be prepared to dewater locations where water is ponded within the planned construction areas and where excavations will approach within one-foot of the groundwater elevation at the time of construction. The contractor should be responsible for the design and installation of any dewatering systems required for this project.

6.7 Excavations

All excavation should be performed in accordance with OSHA guidelines found in 29 Code of Federal Regulations (CFR) Parts 1926.650 through 1926.652, Subpart P, A through F. The existing subgrade soil generally classifies as Type C soil in accordance with OSHA *Excavation*

Standard Handbook. The existing soil material is expected to be loose at or below the groundwater table, and will likely "flow" during excavation. Thus, sloping or benching of excavations in the existing sands in this or other areas where loose sands are encountered may not provide a stable condition and excavations may need to be shored in some areas. Design and maintenance of the shoring should be the responsibility of the Contractor.

7.0 CONTINUATION OF SERVICES

F&R recommends that we be retained for professional and construction materials testing services during construction of the project. Our continued involvement on the project helps provide continuity for proper implementation of the recommendations discussed herein. Additionally, we request the opportunity to review the foundation plans and project specifications when these construction documents approach completion. This review evaluates whether the recommendations and comments provided herein have been understood and properly implemented. The above listed services are not part of the currently authorized scope of services.

8.0 LIMITATIONS

There are important limitations to this and all geotechnical studies. Some of these limitations are discussed in the information prepared by The Association of Engineering Firms Practicing in the Geosciences (ASFE), which is included in Appendix I. We recommend that you review the ASFE information.

This report has been prepared for the exclusive use of the North Carolina Department of Transportation or their agents, for specific application to the new sand blasting storage shed project at the Ferry Repair Facility in Manns Harbor, North Carolina, in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. Our conclusions and recommendations are based on design information furnished to us at the time the work was performed, the data obtained from the previously described subsurface exploration program, and generally accepted geotechnical engineering practice. The findings and recommendations do not reflect variations in subsurface conditions, which could exist in unexplored areas of the site. In areas where variations from the available subsurface data become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon on-site observations of the conditions.

Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions in other areas will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, our experienced geotechnical engineers should evaluate foundation construction to verify that the conditions anticipated in design actually exist. Otherwise, we assume no responsibility for construction compliance with the design concepts, specifications, or recommendations.

In the event that changes are made in the design, location or anticipated depth of the proposed building foundations, the recommendations presented in this report shall not be considered valid unless the changes are reviewed by our firm and conclusions of this report modified and/or verified in writing. If this report is copied or transmitted to a third party, it must be copied or transmitted in its entirety, including text, attachments, and enclosures. Interpretations based on only a part of this report may not be valid.

APPENDIX I

ASFE Publication

"Important Information About Your

Geotechnical Engineering Report"

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —* should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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APPENDIX II

Site Vicinity Map (Drawing No. 1)

Subsurface Exploration Plan (Drawing No. 2)

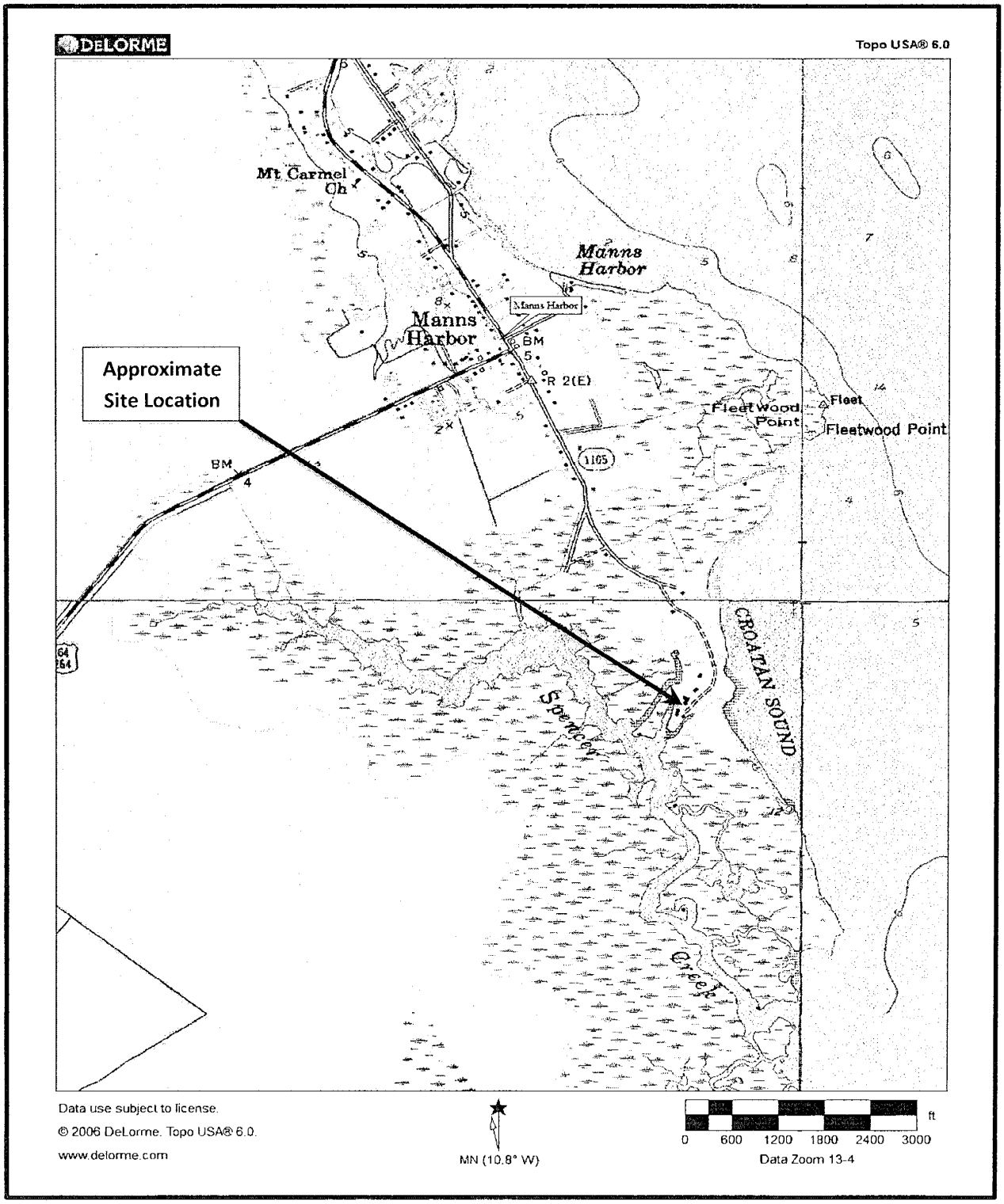
FROEHLING & ROBERTSON, INC.

SITE VICINITY MAP

Drawing No. 1

Project No: 61R-3142
Client: NCDOT Ferry Division
Project: New Sand Blasting Storage Shed
City/State: Manns Harbor, North Carolina

Source: DeLorme®
Scale: As Shown
Date: March 2014

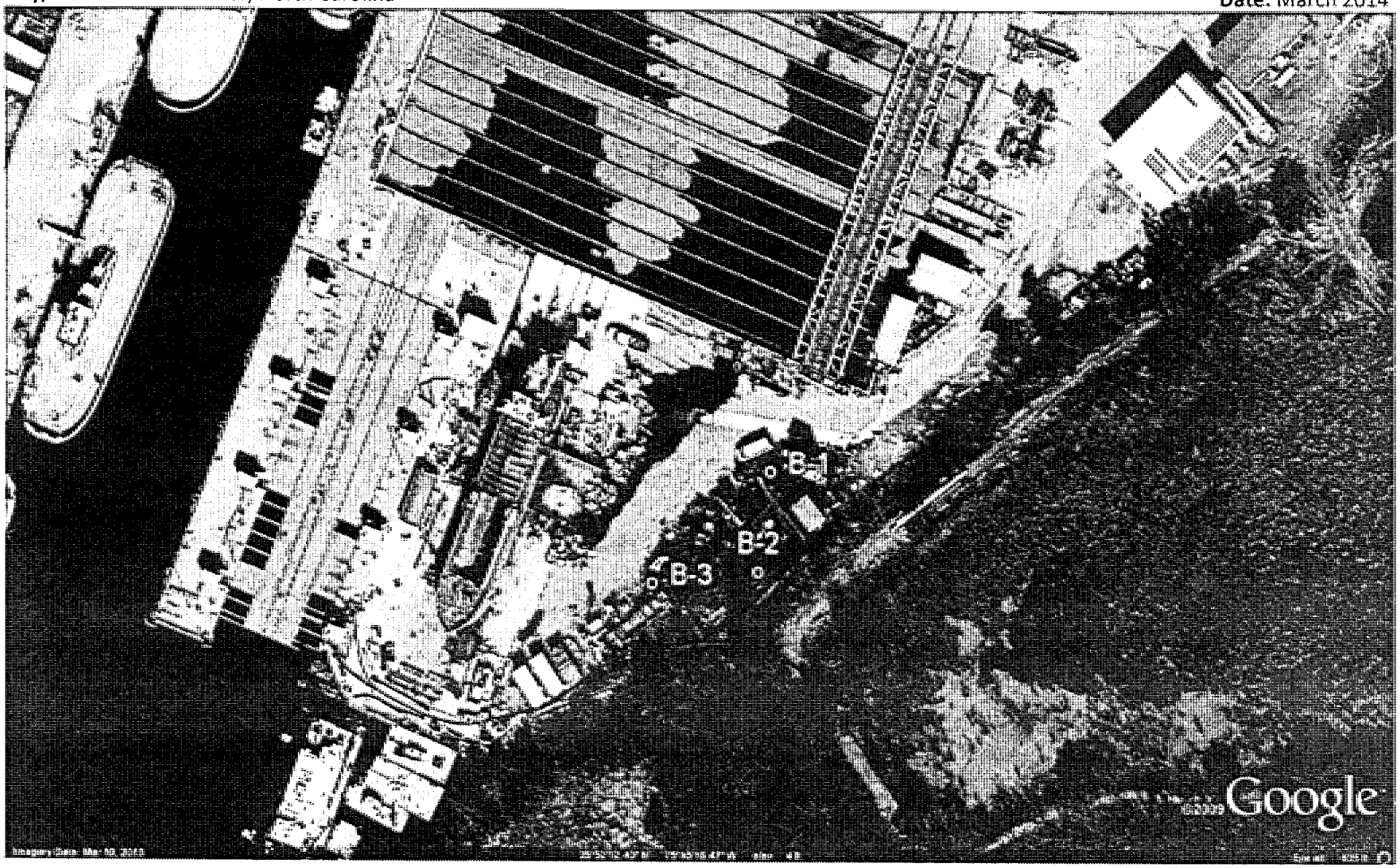


FROEHLING & ROBERTSON, INC.

SUBSURFACE EXPLORATION PLAN

Project No: 61R-3142
Client: NCDOT
Project: New Sand Blasting Storage Shed
City/State: Manns Harbor, North Carolina

Source: Google®
Date: March 2014



◎ - Approximate Boring Location

APPENDIX III

Boring Logs (B-1, B-2, and B-3)

Composite Subsurface Profile

Soil and Rock Legend, Terms, Symbols and Abbreviations

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 36057.115	**TIP** Manns Harbor	**COUNTY** DARE	**GEOLOGIST** Contract Geologist	
SITE DESCRIPTION Current Sand Blasting Area. Area is Partially Asphalt Paved and Unpaved.				**GROUND WTR (ft)**
BORING NO. B-1	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.0
COLLAR ELEV. N/A	**TOTAL DEPTH** 20.0 ft	**NORTHING** N/A	**EASTING** N/A	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 76% 02/22/2014		**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 03/11/14	**COMP. DATE** 03/11/14	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										GROUND SURFACE 0.0
				11	14	25	SS-1			Asphalt, 7.5 inches 0.6
										Crushed Gravel ABC Stone (A-1-b), 8 inches 1.3
		2.0	9	6	5	11	SS-2			Medium-Dense to Loose, Light Brown, Fine SAND with trace silt, moist to wet (A3) **STRATUM I**
		4.0	1	3	3	6	SS-3	▽		
		6.0	1	1	1	2	SS-4			
		8.0	1	1	1	2	SS-5			7.5
										Very Loose, Dark Brown, Fine SAND with trace silt, wet (A3) **STRATUM I**
		13.0	1	1	1	2	SS-6			15.5
										Very Loose to Medium-Dense, Brown, Fine SAND with trace silt and fine roots and organics, wet (A3) **STRATUM II**
		18.0	3	6	9	15	SS-7			20.0
										Boring Terminated at Depth 20.0 ft

NCDOT BORE SINGLE 61R3142.GPJ NC_DOT.GDT 3/26/14

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 36057.115	**TIP** Manns Harbor	**COUNTY** DARE	**GEOLOGIST** Contract Geologist
SITE DESCRIPTION Current Sand Blasting Area. Area is Partially Asphalt Paved and Unpaved.			**GROUND WTR (ft)**
BORING NO. B-2	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.0
COLLAR ELEV. N/A	**TOTAL DEPTH** 20.0 ft	**NORTHING** N/A	**EASTING** N/A	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 76% 02/22/2014		**DRILL METHOD** Mud Rotary	**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 03/11/14	**COMP. DATE** 03/11/14	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										GROUND SURFACE	0.0
		0.0	3	6	8	14	SS-1			"Surficial" Soil & Sand Blast Grit	0.5
		2.0								Medium-Dense, Light Brown, Fine SAND with trace silt, moist to wet (A3) **STRATUM I**	
			4	4	3	7	SS-2				3.5
		4.0								Loose, Dark Brown, Fine SAND with trace fine roots and peat lenses, moist to wet (A3) **STRATUM IA**	
			3	3	4	7	SS-3	▽			
		6.0									
			1	4	5	9	SS-4				7.5
		8.0								Loose to Very Loose, Brown, Fine SAND with trace silt, wet (A3) **STRATUM I**	
			1	3	1	4	SS-5				
		13.0									13.5
			3	5	5	10	SS-6			Medium-Dense, Fine to Coarse SAND with trace silt, wet (A3) **STRATUM II**	
		18.0									
			3	5	6	11	SS-7				20.0
										Boring Terminated at Depth 20.0 ft	

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 36057.115	**TIP** Manns Harbor	**COUNTY** DARE	**GEOLOGIST** Contract Geologist	
SITE DESCRIPTION Current Sand Blasting Area. Area is Partially Asphalt Paved and Unpaved.				**GROUND WTR (ft)**
BORING NO. B-3	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** N/A	**0 HR.** 5.0
COLLAR ELEV. N/A	**TOTAL DEPTH** 20.0 ft	**NORTHING** N/A	**EASTING** N/A	**24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 76% 02/22/2014		**DRILL METHOD** Mud Rotary		**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 03/11/14	**COMP. DATE** 03/11/14	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
										GROUND SURFACE 0.0
					13		SS-1			Asphalt, 9 inches 0.8
										Crushed Gravel ABC Stone (A-1-b), 7 inches 1.3
		2.0	9	8	6	14	SS-2			Medium-Dense, Brown, Fine SAND with trace silt, moist to wet (A3) **STRATUM I**
		4.0	4	4	3	7	SS-3	▽		4.0 Medium-Dense to Very Loose, Dark Brown, Fine SAND with trace silt, wet (A3) **STRATUM I**
		6.0	1	1	1	2	SS-4			
		8.0	1	1	1	2	SS-5			
		13.0	**	1	1	2	SS-6			15.0 Very Loose to Medium Dense, Brown, Fine to Coarse SAND with trace silt, wet (A3) **STRATUM II**
		18.0	3	4	6	10	SS-7			20.0 Boring Terminated at Depth 20.0 ft

FROEHLING & ROBERTSON, INC.

SUBSURFACE PROFILE

Plot Based on Depth

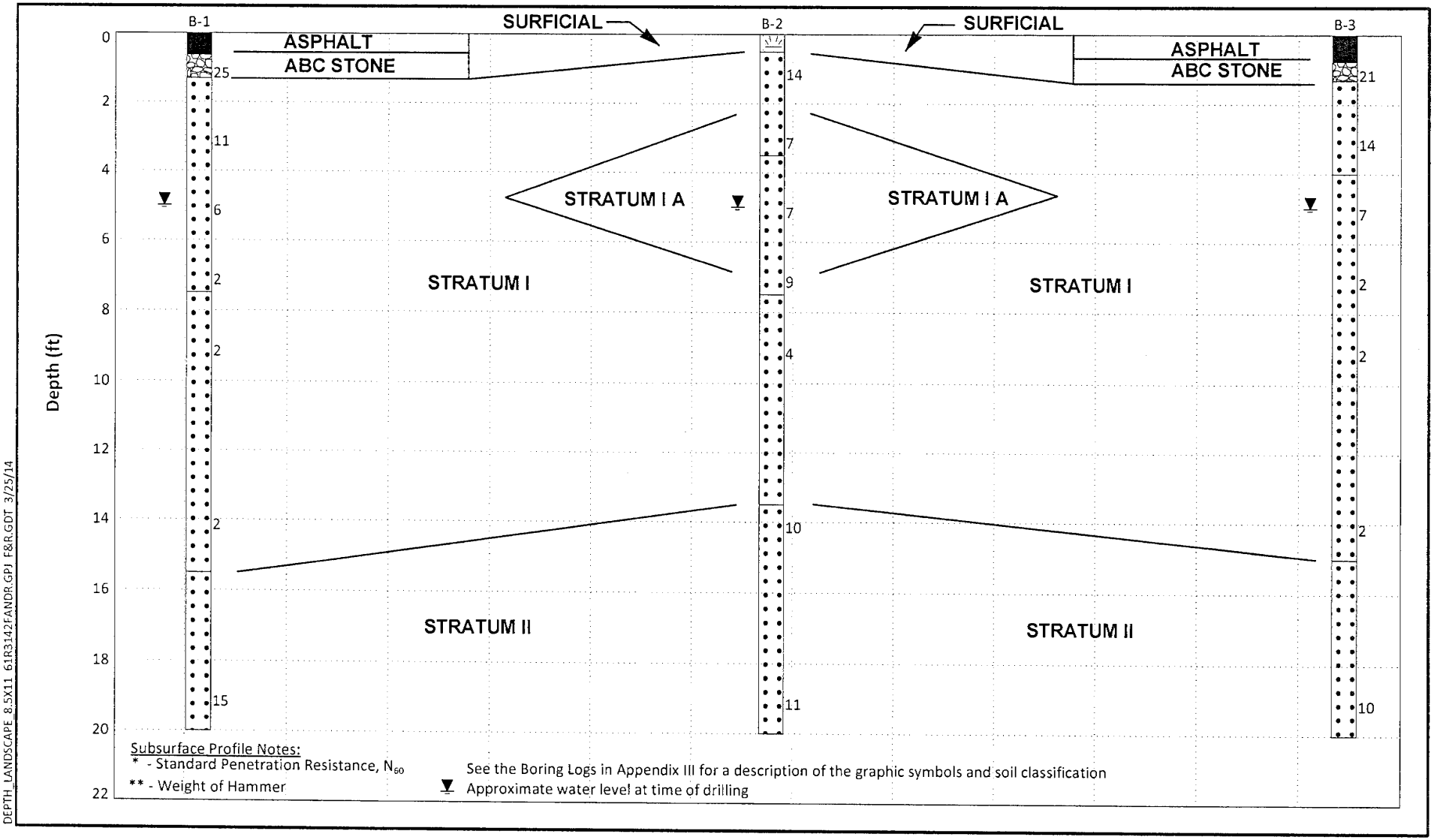
Profile Name: Subsurface Profile

Project No: 61R-3142

Client: NC Department of Transportation

Project: New Sand Blasting Storage Shed

City/State: Manns Harbor, North Carolina



Subsurface Profile Notes:

* - Standard Penetration Resistance, N_{60}

** - Weight of Hammer

See the Boring Logs in Appendix III for a description of the graphic symbols and soil classification

Approximate water level at time of drilling

DEPTH_LANDSCAPE_8.5X11 61R3142FANDR.GPJ F&R.GDT 3/25/14

PROJECT REFERENCE NO.	SHEET NO.
WBS: 36057.115	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2			A-4	A-5	A-6	A-7	A-1, A-2 / A-3	A-4, A-5 / A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6 / A-2-7				A-7-5 / A-7-6			
SYMBOL													
% PASSING #10	50 MX										GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN										
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX / 35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX / 41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN / 11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX	8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND			SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	>10%	>20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT / CPT / DMT / VST / PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF — SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [ ] W/ ADVANCER
- [X] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

REVISED 09/23/09

APPENDIX IV

Laboratory Test Results

SINCE 1881

FROEHLING & ROBERTSON, INC.

LABORATORY TEST SUMMARY SHEET

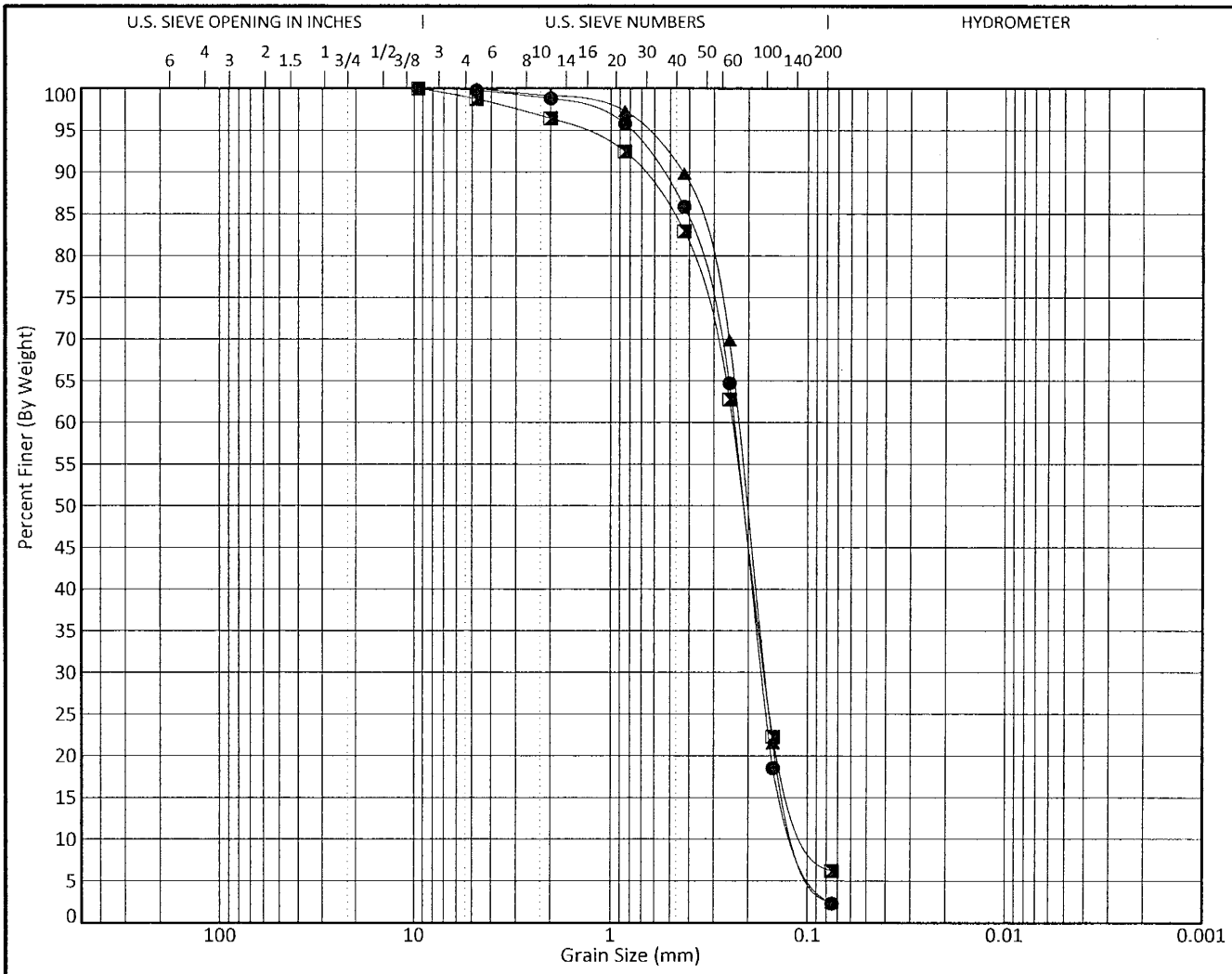
Project No: 61R-3142
Client: NC Department of Transportation
Project: New Sand Blasting Storage Shed
City/State: Manns Harbor, North Carolina

Boring/ Sample No.	Depth (ft)	LL	PL	PI	Water Content (%)	% Gravel	% Sand	% Fines	USCS Class.	AASHTO Class.	Maximum Dry Density (pcf)	Optimum Water Content (%)	CBR Value @ 0.1
B-1	3.0	NP	NP	NP	19.4	0.3	97.5	2.3	SP	A-3			
B-2	3.0	NP	NP	NP	29.2	1.3	92.6	6.2	SP-SM	A-3			
B-3	3.0	NP	NP	NP	19.5	0.0	97.6	2.4	SP	A-3			

FROEHLING & ROBERTSON, INC.

GRAIN SIZE DISTRIBUTION

Project No: 61R-3142
Client: NC Department of Transportation
Project: New Sand Blasting Storage Shed
City/State: Manns Harbor, North Carolina



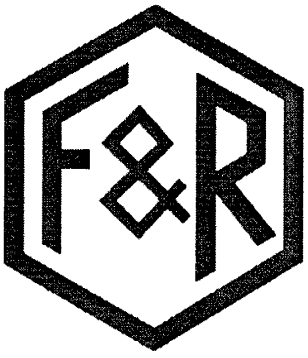
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.		Depth	Classification	LL	PL	PI	Cc	Cu
●	B-1	at	3.0	POORLY GRADED SAND (SP)	NP	NP	NP	1.17	2.28
◪	B-2	at	3.0	POORLY GRADED SAND with SILT (SP-SM)	NP	NP	NP	1.28	2.73
▲	B-3	at	3.0	POORLY GRADED SAND (SP)	NP	NP	NP	1.21	2.28
		at							
		at							

	Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	at	3.0	9.5	0.237	0.17	0.104	0.3	97.5	2.3	
◪	B-2	at	3.0	9.5	0.241	0.165	0.088	1.3	92.6	6.2	
▲	B-3	at	3.0	4.75	0.225	0.164	0.099	0.0	97.6	2.4	
		at									
		at									

US_GRAIN_SIZE 61R3142FANDR.GPJ F&R.GDT 3/24/14

SINCE



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SECTION 03100

CONCRETE FORMS AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

1.02 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute; 2005.

B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute; 2008.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.

C. Comply with applicable State Codes with respect to design, fabrication, erection, and removal of formwork.

2.02 WOOD FORM MATERIALS

A. Form Materials: At the discretion of the Contractor.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

3.03 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

3.04 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.05 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03100 - Concrete Forms and Accessories.

B. Section 03300 - Cast-in-Place Concrete.

C. Section 04810 - Unit Masonry Assemblies: Reinforcement for masonry.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.
   1. Maintain one copy of each document on project site.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
   1. Plain billet-steel bars.
   2. Unfinished.

B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
   1. Flat Sheets.
   2. Mesh Size and Wire Gage: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Locate reinforcing splices not indicated on drawings at point of minimum stress.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Conform to applicable code for concrete cover over reinforcement.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete foundations.

B. Concrete walls.

C. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 03100 - Concrete Forms and Accessories: Forms and accessories for formwork.

B. Section 03200 - Concrete Reinforcement.

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).

B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.

D. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.

E. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 1988 (Reapproved 2002).

F. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001.

G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.

H. ASTM C 33 - Standard Specification for Concrete Aggregates; 2007.

I. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2005.

J. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2007.

K. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2005a.

L. ASTM C 150 - Standard Specification for Portland Cement; 2007.

M. ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2007.

N. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2006.

O. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2007.

P. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete; 2008.

Q. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2007a.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

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 FORMWORK

A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

2.02 REINFORCEMENT

A. Comply with requirements of Section 03200.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C 150, Type I - Normal portland type.

B. Fine and Coarse Aggregates: ASTM C 33.

C. Water: Potable.

2.04 CHEMICAL 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.

2.05 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. Water-Cement Ratio: Determined by mix design.
   3. Total Air Content: As indicated on plans.
   4. Maximum Slump: 4 inches.
   5. Chlorides are not permitted in mix.

2.06 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. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

3.03 INSTALLING REINFORCEMENT

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.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Notify Architect not less than 24 hours prior to commencement of placement operations.

C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

3.05 CURING AND PROTECTION

A. Comply with requirements of ACI 308. 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.

3.06 FIELD QUALITY CONTROL

A. NC DOT's testing agency will perform field quality control tests.

B. Provide free access to concrete operations at project site and cooperate with NCDOT personnel.

C. Submit proposed mix design of each class of concrete to design engineer for review prior to commencement of concrete operations.

D. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure five concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.

E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

F. Perform one slump test for each truck on jobsite, following procedures of ASTM C 143/C 143M.

3.07 DEFECTIVE CONCRETE

A. 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.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Non-structural dimension lumber framing.

C. Sheathing.

D. Roofing nailers.

E. Preservative treated wood materials.

F. Miscellaneous framing and sheathing.

G. Concealed wood blocking, nailers, and supports.

H. Miscellaneous wood nailers, furring, and grounds.

I. Water-resistive barrier over wall sheathing.

1.02 RELATED REQUIREMENTS

A. Section 06173 - Plate Connected Wood Trusses.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 1999.

B. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2001.

C. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.

D. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007

E. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2003.

F. AWPA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2003.

G. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood-Preservers' Association; 2007.

H. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

I. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.; 2002.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB) and Northeastern Lumber Manufacturer's Association (NELMA).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: Kiln-dry or MC15.

D. Stud Framing (2 by 2 through 2 by 6):
   1. Species: Any allowed under referenced grading rules.
   2. Grade: No. 2.

E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Species: Any allowed under grading rules.
   2. Grade: No. 2.

F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Roof Sheathing: Oriented strand board wood structural panel; PS 2, Exposure 1.
   1. Thickness: 5/8 inch, nominal.

B. Wall Sheathing: APA PRP-108/APA PRP-108, Form B455Rated Sheathing, Exposure 1, and as follows:
   1. Span Rating: 24/16.
   2. Thickness: as indicated on drawings

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653/A653M.

C. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.

1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653/A653M.

D. Water-Resistive Barrier: No. 15 asphalt felt.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA Use Category UC3B, Commodity Specification A (Treatment C2) using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
   2. Preservative Pressure Treatment of Plywood Above Grade: AWPA Use Category UC2 and UC3B, Commodity Specification F (Treatment C9) using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.

PART 3 EXECUTION

3.01 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.

E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures,

specialty items, and trim.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
   1. Use plywood or other acceptable structural panels at building corners, for not less than 96 inches, measured horizontally.
   2. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.

3.06 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01732.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06173

PLATE CONNECTED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-engineered shop fabricated wood trusses for roof framing.

B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Installation requirements for miscellaneous framing.

B. Section 06100 - Rough Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.

B. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.; 2002.

C. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses; Truss Plate Institute; 1989.

D. BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses; joint publication of the Truss Plate Institute and the Wood Trust Council of America; 2006.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.

C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
   1. Include identification of engineering software used for design.
   2. Provide shop drawings stamped or sealed by design engineer registered in North Carolina.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Handle and erect trusses in accordance with BCSI 1. Comply with AITC recommendations and manufacturer's printed instructions.

B. Protect trusses from weather and condensation. Trusses showing discoloration, corrosion, or other evidence of deterioration must be inspected by the truss plate manufacturer or other acceptable inspection agency before concealment. Replace trusses which inspection determines to be damaged or defective.

C. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Truss Plate Connectors:
   1. Alpine Engineered Products, Inc: www.alpeng.com.
   2. MiTek Industries, Inc: www.mii.com.
   3. Truswal Systems: www.truswal.com.

4. Substitutions: See Section 01600 - Product Requirements.

2.02 MATERIALS

A. Lumber:
   1. Grade: SPIB (GR), Grade 2, minimum.
   2. Moisture Content: Between 7 and 9 percent.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 FABRICATION

A. Fabricate trusses to achieve structural requirements specified.

B. Brace wood trusses in accordance with TPI DSB-89 and BCSI 1.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that supports and openings are ready to receive trusses.

3.02 ERECTION

A. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and BCSI 1; maintain a copy of each TPI document on site until installation is complete.

B. Set members level and plumb, in correct position.

C. Do not field cut or alter structural members without approval of Architect.

D. Install permanent bridging and bracing.

E. Frame openings between trusses with lumber in accordance with Section 06100.

END OF SECTION

SECTION 06181

GLUED-LAMINATED STRUCTURAL UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glue laminated wood beams.

1.02 REFERENCE STANDARDS

A. AITC 117 - Standard Specifications for Structural Glued Laminated Timber of Softwood Species; American Institute of Timber Construction; 2004 (with errata 2005).

B. AITC A190.1 - American National Standard for Wood Products - Structural Glued Laminated Timber; American Institute of Timber Construction; 2007.

C. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; Redwood Inspection Service; 2000.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate framing system, sizes and spacing of members, loads and cambers, bearing and anchor details, bridging and bracing, framed openings.

1.04 QUALITY ASSURANCE

A. Manufacturer/Fabricator Qualifications: Company specializing in manufacture of glue laminated structural units with three years of documented experience, and certified by AITC in accordance with AITC A190.1.

PART 2 PRODUCTS

2.01 GLUED-LAMINATED UNITS

A. Glued-Laminated Units: Fabricate in accordance with AITC 117 Industrial grade.
   1. Verify dimensions and site conditions prior to fabrication.
   2. Cut and fit members accurately to length to achieve tight joint fit.
   3. Fabricate member with camber built in.
   4. Do not splice or join members in locations other than those indicated without permission.
   5. After end trimming, seal with penetrating sealer in accordance with AITC requirements.

2.02 MATERIALS

A. Lumber: Softwood lumber conforming to RIS grading rules with 12 percent maximum moisture content before fabrication. Design for the following values:
   1. Bending (Fb): 2400 psi.
   2. Horizontal Shear (Fv): 190 psi.
   3. Modulus of Elasticity (E): 1,700,000 psi.

2.03 FABRICATION

A. Fabricate glue laminated structural members in accordance with AITC Industrial grade.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that supports are ready to receive units.

B. Verify sufficient end bearing area.

3.02 ERECTION

A. Lift members using protective straps to prevent visible damage.

B. Set structural members level and plumb, in correct positions or sloped where indicated.

END OF SECTION

SECTION 07260

WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water-Resistive Barrier: Under exterior wall cladding, over sheathing or other substrate; not air-tight or vapor retardant.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Water-resistive barrier under exterior cladding.

1.03 DEFINITIONS

A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, vapor retarders, or water-resistive barriers.

B. Water-Resistive Barrier: Water-shedding barrier made of material that is moisture-resistant, to the degree specified, intended to be installed to shed water without sealed seams.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER NOR VAPOR RETARDER)

A. Asphalt Felt: ASTM D226 Type I felt (No.15).

2.02 ADHESIVES

A. Mastic Adhesive: Compatible with sheet seal and substrate, thick mastic of uniform knife grade consistency.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Water-Resistive Barriers: Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.

C. Mechanically Fastened Sheets - On Exterior:
   1. Install sheets shingle-fashion to shed water, with seams generally horizontal.
   2. Overlap seams as recommended by manufacturer but at least 6 inches.
   3. Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.
   4. Attach to framed construction with fasteners extending through sheathing into framing. Space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
   5. Install water-resistive barrier over jamb flashings.
   6. Install air barrier and vapor retarder UNDER jamb flashings.
   7. Install head flashings under weather barrier.

8. At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing.

3.03 FIELD QUALITY CONTROL

A. Do not cover installed weather barriers until required inspections have been completed.

3.04 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07311

ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphalt shingle roofing.

B. Flexible sheet membranes for eave protection, underlayment, and valley protection.

C. Associated metal flashings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Roof sheathing.

B. Section 07631 - Gutters and Downspouts.

1.03 REFERENCE STANDARDS

A. ASTM D225 - Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules; 2007.

B. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2006.

C. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method); 2008b.

D. ASTM D 3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules; 2007.

E. ASTM D4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing; 2005.

F. NRCA MS104 - The NRCA Steep Roofing Manual; National Roofing Contractors Association; 2001, Fifth Edition, with interim updates.

G. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating material characteristics.

C. Shop Drawings: For metal flashings, indicate specially configured metal flashings.

D. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern; for color selection.

E. Manufacturer's Instructions: Indicate installation criteria and procedures.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 WARRANTY

A. Submit Manufacturer's standard 30 year warranty on shingles for review along with submittals shown in Section 1.04.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with the recommendations of NRCA Steep Roofing Manual.

1.07 FIELD CONDITIONS

A. Do not install shingles or eave protection membrane when surface temperatures are below 45 degrees F.

PART 2 PRODUCTS

2.01 SHINGLES

A. Manufacturers:
   1. GAF Materials Corporation: www.gaf.com.
   2. Owens Corning Corp: www.owenscorning.com.
   3. Tamco Building Products: www.tamco.com.

B. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462; Class A fire resistance.
   1. Wind Resistance: Class F, when tested in accordance with ASTM D3161.
   2. Warranted Wind Speed: 90 mph.
   3. Style: Architectural.
   4. Color: Selected by architect from manufacturer's standart pallette.

2.02 ACCESSORIES

A. Nails: Standard round wire shingle type, of hot-dipped zinc coated steel, 12 gage, 0.105 inch shank diameter, 3/8 inch head diameter, of sufficient length to penetrate through roof sheathing or 3/4 inch into roof sheathing or decking.

B. Lap Cement: Fibrated cutback asphalt type, recommended for use in application of underlayment, free of toxic solvents.

C. Ridge Vents: Ridge vents are not required on this project.

2.03 METAL FLASHINGS

A. Metal Flashings: Provide sheet metal eave edge, gable edge, ridge, and other flashing indicated.
   1. Form flashings to profiles indicated on Drawings.
   2. Hem exposed edges of flashings minimum 1/4 inch on underside.
   3. Coat concealed surfaces of flashings with bituminous paint.

B. Sheet Metal: Prefinished aluminum, 0.016 inch thick; PVC coating.

C. Bituminous Paint: Acid and alkali resistant type; black color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

B. Verify that deck is of sufficient thickness to accept fasteners.

C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.

D. Verify roof openings are correctly framed.

E. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.02 PREPARATION

A. Seal roof deck joints wider than 1/16 inch with deck tape.

B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.

C. Broom clean deck surfaces before installing underlayment or eave protection.

D. Install eave edge flashings tight with fascia boards. Weather lap joints 2 inches and seal with plastic cement. Secure flange with nails spaced 6 inches on center.

3.03 INSTALLATION - ICE PROTECTION UNDERLAYMENT

A. Ice dam protection is not required for this project.

3.04 INSTALLATION - UNDERLAYMENT

A. At Roof Slopes Greater Than 4:12 : Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches. Stagger end laps of each consecutive layer. Nail in place. Weather lap minimum 4 inches over eave protection.

B. Items projecting through or mounted on roof: Weather lap and seal watertight with plastic cement.

3.05 INSTALLATION - METAL FLASHING AND ACCESSORIES

A. Install flashings in accordance with NRCA requirements.

B. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.

C. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.06 INSTALLATION - SHINGLES

A. Install shingles in accordance with manufacturer's instructions.
   1. Fasten individual shingles using 6 nails per shingle, or as required by code, whichever is greater.
   2. Fasten strip shingles using 6 nails per strip, or as required by code, whichever is greater.

B. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area. Provide double course of shingles at eaves.

C. Project first course of shingles 3/4 inch beyond fascia boards.

D. Extend shingles 1/2 inch beyond face of gable edge fascia boards.

E. Complete installation to provide weather tight service.

END OF SECTION

SECTION 07466

FIBER CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood-fiber cement siding.

1.02 RELATED REQUIREMENTS

A. Section 06100 - Rough Carpentry: Water-resistive barrier under siding.

B. Section 07260 - Weather Barriers: Weather barrier under siding.

C. Section 09900 - Paints and Coatings: Field painting.

1.03 REFERENCE STANDARDS

A. ASTM C 1186 - Standard Specification for Flat Fiber Cement Sheets; 2007.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Manufacturer's requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.

C. Test Report: Applicable model code authority evaluation report (e.g. ICC-ES).

D. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.

E. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum 3 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 PRODUCTS

2.01 SIDING

A. Panel Siding: Vertically oriented panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
   1. Length (Height): 96 inches, nominal.
   2. Width: 48 inches.
   3. Thickness: 5/16 inch, nominal.
   4. Finish: Unfinished.
   5. Warranty: 50 year limited; transferable.

2.02 ACCESSORIES

A. Trim: Same material and texture as siding.

B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4

inch.

C. Joint Sealer: As specified in Section 07900.

PART 3 EXECUTION

3.01 PREPARATION

A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Verify that weather barrier has been installed over substrate completely and correctly.

C. Do not begin until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations.
   1. Read warranty and comply with all terms necessary to maintain warranty coverage.
   2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
   3. Use trim details indicated on drawings.
   4. Touch up all field cut edges before installing.
   5. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.

C. Allow space between both ends of siding panels that butt against trim for thermal movement; seal joint between panel and trim with exterior grade sealant.

D. Joints in Vertical Siding: Install Z-flashing in horizontal joints between successive courses of vertical siding.

E. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.

F. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.

G. Finish Painting: Specified in Section 09900.

3.03 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07631

GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-finished aluminum gutters and downspouts.

1.02 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.

B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.

C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.

D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.03 DESIGN REQUIREMENTS

A. Conform to SMACNA Architectural Sheet Metal Manual for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

C. Product Data: Provide data on prefabricated components.

D. Samples: Submit two samples, illustrating component design, finish, color, and configuration.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials that could cause discoloration, staining, or damage.

1.06 PROJECT CONDITIONS

A. Coordinate the work with downspout discharge pipe inlet.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gutters and Downspouts:
   1. Peterson Aluminum: www.pac-clad.com.
   2. Cheney Flashing Company: www.cheneyflashing.com.
   3. Perimeter Systems: www.perimeter-systems.com.
   4. Substitutions: See Section 01600 - Product Requirements.

2.02 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: As selected from manufacturer's standard colors.

2.03 COMPONENTS

A. Gutters: square style profile.

B. Downspouts: CDA Rectangular profile.

C. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: In accordance with CDA requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

D. Fasteners: Galvanized steel, with soft neoprene washers.

2.04 ACCESSORIES

A. Splash Pads: Precast concrete type, size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.

B. Downspout Boots: Plastic.

2.05 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.06 FACTORY FINISHING

A. Modified silicone polyester coating: Baked enamel system conforming to AAMA 603.8.

B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

B. Precompressed foam sealers.

1.02 RELATED REQUIREMENTS

A. Section 04810- Unit Masonry Assemblies.

B. Section 07260 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders:

1.03 REFERENCE STANDARDS

A. ASTM C 834 - Standard Specification for Latex Sealants; 2005.

B. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.

C. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2005a.

D. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for concrete Pavements; 1991 (Reapproved 2005).

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics.

C. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.06 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.08 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Elastomeric Sealants:

1. Bostik Inc: www.bostik-us.com.
2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
3. Pecora Corporation: www.pecora.com.
4. BASF Construction Chemicals-Building Systems: www.chemrex.com.

2.02 SEALANTS

A. General Purpose Exterior Sealant: Acrylic, solvent release curing; ASTM C920, Grade NS, Class 12-1/2, Uses M, G, and A; single or multi- component.
   1. Color: Standard colors matching finished surfaces, or paintable.
   2. Applications: Use for:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
   1. Size as required to provide weathertight seal when installed.
   2. Provide product recommended by manufacturer for traffic-bearing use.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
   1. Applications: Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.
      c. Other interior joints for which no other type of sealant is indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Install bond breaker where joint backing is not used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Tool joints concave.

G. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect sealants until cured.

END OF SECTION

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

1.02 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all finishing products, including VOC content.

1.03 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work as described in this section, with minimum three years experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.05 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, when concrete is damp, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:
   1. Duron, Inc: www.duron.com.
   2. ICI Paints: www.icipaintsinna.com.
   3. Benjamin Moore & Co: www.benjaminmoore.com.

C. Substitutions: See Section 01600 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each coating material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
   1. Provide coatings that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.03 PAINT SYSTEMS - EXTERIOR

A. Fiber cement trim (shop primed), Opaque, 2 Coat:
   1. Two coats of 100 % acrylic paint flat finish.

B. Masonry/Concrete, Opaque, Latex, 2 Coat:
   1. One coat of block filler.
   2. Semi-gloss: One coat of latex enamel; .
   3. Flat: One coat of latex enamel; .

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.02 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION

PROPOSAL AND CONTRACT

for

One-Bay Sand Blasting Shed, Dare County

SCO ID# - 13-10648-01A

This contract is for construction of a new, one-bay bulk storage facility, and containment area. The building is constructed of cast in place concrete walls bearing on a shallow concrete foundation, with wood truss roof. There is no plumbing, mechanical, or electrical work included in this project.

The undersigned, as bidder, proposes and agrees if this proposal is accepted to contract with the State of North Carolina through the North Carolina Department of Transportation for the furnishing of all materials, equipment, and labor necessary to complete the construction of the work described in these documents in full and complete accordance with plans, specifications, and contract documents, and to the full and entire satisfaction of the State of North Carolina and the North Carolina Department of Transportation for the sum of:

BASE BID: _____ **Dollars $** _____

Respectively submitted this _____ day of _____ 20____

_____

(Contractor

Federal ID#: _____

Witness: _____

_____
(Proprietorship or Partnership)

Attest: *(corporation)*

By: _____

Title: _____
(Owner, partner, corp. Pres. Or Vice President)

Address: _____

Email Address: _____

(***Corporate Seal)***

By: _____ License #: _____

Title: _____
(Corporation.Secretary./Ass't Secretary.)

GC to acknowledge review of Addenda: _____Add. 1 _____Add. 2 _____Add. 3

ACCEPTED by the STATE OF NORTH CAROLINA

through the

_____
(Agency/Institution)

BY: _____ TITLE: _____

DATE: _____ 20____

FORM OF PERFORMANCE BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal (Contractor) _____

Name of Surety: _____

Name of Contracting Body: _____

Amount of Bond: _____

Project

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

_____
(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec.. only)

(Corporate Seal)

_____
Contractor: (Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

_____
(Surety Company)

Witness:

_____

By: _____

Title: _____
(Attorney in Fact)

Countersigned:

_____

_____
(N.C. Licensed Resident Agent)

_____

_____
Name and Address-Surety Agency

_____

_____
Surety Company Name and N.C. Regional or Branch Office Address

(Surety Corporate Seal)

FORM OF PAYMENT BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal (Contractor) _____

Name of Surety: _____

Name of Contracting Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

_____
(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec.. only)

(Corporate Seal)

_____
Contractor: (Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

_____
(Surety Company)

Witness:

_____

By: _____

Title: _____
(Attorney in Fact)

Countersigned:

_____

_____
(N.C. Licensed Resident Agent)

_____

_____
Name and Address-Surety Agency

_____

_____
Surety Company Name and N.C.
Regional or Branch Office Address

(Surety Corporate Seal)

STATE OF NORTH CAROLINA
COUNTY SALES AND USE TAX REPORT
SUMMARY TOTALS AND CERTIFICATION

CONTRACTOR: _____ Page __1____ of _____

PROJECT: _____ FOR PERIOD: _____

	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL ALL COUNTIES
CONTRACTOR							
SUBCONTRACTOR(S)*							
COUNTY TOTAL							

* Attach subcontractor(s) report(s)
** Must balance with Detail Sheet(s)

I certify that the above figures do not include any tax paid on supplies, tools and equipment which were used to perform this contract and only includes those building materials, supplies, fixtures and equipment which actually became a part of or annexed to the building or structure. I certify that, to the best of my knowledge, the information provided here is true, correct, and complete.

Sworn to and subscribed before me,

This the _____ day of _____, 20____

_____
Signed

_____
Notary Public

_____
Print or Type Name of Above

My Commission Expires: _____

Seal

NOTE:
This certified statement may be subject to audit.

STATE OF NORTH CAROLINA
SALES AND USE TAX REPORT DETAIL

CONTRACTOR: _____ Page 2 of _____

SUBCONTRACTOR _____ FOR PERIOD: _____

PROJECT: _____

PURCHASE DATE	VENDOR NAME	INVOICE NUMBER	TYPE OF PROPERTY	INVOICE TOTAL	COUNTY TAX PAID	COUNTY OF SALE *
				$	$	
				TOTAL:	$	

* If this is an out-of-state vendor, the County of Sale should be the county to which the merchandise was shipped.

SECTION 01151A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit after award of Contract and prior to commencing work)

Project Title:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	To:

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling will occur

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Cost/Reven.
a. Total Diversion						

SECTION II - DISPOSED MATERIALS

Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Cost
b. Total Disposal						

SECTION III - TOTAL MATERIALS GENERATED

This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation

				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled						
b. Total Disposed						
c. Total Generated						

SECTION 01511B

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING REPORT

(Submit with each Pay Application)

Project Title:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	To:

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Cost/Reven.
a. Total Diversion						

SECTION II - DISPOSED MATERIALS

Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Cost
b. Total Disposal						

SECTION III - TOTAL MATERIALS GENERATED

This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation

				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled						
b. Total Disposed						
c. Total Generated						

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

(Revised on 3/14/2003)