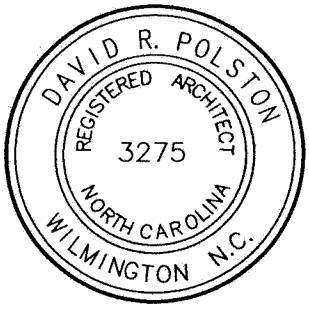
PRUITTHEALTH
CRYSTAL COAST

Beaufort, North Carolina

104 BED
NURSING FACILITY

SPECIFICATION MANUAL

MAY 15, 2021



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Architecture Planning Design

PROJECT MANUAL

PRUITTHEALTH-CRYSTAL COAST
NEW 104 BED NURSING HOME
BEAUFORT, NORTH CAROLINA

MAY 15, 2021

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General Conditions of the Contract for Construction

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document has been approved and endorsed by The Associated General Contractors of America.

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1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

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ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements).

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and Architect or (4) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are

complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.3 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 CAPITALIZATION

1.3.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.4 INTERPRETATION

1.4.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5 EXECUTION OF CONTRACT DOCUMENTS

1.5.1 The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.5.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

1.6.1 The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in

the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' copyrights or other reserved rights.

ARTICLE 2 OWNER

2.1 GENERAL

2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Subparagraph 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the written request of the Contractor, prior to commencement of the Work and thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Furnishing of such evidence shall be a condition precedent to commencement or continuation of the Work. After such evidence has been furnished, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

2.2.2 Except for permits and fees, including those required under Subparagraph 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

2.2.4 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in

accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor within such three-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

3.1 GENERAL

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Subparagraph 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Architect as a request for information in such form as the Architect may require.

3.2.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Architect.

3.2.3 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any resulting loss or damage.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.2 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract

Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.1 and (2) changes in Contractor's costs under Clause 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work.

3.9 SUPERINTENDENT

3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect without action.

3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by

the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice the Architect's approval of a resubmission shall not apply to such revisions.

3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Subparagraph 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

3.17 ROYALTIES, PATENTS AND COPYRIGHTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Paragraph 11.3, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be

construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Subparagraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

4.1.3 If the employment of the Architect is terminated, the Owner shall employ a new Architect against whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the former Architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Paragraph 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

4.2.2 The Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Subparagraph 3.3.1.

4.2.3 The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.6 The Architect will have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor.

The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Time Limits on Claims. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Architect and the other party.

4.3.3 Continuing Contract Performance. Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.4 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.5 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.6.

4.3.6 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Paragraph 4.3.

4.3.7 CLAIMS FOR ADDITIONAL TIME

4.3.7.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.7.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

4.3.8 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.3.9 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

4.3.10 Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Subparagraph 4.3.10 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 Decision of Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Paragraphs 10.3 through 10.5, shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a

condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

4.4.2 The Architect will review Claims and within ten days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

4.4.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

4.4.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Architect when the response or supporting data will be furnished or advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

4.4.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefor and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and arbitration.

4.4.6 When a written decision of the Architect states that (1) the decision is final but subject to mediation and arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.4.7 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.4.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the Claim by the Architect, by mediation or by arbitration.

4.5 MEDIATION

4.5.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5 shall, after initial decision by the Architect or 30 days after submission of the Claim to the Architect, be

subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

4.5.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

4.5.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

4.6 ARBITRATION

4.6.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5, shall, after decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.

4.6.2 Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.6.3 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.4.6 and 4.6.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.6.4 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a Claim not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.6.5 Claims and Timely Assertion of Claims. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

4.6.6 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitute.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the

Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Paragraph 4.3.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the

Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

7.1 GENERAL

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect, stating their agreement upon all of the following:

.1 change in the Work;

.2 the amount of the adjustment, if any, in the Contract Sum; and

.3 the extent of the adjustment, if any, in the Contract Time.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 unit prices stated in the Contract Documents or subsequently agreed upon;

.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

.1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by the Contract Documents or a notice to proceed given

by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of morgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

8.3.3 This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

9.3.1.1 As provided in Subparagraph 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's

opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.2, because of:

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or another contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 persistent failure to carry out the Work in accordance with the Contract Documents.

9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Clause 11.4.1.5 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and

have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that

portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

.1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents; or

.3 terms of special warranties required by the Contract Documents.

9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 HAZARDOUS MATERIALS

10.3.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

10.3.2 The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Subparagraph 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

10.4 The Owner shall not be responsible under Paragraph 10.3 for materials and substances brought to the site by the Contractor unless such materials or substances were required by the Contract Documents.

10.5 If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

10.6 EMERGENCIES

10.6.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or

extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 claims for bodily injury or property damage arising out of completed operations; and

.8 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

11.3.1 Optionally, the Owner may require the Contractor to purchase and maintain Project Management Protective Liability insurance from the Contractor's usual sources as primary coverage for the Owner's, Contractor's and Architect's vicarious liability for construction operations under the Contract. Unless otherwise required by the Contract Documents, the Owner

shall reimburse the Contractor by increasing the Contract Sum to pay the cost of purchasing and maintaining such optional insurance coverage, and the Contractor shall not be responsible for purchasing any other liability insurance on behalf of the Owner. The minimum limits of liability purchased with such coverage shall be equal to the aggregate of the limits required for Contractor's Liability Insurance under Clauses 11.1.1.2 through 11.1.1.5.

11.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Architect waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

11.3.3 The Owner shall not require the Contractor to include the Owner, Architect or other persons or entities as additional insureds on the Contractor's Liability Insurance coverage under Paragraph 11.1.

11.4 PROPERTY INSURANCE

11.4.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

11.4.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

11.4.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

11.4.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

11.4.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

11.4.1.5 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial

occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.4.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.4.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.4.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.4.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.4.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.4. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

11.4.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Paragraph 11.4 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.4.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.4.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.4.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.6. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

11.4.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved as provided in Paragraphs 4.5 and 4.6. The Owner as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of the arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.5 PERFORMANCE BOND AND PAYMENT BOND

11.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.5.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

12.2.1.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.2 AFTER SUBSTANTIAL COMPLETION

12.2.2.1 In addition to the Contractor's obligations under Paragraph 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Paragraph 2.4.

12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.5 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Subparagraph 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3, shall be at the Owner's expense.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

.1 Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

.2 Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

.3 After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;

.2 an act of government, such as a declaration of national emergency which requires all Work to be stopped;

.3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

14.1.3 If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 accept assignment of subcontracts pursuant to Paragraph 5.4; and

.3 finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARCHITECT'S SUPPLEMENTARY CONDITIONS:

PART 1 GENERAL

1.01 Description

A. The Amendments to the General Conditions contain changes and additions to AIA Document A201. Where any part of the General Conditions is supplemented hereby, the AIA Provisions of such article shall remain in effect. All supplemental provisions shall be considered as added thereto. Where any such part or article is amended, voided, or superseded thereby, the provisions of such article not so specifically amended, voided, or superseded shall remain in effect.

1. ARTICLE 2 OWNER:

(add) "2.1.1.2 The Owner is Pruitthealth - Crystal Coast and is referred to in the Contract Documents as if singular in number and masculine in gender."

2. ARTICLE 3 CONTRACTOR:

(add) "3.6.2 Contractor shall pay all applicable Federal, State and Local taxes, including sales taxes on all equipment and materials used in the project."

(add) "3.7.5 Contractor shall procure all applicable permits and licenses, including permits and licenses required pursuant to applicable patent and copyright laws, shall pay all charges and fees, and shall give all notices necessary and incidental to the due and lawful prosecution to the work"

3. ARTICLE 4 ADMINISTRATION OF THE CONTRACT:

(add) "4.1.1 The Architect is David R. Polston, Architect, 3806 Park Avenue, Unit 2L, Wilmington, North Carolina 28403, (910) 350-8900, and is referred to in the Contract Documents as if singular in number and masculine in gender."

(add) "4.1.2 The term 'Architect' means the Architect or his authorized representative, and means the same as 'Architect/Engineer', or 'Engineer'."

4. ARTICLE 7 CHANGES IN THE WORK:

(add) "7.1.5 No modification or rescission of this contract shall be effective unless evidenced by a written change order signed by both parties, the Architect and by the surety to this contract. The Owner may issue change orders, which are defined as written order to Contractor prepared by Architect and signed by the Owner or his designee, authorizing an addition, deletion or revision in the work or an adjustment in the contract price or the contract time. Contractor agrees to perform such reasonable extra work as may be ordered in writing by Architect.

The Owner agrees to pay Contractor, upon Contractor's presentation of itemized cost statements, for extra work computed as follows: (a) labor used at actual payroll charges therefore; (b) actual payroll charges for Workers' Compensation Insurance, Social Security and all other payroll charges; (c) a competitive hourly rate for actual operating hours of equipment used; (d) amounts paid by Contractor to vendors, as evidenced by paid invoices, for material purchased and used on extra work orders; (e) cost of bonding, if applicable and (f) overhead and profit combined shall be based on new paragraph 7.1.6."

(add) "7.1.6 The allowance for overhead and profit combined, and management fee when applicable, for all change orders included in the total cost to the Owner, shall be based on the following schedule:

1. For the Contractor, for any work performed by the Contractor's own forces, 10 percent plus 5 percent management fee of the cost.

2. For the Contractor, for work performed by his Subcontractor, 5 percent of the amount due the Subcontractor.

3. For each Subcontractor or Sub-subcontractor involved, for any work performed by his own forces, 10 percent of the cost.

4. For each Subcontractor, for work performed by his Sub-subcontractors, 5 percent of the amount due the Sub-subcontractor.

5. Cost to which overhead and profit or management fee is to be applied shall be determined in accordance with Subparagraph of the General Conditions.

6. In order to facilitate checking of quotations for extras or credits, all proposals, shall be submitted in the following manner. Change Order Requests failing to comply with this form will be returned for correction.

   a) Materials (itemized breakdown) $ _____

   b) *Rent of Equipment (list separately) $ _____

   Sub-Total (1) $ _____

   c) Labor (itemized breakdown) $ _____

   Sub-Total (2) $ _____

   d) For Subcontract Work - Overhead & Profit (**10% x Sub-Total 1 and 2) $ _____

   Sub-Total (3) $ _____

e) Management Fee (when applicable, 5% x a, b, c, and d. See 1 through 5 above) $ _____

Sub-Total (4) $ _____

f) Insurance (Workmen's Compensation, Social Security or as otherwise required and/or specified) $ _____

Sub-Total (5) $ _____

g) Guarantee Bond (on Sub-Total 3 or 4 as applicable) $ _____

Total $ _____

* Rates not in excess of those prevailing in areas

** If deductive changes, this figure to be 5%"

5. ARTICLE 8 TIME:

(add) "8.1.2 The Contractors shall commence work to be performed under this agreement on a date to be specified in a written order from the Architect and shall fully complete all work hereunder according to the following schedule:

485 Consecutive Calendar Days

Time is of the essence, and if the Contractor fails to complete the work within the maximum time, the Owner will incur substantial damages, including but not limited to capitalized interest payments and loss of revenue resulting from the inability to utilize the completed project for patient care.

If the progress or completion of the work be delayed by any fault, neglect, act or failure to act on the part of the Contractor or anyone acting for or on behalf of the Contractor, then the Contractor shall, in addition to all of the other obligations imposed by this Contract and by law upon the Contractor, and at no cost or expense to the Owner, work such overtime or require the appropriate subcontractor to work such overtime as may be necessary to make up for all time lost and to avoid delay in the progress and completion of the work.

Should the progress or completion of the work be delayed by any fault, neglect, act or failure to act on the part of the Contractor or anyone acting for or on behalf of the Contractor so as to cause any additional cost, expense, liability, or damage to the Owner of any damage or additional cost or expense for which the Owner may or shall become liable, the Contractor shall and does hereby agree to compensate the Owner for and to

indemnify the Owner against all such costs, expenses, liabilities and damages.

For the purposes of this Article, subcontractors shall be deemed to be acting for and on behalf of the Contractor. The construction shall be completed within 485 calendar days from the date of a Written Notice to Proceed issued by the Owner.

6. ARTICLE 11 INSURANCE AND BONDS:

(add) " 11.1.1 During the term of the Contract, the Contractor shall, at his own expense, purchase and maintain insurance by companies properly licensed in North Carolina and satisfactory to the Owner, who shall be designated on the policy as Pruitthealth - Crystal Coast as the named insured, of the kinds and minimum amounts specified below.

Certificates and Notice of Cancellation: Before commencing work under this contract, Contractor shall furnish the Owner with certificates of all insurance required below. Certificates shall indicate the type, amount, class of operations covered, effective date and expiration date of all policies, and shall contain the following statement:

> "The insurance covered by this certificate will not be canceled or materially altered, except after thirty (30) days written notice has been received by the Owner."

Workers' Compensation and Employer's Liability Insurance: Covering all of the Contractor's employees to be engaged in the work under this contract, providing the required statutory benefits under North Carolina Workers' Compensation Law, and employers liability insurance providing limits at least in the amount of $500,000/1,000,000 applicable to claims due to bodily injury by accident or disease.

Commercial General Liability: Including coverage for independent contractor operations, contractual liability assumed under the provisions of this contract, products/completed operations liability and broad form property damage liability insurance coverage. Exclusions applicable to explosion, collapse and underground hazards are to be deleted when the work involves these exposures. The policy shall provide liability limits at least in the amount of $1,000,000 occurrence, combined single limits, applicable to claims due to bodily injury and/or property damage.

Owners and Contractors Protective Liability Insurance: To be issued in the name of Pruitthealth - Crystal Coast. This coverage shall be provided by a separate policy and written with liability limits at least in the amount of $1,000,000 per occurrence, combined single limits, applicable to claims due to bodily injury and/or property damage arising out of work to be performed under this contract on behalf of the Owner.

Automobile Liability Insurance: Covering all owned, non-owned and hired vehicles, providing liability limits at least in the amount of $1,000,000 per occurrence combined single limits applicable to claims due to bodily injury and/or property damage.

Builder's Risk Insurance: Contractor shall provide builder's risk insurance written in the amount of 100 percent of the contract amount. Coverage shall apply to risks of direct physical loss or damage to buildings and structures while in the course of construction, including foundations, attachments, machinery and all permanent fixtures constituting a part of said buildings or structures. Contractor shall be responsible for any loss within the deductible applicable to this insurance. The coverage shall be written in the name of Pruitthealth - Crystal Coast and shall protect the Contractors as their interests may appear."

(add) "11.4.3 The successful bidder shall deliver to the Owner in duplicate a Performance Bond and a separate Labor and Material Payment Bond, AIA Form A-311, each in an amount at least equal to 100 percent (100%) of the Contract sum as security for the faithful performance of the Contract, and the payment of all persons performing labor and furnishing materials in connection with this Contract. The surety shall be subject to approval by the Owner and shall be licensed to transact business in the State of North Carolina. The Performance and Labor and Materials Payment Bonds must each be accompanied by a current Power of Attorney. The cost of such bonds shall be included in the Contractor's proposal amount."

7. ARTICLE 13 MISCELLANEOUS PROVISIONS:

(add) "13.1.1.1 The Work shall be executed in accordance with all applicable provisions and requirements of the latest edition of the North Carolina State Building Code and county building ordinances in effect at the time the Contract is executed."

8. ARTICLE 15 EQUAL OPPORTUNITY:

Add the following Article:

"ARTICLE 15 EQUAL OPPORTUNITY"

"15.1 The Contractor shall maintain policies of employment as follows:

"15.1.1 The Contractor and all subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment, advertising; layoff or termination; rates of pay or other forms of compensation; and selection for

training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices setting forth the policies of non-discrimination."

"15.1.2 The Contractor and all subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin."

DIVISION ONE - GENERAL REQUIREMENTS

Section 01010 - General

SCOPE: This division is to be added to the AIA General Conditions and shall also form a part of the contract. Precedence shall be given to items in this division. Items in the AIA General Conditions which may be in conflict with this division shall be null and void.

SCOPE OF WORK: Contractor shall furnish all labor, materials and equipment and shall perform all work in the manner and form as provided by the following enumerated specifications and documents, which are attached hereto and made a part hereof as if fully contained herein: General Conditions, Supplemental General Conditions, Plans and Specifications, and Insurance Certificates for Workers' Compensation, and Public Liability and Property Damage, for the project more fully described therein and generally described as: Pruitthealth - Crystal Coast. The scope of work for this contract shall include the furnishing of all labor, materials, equipment and services as required to complete the construction of a new 104 bed nursing home and as detailed on the construction drawings and specification manual by David R. Polston, Architect. The specified work includes, but is not limited to the site work, general construction, plumbing, electrical, fire protection and HVAC systems necessary to construct a complete nursing home.

PRE-CONSTRUCTION CONFERENCE: The Architect shall arrange for a pre-construction conference in coordination with the Owner. He shall give written notice to all Contractors and the Owner as to the time and place of this conference. The purpose of this meeting is to review the requirements of the project and to coordinate activities for all construction. The conference shall cover but not be limited to the following items:

1. Protocol For Payment Requests
2. Protocol For Change Order Requests
3. Protocol For Communication Between Owner, Architect and Contractor
4. State Inspection Schedule
5. Protocol For Time Extensions
6. Required Reports During The Construction Period
7. Protocol For Shop Drawings
8. Establishment of Project Schedule
9. Establishment of Monthly Construction Conference
10. Protocol For Project Close-Out

The Architect shall send copies of the minutes of this conference to all Contractors, the Owner and to other interested parties.

PROJECT SCHEDULE: The Contractor shall develop a project schedule (CPM Chart) prior to the pre-construction meeting which schedules all major trades for the contract period. The project schedule shall be reviewed and updated during each monthly progress meeting.

MONTHLY PROGRESS MEETINGS: The Architect shall establish and conduct a regular scheduled monthly meeting, to be held at the job site. These meetings shall be open to subcontractors, material suppliers, and any others who can contribute toward maintaining required job progress. The Architect shall request that each prime contractor be represented by both home office and project personnel. These representatives shall have authority to act on behalf of the Contractor. It shall be the purpose of these meetings to effect coordination, cooperation, and assistance in maintaining progress of the project on schedule in order to complete the project within the contract time.

PROJECT COMPLETION AND CLOSE-OUT: Prior to final inspection of the work by the North Carolina DHSR Construction Section, the Contractor shall provide the following documentation for review by the State Personnel:

1. Certification by the Project Architect and Consulting Engineer in each design category, i.e. plumbing, heating/air conditioning, electrical systems, that the work was completed in accordance with the drawings and any supplementary construction documents.

2. Final Occupancy Permit.

3. Documentation indicating the flame spread rating of the carpet used. (This must be from an independent testing laboratory.)

4. Evidence that the Boiler Inspection Division of the North Carolina Department of Labor has made an inspection or that the inspection has been requested for all boilers and/or hot water heaters if their capacities are more than 120 gallons or 200,000 BTU or 200 degrees.

5. Documentation indicating the flame spread rating of the draperies, curtains, and privacy screens.

6. Certification by the local sanitarian indicating that the kitchen may be used for food preparation and that the potable water system has been sanitized in accordance with North Carolina State Building Code.

7. Certification that the sprinkler system has been installed in accordance with National Fire Protection Association Code No. 13 and that flow control and supervisory valve alarms are active.

8. An evacuation plan and smoking regulations must have been established and posted prior to the final inspection. The plan and regulations must be posted in prominent locations on all floors, approximately half the distance down each corridor.

9. Documentation showing the values of impedance and equipotential voltage for each grounded point in a patient use room and showing the value of current leakage (with grounds in place and lifted) of each piece of fixed electrical equipment. (See NFPA

99, 1987 Section 3-5.2)

10. Installation instructions for fire dampers, ceiling radiation dampers, smoke dampers, and duct smoke detectors.

11. Two copies of the Owner's equipment operational and maintenance manuals.

12. Owner's guarantees and warranties.

13. Certification that all required portable fire extinguishers are installed.

14. One set of Owner's reproducible as-built drawings.

The Contractor shall also provide to the Owner:

1. A set of reproducible record drawings prepared by the Architect and Contractor. The Contractor must update the job set documents of any changes on a daily basis. The Architect will make these changes to the originals at the end of the project and supply the owner with one reproducible set of record drawings.

2. An executed copy of the Waiver Of Liens from the Contractor.

3. A disclaimer from the Contractor establishing the date of final completion and stating that he is satisfied with the money paid to him.

4. A Consent of Surety.

5. Two copies of the installation, operation and maintenance manuals for all installed equipment.

INTENTION: The Contractor shall, unless otherwise specified, supply all heat, sanitary facilities, water, scaffolding and incidentals necessary for the entire and proper and substantial 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 and everything incidental thereto, as shown on the plans, stated in the specifications or reasonable implied, therefrom, all in accordance with the contract documents.

PERMITS: Each Contractor shall apply for, take out and pay for all permits, licenses, inspections, etc., as required. Refer to new Paragraph 3.7.5 of the Supplementary Conditions of the General Conditions.

CONTRACTOR PAYMENTS: The Contractor shall submit a completed Schedule of Values (AIA Document G703) for all project costs to the Architect for approval prior to the start of construction. During the pre-construction conference, the General Contractor, Architect, and Owner will establish a monthly cut-off date for pay applications by the Contractor. The Contractor shall submit to the Architect completed AIA Form G702 (Application and

Certification of Payment), AIA Form G703 (Schedule of Value) along with verification of sales tax payments for each monthly application for payment. The Architect will review the application and will approve or adjust the application for payment within seven calendar days. Payments will be made on the basis of ninety (90%) percent of the estimated payments until completion and acceptance of the work at which time complete payment will be made.

MEASUREMENTS: Before ordering materials or doing any work, each contractor shall verify all measurements at site and shall be responsible for the correctness of such measurements. No extra charge on completion will be allowed on account of differences between actual dimensions and the measurements indicated on the drawings; any differences which may be found shall be submitted to the Architect for consideration before proceeding with the work.

PROJECT SIGN: The General Contractor shall furnish, erect, paint and maintain one temporary project sign. The sign shall be painted by a professional sign painter. See attached drawing for detail of sign construction. The entire cost of the sign shall be paid by the General Contractor. Maintain the sign in good condition until the work has been completed, and then remove it from the site.

SANITARY ARRANGEMENTS: The Contractor shall provide, where directed, portable toilet facilities for employees, and shall furnish and install in these facilities all water closets required for a complete and adequate sanitary arrangement. Sanitary arrangements must meet all requirements of the local and state health authorities.

TEMPORARY STRUCTURES: Each Contractor shall provide all necessary storage facilities (trailers), etc. for their own use. All temporary structures shall be built in a sound waterproof manner and shall remain on the premises until their removal is directed by the Architect.

BARRIERS: The Contractor shall protect all trees and shrubs in the vicinity of the operations by building substantial boxes around same. Barricade all walks, roads, etc. as directed by the Architect to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.

PROTECTION: The Contractor shall be responsible for the entire site and the building or construction of same and provide all necessary protections as required by the Owner or Architect, and by laws or ordinances governing such conditions. He will be responsible for any damage to the Owner's property or that of others on the job, by him, his men or his sub-contractors and shall pay for any claims against the Owner.

EXAMINATION OF CONDITIONS: The submission of a bid will assume that the Contractor has fully examined the site and knows existing conditions, and has made every provision for the operation under existing conditions, and has included all necessary items.

COOPERATION WITH OTHERS: All Contractors will be required to cooperate and consult with each other during the construction of this project. Each Contractor shall lay out and execute his work so as to cause the least delay to other contractors. Each Contractor shall be held responsible for any damage to other Contractor's work.

The Contractor shall consult the Architect prior to closing any furred spaces or pipe spaces or pouring any concrete floors to determine that all mechanical work has been installed. Omission of mechanical work from furred spaces due to failure of the Contractor to check with the Architect will not be tolerated. If such occurs, the Contractor shall open the space at his own expense. Each contractor shall provide full and safe access for inspection at all times.

COVERED WORK: No work or material will be covered up until inspected and approved by the Architect. Work covered before such inspection shall be uncovered at the Contractor's expense and replaced at his expense and as directed after approval is given.

APPROVALS: Each Contractor shall obtain written approval from the Architect for the use of materials as specified equal and for those not mentioned as standard. Such approvals must be obtained as soon after contract award as possible and before any materials are ordered. Application for approvals will be made by the Contractor and not by subcontractors or material men.

WORK AND MATERIALS: All materials will be new and the best quality of those specified. Samples or other necessary evidence of quality may be asked for and will be furnished by the Contractor without cost as also the necessary tests to show that requirements have been established. Workmanship shall be the best quality, done by mechanics skilled in the special work involved.

CONDUCT OF WORKMEN: At any time during the construction and completion of the work covered by these specifications, if the conduct of any workmen of the various crafts be adjudged ungentlemanly and a nuisance to the Owner or Architect, the contractor shall order such parties removed immediately from the grounds.

SUPERINTENDENT: All Contractors shall keep full time superintendents, satisfactory to the Architect, on the work as required.

OWNER'S RIGHT TO EMPLOY OTHER WORKMEN: The Owner shall have the right to employ other workmen during the construction of the building to do work not included in the contract. Such work will in no way change or void this contract.

VERBAL AGREEMENTS: Verbal agreements at variance with these drawings and specifications will not be regarded as binding. A written memorandum or change order must be made by the Owner or Architect.

SHOP DRAWINGS: The Contractor shall execute, with such promptness to cause no delay in his own work or in the work of others, three copies of all shop or setting drawings and schedules required for the work. The Architect shall pass upon them with reasonable promptness. The Contractor shall make any corrections required; and if necessary, resubmit shop drawings for the Architect's approval.

EXTRAS: No extras will be paid unless approved by the Architect in writing. The Owner has the right during construction to make changes or authorize extra work. This will in no way void

or change the contract except to add to or deduct from the amount of the contract by a reasonable and fair valuation.

DRAWINGS AND SPECIFICATIONS: The Owner will furnish copies of the drawings and specifications to the successful Contractors without charge. The drawings and specifications are complementary and any work shown and not specified, or vice-versa, shall be furnished the same as if shown and specified.

SUBCONTRACTORS: Subcontractors are subject to the approval of the Architect and such approval will be asked for and given in writing. Subcontractors will not be allowed to start work until they and their insurance certificates have been approved.

CLEANING: The Contractor will keep the site, within and around the operation, clean and neat and free of trash and debris accumulations. All debris shall be removed from the site. He will keep it free from inflammable or dangerous stored material at all times. If such is not done as directed, it will be done by the Owner and such costs charged to the Contractor. Upon completion, all parts of the work shall be left clean and neat to present a finished appearance. Floors shall be scrubbed if necessary.

GUARANTEE: All work, materials and equipment must be guaranteed for a period of twelve (12) months from the date of final acceptance by the Owner. Any defects developing from faulty workmanship or material or negligence in this period will be made by the Contractor without expense to the Owner. Also, damage resulting therefrom to other work shall be made good at the expense of the Contractor.

CORRELATION OF PLANS AND SPECIFICATIONS: If the plans and specifications are found to disagree, the Architect shall be the judge to which shall govern and his decision shall be final.

WATER: The General Contractor shall provide and pay for construction water as required.

ELECTRICITY: The General Contractor shall provide and pay for construction electricity as required.

HEAT: The General Contractor shall provide and pay for building heating as required.

TELEPHONE: The General Contractor shall provide and pay for construction telephone services as required.

SECTION 01030 – ALLOWANCES

PART 1 - GENERAL

1.01 ALLOWANCE LIST

A. ALLOWANCE NO. 1: Brick Allowance:
   1. Allow $400.00 (Four Hundred Dollars) per thousand including taxes.
   2. As specified in Section 04210.
   3. Include only the cost of the material in the allowance (manufacturer's price, taxes, freight).
   4. Include all other related costs in the Contract sum.

B. ALLOWANCE NO. 2: Kitchen Equipment:
   1. The General Contractor shall include an allowance of $250,000 for the purchase of kitchen equipment shown on Sheets A-10 and A-11 (main kitchen plus 2 serving kitchens). Kitchen exhaust hood, dishwasher condensation hood, all related hood ductwork, duct fire protection and roof exhaust fans/curbs shall be by the Mechanical Contractor, part of the General Contractor's Base Bid and not part of this allowance. Allowance to include equipment purchase cost, tax and freight. General Contractor to include in Base Bid installation of allowance equipment and required electrical, plumbing and gas services/connections.

C. ALLOWANCE NO. 3: Laundry Equipment:
   1. The General Contractor shall include an allowance of $75,000 for the purchase of 3 commercial washers and 3 commercial dryers as shown on Sheet A-10. Allowance to include equipment purchase cost, tax and freight. General Contractor to include in Base Bid installation of Laundry Equipment and required electrical, plumbing, gas and ductwork services/connections.

SECTION 01200 - PROGRESS DOCUMENTATION AND PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Progress procedures:
      a. Progress meetings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROGRESS MEETINGS

A. Hold periodic progress meetings.

B. The following are required to attend:
   1. Project superintendent.
   2. Major subcontractors and suppliers.

C. The following topics may be applicable:
   1. Review minutes of previous meeting.
   2. Status of submittals and impending submittals.
   3. Off-site fabrication and delivery schedules.
   4. Actual progress of activities in relation to the schedule.
   5. Actual and anticipated delays, their impact on the schedule and corrective actions taken or proposed.
   6. Actual and potential problems.
   7. Status of change order work.
   8. Effect of proposed changes on schedule and coordination.
   9. Status of corrective work.
   10. Progress expected to be made during the next period.
   11. Other business related to the Work.

END OF SECTION 01200

SECTION 01220 - SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Preparing and processing of submittals for review and action.
   2. Preparing and processing of informational submittals.

B. Submit the following for the Contractor's review and action:
   1. Shop drawings.
   2. Product data.
   3. Samples.
   4. Submittals indicated as "for approval."
   5. Submittals for which procedures are not defined elsewhere.

C. Submit the following as informational submittals:
   1. Certificates.
   2. Coordination drawings.
   3. Reports.
   4. Qualification statements for manufacturers/installers.

D. Specific submittals are described in individual sections.
   1. Provide other information required by Division 15 for plumbing work.
   2. Provide other information required by Division 16 for electrical work.
   3. Provide other information required by Division 17 for HVAC work.

E. Submit all submittals to the Contractor.

1.02 DEFINITIONS

A. Product Data Submittals: Standard printed data which show or otherwise describe a product or system, or some other portion of the Work.
   1. Product data submittals to include selection data showing standard colors.

B. Samples: Actual examples of the products or Work to be installed.

C. Informational Submittals: Submittals identified in the Contract Documents are to be submitted for information only.

1.03 FORM OF SUBMITTALS

A. Sheets Larger Than 8-1/2 by 11-inches:

1. Maximum sheet size: 24 by 32-inches.
   a. Exception: Full size pattern or template drawings.
2. Number of copies:
   a. Submittals for review:
      1. Five (5) copies of blue- or black-line prints.
      2. All but three (3) copies will be returned.
   b. Informational submittals:
      1. Three (3) copies of opaque prints.
      2. No copies will be returned.

B. Small Sheets or Pages:
1. Minimum sheet size: 8-1/2 by 11-inches.
2. Number of copies:
   a. Opaque copies:
      1. For review: Five (5) copies.
         a. Three (3) copies will be retained.
      2. Informational submittals: Three (3) copies.

C. Samples: Two (2) sets of each.
1. One (1) set will be returned.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TIMING OF SUBMITTALS

A. Deliver each submittal requiring approval in time to allow for adequate review and processing time, including resubmittals if necessary. Failure of the Subcontractor in this respect will not be considered as grounds for an extension of the Contract Time.

B. If a submittal must be processed within a certain time in order to maintain the progress of the Work, state so clearly on the submittal.

3.02 SUBMITTAL PROCEDURES - GENERAL

A. Preparation of Submittals:
1. Label each copy of each submittal with the following information:

a. Project name.
b. Date of submittal.
c. Subcontractor's name and address.
d. Supplier's name and address.
e. Manufacturer's name.
f. Specification section where the submittal is specified.
g. Numbers of applicable drawings and details.

3.03 SHOP DRAWINGS

A. Content: Include the following information:
1. Dimensions at accurate scale.
2. All field measurements that have been taken at accurate scale.
3. Names of specific products and materials used.
4. Details identified by the Contract Document sheet and detail numbers.
5. Show compliance with the specific standards referenced.
6. Name of preparing firm.

B. Preparation:
1. Reproductions of the Contract Documents is not acceptable as shop drawings.

C. Required submittals:
1. Structural and miscellaneous metals.
2. Roof trusses.
3. Casework.
   a. Cabinets.
   b. Nurses' Station.
4. Doors.
   a. Hollow Metal.
   b. Wood.
   c. Hardware.
   d. Access Doors.
5. Accessories.
6. Fire extinguishers and cabinets.
7. Column covers.
8 Mechanical, electrical and plumbing.

3.04 SAMPLES

A. Samples:
1. Where selection is required, provide full set of all options.
2. Attach a description to each sample.

3. Attach name of manufacturer or source to each sample.

B. Required Sample and/or Color Submittals
1. Brick and mortar.
2. Shingles.
3. Gutters and downspouts.
4. Plastic laminate.
5. Cabinet stain and finish.
6. Door stain and finish.
7. Paint.
8. Flooring and Walls.
   a. VCT and base.
   b. Ceramic tile and base.
   c. Quarry tile and base.
9. Vinyl wallcoverings.

3.05 REVIEW OF SUBMITTALS

A. Submittals for approval will be reviewed, marked with appropriate action, and returned.

3.06 RETURN AND RESUBMITTAL

A. Submittals may be returned to the Subcontractor by mail.

B. Perform resubmittals in the same manner as original submittals; indicate all changes requested by the Contractor.

END OF SECTION 01220

SECTION 01241 - QUALITY CONTROL PROCEDURES

PART 1- GENERAL

1.01 SUMMARY

A. Section Includes:
   1. General quality control activities.
   2. Procedures for submittal of quality control documentation.

B. Related Sections:
   1. Section 01300 - Submittals.

1.02 CONTRACT CONDITIONS

A. Independent testing agencies may not change the requirements of the Contract Documents and may not approve any portion of the Work.

B. Employment of testing agencies, by the Contractor or the Subcontractor, shall not relieve the Subcontractor of his obligation to perform the Work in accordance with the Contract Documents.

1.03 SUBMITTALS

A. Reports:
   1. Unless otherwise indicated, submit to the Contractor for review.
   2. Submit reports no later than the date of application for payment for the work to which the quality control activity relates.
   3. Reports shall be prepared by the entity performing the quality control activity.
   4. Include the following information in all types of reports:
      a. Date of report.
      b. Project name (and number, if applicable).
      c. Description.
      d. Name, address, and telephone number of entity performing activity.
      e. Date quality control activity was performed if applicable.
      f. Specification section(s) involved.
      g. Basis for evaluation (test method, etc.).
      h. Results or conclusions, including evaluations and interpretations.
      i. Title, name, and signature of person performing activity.
   5. Include the following information in all test reports:
      a. Locations from which samples were taken, if any.

b. Ambient conditions at time of activity.
c. Recommendations for retesting, if any.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Use installers who are capable of producing work of the specified quality.

B. Perform all quality control activities specified unless indicated to be performed by other entities.

3.02 TESTING

A. Perform tests specified.

B. When results of tests are unsatisfactory, make whatever changes or repairs are necessary and retest, at no cost to the Contractor or the Owner.

C. Submit a written report of each original test and of each retest.

END OF SECTION 01241

SECTION 01312 - TEMPORARY FACILITIES AND SERVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Temporary utilities.
2. Temporary construction.
3. Protective facilities.
4. Employee facilities.
5. Temporary services.
6. Required temporary facilities and services include but are not limited to:
   a. Access roads.
   b. Existing property protection.
   c. Public protective facilities required by law.
   d. Water supply.
      1. Include water service and sewer usage charges.
   e. Electrical service, except extension cords.
      1. Include electric service usage charges.
   f. Temporary lighting.
   g. Use of permanent lighting systems.
   h. Use of permanent electrical systems.

1.02 DEFINITIONS

A. Temporary Facilities: Construction, fixtures, fittings and other built items required to accomplish the Work but which are not incorporated into the finished work.

B. Temporary Utilities: A type of temporary facility, primary sources of electric power, water, natural gas supply, etc., obtained from public utilities, other main distribution systems, or temporary sources constructed for the Project, but not including the fixtures and equipment served.

C. Temporary Services: Activities required during construction which do not directly accomplish the Work.

D. Construction Equipment: A type of temporary facility, consisting of fixed equipment used to accomplish the Work, determined by the method the Subcontractor chooses to accomplish the Work.

1.03 QUALITY ASSURANCE

A. Comply with requirements of governing authorities, as to type, quantity, location and use of temporary facilities.

B. Comply with requirements of governing authorities, as to type and frequency of temporary services.

C. Comply with requirements of public utilities affected.

1.04 PROJECT CONDITIONS

A. Obtain easements where required.

1.05 SEQUENCING AND SCHEDULING

A. Maintain required facilities until not needed or until shortly before Substantial Completion. Remove facilities before Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide materials which are both suitable for the use and durable enough to withstand the use and abuse to be expected.

2.02 TEMPORARY UTILITIES

A. Temporary Water Service:
1. Plumbing Subcontractor to provide the following as part of the Work:
   a. Connect to existing water main.
   b. Provide meter and shut-off valve.
   c. Disinfect temporary piping before use.

B. Temporary Power:
1. Electrical Subcontractor to provide the following as part of the Work:
   a. Obtain temporary service from local utility.
   b. Provide disconnect at connection to service.
   c. Provide service conductors and equipment.
   d. Provide metering equipment.

2.03 PROTECTIVE FACILITIES

A. Grading Subcontractor to provide the following as part of the Work:
1. Barricades at sidewalks and open ditches where construction work may present hazards to vehicles and personnel.

a. Do not remove until other security facilities, either temporary or permanent, are in place and in operation.

2. All protective facilities to meet standards of OSHA and The Haskell Company.

3. Existing Property Protection: Provide fixed barriers to prevent damage due to construction machinery, vehicles, and adjacent work;

2.04 EMPLOYEE FACILITIES

A. Temporary Lighting: Electrical Subcontractor to provide lighting.

2.05 TEMPORARY CONSTRUCTION

A. Access Roads: Grading Subcontractor to provide temporary roads as required.

1. Provide traffic surfaces which are adequate for the loads expected and which will be durable in normal weather conditions.

PART 3 - EXECUTION

3.01 TERMINATION AND REMOVAL

A. Remove temporary facilities when no longer needed, or when use of appropriate permanent facility is approved, but not later than Substantial Completion.

B. Where temporary roads are not provided in same location as permanent roads, Grading Subcontractor is to restore the Site to its original condition after removal of temporary roads, if required by the Drawings.

1. Remove temporary paving.
2. In areas to be planted, remove contaminants which inhibit growth of plants.
3. In areas where specific soil or fill is required, remove soil and fill that does not comply.
4. Till and regrade as required to restore original degree of compaction.

END OF SECTION 01312

SECTION 01630 - PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. General product requirements, including:
      a. Product options.
      b. Procedures for substitution requests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PRODUCT OPTIONS

A. It is the Subcontractor's responsibility to select products which comply with the Contract Documents and which are compatible with one another.
   1. Verify that electrical characteristics of products are compatible with electrical systems. Notify the Contractor of all discrepancies.

3.02 SUBSTITUTION PROCEDURE

A. Submission of request for substitution shall constitute a representation by the Subcontractor that he:
   1. Has investigated the proposed product and determined that it is equal to or better than the specified product. Absence of an explicit comparison of any characteristic of the proposed product to the specified product shall constitute a representation that the proposed product is equal to or better than the specified product with regard to that characteristic.
   2. Will provide the same warranty for the proposed product as for the specified product.
   3. Will coordinate the installation and make other changes which may be required for the Work to be complete in all respects, including:
      a. Redesign.
      b. Additional components and capacity required by other work affected by the change.
   4. Waives all claims for additional costs and time extensions which subsequently may become apparent and which are caused by the change.

B. Substitutions will not be considered when acceptance would require substantial revision of the Contract Documents.

C. Data Required with Substitution Request: Provide at least the following data:

1. Complete product data.
2. An itemized comparison of the proposed product to the specified product.
3. Description of changes that will be required in other work or products if the substitute product is approved.

END OF SECTION 01630

SECTION 01700 - CONSTRUCTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Laying out the Work.
2. General construction and installation procedures.
3. Cleaning during construction.
4. Project completion procedures.

1.02 PROJECT CONDITIONS

A. Take precautions to prevent accidents due to physical hazards.
1. Provide barricades, warning lights, or signs as required to inform personnel and the public of the hazard being protected against.
2. Safety barricades: Comply with regulations.
3. Notify the Contractor before beginning work that involves hazardous operations, including use of explosives and the like.
4. Comply with all OSHA 15 safety requirements.
5. Hardhats and safety glasses are to be worn by all personnel on the Job Site and all precautions shall comply with governing safety agencies.

B. Take care to prevent pollution of air, water and soil.
1. Comply with environmental protection regulations.
2. Do not dump contaminants on the Project Site. Dispose of materials in accordance with all Federal, State and Local requirements.

C. Keep public streets free of debris, dirt and rocks due to the Work.

D. Provide adequate traffic control by means of signs, signals and flagmen, as necessary.

PART 2 - PRODUCT (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL EXAMINATION REQUIREMENTS

A. Prior to performing Work, examine the applicable substrates and the conditions under which the Work is to be performed.

B. If unsatisfactory conditions are encountered, notify the Contractor and take corrective action before proceeding.

C. Conditions which could have been discovered by examination will not be allowed as cause for claims for extra work.

D. Notify the Contractor promptly of any modifications required due to existing conditions or previous work.

E. Verify space requirements of items which are shown diagrammatically on the Drawings.

3.02 GENERAL PREPARATION REQUIREMENTS

A. Take field measurements as required to fit the Work properly.

B. Recheck measurements prior to installing each product.

3.03 GENERAL INSTALLATION PROCEDURES

A. Accurately locate the Work and components of the Work; make vertical work plumb; make horizontal work level.

B. Coordinate exact locations of fixtures and outlets with finish elements.

3.04 CLEANING AND PROTECTION

A. Remove debris from concealed spaces prior to enclosing the space.

B. Keep the Site and the Work free of waste materials and debris.
1. Remove waste from the Site periodically. DO NOT conceal waste (cans, bottles, cigarette butts etc.) within the new construction.
2. Keep hazardous and unsanitary materials in containers separate from other waste.

C. Clean areas in which Work is to be done to level of cleanliness necessary for proper execution of that Work.
1. Where dust would impair execution of Work, broom and vacuum clean the entire interior area and keep clean.

D. One (1) request will be made to the Subcontractor to maintain a clean and safe work area. If area is not maintained, the Contractor may maintain the area(s) and back charge the Subcontractor for all associated costs.

3.05 INSTALLATION OF COMPONENTS

A. Install all products in accordance with the manufacturer's instructions and recommendations, whether conveyed in writing or not.

B. Mounting Heights: Where mounting heights are not indicated, mount at heights directed by the Contractor.

C. Provide all anchors and fasteners required and use methods necessary to securely fasten the Work.
   1. Allow for thermal expansion and contraction, and for building movement.

D. After installation, adjust operating components to proper operation as required.

3.06 FINAL CLEANING

A. Dispose of debris in a lawful manner.
   1. Do not burn or bury debris on the Site if not allowed by the regulating agencies having jurisdiction.
   2. Do not dispose of volatile wastes in storm or sanitary drains.
   3. Dispose of Hazardous materials as specified in the Material Data Safety Sheets and Federal, State and Local ordinances.

B. All areas are to be completed in a broom cleaned condition.

3.07 PROJECT COMPLETION PROCEDURES

A. Complete the Work, prior to Substantial Completion, as required to obtain a Certificate of Occupancy from the governing authorities.

END OF SECTION 01700

SECTION 02010—SUBSURFACE EXPLORATION

PART 1 – GENERAL

1.01. Related Documents
Drawings and General Provisions of Contract including General Conditions, Geotechnical / Soils Report, Supplementary Conditions, and Division 1 Specification Sections.

1.02. A subsurface investigation and Report for this project was prepared and has been distributed to all parties affiliated with this project to include those invited to provide the Owner with a qualified bid. . The information obtained is available to the Contractor for use in the preparation of this bid and the Construction of Building Phase. This report is available to all prospective Bidders. The information is made available to all bidders only so that they have access to the identical information available to the Owner. Accordingly, the information shall be used at each bidders own judgment.

1.03. ***The subsurface information included in these specifications shall not be considered*** a substitute for personal investigation, interpretations, or judgments of bidders as to the character of subsurface materials that may not be encountered for the work.

1.04. If a bidder requires additional subsurface information, he may have access to the job site for making his own exploration at his own expense. Providing however, that he first has approval of the Owner, and also that he leaves the site in as neat and orderly condition as before entering the site.

1.05. The Owner, and Architect, assumes no responsibility for the accuracy of such information, and no representations are made by them regarding the subsurface conditions.

PART 2 - SUB SURFACE REPORT

2.01. The published report of subsurface exploration and geo-technical evaluation on the Project is enclosed in these Specifications.

END OF SECTION

ECS Southeast, LLP

Preliminary Geotechnical Engineering Report

Farm Tract in Beaufort

Route 70 near Cedar Avenue
Beaufort, North Carolina

ECS Project Number # 22:26486

March 23, 2018

March 23, 2018

Nicole Frazier
Vice President of Community Improvements
Pruitt Health
1626 Jeurgens Court
Norcross, GA 30093

ECS Project No. 22:26486

Reference: Preliminary Geotechnical Engineering Report
Farm Tract in Beaufort – Route 70 near Cedar Avenue
Beaufort, Carteret County, North Carolina

Dear Ms. Frazier:

ECS Southeast, LLP (ECS) has completed the subsurface exploration and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our Proposal No. 22:22352 dated March 14, 2018. This report presents our understanding of the geotechnical aspects of the project along with, the results of the field exploration conducted, and our preliminary design and construction recommendations.

It has been our pleasure to be of service to Pruitt Health during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and during the construction phase operations as well to verify the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Southeast, LLP

Joshua Gilman, PE
Project Manager
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Winslow Goins, PE
Principal Engineer
WGoins@ecslimited.com

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EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The geotechnical exploration performed for the planned development included ten (10) electronic cone penetration test (CPT) soundings to termination/refusal depths ranging from approximately 30 feet to 50 feet.

- The soundings generally encountered coastal plain soils consisting of Silty and Clean SAND (SM, SP) with layers of Sandy SILT (ML), Silty CLAY (CL-ML) and Lean CLAY (CL).

- Undercutting will be required to the indicated estimated depths at the following locations:
    - 3 to 5 feet in the vicinity of S-2, S-3, S-8, and S-10
    - 2 feet in the vicinity of S-7

- The proposed building can be supported with a shallow foundation having an allowable bearing pressure of 2,000 psf.

- Based on the results of the CPT soundings and our evaluation of the site, the site shall be assigned a seismic class "D".

- Relatively shallow groundwater was encountered approximately 2.1 to 2.8 feet below existing grades at the site. Depending on design grades, temporary construction dewatering operations may be required to facilitate subsurface construction.

1.0 INTRODUCTION

1.1 GENERAL

ECS' understanding of this project is based on information provided by Charles Cullipher, PE of the Cullipher Group, PA (TCG) via email on 3/12/18, and a telephone discussion with Mr. Cullipher on 3/7/18. The site is located on an approximately 14 acre plat that is located northeast of the intersection of Route 70 and Cedar Avenue in Beaufort, Carteret County, North Carolina. The project will consist of a single story structure ranging in size from 50,000 to 75,000 square feet constructed on a portion of the site, and several configurations are being considered. Structural loading information was not available at the time of this report.

This report contains the results of our subsurface explorations, site characterization, engineering analyses, and recommendations for the design of the proposed construction.

1.2 SCOPE OF SERVICES

To obtain the necessary geotechnical information required for design of the proposed development, a total of ten (10) CPT soundings were performed. All CPT soundings were advanced to approximately 30 feet beneath existing grades except for S-5; which was advanced to approximately 50 feet beneath the ground surface. Shear wave velocity tests were performed in sounding S-5 for seismic site classification and liquefaction potential.

This report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following:

- A brief review and description of our field test procedures and the results of testing conducted;
- A review of surface topographical features and site conditions;
- A review of area and site geologic conditions;
- A review of subsurface soil stratigraphy with pertinent available physical properties;
- Preliminary foundation recommendations;
  - Allowable bearing pressure;
  - Settlement estimates (total and differential);
- Site development recommendations;
- Suitability of soils for use as fill material;
- Pavement design recommendations;
- Discussion of groundwater impact;
- Compaction recommendations;
- Special conditions encountered;
- Seismic site classification and liquefaction potential;
- Site vicinity map;
- Exploration location plan; and
- CPT sounding logs.

1.3 AUTHORIZATION

Our services were provided in accordance with our Proposal No. 22.22352, dated 3/14/18, as authorized by Pruitt Health on 3/15/18, and is subject to the Terms and Conditions of Service outlined in our proposal.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The site is located on a +/- 14 acre plat that east of Route 70 and northeast of the intersection of Route 70 and Cedar Avenue in Beaufort, Carteret County, North Carolina. Figure 2.1.1 below shows an aerial image of the site.

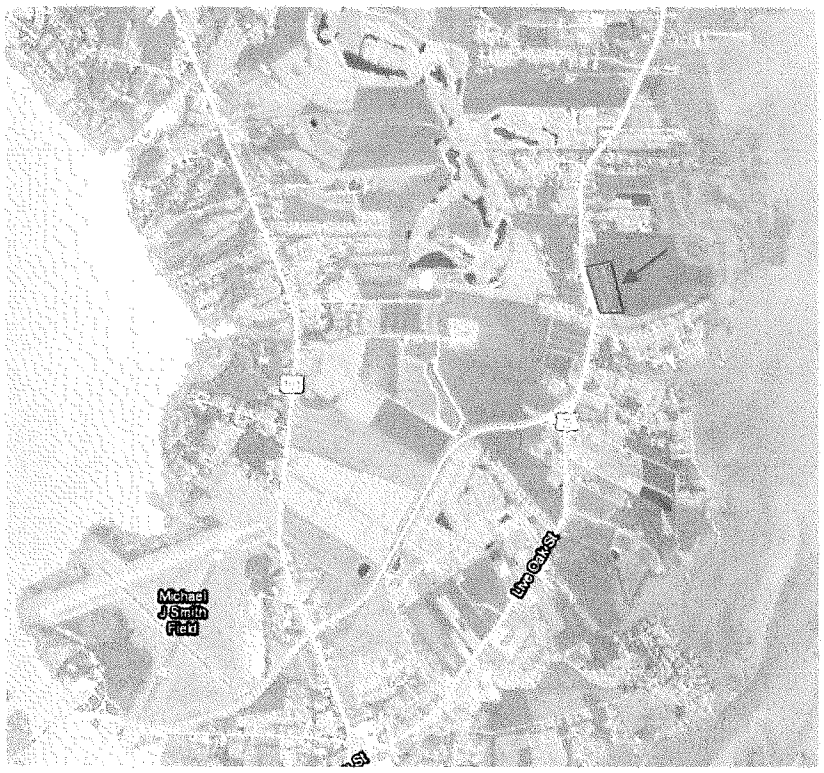


Figure 2.1.1 Site Location

2.2 CURRENT SITE CONDITIONS

At the time of our site visit, the entire site consisted of flat, open farm field with ditch lines around the perimeter and two ditches running approximately north-south. The average site elevation is approximately 5.5 feet (Per TCG).

2.3 PROPOSED CONSTRUCTION

The project will consist of a single story structure ranging in size from 50,000 to 75,000 square feet constructed on a portion of the site, and several configurations are being considered including locating the structure on the north or south portion of the tract with the option to expand in the opposite direction in the future.

2.3.1 Site Civil Features

- Grading for stormwater ponds, roadways and building pads
- Cuts and fills less than 5 feet (assumed)

2.3.2 Structural Information/Loads

The following information explains our assumed structural loads for the purpose of the recommendations made in this report:

Table 2.3.2.1 Design Values

SUBJECT	DESIGN INFORMATION / EXPECTATIONS
Usage	Occupancy Category I, II or III
Column Loads	100
Wall Loads	Up to 5 kips/ft
Finish Floor Elevation	±3.5 feet of existing grade (assumed)

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field data to assist in the determination of geotechnical recommendations.

3.1.1 Cone Penetrometer Soundings

The subsurface conditions were explored by advancing ten (10) electronic cone penetration test (CPT) soundings across the site. All CPT soundings were advanced to approximately 30 feet beneath existing grades except for S-5; which was advanced to approximately 50 feet beneath the ground surface.

Sounding locations were located in the field by an ECS representative using a hand held GPS unit and referencing existing site features. The approximate as-drilled sounding location is shown on the Exploration Location Diagram in Appendix A.

The CPT soundings were conducted in general accordance with ASTM D 5778. The cone used in the soundings has a tip area of 10 cm^2 and a sleeve area of 150 cm^2. The CPT soundings recorded tip resistance and sleeve friction measurements to assist in determining pertinent index and engineering properties of the site soils. The ratio of the sleeve friction to tip resistance is then used to aid in assessing the soil types through which the tip is advanced. The results of the CPT soundings are presented in Appendix B.

Within sounding S-5, seismic tests were performed at approximately three foot intervals to refusal to measure the shear wave velocity (v_s) of the subsurface materials to aid in assessing the dynamic response properties of the site subsurface materials. The seismic shear waves are generated by making impact with a 20-pound sledgehammer onto a steel beam. The impacts are initiated on the right and left sides of the CPT rig and the corresponding wave traces recorded on an oscilloscope are analyzed to determine the shear wave velocity of the tested material. The waves are measured with three geophones that are installed in the cone. The results of the CPT soundings are presented in Appendix B.

3.2 REGIONAL/SITE GEOLOGY

The site is located in the Coastal Plain Physiographic Province of North Carolina. The Coastal Plain is composed of seven terraces, each representing a former level of the Atlantic Ocean. Soils in this area generally consist of sedimentary materials transported from other areas by the ocean or rivers. These deposits vary in thickness from a thin veneer along the western edge of the region to more than 10,000 feet near the coast. The sedimentary deposits of the Coastal Plain rest upon consolidated rocks similar to those underlying the Piedmont and Mountain Physiographic Provinces. In general, shallow unconfined groundwater movement within the overlying soils is largely controlled by topographic gradients. Recharge occurs primarily by infiltration along higher elevations and typically discharges into streams or other surface water bodies. The elevation of the shallow water table is transient and can vary greatly with seasonal fluctuations in precipitation.

Based on the U.S. Geological Survey[1,2] the proposed construction site consists of Undivided Surficial Deposits (Quaternary). Soils typically contain sand, clay, gravel, and peat deposited in marine, fluvial, eolian, and lacustrine environments. An overview of the general site geology is illustrated in Figure 3.2.1 below.

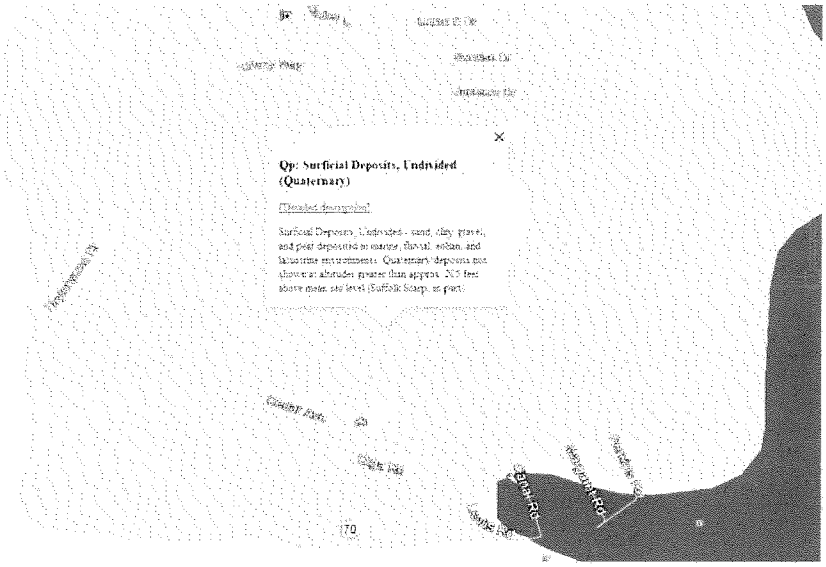


Figure 3.2.1

Geologic map for Figure 3.2.1 obtained from The North Carolina Dept. of Environment, Health, and Natural Resources, Division of Land Resources, NC Geological Survey, in cooperation with the NC Center for Geographic Information and Analysis, 1998, Geology - North Carolina (1:250,000), coverage data file geol250 and Google Earth.

[1] The North Carolina Dept. of Environment, Health, and Natural Resources, Division of Land Resources, NC Geological Survey, in cooperation with the NC Center for Geographic Information and Analysis, 1998, Geology - North Carolina (1:250,000), coverage data file geol250. The data represents the digital equivalent of the official State Geology map (1:500,000 scale), but was digitized from (1:250,000 scale) base maps.

[2] Rhodes, Thomas S., and Conrad, Stephen G., 1985, Geologic Map of North Carolina: Department of Natural Resources and Community Development, Division of Land Resources, and the NC Geological Survey, 1:500,000-scale, compiled by Brown, Philip M., et al, and Parker, John M. III, and in association with the State Geologic Map Advisory Committee.

3.3 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil encountered during our subsurface exploration. For subsurface information at a specific location, refer to the CPT Sounding Logs in Appendix B.

Table 3.3.1 Subsurface Stratigraphy

Approximate Depth Range (ft)	Stratum	Description	Ranges of N*-Values[(1)] blows per foot (bpf)
0-0.5	N/A	Soundings performed throughout contained an observed thickness of topsoil. Deeper topsoil or organic laden soils are most likely present in wet, poorly drained areas and potentially unexplored areas of the site.	N/A
0.5-5	I	Very soft to soft, lean Clay (CL), interbedded layers of sandy silt/silty sand (SM), moist to saturated. Encountered at S-1 through S-3, S-5, S-7 through S-10. Thickness varied from approximately 0' to 5'.	1-4
0.5-18	II	Loose to medium dense, Silty and Clean SAND (SM, SP) with interbedded layers up to 2' thick of Sandy SILT (ML) and Silty Clay (CL-ML), Moist to Saturated. Thickness varied from approximately 11' to 20'.	6 to 33
18-27	III	Very soft to very stiff, silty Clay (CL-ML), occasional interbedded layers of sandy silt/silty sand, saturated. Thickness varied from approximately 4' to 11', S-10 terminated in this stratum.	3 to 8
27-50	IV	Loose to very dense (typically medium dense), Silty and Clean SAND (SM, SP) with interbedded layers up to 2' thick of Sandy SILT (ML) and Silty Clay (CL-ML), Moist to Saturated. All soundings terminated in this stratum except S-10.	6 to 50+

Notes: (1) Equivalent Corrected Standard Penetration Test Resistances

3.4 GROUNDWATER OBSERVATIONS

Porewater pressure measurements were made at the sounding locations during exploration as noted on the CPT sounding logs in Appendix B. The apparent groundwater depths were observed at the time of drilling to range from approximately 2.1 to 2.8 feet below ground surface.

The highest groundwater observations are normally encountered in the late winter and early spring. Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors not immediately apparent at the time of this exploration. If long term water levels are crucial to the development of this site, it would be prudent to verify water levels with the use of perforated pipes or piezometers.

4.0 DESIGN RECOMMENDATIONS

4.1 BUILDING DESIGN

The following sections provide recommendations for foundation design.

4.1.1 Foundations

Shallow Foundations: Provided that the subgrades are prepared as discussed herein, the proposed structures can be supported by conventional shallow foundations. The design of the foundation shall utilize the following parameters:

Table 4.1.1.1 Foundation Design

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure[1]	2,000 psf	2,000 psf
Acceptable Bearing Soil Material	Stratum I or approved structural fill	Stratum I or approved structural fill
Minimum Width	30 inches	18 inches
Minimum Footing Embedment Depth (below slab or finished grade)	12 inches	12 inches
Estimated Total Settlement	1 inch	1 inch
Estimated Differential Settlement	Less than 0.5 inches	Less than 0.5 inches

1. Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.

It will be important to have the geotechnical engineer of record observe the foundation subgrade prior to placing foundation concrete; to confirm the bearing soils are what was anticipated. If soft or unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and removed. Any undercut should be backfilled with approved structural fill up to the original design bottom of footing elevation; the original footing shall be constructed on top of the structural fill. The depth and lateral extent of the undercut should be determined in the field during undercutting operation. An ECS representative must be on site during the undercut and backfill of the areas in order to provide a report stating that the repairs were in accordance with our recommendations.

4.1.2 Floor Slabs

Based on the information provided by TCG, floor slabs will bear on +/- 3.5 feet of compacted structural fill. Provided the subgrade preparation and structural fill compaction recommendations of this report are followed, this material is likely suitable for the support of a slab-on-grade.

Subgrade Modulus: Provided the Subgrade Preparations and Earthwork Operations Sections of this report are followed, the slab may be designed assuming a modulus of subgrade reaction, k of 150 pci (lbs/cu. inch). The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

Slab Isolation: Ground-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab. Maximum differential settlement of soils supporting interior slabs is anticipated to be less than 0.5 inches in 50 feet.

4.1.3 Seismic Design Considerations

Seismic Site Classification: The International Building Code (IBC) 2009 requires site classification for seismic design based on the upper 100 feet of a soil profile. Three methods are utilized in classifying sites, namely the shear wave velocity (v_s) method; the unconfined compressive strength (s_u) method; and the Standard Penetration Resistance (N-value) method. The first method (shear wave velocity) was used in classifying this site.

The results of the shear wave velocity profiles are contained in Appendix B. The seismic site class definitions for the weighted average of shear wave velocity or SPT N-value in the upper 100 feet of the soil profile are shown in the following table:

Table 4.1.3.1: Seismic Site Classification

Site Class	Soil Profile Name	Shear Wave Velocity, Vs, (ft./s)	N value (bpf)
A	Hard Rock	Vs > 5,000 fps	N/A
B	Rock	2,500 < Vs ≤ 5,000 fps	N/A
C	Very dense soil and soft rock	1,200 < Vs ≤ 2,500 fps	>50
D	Stiff Soil Profile	600 ≤ Vs ≤ 1,200 fps	15 to 60
E	Soft Soil Profile	Vs < 600 fps	<15

The North Carolina Building Code (2009 International Building Code with North Carolina Amendments) requires that a seismic Site Class be assigned for new structures. The seismic Site Class for the site was determined by calculating a weighted average of the shear velocities of the overburden to the depth of rock/refusal. The CPT test data indicates that the existing natural, overburden soils at the site have shear velocities ranging from approximately 427 ft/sec to 1,396 ft/sec. The method for determining the weighted average value is presented in Section 1613.5.5 of the IBC 2009. The weighted average value for the site is 770 ft/sec. Based on the results of the CPT soundings and our evaluation of the site, the site shall be assigned a seismic class "D".

Liquefaction: The potential for liquefaction at the site is considered low based upon the CPT results and the liquefaction index procedure developed by Iwasaki (1982). Based on our CPT results and our evaluation using a site peak ground acceleration of 0.062, an earthquake event with a magnitude of 7.3 and procedures developed by Robertson (2009) and Boulanger & Idriss (2014), the liquefaction induced settlement at the subject site is estimated to be less than 1 inch.

Ground Motion Parameters: In addition to the seismic site classification noted above, ECS has determined the design spectral response acceleration parameters following the IBC 2009 methodology The Mapped Reponses were estimated from the free U.S. Seismic Design Maps Application available from the USGS website. The design responses for the short (0.2 sec, S_{DS}) and 1-second period (S_{D1}) are noted in bold at the far right end of the following table.

Table 4.1.3.2: Ground Motion Parameters (IBC 2009 Method)

Period (sec)	Mapped Spectral Response Accelerations (g)		Values of Site Coefficient for Site Class		Maximum Spectral Response Acceleration Adjusted for Site Class (g)		Design Spectral Response Acceleration (g)	
Reference	Figures 1613.5 (1) & (2)		Tables 1613.5.3 (1) & (2)		Eqs. 16-37 & 16-38		Eqs. 16-39 & 16-40	
0.2	S_S	0.146	F_a	1.600	$S_{MS}=F_aS_s$	0.233	$S_{DS}=2/3\ S_{MS}$	0.155
1.0	S_1	0.061	F_v	2.400	$S_{M1}=F_vS_1$	0.146	$S_{D1}=2/3\ S_{M1}$	0.097

The Site Class definition should not be confused with the Seismic Design Category designation, which the Structural Engineer typically assesses. If a higher site classification is beneficial to the project, ECS would be pleased to discuss additional testing capabilities in this regard.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

It should be noted that the natural geology of the site has been modified in the past; therefore potential unsuitable material may be present on the site. The subgrade preparation should consist of stripping all vegetation, rootmat, topsoil, existing fill, and any other soft or unsuitable materials from the 10-foot expanded building area and 5-foot expanded pavement areas. ECS should be called on to verify that topsoil and unsuitable surficial materials have been completely removed prior to the placement of structural fill or construction of the building and pavement areas.

5.1.2 Proofrolling

After removing all unsuitable surface materials, cutting to the proposed grade, and prior to the placement of any structural fill or other construction materials, the exposed subgrade should be examined by the geotechnical engineer or authorized representative. Based on the results of subsurface explorations, it is expected that undercutting shall be required to remove unsuitable soft soils to the estimated depths and at the following locations:

- 3 to 5 feet in the vicinity of S-2, S-3, S-8, and S-10
- 2 feet in the vicinity of S-7

The exposed subgrade should be thoroughly proofrolled with previously approved construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck). The areas subject to proofrolling should be traversed by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of the geotechnical engineer or authorized representative. This procedure is intended to assist in identifying any localized yielding materials. In the event that unstable or "pumping" subgrade is identified by the proofrolling, those areas should be marked for repair prior to the placement of any subsequent structural fill or other construction materials. Methods of repair of unstable subgrade, such as undercutting or moisture conditioning or chemical stabilization, should be discussed with the geotechnical engineer to determine the appropriate procedure with regard to the existing conditions causing the instability. Test pits may be excavated to explore the shallow subsurface materials in the area of the instability to help in determined the cause of the observed unstable materials and to assist in the evaluation of the appropriate remedial action to stabilize the subgrade.

5.1.3 Site Temporary Dewatering

Subsurface Water: Due to the relatively shallow groundwater conditions observed during this exploration, temporary construction dewatering may be necessary to facilitate efficient below-grade construction. Dewatering operations for the majority of the site can be handled by the use of conventional submersible pumps directly in the excavation or temporary trenches or French drains consisting of free draining granular stone wrapped in filter fabric to direct the flow of water and to remove water from the excavation. If temporary sump pits are used, we recommend they be established at an elevation 3 to 5 feet below the bottom of the excavation subgrade or bottom of footing. A perforated 55 gallon drum or other temporary structure could be used to house the pump. We recommend continuous dewatering of the excavations using electric pumps or manned gasoline pumps be used during construction.

5.2 EARTHWORK OPERATIONS

5.2.1 Structural Fill Materials

Product Submittals: Prior to placement of structural fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships for compaction. Imported materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Satisfactory Structural Fill Materials: Materials satisfactory for use as structural fill should consist of inorganic soils classified as SM, SC, SW, SP, GW, GP, GM, and GC, or a combination of these group symbols, per ASTM D 2487. Natural fine-grained soils classified as clays or silts (CL, ML) should generally not be considered for use as engineered fill, but may be evaluated by the geotechnical engineer to determine their suitability at the contractor's request. The materials should be free of organic matter, debris, and should contain no particle sizes greater than 4 inches in the largest dimension. Open graded materials, such as gravels (GW and GP), which contain void space in their mass should not be used in structural fills unless properly encapsulated with filter fabric. Suitable structural fill material should have the index properties shown in Table 5.2.1.1.

Table 5.2.1.1 Structural Fill Index Properties

Location with Respect to Final Grade	LL	PI	Max % Fines Passing # 200 Sieve
Building Area	35 max	9 max	20
Pavement Area	35 max	9 max	20

Unsatisfactory Materials: Materials that should not be used as engineered fill include topsoil, organic materials (OH, OL), and high plasticity clays and silts (CH, MH). Such materials removed during grading operations should be either stockpiled for later use in landscape fills, or placed in approved on or off-site disposal areas.

On-Site Borrow Suitability: Near surface SANDS (SM, SP) with a fines content less than 20 percent should be suitable for re-use as structural fill. Moisture conditioning should be anticipated for the soils to achieve the optimum moisture content for fill placement.

5.2.2 Compaction

Structural Fill Compaction: Structural fill within the expanded building, pavement, and embankment limits should be placed in maximum 8-inch loose lifts, moisture conditioned as necessary to within -3 and +3 % of the soil's optimum moisture content, and be compacted with suitable equipment to a dry density of at least 98% of the standard Proctor maximum dry density (ASTM D698). Beyond these areas, compaction of at least 95% should be achieved. ECS should be called on to document that proper fill compaction has been achieved.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for the proposed construction area, at the time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified representative of the construction testing laboratory to determine that the minimum compaction requirements are being achieved. Field density testing of fills will be performed at the frequencies shown in Table 5.2.2.1, but not less than 1 test per lift.

Table 5.2.2.1 Frequency of Compaction Tests in Fill Areas

Location	Frequency of Tests
Building Area	1 test per 2,500 sq. ft.
Utility Trenches	1 test per 200 sq. ft.
Pavement Areas	1 test per 10,000 sq. ft.

Compaction Equipment: Compaction equipment suitable to the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be suitable for the fine-grained soils (Clays and Silts). A vibratory steel drum roller should be used for compaction of coarse-grained soils (Sands) as well as for sealing compacted surfaces.

Fill Placement Considerations: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and all frozen or frost-heaved soils should be removed prior to placement of structural fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

At the end of each work day, all fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the Contractor may need to scarify existing subgrades to a depth on the order of 4 inches so that a weak plane will not be formed between the new fill and the existing subgrade soils.

Drying and compaction of wet soils is typically difficult during the cold, winter months. Accordingly, earthwork should be performed during the warmer, drier times of the year, if practical. Proper drainage should be maintained during the earthwork phases of construction to prevent ponding of water which has a tendency to degrade subgrade soils.

Where fill materials will be placed to widen existing embankment fills, or placed up against sloping ground, the soil subgrade should be scarified and the new fill benched or keyed into the existing material. Fill material should be placed in horizontal lifts. In confined areas such as utility trenches, portable compaction equipment and thin lifts of 3 inches to 4 inches may be required to achieve specified degrees of compaction.

We recommend that the grading contractor have equipment on site during earthwork for both drying and wetting fill soils. We do not anticipate significant problems in controlling moisture within the fill during dry weather, but moisture control may be difficult during winter months or extended periods of rain. The control of moisture content of higher plasticity soils is difficult when these soils become wet. Further, such soils are easily degraded by construction traffic when the moisture content is elevated.

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 2 to 3-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: The preparation of fill subgrades, as well as proposed building subgrades, should be observed on a full-time basis by ECS personnel. These observations should be performed by an experienced geotechnical engineer or qualified person to ensure that unsuitable materials have been removed and that the prepared subgrade meets project requirements for support of the proposed construction and/or fills.

It will be important to have the geotechnical engineer of record observe the foundation subgrade prior to placing foundation concrete; to confirm the bearing soils are what was anticipated. If soft or unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and removed. Any undercut should be backfilled with approved structural fill up to the original design bottom of footing elevation; the original footing shall be constructed on top of the structural fill. The depth and lateral extent of the undercut should be determined in the field during undercutting operation. An ECS representative must be on site during the undercut and backfill of the areas in order to provide a report stating that the repairs were in accordance with our recommendations.

5.4 GENERAL CONSTRUCTION CONSIDERATIONS

Moisture Conditioning: During the cooler and wetter periods of the year, delays and additional costs should be anticipated. At these times, reduction of soil moisture may need to be accomplished by a combination of mechanical manipulation and the use of chemical additives, such as lime or cement, in order to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas. It would be advisable to designate a haul road and construction staging area to limit the areas of disturbance and to prevent construction traffic from excessively degrading sensitive subgrade soils and existing pavement areas. Haul roads and construction staging areas could be covered with excess depths of aggregate to protect those subgrades. The aggregate can later be removed and used in pavement areas.

Surface Drainage: Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or greater to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

Excavation Safety: Cuts or excavations associated with utility excavations may require forming or bracing, slope flattening, or other physical measures to control sloughing and/or prevent slope failures. Contractors should be familiar with applicable OSHA codes to ensure that adequate protection of the excavations and trench walls is provided.

Excavation Considerations: Based on the results of the soundings, we expect that the natural Coastal Plain soils encountered on this site can be excavated with conventional earth moving equipment such as loaders, bulldozers, rubber tired backhoes, etc.

The site soils are OSHA Type C soils for the purpose of temporary excavation support. Excavations should be constructed in compliance with current OSHA standards for excavation and trenching safety. Excavations should be observed by a "competent person," as defined by OSHA, who should evaluate the specific soil type and other conditions, which may control the excavation side slopes or the need for shoring or bracing. Regardless, site safety shall be the sole responsibility of the contractor and their subcontractors. Exposed earth slopes shall be protected during periods of inclement weather.

Erosion Control: The surface soils may be erodible. Therefore, the contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. All erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements.

6.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project.

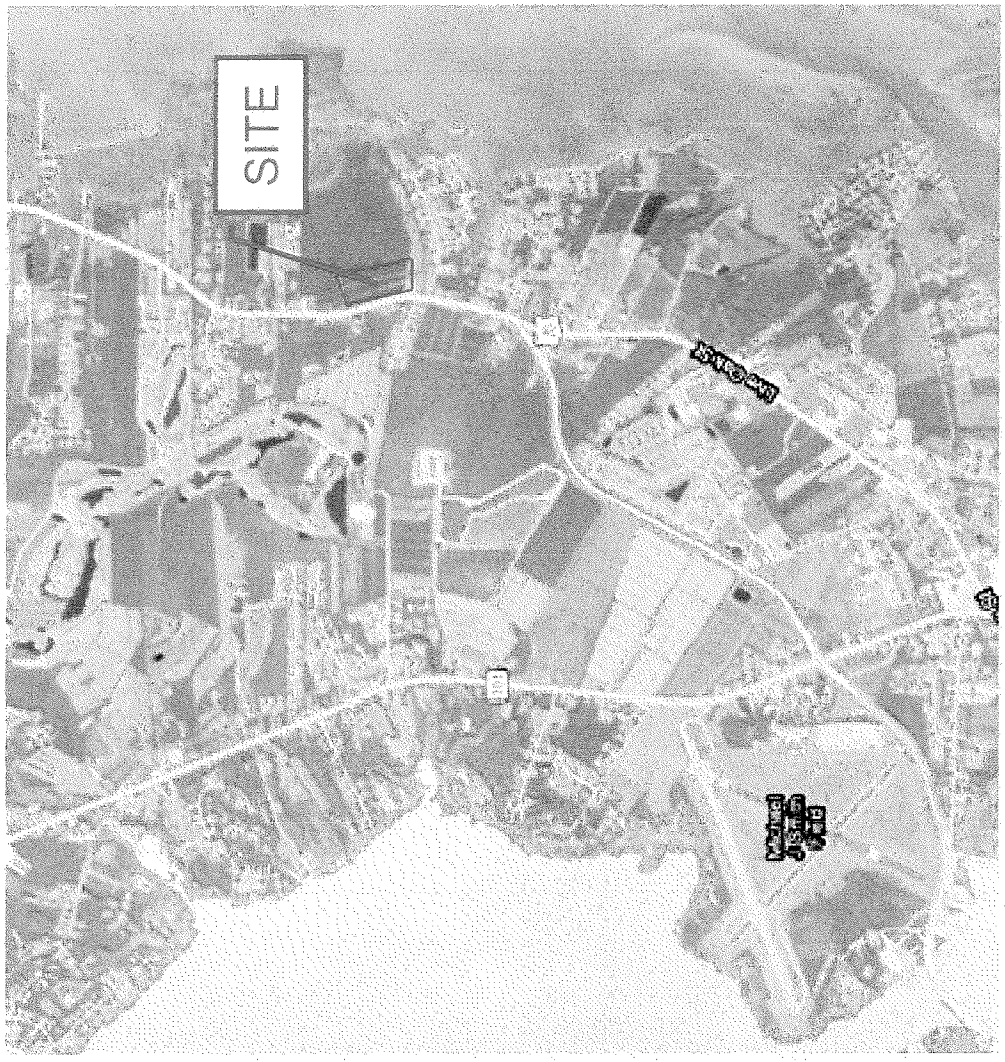
The description of the proposed project is based on information provided to ECS by TCG. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

We recommend that ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Drawings & Reports

Site Location Diagram
Exploration Location Diagram



SITE LOCATION DIAGRAM

Farm Tract Preliminary Geotechnical Project

Beaufort, North Carolina

REFERENCE	N/A.:
ENGINEER	WEG
DRAFTING	JDG
SCALE	NTS
PROJECT NO.	22-26486
SHEET	1 of 2
DATE	03/22/2018

EXPLORATION LOCATION DIAGRAM

Farm Tract Preliminary Geotechnical Project

Beaufort, North Carolina

REFERENCE	N/A.:
ENGINEER	WEG
DRAFTING	JDG
SCALE	NTS
PROJECT NO.	22-26486
SHEET	2 of 2
DATE	03/22/2018

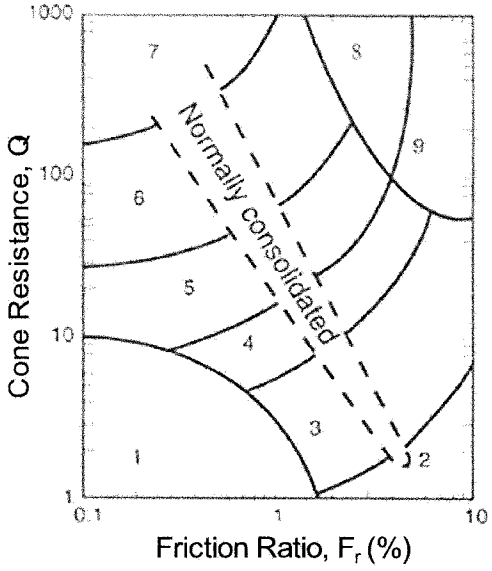
DENOTES APPROXIMATE LOCATION OF CPT SOUNDING

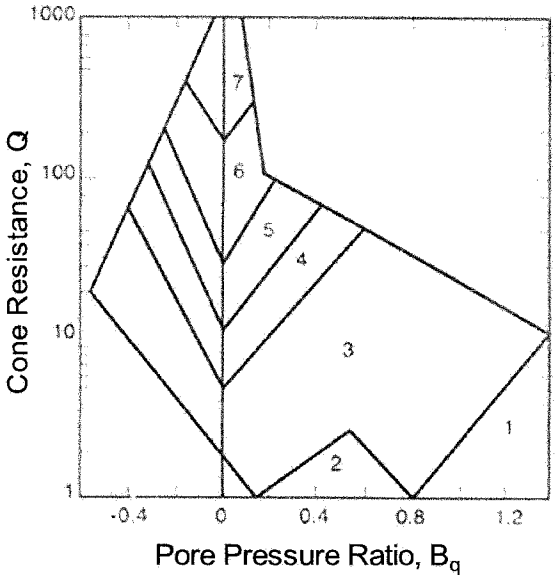
APPENDIX B – Field Operations

Reference Notes for Sounding Logs
CPT Sounding Logs S-1 through S-10 (S-5 includes Shear Wave Velocity Profile)

REFERENCE NOTES FOR CONE PENETRATION TEST (CPT) SOUNDINGS

In the CPT sounding procedure (ASTM-D-5778), an electronically instrumented cone penetrometer is hydraulically advanced through soil to measure point resistance (q_c), pore water pressure (u_2), and sleeve friction (f_s). These values are recorded continuously as the cone is pushed to the desired depth. CPT data is corrected for depth and used to estimate soil classifications and intrinsic soil parameters such as angle of internal friction, preconsolidation pressure, and undrained shear strength. The graphs below represent one of the accepted methods of CPT soil behavior classification (Robertson, 1990).





1. Sensitive, Fine Grained
2. Organic Soils-Peats
3. Clays; Clay to Silty Clay
4. Clayey Silt to Silty Clay
5. Silty Sand to Sandy Silt
6. Clean Sands to Silty Sands
7. Gravelly Sand to Sand
8. Very Stiff Sand to Clayey Sand
9. Very Stiff Fine Grained

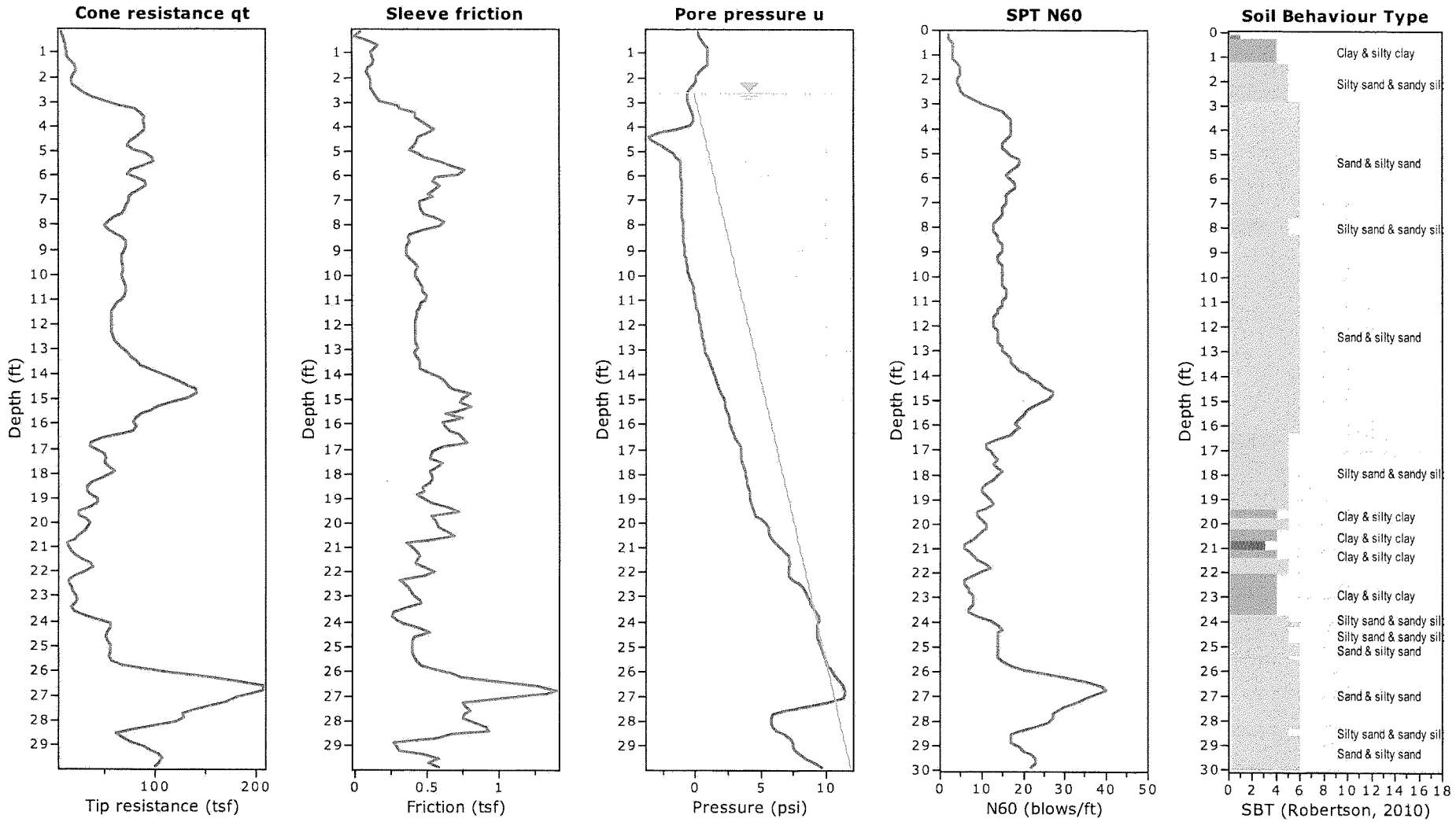
The following table presents a correlation of corrected cone tip resistance (q_c) to soil consistency or relative density:

SAND		SILT/CLAY	
Corrected Cone Tip Resistance (q_c) (tsf)	**Relative Density**	**Corrected Cone Tip Resistance (q_c) (tsf)**	**Relative Density**
<20	Very Loose	<5	Very Soft
20-40	Loose	5-10	Soft
40-120	Medium Dense	10-15	Firm
		15-30	Stiff
120-200	Dense	30-45	Very Stiff
>200	Very Dense	45-60	Hard
		>60	Very Hard

ECS Southeast, LLP
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

CPT: S-1
Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**



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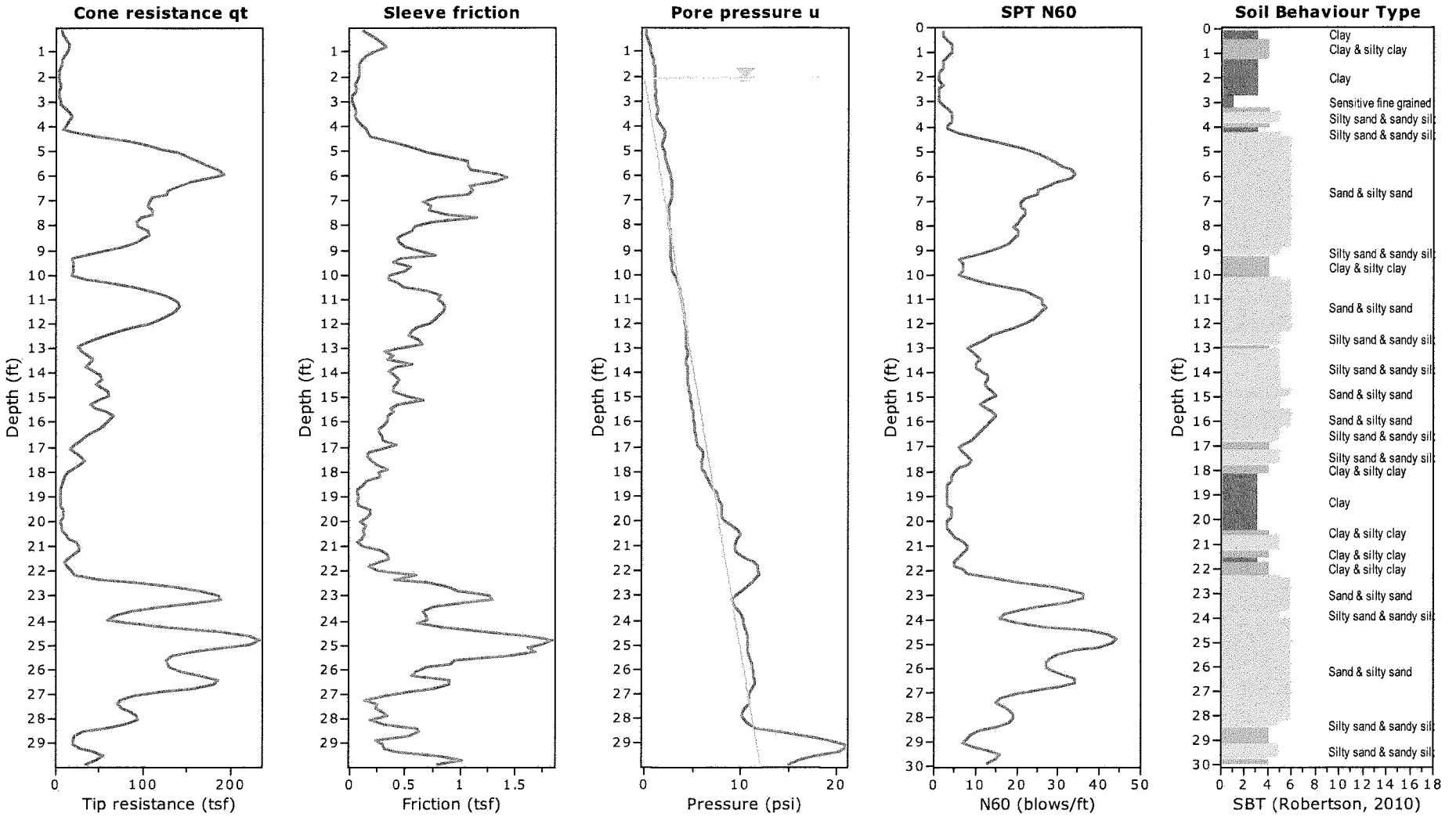
Wilmington, NC 28405
ECS Project # 22-26486

CPT: S-2

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

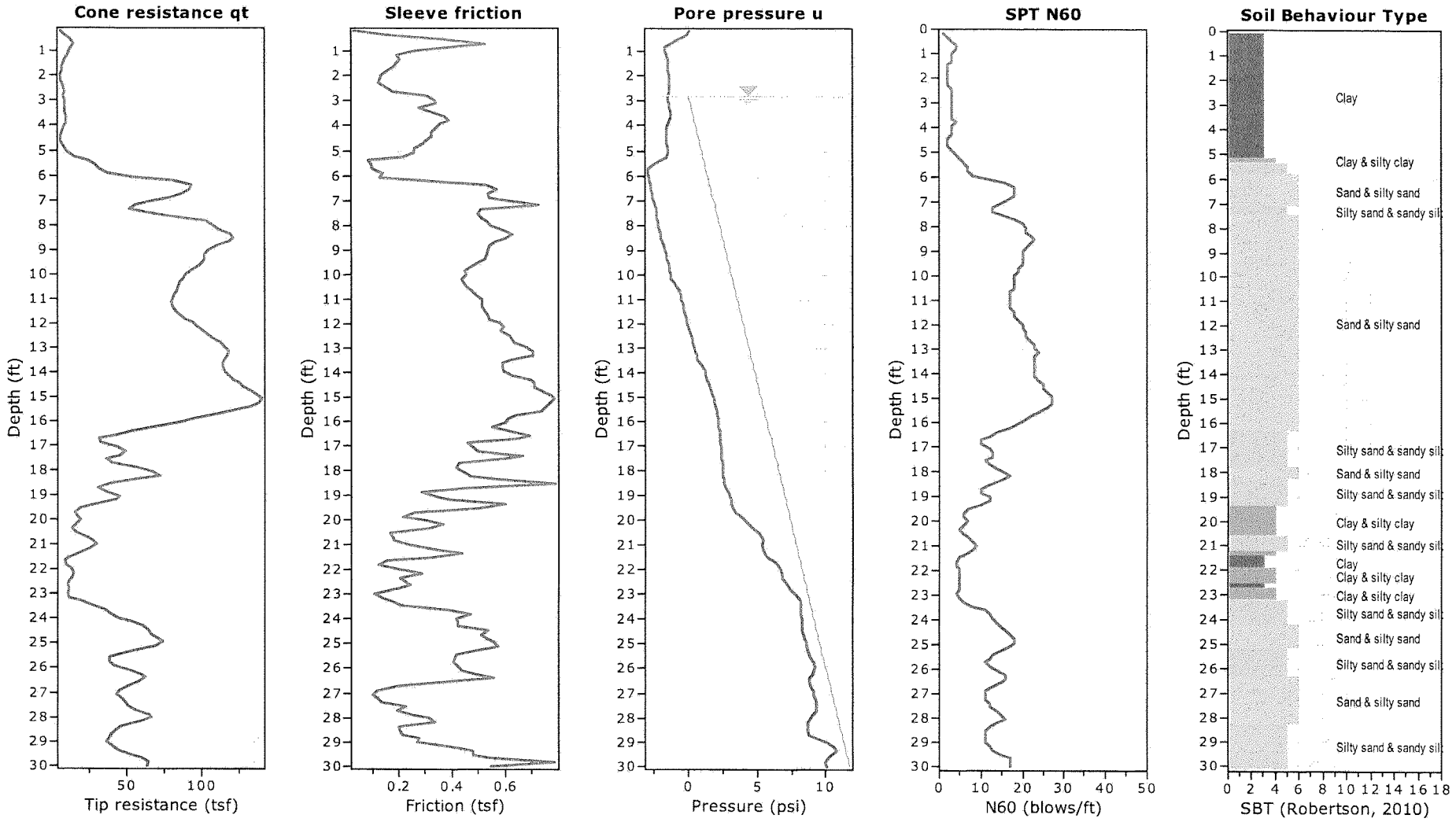
Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison



ECS Southeast, LLP
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

CPT: S-3
Total depth: 30.02 ft, Date: 3/21/2018
Cone Operator: Cory Robison



ECS Southeast, LLP
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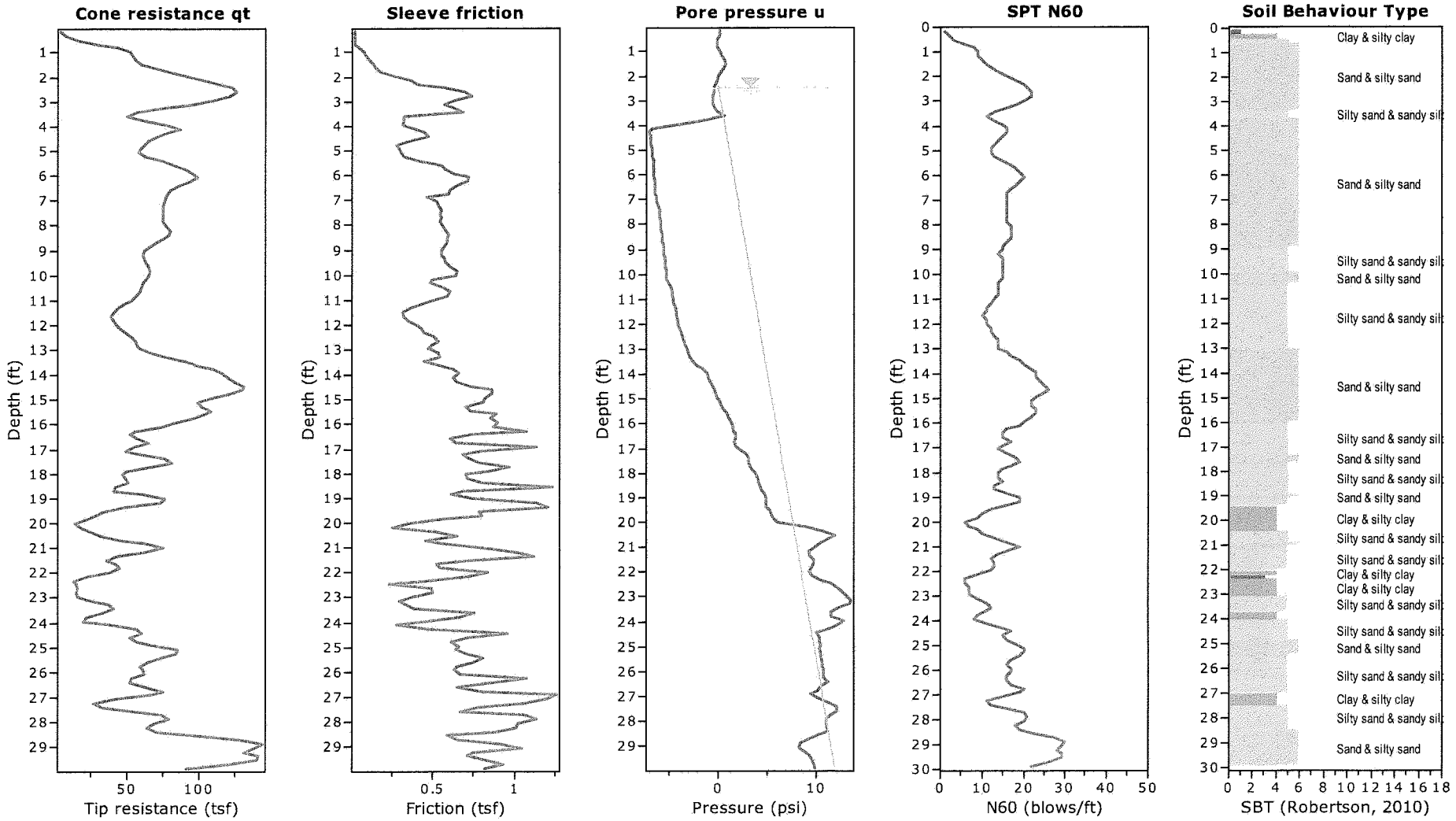
Wilmington, NC 28405
ECS Project # 22-26486

CPT: S-4

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

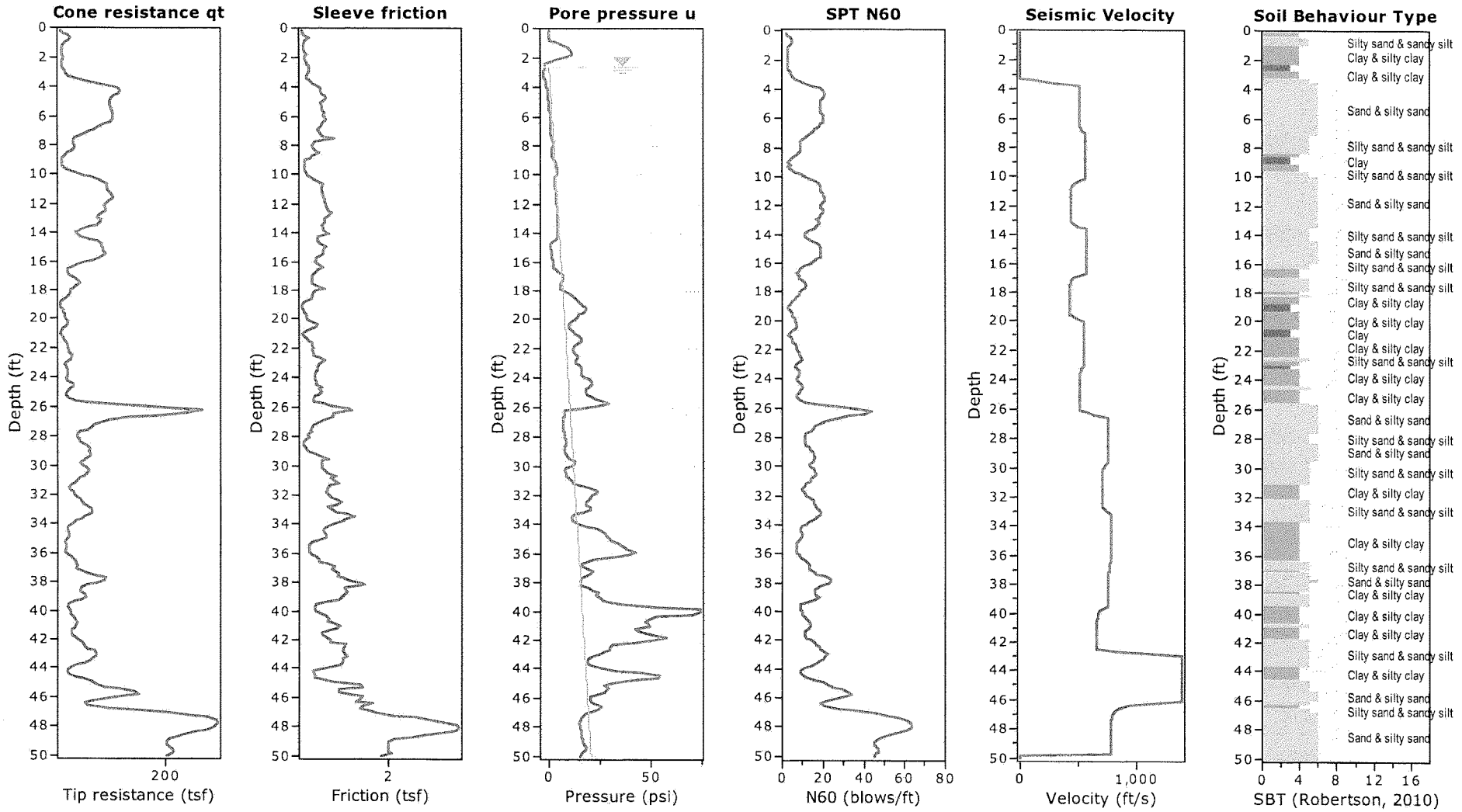
Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison



ECS Southeast, LLP
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

CPT: S-5
Total depth: 50.03 ft, Date: 3/21/2018
Cone Operator: Cory Robison

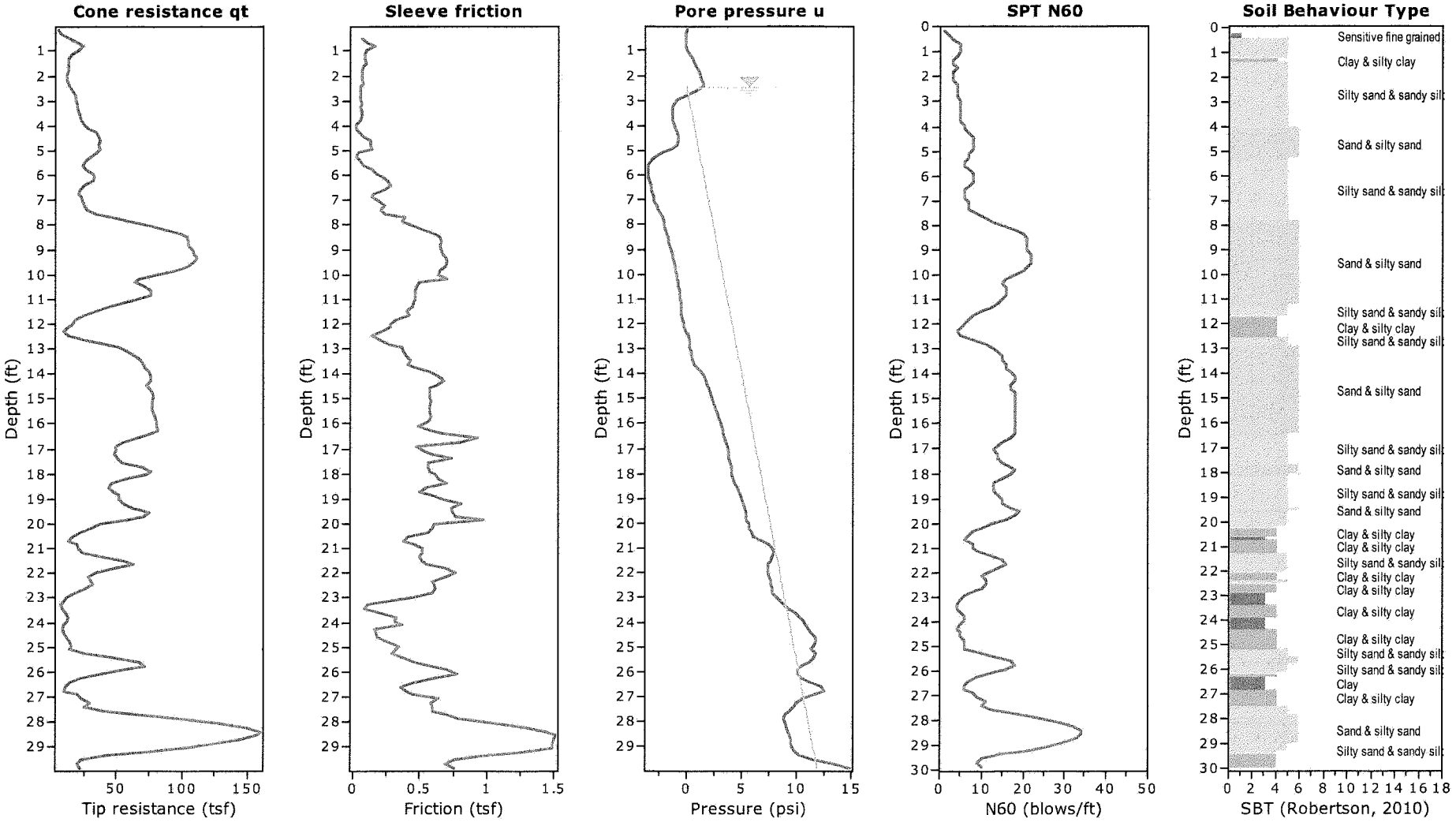


ECS Southeast, LLP
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

CPT: S-6

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

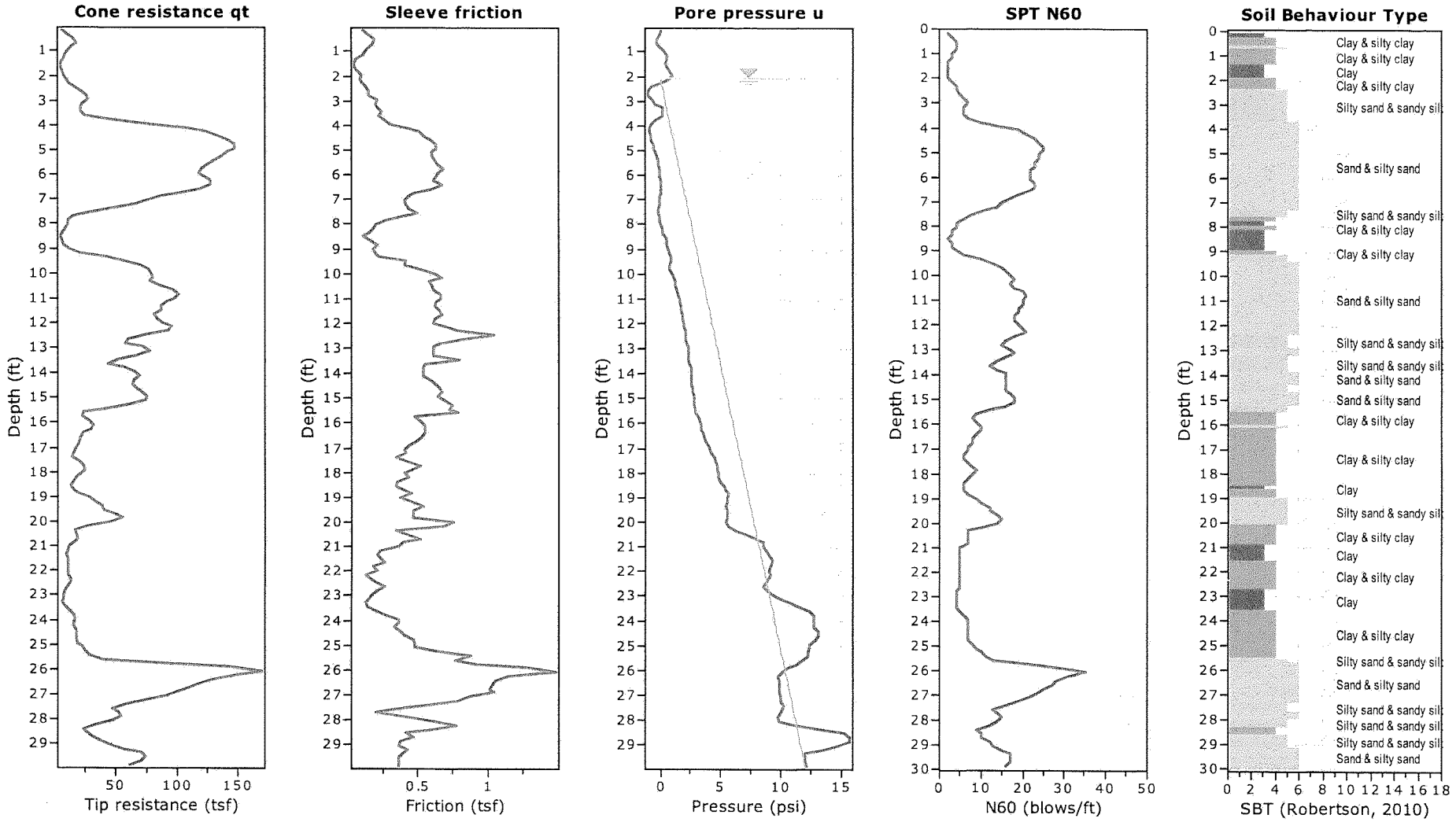
Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison



ECS Southeast, LLP
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

CPT: S-7
Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison



ECS Southeast, LLP
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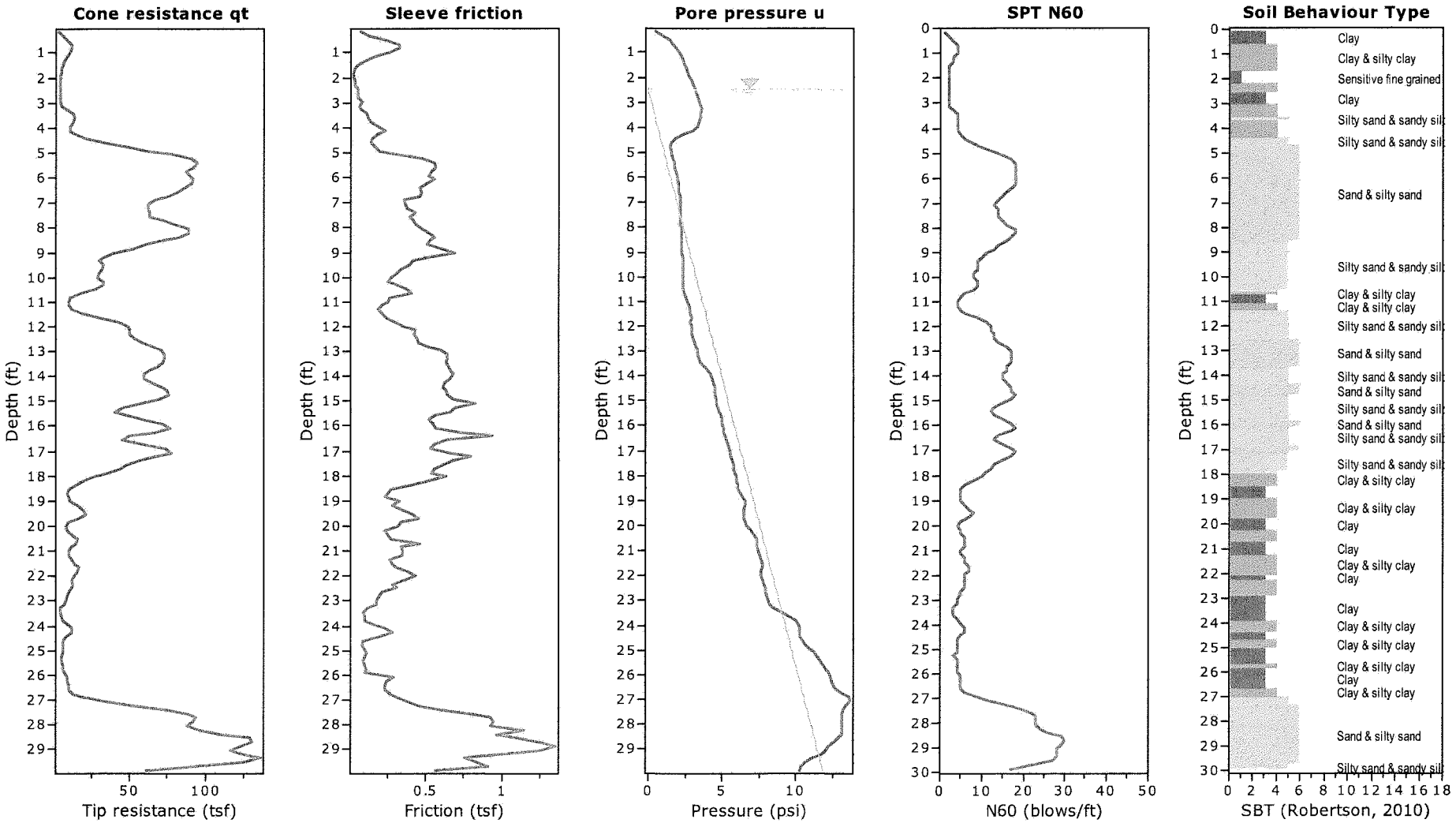
Wilmington, NC 28405
ECS Project # 22-26486

CPT: S-8

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

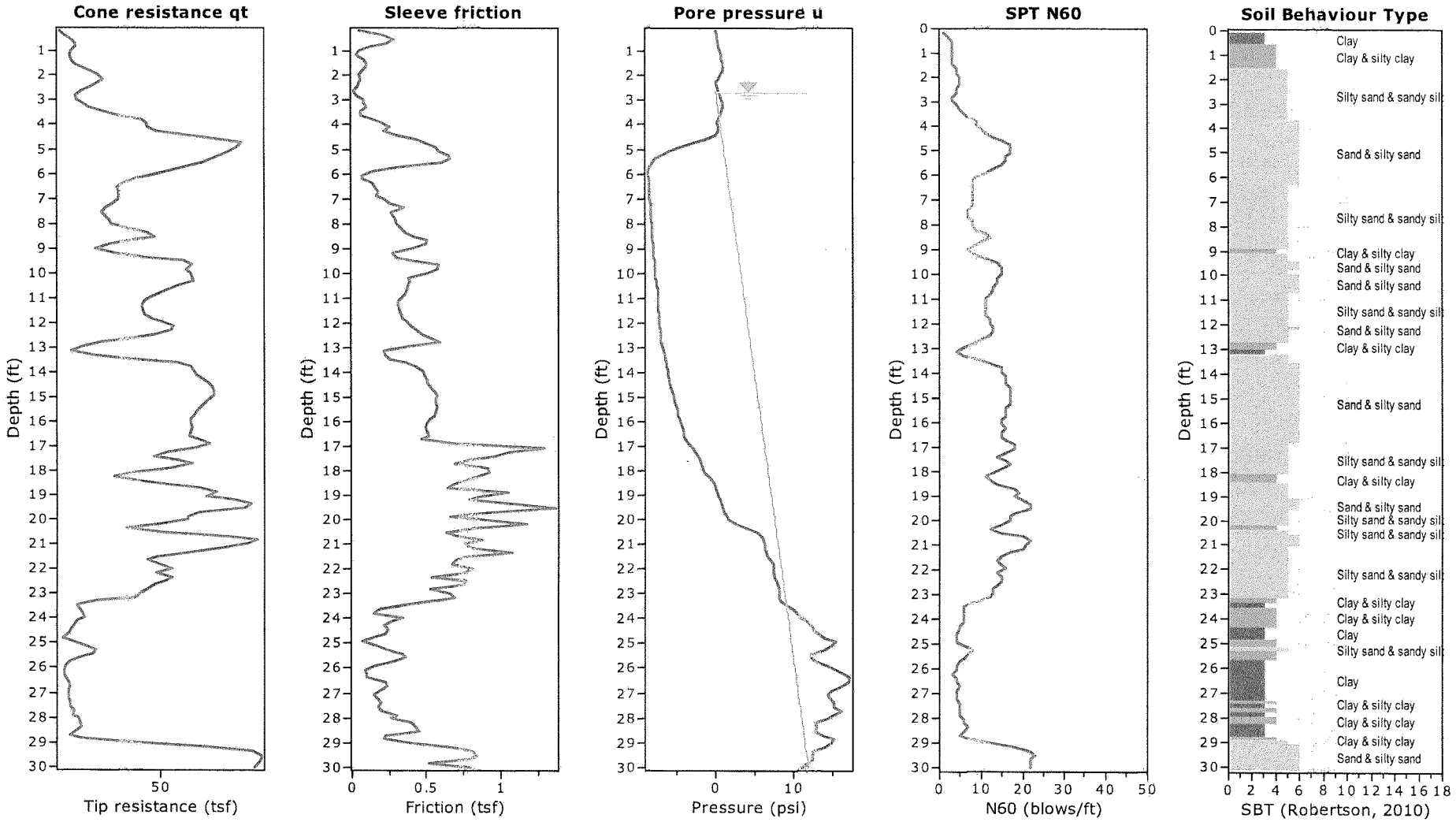
Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison



ECS Southeast, LLP
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

CPT: S-9
Total depth: 30.02 ft, Date: 3/21/2018
Cone Operator: Cory Robison



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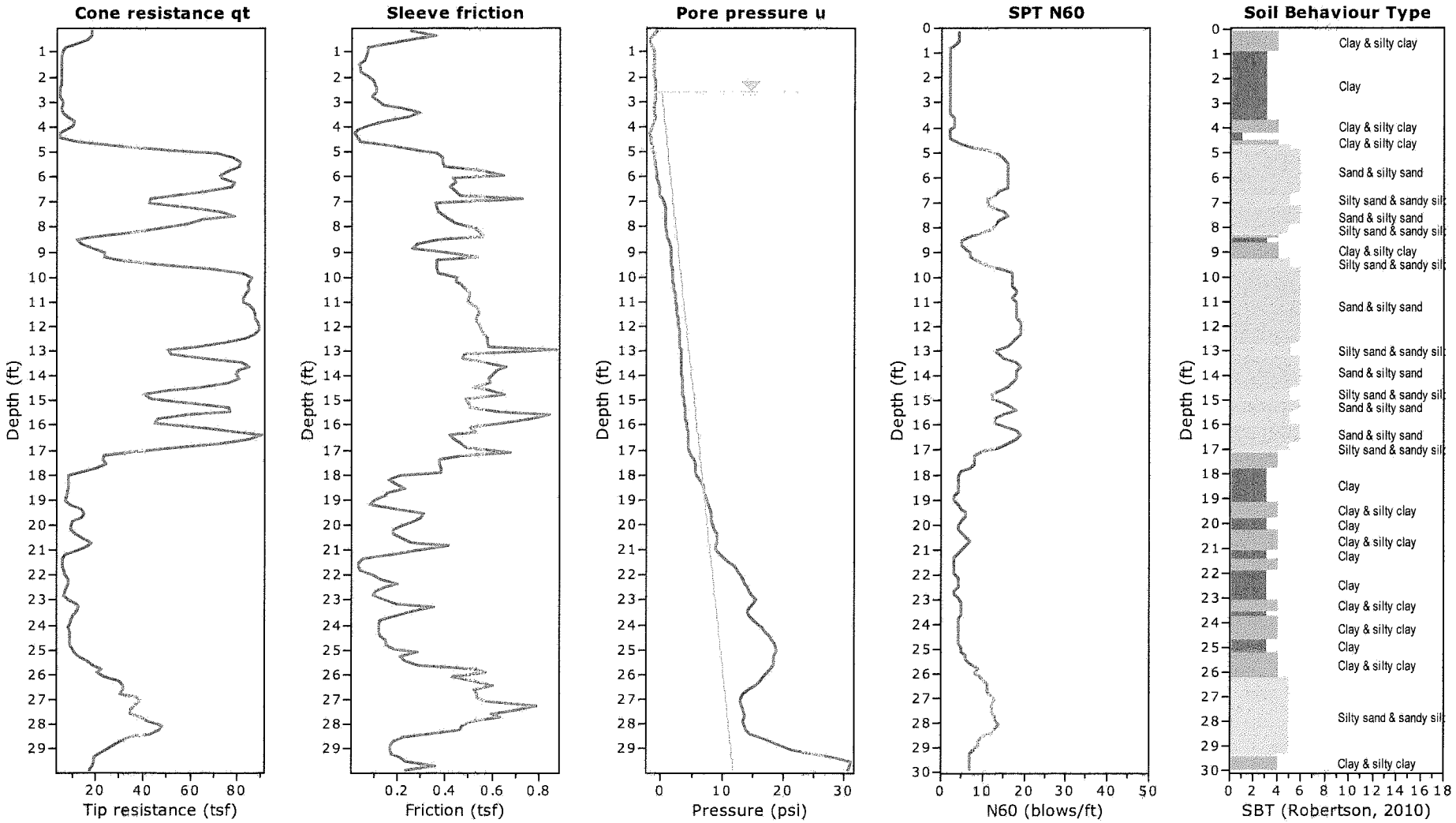
6714 Netherlands Drive
Wilmington, NC 28405
ECS Project # 22-26486

CPT: S-10

Project: **Farm Tract - Preliminary Geotechnical Evaluation**
Location: **Beaufort, Carteret County, North Carolina**

Total depth: 29.86 ft, Date: 3/21/2018
Cone Operator: Cory Robison



APPENDIX C – Supplemental Report Documents

ASFE Document

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 alight 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 Geotechnical 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 your 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

IIGER06045.0M

SECTION 02251—TERMITE CONTROL

PART 1 - GENERAL

1.01. Related Documents
Drawings and General Provisions of Contract including General Conditions, Supplementary Conditions, and Division 1 Specification Sections.

1.02. Termite control shall be applied under all slabs on grade, and along entire inside and outside perimeters of the foundation walls.

1.03. Deliver chemicals in factory sealed containers. Prepare working solution by diluting as recommended by the manufacturer. Dilution with fuel oil will not be permitted.

1.04. Chemical soil treatment materials and procedures shall comply with current FHA, "Minimum Property Standards" Publication No. 300, Section 815, and with recommendations contained in the U.S. Department of Agriculture H&G Bulletin No. 64 "Subterranean Termites, Their Prevention and Control in Buildings".

1.05. Termite control contractor shall be registered and licensed by the governing state and local authority to perform this type of work.

1.06. Testing is not required when the applicator provides an insured contract that is non-cancelable by all parties except the Owner.

1.07. Guarantee

a. Upon completion of soil treatment, and as a condition of final acceptance, furnish the Owner with a written insured guarantee.
b. The guarantee shall state that the application was made at the concentration rates and methods that comply with these specifications.
c. The effectiveness of the treatment is guaranteed for not less than five (5) years, without additional cost to the Owner.
d. Re-treatment, upon evidence of subterranean termite activity, shall be at no charge to the Owner, in accordance with accepted trade practices.
e. Damage to the building caused by termites shall be corrected without cost to the Owner; up to a minimum of $50,000.00 in value or greater per Company's warrantee.
f. The guarantee is non-cancelable by all parties to the contract except the Owner.
g. Draw the guarantee in favor of the Owner and submit a sample form of guarantee to the Architect for approval before beginning the work.
h. Submit 4 originals at the Close out Phase in compliance with Section 01700.

PART 2 - PRODUCTS

2.01. Toxicants

a. Use only water-base emulsion soil chemicals.

b. Use working solutions containing any one of the following chemicals at the listed minimum concentrations:

Dursban T.C.	1.0%	EPA	Reg. #464562
Goldcrest Tribute	0.5-1.0%	EPA	Reg. #876459
Torpedo	0.5%	EPA	Reg. #10182-18

c. If combinations of toxicants are used, one of them must be at the listed percentage.

PART 3 - EXECUTION

3.01. Application

a. Do not begin soil-poisoning work until all filling and compaction work is complete. Apply treatment before placement of any type vapor barrier.

b. Do not apply soil poison when surface water is present.

3.02. Rate of Application

a. Building areas: Apply soil poison at the minimum rate of one (1) gallon of toxicant to each ten (10) square feet of area under slabs on grade within the building lines. On coarse or porous fill use 1.5 gallons per ten (10) square feet.

b. Masonry foundation wall: Treat the voids of the foundation walls at the rate of one (1) gallon per five (5) linear feet.

c. Miscellaneous: Apply soil poison at the rate of two (2) gallons per five (5) lineal feet at the following areas: immediately below expansion joints, control joints, where slab is penetrated by construction features and where exterior veneers of facings extend below grade.

END OF SECTION

SECTION 03015 - CONCRETE TESTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included:
   1. Field sampling and testing of fresh, structural concrete.
   2. Laboratory testing of concrete test specimens.

1.02 TESTING AGENCY

A. As selected and directed by the General Contractor.

B. Requests for Testing Services: Scheduled by the Contractor

C. Qualifications:
   1. Equipped and staffed in accordance with appropriate sections of ASTM E 329.
   2. Participation in periodic inspection program of its procedures and equipment by recognized National and State authority or trade association.

D. Duties:
   1. Perform sampling and testing in strict accordance with specified ASTM test procedures using calibrated testing equipment.
   2. Issue test reports as directed by the General Contractor.
      a. Communicate nonconforming field tests to Job Superintendent prior to leaving the Job Site.
      b. Communicate nonconforming laboratory tests to the General Contractor and the Architect/ Engineer within twenty-four (24) hours.
   3. Upon request by the Architect, provide latest inspection report.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SAMPLING

A. Frequency:

1. Sample each class of structural concrete not less than once a day, nor less than once for each 100 cubic yards, nor less than once for each 5,000 square feet of slab area.

B. Method: Sample concrete in accordance with ASTM C 172 with exception that composite sample is not required. Obtain one (1) sample from middle half of load during discharge.

3.02 FIELD TESTING (FOR EACH SAMPLE)

A. Slump Test: Perform slump test in accordance with ASTM C 143.

B. Temperature: Measure and record concrete and air temperature.

C. Test Cylinders:
1. Mold three (3) test cylinders in accordance with ASTM C 31.
2. Protect cylinders from moisture loss by providing plastic cylinder caps or "baggies."
3. Store cylinders at Job Site for initial sixteen (16) to twenty-four (24) hours in area protected from damage and extreme temperature.

3.03 LABORATORY TESTING

A. Type: Compressive strength tests.

B. In accordance with ASTM C 39.

C. Test one (1) cylinder at seven (7) days, two (2) cylinders at twenty-eight (28) days, and one (1) cylinder at fifty-six (56) days.

3.04 REPORTING

A. For each sample of concrete tested, complete test report indicating the following.
1. Sample date.
2. Mix designation.
3. Concrete supplier.
4. Time batched.
5. Time sampled.
6. Air and mix temperatures.
7. Location of concrete placement.
8. Load size.
9. Amount of water added at the Job Site.
10. Slump test.
11. Other field test results.

12. Laboratory test results.
13. All other information required by ASTM C 39.

B. Sequentially number test reports for easy identification.

C. Prepare and issue typed test reports not later than one (1) working day following laboratory testing.

D. Distribute reports to the General Contractor, the Owner, and the Architect.

END OF SECTION 03015

SECTION 03210 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Reinforcing steel for cast-in-place concrete.

1.02 QUALITY ASSURANCE

A. Codes and Standards: Comply with the following documents, except where requirements of the Contract Documents or of governing codes and governing authorities are more stringent:
   1. ACI 301.
   2. ACI 318.
   3. CRSI Manual of Standard Practice.

PART 2 - PRODUCTS

2.01 REINFORCING MATERIALS

A. Reinforcing Bars: Provide deformed bars complying with ASTM A 615, Grade 60.

B. Welded Wire Fabric: 6/6 x W1.4/W1.4 ASTM A 185, cold-drawn steel, plain.

PART 3 - EXECUTION

3.01 PLACING REINFORCEMENT

A. General: Comply with requirements of ACI 301.

B. Preparation: Clean reinforcement of loose rust and mill scale, soil and other materials which adversely affect bond with concrete.

C. Wire mesh to be lifted to center of slab.

END OF SECTION 03210

SECTION 03310 - CONCRETE FORMWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Formwork for cast-in-place concrete.
2. Formwork accessories.
3. Form stripping.

1.02 QUALITY ASSURANCE

A. Codes and Standards: Comply with the following documents, except where requirements of the Contract Documents or of governing codes and governing authorities are more stringent:
1. ACI 301.
2. ACI 318.
3. ACI 347.

PART 2 - PRODUCTS

2.01 FORMWORK

A. Void Forms: Treated cardboard, plastic, rubber, fiber, or laminated paper forms specially designed to reduce concrete mass.

B. Formwork Accessories:
1. Form coating: Form release agent that will not adversely affect concrete surfaces or prevent subsequent application of concrete coatings.

PART 3 - EXECUTION

3.01 CONCRETE FORM PREPARATION

A. General: Comply with requirements of ACI 301 for formwork, and as herein specified. The Subcontractor is responsible for design, engineering and construction of formwork, and for its timely removal.

B. Earth Forms: Hand-trim bottoms and sides of earth forms to profiles indicated on the Drawings. Remove loose dirt prior to placing concrete.

C. Construction: Construct and brace formwork to accurately achieve end results required by the Contract Documents, with all elements properly located and free of distortion. Provide for necessary openings, inserts, anchorages and other features shown on the Drawings or as otherwise required.

D. Tolerances for Formed Surfaces: Comply with minimum tolerances established in ACI 347.

E. Release Agent: Provide either form materials with factory-applied non-absorptive liner or field-applied form coating. If field-applied coating is employed, thoroughly clean and recondition formwork and reapply coating before each use. Rust on form surfaces is unacceptable.

END OF SECTION 03310

SECTION 03321 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Cast-in-place concrete.
2. Concrete curing.

1.02 QUALITY ASSURANCE

A. Comply with the following documents:
1. ACI 301.
2. ACI 318.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150.

B. Water: Potable.

C. Aggregates:
1. Normal weight concrete: ASTM C 33.

D. Admixtures - General: Admixtures which result in more than 0.1 percent of soluble chloride ions by weight of cement are prohibited.

E. Air-Entraining Admixture: ASTM C 260.

F. Water-Reducing Admixture: ASTM C 494, Type A.

G. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or G.

2.02 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Vapor Retarder:
1. Polyethylene sheet, ten (10) mils thick.

B. Nonshrink Grout: ASTM C 1107.
1. Type: Non-metallic type.

C. Liquid Curing Compounds:
1. Comply with ASTM C 309, Type 1.

2.03 CONCRETE MIX DESIGN

A. Comply with recommendations of ACI 211.1, normal weight concrete.

B. Specified compressive strength at twenty-eight (28) days: 3000 psi.

C. Admixtures:
a. Air-entraining admixture: Add at rate to achieve total air content in accordance with Table 1.4.3 of ACI 301.2. For concrete not exposed to exterior, add at rate to achieve total air content between two (2) percent and four (4) percent.

PART 3 - EXECUTION

3.01 VAPOR RETARDER INSTALLATION

A. General: Lap edges 6-inches.

3.02 JOINT CONSTRUCTION

A. Construction Joints: If construction joints are not indicated, locate in manner which will not impair strength and will have least impact on appearance, as acceptable to the Contractor.
1. Keyways: Provide keyways not less than 1 ½-inches deep.

B. Control Joints: If control joints are not indicated, provide at thirty (30) feet on center, maximum, as acceptable to the Contractor.

C. Saw Joints: 1/3 to 1/2 depth of floor.

3.03 CONCRETE PLACEMENT

A. Inspection:
1. Wood forms: Moisten immediately before placing concrete in locations where form coatings are not used.

3.04 FINISHING SLABS

A. Finishing Operations - General:
   1. Do not directly apply water to slab surface or dust with cement.
   2. Screeding: Verify conformance to surface tolerances. Correct deficiencies while concrete is still plastic.
   3. Grind smooth surface defects which would telegraph through final floor covering system.

B. Slab Surface Tolerances:
   1. Achieve flat, level planes except where slopes are indicated. Slope uniformly to drains. Maximum tolerances in high or low spots is 1/8-inch in ten (10) feet.

C. Slab Finishes:
   1. Area which receives no applied finish except sealer/ hardener: Smooth steel troweled.
   2. Areas which are to receive resilient flooring, carpet, etc.: Steel troweled.
   3. Exterior patio or sidewalk areas which receive no additional applied surface: Broom finish with tooled control and expansion joints.
   4. Sidewalk curb ramps shall have a detectable warning surface complying with the Americans with Disabilities Act, latest printing.

END OF SECTION 03321

SECTION 04200 - CONCRETE MASONRY UNITS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Concrete masonry units
2. Mortar.
3. Reinforcement, anchorage, and accessories.

1.02 QUALITY ASSURANCE

A. Comply with the following documents:
1. ASTM C 33
2. ASTM C 331

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver, handle and store masonry units by means which will prevent mechanical damage and deterioration due to moisture, temperature changes and contamination by other materials.

B Protect cementitious materials from precipitation and absorption of ground moisture.

C. Store masonry accessories to prevent corrosion, dirt accumulation and other deterioration.

1.04 PROJECT CONDITIONS

A. Construction Protection: Cover tops of incomplete masonry elements with waterproof sheet material at end of each work day and when masonry work is not under way.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Provide sizes and shapes as indicated on the Drawings.

2.02 MORTAR MATERIALS

A. Masonry Cement: Type "S".

B. Aggregate for Mortar: ASTM C 144.

C. Water: Potable.

2.03 REINFORCEMENT AND ANCHORAGE

A. As required according to the Structural Drawings.

B. Provided minimum of ASTM A 82 class 1 mill galvanized or as required by local codes.

2.04 MISCELLANEOUS MASONRY ACCESSORIES

A. Expansion Joint Strips: Neoprene filler strips complying with ASTM D 1056, Classification 2 A1, capable of thirty-five (35) percent compression and sized for specific conditions indicated.

B. Sealant and Backer Rod: As specified in Division 7.

C. Flashing: Twenty (20) mil PVC width as per the Drawings.

2.05 MORTAR MIX

A. Do not use calcium chloride in mortar mixture.

B. Mixing: Use mechanical batch mixer and comply with referenced ASTM standards.

C. Mortar for Unit Masonry: ASTM C 270, Proportion Specification.

PART 3 - EXECUTION

3.01 INSTALLATION PROCEDURES

A. Openings for Equipment and Services: Leave openings in masonry as required for subsequent installation of equipment and services.

B. Cutting: Where cutting is required, use power saws to provide clean, sharp, unchipped edges.

3.02 CONSTRUCTION TOLERANCES

A. Variation from Plumb:
   1. ¼-inch in ten (10) feet.

B. Variation from Level:
   1. ¼-inch in one (1) bay; ten (10) feet maximum.
   2. ½-inch in twenty (20) feet or more.

C. Variation from Plan Lines:
   1. ½-inch in any bay; twenty (20) feet maximum.

E. Variation in Mortar Joint Thickness:
   1. Bed joints: Plus or minus 1/8-inch.
   2. Head joints: Minus ¼-inch, plus 1/8-inch.

3.03 MASONRY CONSTRUCTION - GENERAL

A. Pattern Bond: Lay exposed masonry in running bond except where other bonds are indicated.

B. Built-in Work: As work progresses, build in items indicated for installation in masonry, filling around built-in items solidly with masonry.

C. Expansion and Control Joints: Build in movement joints where indicated, or as required, installing accessory items as masonry is constructed.

D. Lintels: Install steel lintels at all openings unless noted otherwise.
   1. Bearing: Provide not less than 8-inches of bearing at each jamb.

3.04 LAYING MASONRY UNITS

A. Solid Masonry Units: Install in full bed joints and with head joint completely filled prior to laying each unit.

B. Joints: Make mortar joints visually and dimensionally consistent.
   1. Except as otherwise indicated, maintain mortar joint widths of 3/8-inch.

C. Exposed Joints: Using concave jointer slightly larger than joint width, tool exposed joints before mortar has assumed final set.

3.05 INSTALLING CONCEALED MASONRY FLASHING

A. General: Whether or not specifically indicated, install flashing at all conditions such as lintels and shelf angles, where the downward flow of any

water within the masonry will be interrupted, so that such water will be diverted to the exterior. Extend flashing full width at such obstructions and at least 4-inches into adjoining masonry, or turn up to form watertight pan at non-masonry construction. Remove or cover protrusions or sharp edges on substrates which could puncture flashing. Place flashing on sloped mortar bed. Seal lapped ends and penetrations of flashing before covering with mortar.

1. Extend fabric or laminated flashing to within ¼-inch of exterior face of masonry.

B. Heads and Sills: Turn up ends of flashing at least 2-inches at heads and sills to form a pan; seal joints.

C. Sealing: Seal all joints in flashing to assure watertight integrity. Lap end joints of flexible flashing at least 4-inches. Seal in accordance with the manufacturer's instructions.

D. Reglets and Other Accessories: Install to receive flashing where indicated.

3.06 REPAIRING MASONRY

A. Replacement: Carefully remove areas of damaged masonry and replace with matching, undamaged units using mortar which matches original work.

B. Pointing: As joints are being tooled, remove mortar with visible holes or mortar which cannot be compacted properly because of hidden voids and replace with fresh mortar, filling each joint completely and tooling to match adjacent work.

3.07 CLEANING AND PROTECTION

A. Clean masonry after mortar is thoroughly set and cured.
1. Scrape off adhered mortar particles by hand.

B. Protection: Institute protective measures as required to ensure that unit masonry work and adjacent areas will be clean and undamaged at Substantial Completion.

C. Remove excess materials and associated products from the Site at completion of concrete masonry unit installation.

END OF SECTION 04200

SECTION 04210 - VENEER MASONRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Brick masonry veneer with anchorage to structural backup.
2. Mortar.
3. Reinforcement, anchorage and accessories.

B. Allowances:
1. Facing brick: Furnish facing brick under allowance as designated in Section 01030.

1.02 QUALITY ASSURANCE

A. Source Control: Obtain exposed masonry units from one manufacturer, with texture and color uniform or of a uniform blend acceptable to the Contractor.

B. Mock-up: Prior to commencement of exposed masonry work, erect sample panel to serve as the standard of appearance and workmanship throughout the construction period, if requested by the Contractor.
1. Build on Site, approximately 4'-0" x 4'-0".
2. Upon completion of construction and subsequent approval by the Contractor, demolish mock-up construction completely and remove debris.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver, handle and store masonry units by means which will prevent mechanical damage and deterioration due to moisture, temperature changes and contamination by other materials.

B Protect cementitious materials from precipitation and absorption of ground moisture.

C. Store masonry accessories to prevent corrosion, dirt accumulation, and other deterioration.

1.04 PROJECT CONDITIONS

A. Construction Protection: Cover tops of incomplete masonry elements with waterproof sheet material at the end of each work day and when masonry work is not under way.

PART 2 - PRODUCTS

2.01 BRICK MASONRY UNITS

A. Facing Brick:
1. Provide facing brick as indicated.

2.02 MORTAR MATERIALS

A. Masonry Cement: Type "N".

B. Aggregate for Mortar: ASTM C 144.

C. Water: Potable.

2.03 REINFORCEMENT AND ANCHORAGE

A. Masonry Veneer Anchors: Twenty-two (22) gauge corrugated ties.
1. Fasteners: Self-drilling, self-tapping, corrosion-resistant screws.

2.04 MISCELLANEOUS MASONRY ACCESSORIES

A. Expansion Joint Strips: Neoprene filler strips complying with ASTM D 1056, Classification 2 A1, capable of thirty-five (35) percent compression and sized for specific conditions indicated.

B. Weep Holes: Cotton sash cord of length required to allow 2-inch exposure while leaving 18-inches within cavity.

C. Sealant and Backer Rod: As specified in Division 7.

D. Flashing: Twenty (20) mil PVC width as per the Drawings.

2.05 MASONRY CLEANER

A. Acidic Cleaner: General-purpose cleaner designed for new masonry surfaces.

2.06 MORTAR MIX

A. Do not use calcium chloride in mortar mixture.

B. Mixing: Use mechanical batch mixer and comply with referenced ASTM standards.

C. Mortar for Unit Masonry: ASTM C 270, Proportion Specification.

PART 3 - EXECUTION

3.01 INSTALLATION PROCEDURES

A. Openings for Equipment and Services: Leave openings in masonry as required for subsequent installation of equipment and services.

B. Cutting: Where cutting is required, use power saws to provide clean, sharp, unchipped edges.

3.02 CONSTRUCTION TOLERANCES

A. Variation from Plumb:
1. ¼-inch in ten (10) feet.

B. Variation from Level:
1. ¼-inch in one (1) bay; ten (10) feet maximum.
2. ½-inch in twenty (20) feet or more.

C. Variation from Plan Lines:
1. ½-inch in any bay; twenty (20) feet maximum.

E. Variation in Mortar Joint Thickness:
a. Bed joints: Plus or minus 1/8-inch.
b. Head joints: Minus ¼-inch, plus 1/8-inch.

3.03 MASONRY CONSTRUCTION - GENERAL

A. Pattern Bond: Lay exposed masonry in running bond except where other bonds are indicated.

B. Built-in Work: As work progresses, build in items indicated for installation in masonry, filling around built-in items solidly with masonry.

C. Expansion and Control Joints: Build in movement joints where indicated, or as required, installing accessory items as masonry is constructed.

D. Lintels: Install steel lintels at all openings unless noted otherwise.
   1. Bearing: Provide not less than 8-inches of bearing at each jamb.

3.04 LAYING MASONRY UNITS

A. Solid Masonry Units: Install in full bed joints and with head joint completely filled prior to laying each unit.

B. Joints: Make mortar joints visually and dimensionally consistent.
   1. Except as otherwise indicated, maintain mortar joint widths of 3/8-inch.

C. Exposed Joints: Using concave jointer slightly larger than joint width, tool exposed joints before mortar has assumed final set.

3.05 INSTALLING CONCEALED MASONRY FLASHING

A. General: Whether or not specifically indicated, install flashing at all conditions such as lintels and shelf angles, where the downward flow of any water within the masonry will be interrupted, so that such water will be diverted to the exterior. Extend flashing full width at such obstructions and at least 4-inches into adjoining masonry, or turn up to form watertight pan at non-masonry construction. Remove or cover protrusions or sharp edges on substrates which could puncture flashing. Place flashing on sloped mortar bed. Seal lapped ends and penetrations of flashing before covering with mortar.
   1. Extend fabric or laminated flashing to within ¼-inch of exterior face of masonry.

B. Veneer Flashing: Turn flashing up not less than 4-inches at backup. Lap top of flashing with building paper, or otherwise seal to prevent moisture penetration between flashing and backup.

C. Heads and Sills: Turn up ends of flashing at least 2-inches at heads and sills to form a pan; seal joints.

D. Sealing: Seal all joints in flashing to assure watertight integrity. Lap end joints of flexible flashing at least 4-inches. Seal in accordance with the manufacturer's instructions.

E. Weep Holes: Provide weep holes in head joints of the first course of masonry immediately above concealed flashing. Space at intervals of 32-inches on center.

F. Reglets and Other Accessories: Install to receive flashing where indicated.

3.06 REPAIRING MASONRY

A. Replacement: Carefully remove areas of damaged masonry and replace with matching, undamaged units using mortar which matches original work.

B. Pointing: As joints are being tooled, remove mortar with visible holes or mortar which cannot be compacted properly because of hidden voids and replace with fresh mortar, filling each joint completely and tooling to match adjacent work.

3.07 CLEANING AND PROTECTION

A. Clean masonry after mortar is thoroughly set and cured.
   1. Scrape off adhered mortar particles by hand, using non-metallic tools.
   2. Protect adjacent surfaces from cleaner with appropriate coating or polyethylene sheet.

B. Protection: Institute protective measures as required to ensure that unit masonry work and adjacent areas will be clean and undamaged at Substantial Completion.

C. Remove excess materials and associated products from the Site at completion of brick installation.

END OF SECTION 04210

SECTION 04721—SIMULATED STONE

PART 1 - GENERAL

1.01. SUBMITTALS

a. General: Submit in accordance with Section 01300 – Submittals.

b. Product Data: Submit product data indicating manufacturer, size, patter, colors and manufacturers recommend storage and installations.

1.02 PROJECT MOCK-UP:

a. Provide project mock-up indicating patterns and colors.

b. Mock-up shall be constructed in conjunction with Precast Concrete Shapes as specified.

1.03 DELIVERY, STORAGE AND HANDLING:

a. Deliver materials, handle and store in accordance with the manufacturer's printed recommendations.

1.04 PROJECT CONDITIONS

a. Project materials from rain, moisture, and freezing temperatures prior to, during and for 48 hours after completion of work.

b. Allow no construction activity on opposite side of wall to which work is being applied during, and for 48 hours after completion of work.

PART 2 - PRODUCTS

2.01. ACCEPTABLE MANUFACTURERS:

a. Horizon Stone

2.02 STONE TYPE

a. Simulated Stone

1. Pattern and Color: ' Ledge Stone Mossy Creek
See attached Specifications.

2.03 MANUFACTURED UNITS

a. Characteristics

1. Compressive Strength: Tested in accordance with UBC Standard No. 26-10, Parts I and IV.

2. Shear (adhesion) Strength: Tested in accordance with ASTM C 482.

3. Thermal Resistance: R factor 1.19 in accordance with ASTM C 177-71. R factor is based on a 1.779" thick sample.

4. Fire Hazard Test: Flame spread of 0, smoke development of 0 in accordance with UL 723.

2.04 ACCESSORIES

a. Mortar: Factor mixed Portland Cement, ASTM C 150, Type 1 or masonry cement (Type N), ASTM C91.

b. Masonry Sealer: Breather type, non-film forming sealer.

c. Weather-Resistant Barrier: Kraft waterproof building paper, UBC standard no. 17-1 or equal.

d. Metal Lath: Paperbacked 3/8" rib galvanized expanded metal lath.

f. Drainage System: ¼" Rain Screen Mat 'Cav Clear' total-wall air space and moisture control. Cavclear.com.

PART 3 - EXECUTION

3.01 PREPARATION:

a. Install one layer of weather-resistant barrier with 4" lap joints. Apply metal lath, attached with galvanized screws 6" o.c. vertical and 16" o.c. horizontal.

3.02 MORTAR MIXING:

a. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C 482, Type N.

b. Do not use anti-freeze compounds.

3.03 APPLICATION:

a. Apply ½" to ¾" of mortar to lath, covering a maximum of 10 sq. ft. at one time. Press units firmly into position in soft mortar bed, joggle each piece slightly to bond firmly, causing mortar to extrude slightly around edge of units.

b. Place units uniform mortar joints. Joints should not be over ½" width. Install outside corner return units with short and long lengths alternated.

c. Plan work to minimize job site cutting. Cut stone only with saws approved by manufacturer to provide uniform edges; use care to prevent breaking unit corners or edges.

d. Minimum width of units at inside corners and at perimeter of opening shall be 4" to 6".

e. Remove excess mortar; do not allow mortar to set up on face of units. Point, rake and tool joints before mortar has set. Clean and finish joints in accordance with the manufacturer's written instructions.

f. Apply breather-type non-film forming masonry sealer to clean completed surfaces in accordance with manufacturer's written instructions.

END OF SECTION

SECTION 05100 - MISCELLANEOUS METALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Miscellaneous structural fabrications.

1.02 JOB CONDITIONS

A. Fit fabrications accurately to actual construction. If it is not practical or possible to take field measurements before fabrication, allow adequate fabrication tolerances and trim to fit.

PART 2 - PRODUCTS

2.01 MATERIALS - METALS

A. Steel Shapes:
1. Plates, bars, angles, channels, and H-sections: ASTM A 36.
2. Tube: Cold-formed: ASTM A 500.
3. Pipe: ASTM A 53 (black steel and hot-dipped galvanized).

2.02 MATERIALS - MISCELLANEOUS

A. Fasteners: Use fasteners suitable for the material being fastened and for the type of connection required.
1. Use fasteners of same material as items being fastened unless otherwise indicated.
2. Lock washers: FS FF-W-84.

2.03 FABRICATION - GENERAL

A. Fabricate and shop-assemble in largest practical sections for delivery to the Site.
1. Prepare and reinforce fabrications as required to receive applied items.
2. Fabricate items with joints tightly fitted, flush, secured, and hairline.

B. Anchors: Fabricate to suit substrate indicated; use anchors of same material and finish as item except where specifically indicated otherwise.

C. Welding:
   1. Provide continuous welds at welded corners and seams.
   2. Exposed welds: Grind flush and smooth.

D. Joints Exposed to Weather: Fabricate to keep water out, or provide adequate drainage of water that penetrates.

E. Shop prime all steel members.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. Provide all fasteners required.

B. Install items in correct location, plumb and level, without rack or warp.

C. Provide temporary supports and bracing as required.

END OF SECTION 05100

SECTION 05120—STRUCTURAL STEEL

PART 1 – GENERAL

1.01. Related Documents
Drawings and General Provisions of Contract including General Conditions, Supplementary Conditions, and Division 1 Specification Sections.

1.02. Section includes

a. Structural steel columns, beams, lintels, and other steel framing members.
b. Base plates, column anchor bolts.
c. Steel to steel connection bolts.

1.03. References

a.	ASTM A53:	Hot-Dipped, Zinc-coated welded and seamless steel pipe.
b.	ASTM A108:	Steel Bars, carbon, cold-finished, standard quality.
c.	ASTM A123:	Zinc (hot dipped galvanized) coating on iron and steel products.
d.	ASTM A153:	Zinc coating (hot dip) on iron and steel hardware.
e.	ASTM A307:	Carbon steel externally threaded standard fasteners.
f.	ASTM A325:	High strength bolts for structural steel joints.
g.	ASTM A490:	Quenched and tempered alloy steel bolts for structural steel joints.
h.	ASTM A500:	Cold formed welded and seamless carbon steel structural tubing round and shapes.
i.	ASTM A501:	Hot formed welded and seamless carbon steel structural tubing.
j.	ASTM A502:	Steel structural rivets.
k.	ASTM A992:	High strength low alloy Columbium-Vanadium steel of structural quality.
l.	AWS A2.0:	Standard welding symbols.
m.	AWS D1.1:	Structural welding code.
n.	AISC:	Specification for the design, fabrication and erection of structural steel for buildings.
o.	AISC:	Specification for Architectural exposed structural steel.
p.	SSPC:	Steel structures painting council.

1.04. Submittals

a. Shop Drawings:
   1. Indicate profiles, sizes, spacing, and locations of structural members, miscellaneous members, attachments, and fasteners.
   2. Connections detailed fully.
   3. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
   4. Prepare shop drawings under the seal of a professional engineer

b. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
c. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.
d. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
e. Field Test Reports: Submit testing and inspection reports from Owner's testing agency to the Architect.

1.05. Quality Assurance

a. Fabricate structural steel members in accordance with AISC – Specification for the design, fabrication and erection of Structural Steel for buildings.
b. Perform exposed work in accordance with AISC – Specification for architectural exposed structural steel.

1.06. Qualifications

a. Fabricator: Company specializing in performing the work of this section with minimum five years documented experience.
b. Design connections not detailed on the drawings under direct supervision of a professional structural engineer experienced in design of this work

1.07. Field Measurements: Verify that field measurements are as shown on drawings.

PART 2 – PRODUCTS

2.01. Materials

a. Structural Steel Members: Certified to ASTM A572.
b. Structural Tubing: ASTM A500, Grade B.
c. Pipe: ASTM A53, Grade B.
d. Bolts, Nuts, and Washers: ASTM A325.
e. Anchor bolts: ASTM A36.
f. Welding Materials: AWS D1.1; type required for materials being welded.
g. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7000 psi at 24 hours.
h. Shop Primer: One coat SSPC 15, type 1, red oxide.

2.02. Finish

a. Prepare structural component surfaces required to be primed in accordance with SSPC SP-3.

b. Shop prime not required for structural steel members where steel is to be enclosed and concealed from view in walls and ceilings or encased in concrete or masonry. All structural steel exposed to view shall be shop primed. Apply sufficient primer to insure 2 mil DFT.

PART 3 – EXECUTION

3.01. Examination

a. Verify that field conditions are acceptable and are ready to receive work.
b. Verify that lay down areas are sufficient, clean, level, and of sufficient strength and stability to support safely members and handling equipment.

3.02. Handling and Storage

a. Provide proper equipment to safely off load material to prevent damage.
b. Provide adequate dunnage and skids to keep steel from getting muddy and dirty.
c. Store steel in such a manner to prevent the accumulation of water and debris.
d. Do no erect steel that is muddy or stained with any deleterious material. Clean steel if necessary before erection.

3.03. Erection

a. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
b. Do not field cut or alter structural members without approval of Architect/Engineer.
c. After erection, clean and prime paint welds, abrasions and surfaces where shop prime has been disturbed.
d. All eaves shall be aligned to be straight and true. All joist extended ends at the eaves and all TS outriggers at the gables shall be pulled into alignment and securely welded to the continuous edge plate or angle as applicable. Edge plates and angles shall be string lined for straightness.
e. Gable outriggers shall be accurately laid out on 36" centers to fit under the wide flute of the metal deck and shall be welded to the top of the affected joists. The metal deck shall be puddle welded to the top of the TS outriggers at 12" oc in addition to welding to the supporting joists.
f. The bent plate ridge plate shall be aligned vertically and horizontally and shall be securely welded to the ends of the joist extended ends to form straight and level ridge.
g. The continuous eave and ridge bent plates and gable edge angles shall be butt-welded straight and full strength at joints. Provide a break in the continuous bent plate and angle members at maximum 40-foot intervals. The minimum length of these members shall be 30 feet. These break joints shall be over a support and shall be welded thereto.
h. Grout under column base plates to get full uniform bearing.

3.04. Field Quality Control

a. The Architect will perform Field inspection.
b. Connection bolts and field welds shall be inspected by an independent testing lab employed by the Owner.
c. The materials testing laboratory shall certify shop welds and fabrication quality. At the option of the lab, the inspection may be conducted in the field after delivery or at the fabrication plant during fabrication and/or prior to shipment.
d. All structural steel members shall be inspected by the testing laboratory for sweep, camber, and twist to comply with ASTM A6 and AISC Code of Standard Practice for fabricated structural steel.

END OF SECTION

SECTION 06110 - WOOD FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Carpentry work not specified as part of other Sections and which generally is not exposed, except as otherwise indicated.
2. Rough carpentry for:
   a. Miscellaneous lumber for attachment and support of other work.
   b. Wood furring.
   c. Sheathing.
   d. Construction panels for miscellaneous uses.
3. Preservative treatment.

B. Related Sections:
1. Standing and running trim: Elsewhere in Division 6.
2. Prefabricated wood trusses: Elsewhere in Division 6.

1.02 REFERENCES

A. APA Form E30L -- Residential & Commercial; American Plywood Association, 1993.

B. Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau (SPIB), 1994.

C. NFPA WCD #1 -- Manual for Wood Frame Construction; American Forest and Paper Association (formerly National Forest Products Association), 1988.

1.03 DELIVERY STORAGE AND HANDLING

A. Protect wood products against moisture and dimensional changes. Support stacks at several uniformly spaced points to prevent deformation. Store stacks raised above ground. Cover to protect from rain and snow. Select and arrange cover to allow air circulation under and all around stacks to prevent condensation. Maintain and restore displaced coverings.

PART 2 - PRODUCTS

2.01 DIMENSION LUMBER

A. Size: Provide nominal sizes indicated, except where actual sizes are specifically required.
   1. SPF Grade: No. 2 (structural light framing) or stud unless approved otherwise by the Structural Engineer.

B. Miscellaneous Lumber: Provide dimension lumber and boards necessary for the support of Work specified in other Sections, whether or not specifically indicated, and including but not limited to blocking, nailers, etc.

2.02 CONSTRUCTION PANELS

A. Roof Sheathing:
   1. 5/8-inch APA rated, exposure 1 roof plywood deck with a minimum span rating of 24/16.

B. Exterior Wall Sheathing:
   1. 5/8-inch OSB rated sheathing:
      a. Exterior exposure class.

C. Construction Panels/Plywood:
   1. Electrical/telephone panel backer: AC grade.

D. Catwalk: 3/4inch CDX sheathing.

2.03 MISCELLANEOUS MATERIALS

A. Fasteners: Provide as required by applicable codes and as indicated on structural drawings.

B. Plywood Sheathing clips: Eighteen (18) gauge, galvanized as required by applicable codes.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. Arrange work to use full length pieces except where lengths would exceed commercially available lengths. Discard pieces with defects that would lower the required strength or appearance of the Work.

B. Cut and fit members accurately. Install plumb and true to line and level.

C. Fasten carpentry in accordance with applicable codes and recognized standards.

D. Where exposed, countersink nails and fill flush with suitable wood filler.

E. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.02 MISCELLANEOUS CARPENTRY

A. Provide miscellaneous blocking, nailers and framing as shown and as required for support of facing materials, fixtures, specialty items and trim. Cut and shape to the required size. Provide in locations required by other work.

3.03 WOOD FURRING

A. Install wood furring plumb and level; shim as necessary to bring true to plane; install closure strips at ends perpendicular to main furring direction.

END OF SECTION 06110

SECTION 06190 - PREFABRICATED WOOD TRUSSES

PART - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Trusses fabricated from dimension lumber.
2. Plate connectors.
3. Engineering of trusses.
4. Erection of trusses.
5. Erection accessories and bracing.
6. Bridging.
7. Attachment to structure.

1.02 REFERENCES

A. National Design Specification for Wood Construction.

B. Design Values for Wood Construction, a Supplement to the National Design Specification.

C. American Forest and Paper Association (formerly National Forest Products Association).

D. TPI PCT -- Design Specification for Metal Plate Connected Parallel Chord Wood Trusses; Truss Plate Institute, latest edition.

1.03 SUBMITTALS

A. Shop Drawings: Submit detailed drawings for fabrication and erection of trusses including plans, elevations and details of special connections, joining and accessories, as required. Reproduction of the Contract Documents is not permitted.
1. Include mark, number, location and spacing of trusses and bridging.
2. Show dimensions, applied loads, reactions and permanent bracing.
3. Provide templates or location drawings of anchors or bearing accessories to be installed as Work of other Sections.

B. Shop drawings shall be sealed by a professional engineer registered in the state in which the Project is located.

1.04 DELIVERY, STORAGE AND HANDLING

A. Handle units to avoid damage. Comply with the manufacturer's printed instructions.

PART 2 - PRODUCTS

2.01 TRUSS CONNECTOR PLATES

A. Connector Plates: Fabricate connector plates from sheet metal meeting the following requirements:
   1. Structural properties: ASTM A 446, any grade.
   2. Finish: Hot-dipped galvanized; ASTM A 525, G60, minimum.
   3. Thickness: As required by truss design but not less than 0.036-inch (21 gauge).

2.02 LUMBER

A. General:
   1. Surfacing: Dressed, S4S.
   2. Moisture content: Nineteen (19) percent maximum at time of dressing and shipment.

2.03 MISCELLANEOUS

A. Provide all attachment clips, wood header beams and hanger attachments, as required.

PART 3 - EXECUTION

3.01 PREPARATION

A. Inspect trusses for damage and loosening of connector plates before installation. Make repairs in accordance with the truss connector plate manufacturer's instructions; otherwise, replace trusses which cannot be properly repaired.

3.02 INSTALLATION

A. Lift trusses at designated lifting points only.

B. Provide temporary bracing to hold trusses upright and in place until permanently secured.

C. Install permanent bridging, bracing and anchors to maintain trusses straight and in correct position before installing supported construction or superimposing loads.

D. Field cutting of truss members is not allowed.

END OF SECTION 06190

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Extruded polystyrene board.
   2. Glass fiber blanket/batt.
   3. Open cell spray foam.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide manufacturer's standard preformed insulation units, sized for proper fit in indicated applications.

B. R-values or thickness of insulation is indicated on the Drawings.

C. Extruded Polystyrene Board Insulation: Manufactured by extrusion process with integral high density skin:
   1. Edges: Provide boards with square edges.

D. Glass Fiber Insulation-Blanket/Batt:
   1. Unfaced blanket/batt: Type I (ASTM C 665), passing ASTM E 136 combustion test requirements.

E. Open Cell Spray Foam: Open cell spray foam complying with Florida Building Code Chapter 26 with code (2604.4.1.6) approved ignition barrier. Tailored Foam of Florida or approved equal.

2.02 ACCESSORIES

A. Provide accessories as necessary to properly install specified products.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with the insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.

B. Insulation Boards:
   1. Extruded polystyrene insulation:
      a. Under-slab installation: Do not install insulation before compaction of subgrade is verified. Provide installation capable of sustaining subsequent construction work without damage or displacement.

END OF SECTION 07210

SECTION 07270 - FIRESTOPPING AND SMOKESTOPPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Firestopping of all penetrations through fire barriers.
   2. Smokestopping of all penetrations through smoke barriers.

B. Extent of fire and smoke barriers is indicated on the Drawings.

C. Work Not Included: Repairing penetrations made in error and repairing penetrations which are too large to be sealed by the methods indicated; these are to be repaired using the original material of the construction.

D. Products Furnished but Not Installed:
   1. Sleeves which are an integral part of the firestopping assembly but which must be set by installer of other construction.

E. Coordinate with mechanical and electrical trades.

1.02 REFERENCES

A. Fire Resistance Directory; Underwriters Laboratories Inc., latest edition.

1.03 DEFINITIONS

A. Fire Barrier: Any wall or ceiling which is indicated as having a fire-resistance rating.

B. Smoke Barrier: Any wall or ceiling which is indicated as being designed to prevent passage of smoke and gases; may be indicated as "smoke barrier," "smoke partition," "smoke wall," etc.

1.05 SEQUENCING AND SCHEDULING

A. Perform firestopping and smokestopping work after completion of work which penetrates fire and smoke barriers, but prior to covering up or eliminating access to the penetration. Coordinate with installers of such other work. Protect all openings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Firestopping Materials: Provide penetration seal assemblies whose fire-resistance ratings have been determined by testing in the configurations required and which have fire-resistance ratings at least as high as that of the fire-rated assembly in which they are to be installed.
1. Use the materials required for the tested assemblies indicated on the Drawings.
a. Where no tested assembly is indicated for a particular penetration, use tested assembly which complies with the requirements of this Specification.

B. Smokestopping: Use any gunnable or pourable joint sealant suitable for the application. Use only fully curing types where accessible in the finished Work.

C. Labels: Red, permanent marking using the words "Fire and Smoke Barrier Protect All Openings."
1. For marking fire and smoke barriers themselves, use letters at least 2-inches high.

PART 3 - EXECUTION

3.01 EXAMINATION

A. If the configuration of a particular penetration does not conform to the configuration necessary for the required firestopping assembly, notify the Contractor for modification of the configuration to suit the assembly. Do not use the firestopping assembly in other configurations except as approved by the authority having jurisdiction.

3.02 PERMANENT IDENTIFICATION OF PENETRATIONS

A. Mark each fire and smoke barrier above lay-in ceilings or in attic space with words identifying it as a fire or smoke barrier at intervals required by authorities having jurisdiction, but not more than twenty (20) feet.

3.03 FIELD QUALITY CONTROL

A. Inspect completed installations for completeness and correct installation.
1. If installed work is to be covered in completed work, inspect and obtain approval prior to covering.

3.04 CLEANING

A. Clean up excess material promptly.

3.05 FIRESTOPPING INSTALLATION

A. Firestopping Installer shall have a manufacturer's trained certification to achieve consistent filed workmanship for the National Recognized Testing Laboratory (NRTL) details required for each application.

B. All firestop penetration installer(s) regardless of trade performing the work shall meet the Quality Assurance requirements of the specifications.

END OF SECTION 07270

SECTION 07310 - FIBERGLASS, CLASS "A" ASPHALT SHINGLES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Fiberglass Class "A" asphalt shingle roofing.
2. Accessories, including underlayment materials, fasteners and adhesives required for a complete fiberglass, class "A" asphalt shingle installation.
3. Ridge vent.

1.02 DELIVERY, STORAGE, AND HANDLING

A. Furnish materials wrapped in the manufacturer's original packaging.

B. Store materials separated from the ground and in a dry location, protected until installation in accordance with the manufacturer's instructions.

1.03 WARRANTY

A. Submit the manufacturer's standard warranty guaranteeing to correct failures in the product which may occur during the warranty period, without reducing or otherwise limiting any other rights to correction which the Owner may have under the Contract Documents.
1. Warranty period: Thirty (30) years.

1.04 EXTRA MATERIALS

A. Furnish five (5) bundles of shingles used in the Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fiberglass Class "A" Asphalt Shingles: Mineral-surfaced, self-sealing, glass fiber base.
1. Fire resistance: Class A, UL labeled.
2. Style: Architectural.
3. Color: Weatherwood.
4. Manufacturer: Timberline.

B. Underlayment: Asphalt-saturated organic roofing felt, thirty (30) pound, 36-inch-wide rolls.

C. Asphalt Plastic Cement: ASTM D 4586, fibrated asphalt cement, asbestos free.

D. Ridge Vents: Use Roll Vent Attic Ventilation System by Benjamin Obdyke Inc. or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Review substrate to receive shingles for obstructions, loose sheathing, or voids in sheathing. Repair or replace unacceptable work which may affect proper material installation.

3.02 PREPARATION

A. Remove projections and debris from substrate before starting installation; lay sheet metal over minor voids and nail to substrate.

B. Coordinate shingle installation with flashing and other work integral with shingles.

C. Secure all vent stacks, curbs and other penetrations to substrate before starting shingle installation.

3.03 INSTALLATION

A. Single Layer Underlayment: Apply one layer of thirty (30) pound felt horizontally over substrate, with 2-inch minimum side laps and 4-inch minimum end laps. Secure with roofing nails until shingles are installed.

B. Flashing:
1. Install the flashing and edge protection to provide a weathertight installation:
    a. Step flashing at vertical walls: Install for entire length of intersection of roof surface and vertical wall.
    b. Drip edge: Install over underlayment along entire length of eaves and rakes. Nail to roof deck with noncorrosive nails 8-inches to 10-inches apart. In high wind areas, nail at 4-inches on center.

C. Shingles:
   1. Install in accordance with the manufacturer's written instructions.
   2. Shingles to be fastened to the roof decking as required to resist the wind loads shown on the structural engineering drawings.

D. Ridge Vents:
   1. Install in accordance with the manufacturer's written instructions.

3.04 CLEANING

A. Remove construction debris from roof surfaces and surrounding ground surfaces.

B. Replace shingles broken or damaged during installation.

END OF SECTION 07310

SECTION 07464 - SIDING

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all labor, materials, tools, equipment and perform all work and services necessary for, or incidental to, the furnishing and installation of all vinyl siding and related work shown on the Drawings or specified herein.

1.02 QUALITY ASSURANCE

A. Codes and Standards: Comply with the following documents, except where requirements of the Contract Documents or of governing codes and governing authorities are more stringent:
1. NOA 15-0122.04 (Miami-Dade Approval).

1.03 WARRANTY

A. Upon Substantial Completion, provide the manufacturer's written lifetime limited warranty.

1.04 SUBMITTALS

A. Shop drawings showing special conditions and the manufacturer's standard installation details.

B. Product Data.

C. Submittals: Color samples; sample of each type of proposed material

PART 2 - PRODUCTS

2.01 MATERIALS

A. Hardie Plank Lap Siding Select Cedarmill. Trim and soffit as required for a complete installation per the manufacturer's instructions.

SECTION 07630 - ALUMINUM GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Gutters and downspouts at interior courtyard only.
   2. Diverters at exterior doors and walks.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Prefinished Aluminum Sheet: ASTM B 209, manufacturer's standard alloy and temper for indicated applications.
   1. Minimum size and thickness:
      a. Gutters: 5-inches, 0.027 gauge OGEE Seamless.
      b. Downspouts: 3-inches x 4-inches, 0.19 gauge.
   2. Color: To be selected by the Architect.

2.02 ACCESSORY MATERIALS

A. Fasteners: Corrosion-resistant metal of same material as the material being fastened, or other material recommended by the aluminum manufacturer. Match finish and color of exposed fastener heads to finish and color of sheet material being fastened.

B. Joint Adhesive: Two-component non-corrosive epoxy adhesive, recommended by the aluminum manufacturer for sealing of non-moving joints.

C. Bituminous Coating: Heavy bodied, sulfur-free, asphalt-based paint.

D. Diverters: Aluminum or galvanized standard shapes.

2.03 FABRICATION - GENERAL

A. Form sheet metal to match profiles indicated and substantially free from oil-canning, fish-mouths, and other defects.

B. Fabricate cleats and attachment devices from the same material as sheet metal component being anchored or from compatible, non-corrosive metal recommended by the sheet metal manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The Siding Contractor shall be responsible for all installation including but not necessarily limited to:

1. Comply with the manufacturer's instructions and recommendations for the installation of the specified material.
2. Install so that expansion and contraction are not restricted.
3. Verify substrate and inform the General Contractor of any unacceptable construction before installing.
4. Use fasteners as recommended by the manufacturer for the specified material, substrate and structural wind loading shown on the structural engineering sheets.

END OF SECTION 07464

1. Gauge: As recommended by SMACNA or the metal manufacturer for application, but in no case less than gauge of the metal being secured.

2.04 GUTTERS AND DOWNSPOUTS

A. Fabricate from prefinished aluminum sheet.

B. Provide expansion joints in gutters at spacing not to exceed forty (40) feet.

C. Gutter Supports: Straps.

D. Downspout Supports: Straps.

PART 3 - EXECUTION

3.01 CLEANING AND PROTECTION

A. Repair or replace Work which is damaged or defaced, as directed by the Contractor.

END OF SECTION 07630

SECTION 07910 - JOINT SEALERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Preparing sealant substrate surface.
2. Sealant and backing.
3. Preparing and installing all materials required where joint sealers are not specifically described in other Sections of the Specifications.

1.02 SUBMITTALS

A. Submittals: Under provisions of Section 01220.

B. Product Data: Indicate sealant chemical characteristics, performance criteria, limitations and color availability.

C. Samples: Submit two (2) samples illustrating colors selected.

D. Manufacturer's Installation Instructions: Provide detailed instructions for construction including preparation, handling and environmental requirements.

1.03 WARRANTY

A. Provide two (2) year warranty.

B. Warranty: Include coverage of installed sealants and accessories which fail to achieve air tight and water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces.

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

PART 2 - PRODUCTS

2.01 SEALANTS

A. Acrylic Latex: ASTM C834; Pecora AC-20.

B. Butyl Rubber: TT-S-001657, Type I; Pecora BC-158.

C. One (1) Part Polyurethane: TT-S-00230C, Type II, Class A; ASTM C920; Pecora Dynatrol I.

D. Polysulfide: TT-S-00230, Type II, Class A; Pecora GC-9, Synthacalk.

E. Silicone: TT-S-00230C, Type II, Class A; Pecora 863.

2.02 ACCESSORIES

A. Primer: Non-staining type, recommended by the sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by the sealant manufacturer; compatible with joint forming material.

C. Joint Backing: ANSI/ ASTM D1056; D1565; round, closed cell foam rod; oversized thirty (30) to fifty (50) percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by the sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive Work and field measurements are as shown on the Drawings and recommended by the manufacturer.

B. Beginning of installation means installer accepts existing surface(s).

3.02 PREPARATION

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

B. Remove loose material and foreign matter which might impair adhesion of sealant.

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

D. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants.

E. Protect elements surrounding the Work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Install sealant in accordance with the manufacturer's instructions.

B. Measure joint dimensions and size material to achieve required width/depth ratios.

C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.

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

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

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

G. Tool joints concave.

3.04 CLEANING AND REPAIRING

A. Clean adjacent soiled surfaces.

B. Repair or replace defaced or disfigured finishes caused by Work of this Section.

3.05 PROTECTION OF FINISHED WORK

A. Protect sealants until cured.

3.06 SCHEDULE

A. The following is a list of principal areas. Final color selection is subject to Architect approval:

1. Under thresholds: Butyl; black.
2. Sheet metal flashing: Polysulfide or polyurethane; color to be selected by the Architect.
3. Window systems: As recommended by the window manufacturer.
4. Concrete: Butyl; gray color to be selected by the Architect.
5. Wood trim: Acrylic latex; color to be selected by the Architect.
6. Toilet fixtures: Sanitary silicone; white color.
7. Masonry and stone: Polysulfide; color to be selected by the Architect.
8. Joints at perimeter of sound rated gypsum board wall assemblies: Acrylic latex; color to be selected by the Architect.
9. Brick control joints: One (1) part polyurethane.
10. Penetrating through fire-rated construction: Sealants approved for use by tested U.L. Assembly. See Section 07270 - Firestopping and Smokestopping.
11. EIFS: Silicone; color to be selected by the Architect.

END OF SECTION 07910

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Standard steel doors and frames.
2. Assemblies for fire-rated openings.
3. Insulated doors.

B. Related Sections:
1. Wood doors for installation in steel frames: Elsewhere in Division 8.
2. Door hardware: Elsewhere in Division 8.
3. Glass and glazing: Elsewhere in Division 8.

1.02 SUBMITTALS

A. Product Data: Submit the manufacturer's printed product information indicating compliance with specified requirements.

B. Shop Drawings: Submit shop drawings for fabrication and installation of steel doors and frames, including the following information:
1. Details of each frame type, including anchorage.
2. Elevations of each opening type.
3. Conditions at openings, including coordination with glass and glazing requirements.
4. Location and installation requirements of door hardware and reinforcements.
5. Schedule of openings coordinated with numbering system used in the Contract Documents.

1.03 QUALITY ASSURANCE

A. Labeled Assemblies: At all locations where fire-rated door and frame assemblies are required, provide assemblies which comply with NFPA 80 and have been tested and labeled in accordance with ASTM E 152 by an agency acceptable to governing authorities.
1. Temperature rise rating: For fire-rated doors in stairwell enclosures, provide door construction tested and certified to limit temperature rise in thirty (30) minutes to 450 degrees F.

1.04 DELIVERY, STORAGE AND HANDLING

A. Replace items damaged in delivery, unless damage is minor and can be repaired to match intact items.

B. Store products under cover, raised above ground level and stacked to prevent warping and to promote air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Sheets, Hot-Rolled: ASTM A 569 and ASTM A 568, commercial quality, pickled and oiled.

B. Steel Sheets, Cold-Rolled: ASTM A 366 and ASTM A 568, commercial quality, matte finish exposed, oiled.

C. Anchors: Galvanized steel, minimum eighteen (18) gauge.

D. Fasteners and Inserts: Units standard with the manufacturer.
   1. Exterior walls: ASTM A 153, hot-dipped galvanized, Class C or D.

E. Paint:
   1. Primer: Manufacturer's standard rust-inhibitive coating, suitable to receive finish coatings specified.

2.02 FABRICATION

A. General: Shop-fabricate assemblies to greatest extent possible.

B. Exposed Panel Faces: Fabricate from cold-rolled steel.

C. Exposed Door Faces: Fabricate from cold-rolled steel.

E. Exposed Screws and Bolts: Where required, provide only countersunk, flat phillips-head fasteners.

F. Insulated Assemblies: At locations scheduled, provide insulating door and frame assemblies.

G. Hardware Preparation: Use approved Hardware Schedule and templates from hardware supplier.
   1. Reinforcement: Reinforce doors and frames for field-installed exposed hardware items.

2.03 STEEL DOORS

A. Exterior Doors:
   1. Entrance doors with glass lights to be sixteen (16) gauge comparable to Amweld 300 Series.
   2. Thickness: 1 ¾-inches.

B. Fixed Panels:
   1. Provide fixed panels of same fabrication as doors; eighteen (18) gauge comparable to Amweld 1500 Series.

2.04 STEEL FRAMES

A. General: Fabricate steel frames for scheduled openings, in styles and profiles as shown, using concealed fasteners.
   1. Provide sixteen (16) gauge material.
   2. Construction: Mitered and welded corners, ground smooth.

B. Door Silencers: Drill stops to receive silencers, except on frames scheduled for weatherstripping.
   1. Provide for three (3) silencers on strike jambs of single-swing frames.
   2. Provide for two (2) silencers on heads of frames for pairs of doors.
   3. Provide for two (2) silencers on heads of frames for double egress doors.

C. Guards: Weld protective covers to back of hardware openings at locations where grout, plaster, or other materials might interfere with hardware operation.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Install steel doors, frames and accessories to comply with the manufacturer's recommendations.
   1. Comply with detailed installation requirements of approved shop drawings.

3.02 ADJUST AND CLEAN

A. Touch-Up: At locations where primer has been abraded or minor rusting has occurred, sand smooth and spray-apply compatible primer.

B. Final Operating Adjustments: Check hardware at all openings for proper operation of doors, making final corrections as required to assure that the Work of this Section is complete and undamaged.

END OF SECTION 08110

SECTION 08200 - WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Solid core wood-faced doors.
2. Prefitting by manufacturer.
3. Premachining by manufacturer.
4. Glazing stops and preparation of flush doors to receive glazing; glazing specified elsewhere.

B. Related Sections:
1. Metal door frames: Elsewhere in Division 8.
2. Door hardware: Elsewhere in Division 8.

1.02 SUBMITTALS

A. Shop Drawings: Prepare and submit shop drawings showing all relevant information, including:
1. Dimensions and location of each product specified.
2. Elevation for each distinct door configuration.
3. Construction details for each distinct product type.
4. Dimensions and location of blocking for hardware.
5. Fire-ratings.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products as required to prevent damage or deterioration.

B. Clearly label each door with opening number where door will be installed. Use removable, temporary labels or mark on door surface which will be concealed from view after installation.
1. Coordinate door identification with approved shop drawing designations.

C. Manufacturer's Warranty:
1. Solid core wood-faced interior doors: One (1) year.

PART 2 - PRODUCTS

2.01 WOOD DOORS - GENERAL REQUIREMENTS

A. Fire Rated Doors:
   1. Construction: Comply with testing agency requirements for indicated fire-rating.
   2. Labels: Shall be embossed metal, mounted on edges of doors between the upper hinges.

2.02 SOLID CORE WOOD-FACED DOORS

A. General:
   1. Grade: Mohawk Premium Grade Birch.

B. Solid Core Wood-Faced Door :
   1. Interior door: Rated as indicated on the Door Schedule and the Drawings.
   2. Faces: Rotary cut, manufacturer's standard premium birch.
   3. Finish: Pre-finished mahogany.
   4. Construction: Five (5) ply, pre-machined and pre-fitted.
   4. Core: Particleboard, bonded to stiles and rails, sanded.

2.03 ACCESSORIES

A. Stops for Glazing and Louvers:

2.04 FABRICATION

A. Doors: Fabricate to provide consistent clearances as indicated.
   1. Prefitting: Fabricate and trim the doors to size at factory to coordinate with approved frame shop drawings and floor finishes as indicated in the Finish Schedule.
   2. Premachining: Make all mortises and cutouts required for hardware at the factory, to conform to approved Hardware Schedule, hardware templates and approved door frame shop drawings.

B. Openings: Cut, trim and seal openings in doors during fabrication.

C. Doors to be pre-finished and pre-machined.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect door frames and doors before beginning door installation.
   1. Do not install damaged or defective doors.

B. Correct unsatisfactory conditions before installing products of this Section. Commencement of installation indicates acceptance of conditions.

3.02 INSTALLATION

A. Clearances:
   1. Clearance between door edge and head: 1/8-inch.
   2. Clearance between door edge and jamb: 1/8-inch.
   3. Clearance between door bottom edge and top surface of threshold: ¼-inch.
   4. Clearance between door bottom edge and floor covering surface or finish (where threshold is not indicated): 1/8-inch, unless otherwise noted.
   5. Clearance between meeting edges at pairs of doors: 1/8-inch.

3.03 ADJUSTING

A. Adjust doors for proper operation; coordinate with hardware adjustment; replace doors which cannot be properly adjusted.

END OF SECTION 08200

SECTION 08310 - ACCESS DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Access doors.

1.02 SUBMITTALS

A. Product Data: Submit the manufacturer's printed product information indicating compliance with specified requirements.

B. Attic access doors shall be J.L. Industries Model FD 24" * 36" or equal.

1.03 QUALITY ASSURANCE

A. Labeled Assemblies: At all locations where fire-rated door and frame assemblies are required, provide assemblies which comply with NFPA 80 and have been tested and labeled in accordance with ASTM E 152 by an agency acceptable to governing authorities.
1. Temperature rise rating: For fire-rated doors in stairwell enclosures, provide door construction tested and certified to limit temperature rise in thirty (30) minutes to 450 degrees F.

1.04 DELIVERY, STORAGE AND HANDLING

A. Replace items damaged in delivery, unless damage is minor and can be repaired to match intact items.

B. Store products under cover, raised above ground level and stacked to prevent warping and to promote air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Install access hatch accessories to comply with the manufacturer's recommendations.

3.02 ADJUST AND CLEAN

A. Touch-Up: At locations where primer has been abraded or minor rusting has occurred, sand smooth and spray apply compatible primer.

B. Final Operating Adjustments: Check hardware at all openings for proper operation of doors, making final corrections as required to assure that the Work of this Section is complete and undamaged.

END OF SECTION 08310

SECTION 08410—ALUMINUM ENTRANCES, STOREFRONT, CURTAIN WALL

PART 1 - GENERAL

1.01. Related Documents
Drawings and General Provisions of Contract including General Conditions, Supplementary Conditions, and Division 1 Specification Sections.

1.02. Scope: Furnish and install entrances and storefront materials, accessories, attachment devices.

1.03 Shop Drawings

a. Submit shop drawings as required to the Architect. Shop drawings shall include engineered drawings of the systems used. System design shall withstand a minimum 145 mph wind load for the Project area. Verify structural drawing, wind zone category.

b. A Florida Registered Engineer shall seal engineered drawings.

1.04 Cleaning: Clean and Polish all work at the completion, as recommended by the manufacturer.

1.05. Guarantees

a. Guarantee shall include water tightness and defects due to materials or workmanship.

b. Guarantee over door closures for two (2) years. Guarantee shall be in writing.

1.06. Approved Manufacturers: Equivalent sections of other manufacturers may be substituted. Contractor shall submit data as required to give evidence that the requested substitution is equivalent. See Section 01640. Storefront sections shall be fabricated from single source where possible.

Manufacturers:

- Amarlite Corporation
- Kawneer Company
- Pittsburgh Plate Glass Company
- U.S. Aluminum

PART 2 – MATERIALS

2.01. Products specified as standard of quality are manufactured by Kawneer Company, Inc.

2.02. Extrusions: 6063-T5 aluminum alloy meeting ASTM B221-79a.

2.03. Gaskets: EPDM elastomeric extrusions.

2.04. Aluminum Sheet: 5005-H34 aluminum alloy meeting ASTM-B209-80, minimum 0.050" thickness.

2.05. Fasteners: All fastening devices shall be stainless steel; countersink exposed fasteners; match entrances and storefronts in color. All fasteners shall be tamper proof.

2.06. Finish: All exposed aluminum surfaces including break metal shall be AI-R1 Mill finish.

2.07. Storefront Sealant: Non-skinning type meeting MAAMM standards 5C-1.1 color to match storefront.

2.08. Glazing Pockets: Vertical and horizontal glazing pockets shall provide ½" glass grippage.

2.09 Hardware: Provide as follows:

a. For parts of entrances:
2 sets of pivots
2 closers
2 push bars
2 pulls
1 deadlock
2 flush bolts
exit device
exit device

1 threshold
2 floor stops
1 deadlocking latch

b. For single entrances:
1 set pivots
1 closer
1 push bar
1 pull
1 deadlock
1 exit device
1 threshold
1 floor stop
1 deadlocking latch

PART 3 - COMPONENTS

3.01. Entrances shall be medium stile design; 350 series by Kawneer Company, Inc. with minimum 500 wide stiles and top rail and 10" bottom rail. Bottom rail sweep shall be provided on doors. Hardware provided for these doors by the Storefront subcontractor.
a. Top, intermediate and bottom offset pivots: pivots positioned with threshold.
b. Floor closer: single acting (offset pivot) Rixon No. 27 with 105° hold open.

c. Threshold: Kawneer threshold (max height ½") offset pivot for floor closer.
d. Removable mullion: Similar to Sargent 980-A Aluminum (US28) with a 511 top retainer and a 502 bottom retainer size mullion to doors. See Door Schedule.
e. Exit Device: Similar to Von Duprin No. 99L with Hex key dogging kit (HDK) each leaf.
f. Cylinder Cores: One each leaf rim type 99NC-OP-F
g. **Key – card reader Locking device :** Shall be supplied by the Hardware supplier and installed by the General Contractor.

3.02. Systems: 1" front glazed and 1" butt glazed

3.03. Storefront Tri-Fab11, 451 2x6 front glazed as manufactured by Kawneer.

3.04. Curtain walls - 1600 Series 2½" x 7½" and as manufactured by Kawneer or US Aluminum Series 4500.

PART 4 - SYSTEM PERFORMANCE REQUIREMENTS

4.01. Minimum Design wind load 100 MPH – Verify with Structural Drawings, wind zone category.

4.02 Air Leakage: Limit to 0.06 CFM/min/sq.ft. (.0003m^3/sm^2) of wall area at 6.24 psf (300 Pa) in accordance with ASTM E283.

4.03 Water Leakage: None measured in accordance with ASTM 331 at pressure difference of 8 psf (384 Pa).

4.04 Mullion Deflection: Limit to L/175 with full recovery of glazing materials.

4.05 **NOTE: Provide certification of the above test requirements to the Architect.**

PART 5 - EXECUTION

5.01. Inspect job conditions and do not proceed until satisfactory conditions exist.

5.02. Cut and fit all material accurately with tight fitting joints. Horizontal members one piece with unbroken face outside and inside.

5.03. Anchor members with fastenings of sufficient size and quantity. Allow for expansion and setting.

5.04. Properly align and adjust entrance doors. Adjustments on doors shall be made at no additional expense to the Owner.

5.05. Manufacturer's flashing shall be provided to allow the system to drain.

5.06. Tightly seal between aluminum and adjoining materials with specified sealants.

5.07. Protect aluminum in contact with masonry, steel, concrete, or other dissimilar materials from contact by neoprene gaskets or bituminous coating.

END OF SECTION

SECTION 08520 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Applications:
      a. Individual window units.
   2. Operating styles:
      a. Fixed windows.
      b. Single hung windows.
      c. Sliding windows.

B. Related Sections:
   1. Glazing: Elsewhere in Division 8.

1.02 SUBMITTALS

A. Product Data.

B. Shop Drawings: Prepare and submit shop drawings showing information not conveyed by the product data as well as the following:
   1. Elevations.
   2. Cross-sections of all typical members.
   3. Anchors.
   4. Accessories.
   5. Glazing methods.
   6. Sealants.

C. Samples for Color Selection of Painted Finishes: The manufacturer's standard range on aluminum sections.

D. Samples for Verification of Painted Finishes: For each color, submit 12-inch long samples of extrusions.

E. Warranty:
   1. Provide one (1) year warranty on window unit.
   2. Provide five (5) year warranty on glazing seal at double insulated glass.

1.03 QUALITY ASSURANCE:

A. Provide windows bearing AAMA certification labels.

PART 2 - PRODUCTS

2.01 WINDOWS - GENERAL

A Windows

1. Horizontal sliding thermal windows
   PGI Wingaurd HR710 (NOA 15-0519.09)
   CGI Model 375 (NOA 16-0125.07)
   ES Model 2050 (NOA 14-0923.10)
2. Single hung thermal window
   PGT Winguard SH700 (NOA 16-0714.06)
   CGI Model 360 (NOA 16-0125.08)
   ES Model ES-H346 (NOA 15-0129.12)
3. Fixed thermal window
   PGT Winguard PW720 (NOA 16-0629.14)
   CGI Model 238 (NOA 15-0512.16)
   ES Model 1500 (NOA 14-0923.08)

2.02 MATERIALS

A. Concealed Anchors:
   1. Steel, cadmium plated after fabrication.
   2. Stainless steel.

B. Sealants: Use only non-hardening, non-shrinking, and non-migrating materials.

PART 3 - EXECUTION

3.01 INSTALLATION OF WINDOWS

A. Install in accordance with the manufacturer's instructions and recommendations.

B. Install windows plumb and level, true and square.

END OF SECTION 08520

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. All door hardware comparable to the items specified herein and sufficient to meet the needs of the Project.

1.02 SUBMITTALS

A. Product Data: Manufacturer's data for each different piece of hardware, with installation instructions.
1. Include evidence of testing of fire door hardware for compliance with requirements.
2. Obtain approval prior to submittal of final schedule.

B. Hardware Schedule: Show the manufacturer's complete identification for every item for every door.
1. Cross-reference to item names and designations in the Contract Documents.
2. Indicate door/frame materials and sizes.
3. Explain number codes and abbreviations.
4. Indicate hardware mounting heights or locations, if different from those specified.
5. Indicate finish for each item.

C. Keying Schedule: To be as follows unless otherwise noted:
1. All locks to be master keyed.
2. All locks to be construction master keyed.
3. All exterior doors to be keyed alike.
4. All maintenance/mechanical doors to be keyed alike.
5. All utility doors to be keyed alike.
6. All janitors' doors to be keyed alike.
7. All dietary room doors to be keyed alike.
8. All storage room doors to be keyed alike.
9. All office doors to be keyed different.
10. All medical prep. room doors to be keyed different.

D. Operation and Maintenance Data: For operating parts and finishes.

1.03 QUALITY ASSURANCE

A. Hardware for Fire-Rated Doors: Tested for compliance with NFPA 80.

1.04 DELIVERY, STORAGE AND HANDLING

A. Provide a locked storage area controlled by the Contractor for hardware not yet installed.

PART 2 - PRODUCTS

2.01 HINGES

A. Manufacturers:
1. To be Stanley or equal.

2.02 LOCKS, LATCHES AND BOLTS

A. Manufacturers:
1. To be Standard Duty, comparable to:
   a. Falcon "F" Series Grade 2
   b. Schalge "S" Series Grade 2
2. Exit devices: Rim panic devises with lever handle. Trim comparable to the following:
   a. VonDuprin 98 Series
   b. Precision 1100 Series
   c. Sargent 8800 Series

B. Bored Locksets and Latchsets:
1. Comply with requirements of BHMA A156.2, Series 4000, Grade 1.

2.03 LOCK CYLINDERS AND KEYING

A. Keying: See Section 1.02.C

B. Key Cabinet: Wall-mounted, for keys hung on hinged panel behind cabinet door. Allow for twenty-five (25) percent expansion.

2.04 DOOR CONTROL DEVICES

A. Manufacturers:
1. Surface-mounted closers: Provide products complying with requirements of the Contract Documents and made by one of the following:
   a. Norton 9300 Series
   b. Corbin-Russwin DC 3600 Series
   c. Sargent Manufacturing Company.

2.05 ARCHITECTURAL DOOR TRIM

A. Push/Pulls:
1. Material: Brushed stainless steel.
2. Pull handles which are not mounted on plates: Fasten with through-bolts concealed under plate on opposite side.

B. Protection Plates: Plastic Laminate. Provide 16-inch x 2-inch less door width.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Reinforce substrates as required for secure attachment and proper operation.

B. Thresholds: Apply continuous bead of sealant to all contact surfaces before installing.

3.02 ADJUSTMENT

A. Adjust each operable unit for correct function and smooth, free operation.

B. Adjust door closers to overcome air pressure produced by HVAC systems.

C. If hardware adjustment is completed more than one (1) month before Substantial Completion, readjust hardware not more than one (1) week before Substantial Completion.

3.03 CLEANING

A. Clean hardware; clean other work soiled during hardware installation.

3.04 CONTRACT CLOSEOUT

A. Deliver all keys to the Contractor.

END OF SECTION 08710

SECTION 08810 - GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Monolithic glass.
   2. Insulating glass.
   3. Glazing gaskets.
   4. Glazing sealants.
   5. Glazing accessories.

B. Types of Work in this Section Include:
   1. Exterior windows.
   2. Exterior doors.
   3. Interior doors.
   4. Hollow interior frames.

1.02 SUBMITTALS

A. Product Data.

B. Insulating Unit Warranty.

C. Weathertight Warranty.

1.03 WARRANTY

A. Warranty on Insulating Glass: Fabricator's standard warranty for five (5) years.
   1. Weathertight warranty: Five (5) years.

PART 2 - PRODUCTS

2.01 GLASS TYPES

A. Glass Types - General: Provide glass types fabricated of the glass products indicated on the Drawings and as required by codes.
   1. Exterior glass thickness:
      a. 5/8-inch thick insulating glass on Gerkin windows.
      b. 3/4-inch thick insulated windows in aluminum storefront frames.
   2. Interior glass thickness: ¼-inch tempered float glass, unless otherwise indicated.

2.02 BASIC GLASS PRODUCTS

A. Sealed Insulating Units: Factory-assembled multiple panes separated by and sealed to spacers forming air-tight, dehydrated air space(s).

PART 3 - EXECUTION

A. Protect glazing from edge damage during handling and installation.

B. Do not install glass that has edge damage or defects that reduce glass strength or performance or diminish appearance.

3.01 GLAZING IN FRAMES

A. Do not block weep holes.

B. Sealants:
1. Use continuous spacers.

C. Compression Gaskets: Secure gaskets so they will not work out under normal movement.
1. Install so they fit tightly at corners, allowing for stretch during installation.

END OF SECTION 08810

SECTION 09000—FINISH SCHEDULE

PART 1 - GENERAL

1.01 Reference interior design drawings and schedules. Interior finishes indicated on the Interior design drawings supersede any interior finishes called out on architectural drawings.

END OF SECTION

SECTION 09010 - DRYWALL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Gypsum wallboard.
2. Gypsum backing board.
3. Water-resistant gypsum backing board.
4. Drywall finishing.

1.02 DELIVERY, STORAGE AND HANDLING

A. Store materials in dry location, fully protected from weather and direct exposure to sunlight.

B. Stack gypsum board products flat and level, properly supported to prevent sagging or damage to ends and edges.

C. Store corner bead and other metal and plastic accessories to prevent bending, sagging, distortion, or other mechanical damage.

PART 2 - PRODUCTS

2.01 FRAMING MATERIALS

A. General: As noted on the Drawings and as required for a complete installation.

B. Studs and Tracks: Refer to the Drawings for size, gauge and to Section 09100.

C. Verify that truss bearing height and metal stud length have been coordinated with prevailing standard wood stud lengths.

2.02 GYPSUM BOARD

A. Gypsum Wallboard: Maximum lengths available.
1. Fire-resistant type (Type X or equivalent).
2. Edges: Tapered.
3. Thickness: 5/8-inch.

B. Gypsum Backing Board: Cement board equal to Durock, maximum lengths available.
   1. Edges: Manufacturer's standard.
   2. Thickness: ½-inch.
   3. Provide behind all ceramic tile and quarry base (in kitchen).

C. Soffit Board, maximum lengths available.
   1. Standard type, except as otherwise indicated.
   2. Edges: Tapered, for taped joint treatment.
   3. Thickness: 5/8-inch, fire-resistant (Type X or equivalent).

2.03 TRIM AND ACCESSORIES

A. General: Except as otherwise specifically indicated, provide trim and accessories by the manufacturer of the gypsum board materials, made of galvanized steel or zinc alloy and configured for concealment in joint compound.
   1. Include metal corner beads, edge trim and other trim units necessary for Project conditions. Provide accessories as required in order to achieve details indicated, whether or not specific accessories are shown on the Drawings.

B. Control Joints: At locations indicated, provide the manufacturer's standard one (1)piece control joints of extruded vinyl, zinc alloy, or other non-corrosive metal. Submit to the Contractor for approval prior to installation.

2.04 MISCELLANEOUS MATERIALS

A. Screws: Self-drilling type; lengths as recommended by the gypsum board manufacturer for Project conditions.

PART 3 - EXECUTION

3.01 INSTALLATION OF GYPSUM BOARD

A. General:
   1. Wherever possible, install gypsum board to minimize butt end joints and to within 1/2-inch of the floor.
   2. Apply ceiling boards prior to installation of wallboard. Arrange to minimize butt end joints near center of ceiling area.
   3. Install wallboard in a manner which will minimize butt end joints in center of wall area. Stagger vertical joints on opposite sides of walls.
   4. Butt all joints loosely, with maximum of 1/16-inch between boards.
   5. Place wrapped edges adjacent to one another; do not place cut edges or butt ends adjacent to wrapped edges.

6. Support all edges and ends of each board on framing or by solid substrate, except that long edges at right angles to framing members in non-fire-rated construction may be left unsupported.
7. Flat tape around all thru-wall units and window sills.
8. Comply with all U.L. ratings.
9. At headwalls in patient rooms, install board in vertical position.
10. Furnish all materials required for a complete job, to meet the UL requirements, and State and Local codes.

B. Control Joints: Form control joints by means of 1/2-inch space between adjacent gypsum boards, with each edge supported on separate framing member, ready to receive trim accessory, and located as shown on the Drawings or as follows:
1. Not more than thirty (30) feet apart on walls which are not intersected by other walls for fifty (50) feet or more.
2. On ceilings with perimeter relief, not more than fifty (50) feet apart in both directions.
3. On ceilings without perimeter relief, not more than thirty (30) feet apart in both directions.

C. Isolation Joints: Where gypsum board construction intersects structural components, provide isolation by stopping board a minimum of ¼-inch from structure.

D. Installation of Backing Board:
1. At locations noted in Section 2.02, B.3 above, install backing board behind tile only.
2. Install backing board in accordance with the manufacturer's recommendations for installation, including minimum clearances and sealing of penetrations and edges. Do not install backing board on ceilings.

3.02 INSTALLATION OF TRIM AND ACCESSORIES

A. Corner Bead: Install metal corner bead at all external corners unless details clearly indicate its omission at specific locations.

B. Edge Trim: Install metal edge trim at locations indicated and wherever edge of gypsum board otherwise would be exposed.

C. Control Joints: Install one (1)piece control joints at required locations. Do not remove tape until finishing operations are complete.

3.03 FINISHING

SECTION 10265—HANDRAILS, WALL AND CORNER GUARDS

PART 1 - GENERAL

1.01. Submittals:

a. General: Submit in accordance with Section 01300- Submittals.

b. Product Data: Indicate product descriptions, full characteristics, sizes and finishes. Include rough-in details.

1.02. Project Conditions:

a. Protection: Protect prefinished surfaces from damage and staining. Provide protective covering following installation until Date of Substantial Completion.

b. Coordinate installation with other work. Secure templates or lay out to dimensions furnished by manufacturer.

PART 2 - PRODUCTS

2.01 Handrails and Guards:

a. Manufacturer: InPro Corporation- IPC.

b. Material: Wood and high impact vinyl

c. Handrail: HR-1- Maple with cherry stain & ¾" x 5-1/2" back board stained to match.

d. Wall Guard: Model #1600- 6" wall guard- color to be selected by architect.

e. Corner guard: Model 150- surface mounted bullnosed 90 degree. Color to be selected by architect.

PART 3 - EXECUTION

3.01. Installation:

a. Locate blocking and stud line behind gypsum board finish to receive mounting screens.

b. Install all units in accordance with the location and dimensions as shown on drawings.

END OF SECTION

A. Penetrations: Fill cutouts and openings around fixtures and penetrations with joint compound. Penetrations in UL rated assemblies to be per referenced UL assemblies noted on the Drawings.

3.04 TEXTURING

A. General: Ensure that surfaces to receive textured finish are clean, dry and smooth.

B. Spray Texturing: Apply textured finish to ceilings where indicated by means of powered spray equipment acceptable to the manufacturer, at recommended application rate.
   1. If applicable, modify texture by means of appropriate tools while surface is still wet, to match approved samples.

3.05 CLEANING

A. Promptly remove any residual gypsum drywall materials from adjacent or adjoining surfaces, leaving spaces broom clean for subsequent finishing operations and decorating.

END OF SECTION 09010

SECTION 10350—FLAGPOLE

PART 1 - GENERAL

1.01. Related Documents
Drawings and General Provisions of Contract including General Conditions, Supplementary Conditions, and Division 1 Specification Sections.

1.02. Refer to the site and building drawing for extent, location, and foundation details.

1.03. Submit shop drawings in accordance with Section 01340: "Shop Drawings, Product Data, and Samples".

1.04. Handling: Uncrate pole and remove all wrappings. Store in dry place off the ground.

PART 2 - PRODUCTS

Manufacturers

- Concord Industries, Inc.
- Bartol Company
- Babcock Davis
- Acme / Lingo

2.01 Flagpole, base, and anchorage devices shall be designed to withstand an 80-mph wind velocity in a flagged condition.

2.02. Aluminum to be 6063T6 alloy. Carbon steel to conform to ASTM A-53, Type S, Grade B.

2.03. Taper: Pole to be cove tapered aluminum, ground set, (1) at 30' exposed height (2) at 24' height, with rate of taper 1" to every 5'-6" of length. Wall thickness to be .188", butt diameter to be 6", and top diameter to be 3". Ball diameter to be 6".

2.04. Finish of pole to be clear anodized.

2.05. Provide six inch spherical ball as flagpole finial. Finish shall be black.

2.06. Flagpole truck shall be standard, revolving double 2-3/8" diameter sheaves. Truck material to be same as pole. Halyards and snap hooks to be standard No. 10 multi-filament braided polypropylene with two bronze snap hooks for each halyard. Cleats to be standard 9" aluminum.

2.07. Provide a flashing collar of aluminum with foundation sleeve of 16 gauge corrugated galvanized steel. Provide a lightening spike of galvanized steel as detailed.

2.08. Two-section pole to be furnished with precision filed splicing sleeve, which require **NO** welding or tension rod.

PART 3 - EXECUTION

3.01. Flagpole to be installed in accordance with approved shop drawings and by a crew experience in pole handling, assembly, and erection.

END OF SECTION

SECTION 10520 - FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.01 SUBMITTALS

A. Product Data.

1.02 QUALITY ASSURANCE

A. Labels: Provide only fire extinguishers which are listed and labeled by Underwriters Laboratories Inc.

PART 2 - PRODUCTS

2.01 FIRE EXTINGUISHERS

A. Manufacturers: Products of the following manufacturers, provided they comply with requirements of Contract Documents, will be among those considered acceptable:
   1. Fire extinguishers:
      a. Amerex Corporation.
      b. Ansul Fire Protection/A Grinnell Company.
      c. J.L. Industries.
   2. Cabinet or wall mounted.
   3. Red enamel tank with chrome valves and a large pressure gauge.
   4. See architectural drawings for types and locations.

2.02 CABINETS AND CABINET ACCESSORIES

A. Manufacturers: Products of the following manufacturers, provided they comply with requirements of Contract Documents, will be among those considered acceptable:
   1. Cabinets and accessories:
      a. J.L. Industries.
      b. Larsen's Manufacturing Company.
      c. Thomas Enterprises.

B. Cabinets:
   1. To house one (1) extinguisher.
   2. Style: Semi-recessed mounted or surface mount; refer to the Drawings.

3. Single flat door.
   a. Narrow vertical glazing panel.
      1. Double strength glass.
      2. Clear.
   b. Door material: Steel, factory painted.
   c. Friction or roller catch.
   d. Door handle.
4. No lettering on door or trim.
5. Box: Manufacturer's standard material and construction.
6. Provide wall bracket for extinguisher, inside cabinet.

C. Hinges: Concealed or continuous type; allow full 180 degree opening of door.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perform installation in accordance with the manufacturer's instructions except where more stringent requirements are shown or specified.

B. Install brackets for wall mounted extinguishers at height indicated on the Drawings.

C. Install cabinets at locations indicated on the Drawings.

END OF SECTION 10520

SECTION 10810 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Paper towel dispensers.
2. Toilet paper dispensers.
3. Grab bars.
4. Shower curtain rods.
5. Soap dispensers.
6. Mop and broom holder.
7. Mirrors.

1.02 SUBMITTALS

A. Product Data.

B. Manufacturer's Instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. All manufacturers and model numbers specified are Owner's standard.

2.02 TOILET ACCESSORIES

A. Paper Towel Dispenser:
1. By Owner.

B. Toilet Paper Dispenser:
1. Moen DN6808BN

C. Grab Bar
1. Bobrick B-6806

D. Soap Dispenser :
1. By Owner.

E. Shower Curtain Rod:
1. Bobrick B-6107

F. Utility Mop and Broom Holder:
   1. By Owner

G. Mirrors
   1. 23 1/2-inch x 31 1/2-inch Gatco 4339 Satin Nickel Finish

H. Towel Bars
   1. 24-inch Moen Y2608BN-24"
   2. 18-inch Moen Y2608BN-18"

I. Robe Hooks
   1. Moen DN6803BN

J. Privacy Curtain Track
   1. ARNCO 1200

K. Shower Seat
   1. Bobrick B-517 (R), B-518 (L)

L. Tub Seat
   1. By Owner

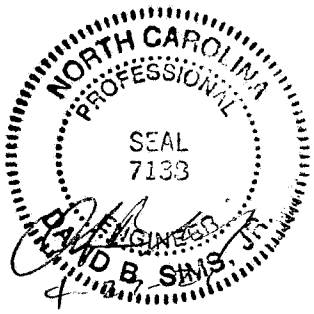
2.03 MATERIALS Mounting Devices and Fasteners: Provide the toilet accessory manufacturer's recommended items for substrates and conditions indicated.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perform installation in accordance with the manufacturer's instructions, except where more stringent requirements are shown or specified, and except where Project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.

END OF SECTION 10810



PRUITTHEALTH CRYSTAL COAST
140 BED NURSING FACILITY
BEAUFORT, NC

DIVISION 15A PLUMBING SPECIFICATIONS

I. GENERAL

1.1 Description of Work

A. Work under this section includes, but is not necessarily limited to, providing and installing equipment and materials to complete the following:

1. Provide and install all fixtures and appurtenant materials for a plumbing system as shown on drawings. Provide and install all hot and cold water system, and a complete waste and vent system.

2. Provide and install inlet and outlet piping for grease interceptor by others. Coordinate with site contractor.

3. Route waste and water to outside building as shown on drawings.

4. Chlorinate water system.

5. Provide and install gas piping system. Route piping to all users as indicated.

6. Do all that is necessary to deliver properly functioning and tested water, waste and gas piping systems.

B. All work under this contract shall be accomplished in strict accordance with State and Local codes. Where these plans and specifications conflict with codes or where there is a conflict between codes, the most restrictive shall govern. Plumbing Contractor shall notify the Architect and Engineer of such conflicts in writing prior to receipt of bids.

C. The General Conditions of the contract are part of this contract.

D. Prior to bidding project, Plumbing Contractor shall visit site to familiarize himself with existing and future grades and to determine exact point of connection with existing components or mains.

E. Contractor in bidding certifies that he has North Carolina licenses and any local licenses required for the work being bid.

F. Fees and Permits: Provide all licenses, fees, permits, health department fees,

insurance, etc., required for execution of this work.

G. The Plumbing Contractor shall provide all materials, perform all work and test and pay all fees necessary to make the plumbing system operable and ready for use by the Owner.

H. Guarantee: All new equipment, new materials and installation shall be guaranteed to be free of defects for a period of one (1) year after final acceptance of work or in accordance with the manufacturer's standard guarantee, if longer.

1.2 Intent

A. The intent of these specifications and the accompanying drawings is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The contractor shall take this into consideration and include in his bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner. This paragraph is not intended to hold the contractor responsible for design or to require him to furnish equipment not remotely indicated, but to insure a complete job will be provided without requests for minor extras.

1.3 Coordination

A. Coordinate work with other prime contractors. Notify Architect of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Architect of decision before resuming operations. This shall also apply to site work such as water distribution, sanitary sewer, and any specialty drain components that are the responsibility of the Plumbing Contractor.

B. Locations shown are approximate. The Contractor shall refer to the Architectural Plans for exact measurements in the placement of equipment, fixtures, outlets, etc. Where the locations are not clear, the Contractor shall obtain the exact location from the Architect. The plans do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details that may be required.

1.4 Seismic Design

All plumbing components shall be installed, supported, and restrained in accordance with the state Building Code requirements for seismic design. It shall be the responsibility of the Contractor to retain a Professional Engineer competent in this field for this design. All required inspections for these designs shall be performed by approved inspectors and agencies provided by Owner or Owner's agent.

II. MATERIALS

2.1 Fixtures

A. The Plumbing Contractor shall set and install complete all fixtures shown on Plumbing Fixture Schedule on plan or other wise indicated on Plans or Fixture Schedule.

2.2 Piping

A. Drain Waste, Vent: Schedule 40 PVC-DW with solvent weld joints.

B. Fittings: Use long-turn drainage fittings except where space prohibits. All fittings shall be sanitary drainage pattern.

C. Hot and Cold Water Piping:

1. Hot and cold water pipes:
   a. Pipe shall be Type L copper tubing above grade and Type K below grade.
   b. Fittings shall be made using solder acceptable to North Carolina Plumbing Code.
2. Acceptable Alternate:
   Hot and cold water pipes beginning 5' from building wall:
   a. For 4"ø piping only, CPVC is an acceptable alternate. Installation shall be as per manufacturer's instructions and recommendations. The contractor must be certified by the manufacturer for CPVC.
   b. Pipe and fittings shall be CPVC.
   c. Fittings shall be made as per Manufacturer's instructions and as per the State Plumbing Code for potable water.
   d. Corzan contact: Ryan Chubon, Phone: 352.989.6273.
   e. For ½" – 3"ø piping only, Uponer PEX is an acceptable alternate except for boiler recirculation piping or 140°F piping which must be copper. Installation shall be as per manufacturer's instructions and recommendations. The contractor must be certified by the manufacturer for PEX installation.
   f. Pipe and fittings shall be Uponer PEX for domestic hot and cold water service.
   g. PEX shall be supported by Uponer PEX a-pipe supports installed as per manufacturer's instructions. This shall provide support and expansion/contraction control.
   h. Transition fittings between dissimilar piping types shall be made with Code approved fitting designed for their purpose.

D. Gas Piping:

1. Gas pipe shall be SCH 40 carbon steel pipe Grade A53, with threaded joints for piping 2" and smaller, and welded joints for piping 2½" and greater, rated for gas service, except as noted below. Underground pipe shall be wrapped for corrosion protection.

2. Connections to gas appliances shall be made with flex pipe, UL rated for the specific application. Provide connector restraint if code required. Transition from carbon steel to copper shall be made using dielectric union.

3. All gas system material and installation shall be as per the North Carolina Building Code and NFPA-54.

E. Hangers:

1. Spacing for copper pipe shall be as follows:

1" & Smaller	6'-0" o.c.
1¼" & 1½"	8'-0" o.c.
3" & Larger	10'-0" o.c.

2. Spacing for carbon steel and cast iron pipe shall be as follows:

1" & Smaller	7'-0" o.c.
1½" & 2"	10'-0" o.c.
2½", 3" & 4"	12'-0" o.c.

3. Spacing for PVC pipe shall be as follows:

1½" & Smaller	2'-0" o.c.
2"	3'-0" o.c.
2" & 4"	5'-0" o.c.

4. Hanger for horizontal piping shall be the Clevis type.

5. Hangers for bare copper piping shall be copper plated.

6. Hanger for insulated piping shall extend around the insulation. Provide 16 gauge galvanized steel insulation protection saddles 12" long at each hanger on all insulated lines and hard insulation inserts at saddles.

7. A hanger shall be fastened by means of threaded rods to building structure. All hangers shall permit adequate adjustment after erection while still supporting the load.

8. A hanger shall be provided within one foot of each bend in horizontal piping.

2.3 Valves:

A. Gate valves, check valves, globe valves, etc., shall be brass construction. Valves shall be Manufacturer recommended for the intended service.

B. Circuit setter valves shall be by Bell and Gossett, Model CB-1/2. Use for balancing hot water recirculation system.

2.4 Cleanouts: Hex plugs in rough areas; recessed plugs in exposed locations. Provide stainless steel plate covers for walls and Nickel Bronze finish plates for floor.

2.5 Sleeves: All pipe penetrations shall be provided with sleeves.

2.6 Insulation

1. Water piping in unconditioned rooms, attic space, or outside building thermal envelope shall be insulated with Fiberglass insulation with vapor barrier jacket. R=6.5 minimum or as shown on drawings, whichever is more stringent.

2. Exposed hot and cold water lines and waste lines under handicap lavatories shall be insulated with fully molded water and waste insulation kit.

3. Underground lines below frost line shall not be insulated.

4. All other water piping shall be insulated as follows:
   a. Cold water piping shall have 1/2" Armaflex.
   b. Hot water piping (110°F) shall have 1" Armaflex or Fiberglass with vapor barrier jacket if part of recirculated piping and 1/2" Armaflex if not.
   c. Hot water piping (140°F) shall have 1" Armaflex or Fiberglass with vapor barrier jacket up to 1¼Ø pipe, 1" Armaflex or Fiberglass with vapor barrier jacket for 1½" and 2"Ø pipe, and 1.5" Fiberglass with vapor barrier jacket for pipes larger than 2"Ø.

5. All insulation exposed in mechanical room shall have a stapled and taped PVC jacket.

III. EXECUTION

3.1 Connections

A. Connection to equipment furnished by others: See Equipment Schedules. This contract includes complete waste, cold water, hot water, and vent piping to equipment furnished by others. Items shown on Equipment Schedule have been verified by Owner and take precedence over Plumbing Plans and Specifications, which are diagrammatic only, in event of conflict.

B. The connection of soil pipes to the water closets shall be made using bends and flanges and shall be made gas and water tight with gasket and wax ring. Floor flanges shall be caulked into position. Plastic caps shall be provided on the tie down bolts and shall be secured in place by screwing down on threaded brass washers.

C. Where water pipes connect to exposed cp trim, the exposed nips shall be chrome plated red brass, with proper escutcheons.

D. The Electrical Contract includes complete power supply to the first power terminals within any plumbing equipment loads such as water heaters, lift units, kitchenette units, disposals, water pumps, etc., shown on Plumbing and Site Plans.

3.2 Service Access

A. All valves and accessories must be installed so that they can be properly serviced. Equipment must not only be installed in like manner; but must also be provided with manufacturer's recommended clearances. Do not install equipment or accessories in locations that will void manufacturer's published warranty. If proper clearances are not available, notify Architect and attempt to work out necessary changes with other trades. In no case shall Contractor bid, submit or install equipment or other components in situations that do not meet code requirements or manufacturer's requirements. Where otherwise impossible to provide access, furnish and install access panels as may be required to service all equipment.

All access panels in toilet or show rooms shall be stainless steel.

3.3 Cleanouts

A. Cleanouts shall be placed as shown, but at a maximum spacing of 100' intervals for 4" piping, and 100' intervals for 6" piping and all radical turns in piping. Cleanout 3" or larger should have a minimum of 18" clearance. 3" or smaller should have a minimum of 12" clearance.

3.4 Routing of Piping

A. Coordinate routing of piping with others; line up work true to or at right angles to adjacent surfaces and in a workmanlike manner. Where required, piping is to be

sturdily supported in a manner satisfactory to the Architect. Piping shall be routed in thermal envelope wherever possible, i.e. inside the prime building insulation. Seal all penetrations.

B. Space pipe hangers on center as recommended by manufacturer; use expansion loops as required. All piping shall be rigidly supported by building structure.

C. Cleanouts in interior shall be placed as shown, but at a maximum spacing of 100' intervals for 4" piping, and 100' intervals for 6" piping and at all radical turns in piping. Prepare for covers as specified.

D. Vent piping should be terminated not less than 6" above roof.

3.5 Insulation

A. All H/W piping to be insulated.

B. All C/W piping to be insulated.

3.6 Handicapped Provisions

A. Set lavatories to comply with North Carolina Building Code. Protect drain and water supply pipes with preformed insulation.

B. Grab bars at water closets at handicapped toilets are specified in other sections and are not in this contract.

C. Mount drinking fountain as per North Carolina Building Code.

3.7 Inspections and Tests

A. Before being concealed, all water, gas, soil, vent, and waste piping shall be tested to determine if they are water or air-tight. Where portions of the piping are complete and ready for test and delay of their covering would hinder the rest of the job, they may be isolated, tested, and covered. All tests shall be made in the presence of a representative of the Architect.

B. Prior to placing into service, entire system shall be tested for leaks in strict accordance with State and Local Codes. As a minimum the following tests shall be done:

1. The hot and cold water piping shall hold a hydrostatic test pressure of 100 psi for a period of at least 1½ hours. Any joint to leak under test shall be broken, remade and retested.

2. All waste piping shall be tested by filling the lines to overflowing. Any joint found to leak under test shall be broken, remade and retested.

3. Gas pipe shall hold a 25 psig air test for 1½ hours. Any joint found to leak shall be broken, remade, and retested.

C. Final inspection and tests of the completed construction shall be performed in the presence of the Architect or his representative and shall be as such times that are convenient to the Architect. Final tests shall show conclusively that all equipment performs its intended and specified function and that all work complies with the provisions of these specifications and applicable codes. All materials, equipment and instruments required for the tests shall be furnished by the Contractor at his own expense. In addition, the Contractor shall furnish a certificate of acceptance from the local Plumbing Inspector prior to acceptance of work by the Owner.

3.8 Sterilization of Piping

Sterilize the entire water system thoroughly with a solution containing not less than 50 parts per million of available chlorine, using liquid chlorine or sodium hypochlorite solution, introduced into the system in an approved manner. The sterilizing solution shall remain in the system for a period of 6 hours during which time all valves and faucets shall be opened and closed several times. After sterilization, flush the solution from the system with clean water until the residual chlorine content in not greater than 0.2 parts per million, unless otherwise directed. Sterilization shall be in accordance with North Carolina Building Code and all requirements of local Code and Health officials.

3.9 Other

A. Each fixture shall be properly supported from the building structure or masonry walls as indicated, described, or required to the end effect that all fixtures and accessories will be held rigidly in place. Water pipes supplying the fixtures must also be held rigidly in place.

B. Comply with handicapped provisions of North Carolina Building Code. (Maximum setting for water temperature is 116 degrees F. for fixtures covered by handicapped provisions.)

C. Locate all hose bibbs and hydrants 18" A.F.F. or A.F.G.

D. Provide cut-off valves at all fixtures and equipment not specified with screwdriver stops or angle supply valves.

E. All holes through walls, floors and ceilings are to be drilled, not broken. Round all sharp edges to drilled holes.

F. Lines are not to be covered until inspected by the Architect.

G. Wrap copper pipe with duct tape where it penetrates the floor.

H. Do not make a water line joint under the slab.

I. Air chambers shall be installed in each water branch line supplying each plumbing fixture; pipe air chambers shall not be less than 12" long and be of a size not less than pipe it serves.

J. Waste pipes passing under or through foundations or through load bearing sections of a wall shall be routed through D.I. sleeves at least two pipe sizes larger than the waste pipe.

K. Provide sufficient hangers, supports, clamps, clips, inserts and maintaining devices to support all piping as per good piping practice and to maintain proper drainage.

L. Install all equipment as per manufacturer's instructions and pertinent recommendations.

M. All piping under building shall be installed in trenches cleared of all rocks and other abrasive materials. Trench bottom shall be compacted and shall fully support pipe. Fill dirt to 6" above top of pipe shall be clean and free of abrasive materials. Fill trenches in 6" lifts compacted to 98% Proctor per ASTM D698 or as per the recommendations of the Soils Engineer.

N. Plumbing Contractor shall coordinate with General Contractor to assure that all underground pipe interferences (foundations, cables, other piping, etc.) are avoided by underground plumbing.

O. No piping of dissimilar metals shall be joined without a dielectric union.

P. Upon completion of the entire system, the Plumbing Contractor shall flush all lines to insure proper flows. All fixtures shall be left clean. The Plumbing Contractor shall demonstrate the proper function of the entire system. The Plumbing Contractor shall acquaint the Owner's Representative with the proper operation of the plumbing system.

Q. All materials shall be new unless otherwise shown or specified and shall be of the very best quality as specified.

Requests to substitute other materials or products for those specified shall be sent in writing to the Owner. Requests shall be accompanied by Engineering Data, specification sheets, etc., as necessary to full identify and appraise the products.

Approval of equipment will not relieve the Contractor of noncompliance with the specification even if such approval is made in writing, unless the Engineer is called to the nonconforming features by letter accompanying the submittal data.

R. As soon as possible (and not more than 30 days) after the contract is signed, the Contractor shall submit five (5) copies of shop drawings covering plumbing fixtures, equipment and materials and any special equipment which he intends to use. Four (4) copies of this data will be returned by the Engineer who will indicate approval or otherwise.

S. All pipe penetrations through smoke partitions or fire rated walls or ceilings shall have the opening around the pipe completely sealed on each side of the partition or ceiling with an approved material with rating equal to that of the partition penetrated. See Architectural drawings for location of smoke partitions and fire rated walls and their ratings. Contractor shall submit U.L. approved construction details for all such penetrations.

T. Openings in exterior walls for pipes shall be rat proofed. Interior walls shall also be rat proofed if necessary.

U. Plumbing Contractor shall coordinate the placement of all plumbing vent penetrations through roof with Mechanical Contractor to assure that all plumbing vents are at least 10' horizontally from HVAC system make-up air duct roof terminations.

V. All hot water heaters and storage tanks shall be provided with a cut-off valve in the cold water supply line not more than 3' from the heater or tank.

W. Penetrations of fire rated ceilings or walls shall be sealed in a manner acceptable to the Plumbing and Building Inspectors and in accordance with the North Carolina Building Code. Refer to Architectural drawings for locations and ratings of fire rated walls and ceilings.

X. Plumber shall paint waste system vent boots at roof to match color of roof shingles.

Y. Water pipe routing through studs shall be protected by metal stud guards.

Z. Provide carbon steel dirt leg in supply line to each gas user.

AA. Gas pipe support spacing shall be as per North Carolina State Code.

BB. Underground gas piping penetrating asphalt or a concrete pad, shall do so through a carbon steel sleeve.

CC. All gas piping shall be electrically grounded as per NFPA-70.

DD. If gas burning equipment is on this project, the units shall not be fired off until the Contractor has verified that the fuel available on site is the fuel the units are designed to burn.

EE. The building's 110°F recirculation system shall be balanced to provide flows to maintain hot water to code standard to all fixtures.

FF. All valves shall be labeled for their area served. Utilize plastic labels wired to valve with corrosion resistant wire.

END OF SECTION

1. GENERAL

1.1 Scope: Provide an automatic sprinkler system for the building complete wi.. piping, fire hydrants, fire department Siamese, water gong, backflow preventer, press· tamper switches and all interconnecting piping, valves, fittings, inspector's test, drips and all other necessary auxiliaries for a complete system. Wall post indicator valve and all gate valves shall be electrically supervised. Provide switch to be made when valves are fully open. Wiring shall be by Electrical Subcontractor for supervisory switch and pressure switch. Work shall begin at the tap to the Utility Company water service. System shall be design build by the Contractor.

System shall be design build and Contractor shall obtain all permits and design the system to NFPA-13, NFPA 24, and NFPA-101 standards minimum.

Provide backflow preventer as required as per specifications of local water authority. As a minimum backflow preventer shall be a Watts 709.

The system protecting the occupied/conditioned area shall be wet and the system protecting the attic/unconditioned area shall be dry and as required by all State reviewing agencies, state and local Fire Marshals and all other nursing home requirements. System shall be light hazard with ordinary hazard for the kitchen as a minimum.

1.2 Plans: Contractor shall provide design and detailed shop drawings for the system. Refer to architectural and structural drawings for building dimensions; sprinkler plans shall include both first floor, canopy and attic protection.

1.3 Workmanship: Workmanship shall be of the best trade practices and procedures as described in N.F.P.A. Pamphlet No.13. Proper sleeves shall be provided as required. Pipe shall be supported in accordance with N.F.P.A. Pamphlet No.13. Only first class pipe fitters shall be employed in this work. Site water piping shall be in accordance with N.F.P.A. 24.

1.4 Permits and Requirements:

1.4.1 Secure all necessary permits, inspection certificates, etc., and pay all charges therewith.

1.4.2 1.4.2 Comply with requirements of N.F.P.A. Pamphlet No.13 and No. 24, including modifications and amendments thereto. Sprinkler system shall also conform to recommendations of the insurance consultants for the Owner, the local Fire Marshall, and all State and Local review Agencies.

1.4.3

1.4.3.1 The Contractor shall provide a documented hydrant test as per the requirements of the State Fire Marshall's Office.

1.4.3.2 Contractor shall complete all forms needed by the engineers for the

submission of plans to the State of North Carolina.

1.4.3.3 The Contractor shall retain the services of a registered Seismic Engineer as needed to develop the details needed in the plans for seismic control.

1.5 Space Conditions

1.5.1 All materials shall fit the space available. Verify all dimensions at building before commencing work.

1.5.2 Maintain maximum head room and accessibility at all points and provide adequate access to all equipment requiring service.

1.5.3 Minor deviations from plans required to conform to space limitations shall be made at no additional cost, subject to approval of Architect.

1.5.4 All valves, devices, etc., shall be so located and installed as to permit access for servicing without damage to building structure or finishes.

1.6 Guarantee: All work shall be guaranteed for a period of one year. Guarantee shall include prompt repair of leaks and replacement of defective equipment.

1.7 Shop Drawings: Shop drawings shall be submitted in accordance with the following:

1.7.1 Detailed and dimensioned shop drawings for the installation of the work shall be prepared and submitted for approval. In preparing shop drawings, check project drawings to avoid interference with structural features, and the work of other trades, and immediately call to the attention of the Architect and Engineer any interferences for clarification in writing.

1.7.2 All shop drawings submitted shall be reviewed by the insurance company having jurisdiction for conformance with NFPA #13 for Sprinkler Systems and approved by the local Fire Marshall prior to submittal to the Architect and Engineer for approval. Submit one set of reproducible sepias and a minimum of one set of prints.

1.8 Test and Inspection:

1.8.1 Before acceptance of his work by the architect, the Sprinkler Contractor shall test and adjust all work installed by him. All piping shall be tested and proved tight with 200 lbs. water pressure, test to be conducted in the presence of the Architect and/or representative of the Owner. The interior piping system shall be cleaned free of all loose scale and other foreign matter.

1.8.2 Certificate copies of sprinkler system approval shall be furnished to Architect along with Material and Test Certificate signed by test witness as mentioned above in 1.8.1.

1.9 License

Contractor shall be a licensed Sprinkler Contractor in the State where work takes place. Contractor shall provide any required State Registered Engineer Seals if required.

1.10 Flow Test
Contractor shall have verified water flow test that has been conducted within the last six (6) months.

1.11 All piping, controls and components shall be installed, supported, and restrained in accordance with the State Building Code requirements for seismic design. It shall be the responsibility of the Contractor to retain a Professional Engineer competent in this field for this design. All required inspections for these designs shall be performed by the Seismic Engineer and paid for by the Contractor. For one possible source for this service contact Seismic Control and Isolations, Inc. Phone: 910 799-5204.

2. MATERIALS INSIDE BUILDING

2.1 Piping Systems:

2.1.1 Piping: Schedule 40 black steel conforming to ASTM A53, and ANSI B36.20, schedule 10 piping with grooved fittings may be used for mains.

2.1.2 Fittings: 150 lb. cast iron screw fittings conforming to ANSI B16.5. Adjacent to flanged valves, etc., shall be ANSI 150 lb. flanges.

2.1.3 Joints: Screwed joints shall be made with pipe dope applied to male threads only. Gaskets for flanged fittings shall be 150 lb. rubber ring type, including machine bolts of accurate length, conforming to Federal Specification HH-G-156B. Piping in general shall be shop fabricated, machine-cut, with American Standard taper threads, chamfered and reamed free of all burrs. Nipples shall be machine-cut of the same materials as adjoining piping. Joints for Schedule 10 pipe shall be rolled to accommodate grooved fittings and couplings.

2.1.4 Unions: Unions shall, in general, be of flange and gasket type with approved type gasket, including machine bolts of accurate length. Malleable ground joint unions of railroad pattern with brass-to-iron seat may be supplied for auxiliary connection of 2" and smaller size at valve location.

2.2 Valves:

2.2.1 Gate Valves of 2-½" and larger nominal size shall be approved Underwriters pattern suitable for 175 lbs. water working pressures (non-shock), of wedge gate pattern, iron-body, brass trimmed, with non-rising brass stem and outside screw and yoke, flanged ends, faced and drilled to American Standard, Class 125, similar and equal to Crane No.467. Valves of 2" and smaller size shall be of bronze construction with wedge disc, OS&Y pattern, Underwriters approved, similar and equal to Crane No. 459, with threaded ends. Valves must be UL and FM approved.

2.2.2 Check Valves: Iron body flange ends swing check valves, bronze mounted with bronze face disc. Underwriters approved for 175 psig WWP, Kennedy Fig. 126. Valves must be UL and FM approved.

2.3 Equipment and Accessories:

2.3.1 Sprinklers shall be dry type 212 degrees Fahrenheit and/or for attic protection, new attic spray with 17/32" diameter discharge orifices and/or standard upright 1/2" diameter discharge orifice. In patient sleeping areas provide chrome plated dry pendant type quick response heads with chrome plated escutcheons and rating of 165 degrees Fahrenheit unless otherwise noted. Any exterior pendent head shall be a dry type pendent and shall have a temperature rating of 165 degrees Fahrenheit. Provide dry type freeze-proof 165 degrees Fahrenheit heads in the freezer/cooler and 212 degrees Fahrenheit heads near the range in the kitchen. Sprinkler head in ceilings shall clear the surface mounted lights.

2.3.2 Sprinkler Guards: Of approved type, rust-resistant construction, shall be provided where required to prevent damage to sprinkler.

2.3.3 Extra Sprinklers: Four (4) extra sprinklers of each type shall be furnished in suitable cabinet, including special sprinkler wrench, stored in the Mechanical Room.

2.3.4 Fire Department Siamese: Shall be 2-½"x2-½"x4" wall Siamese. Hose threads shall conform to the local fire department standards.

2.3.5 System Drain Connection: Shall be extended to floor through outside wall. Terminate with elbow and wall escutcheon.

2.3.6 Inspector's Test Connection: Inspector's test connection shall be provided where required, complete with drain valve and inspector's test gauge connection. Flushing connections shall be provided at ends of all cross mains.

2.3.7 Electric Alarms: Electrical Contractor to be responsible for all wiring required for electrical pressure alarms, valve tamper alarms, and bells necessary in accordance with state and local requirements. Sprinkler Contractor shall provide pressure switch and tamper switches on all valves.

3. EXECUTION:

3.1 Work shall be carried out according to the best trade practices. Proper sleeves, hangers, and other appurtenances shall be provided as required by good workmanship.

3.2 Take special precautions to support and grade pipe for draindown. Provide double drain valves at low points in the system. Sagging piping will not be allowed. Drainage shall be in accordance with NFPA 13 for dry pipe systems.

3.3 All piping, such as at sprinkler heads, that cannot be effectively drained down shall be located within the building insulation. Adjust and rearrange insulation to cover any joints, piping, etc., that could freeze during winter temperatures. Initial insulation installation shall be by Insulation Contractor and they shall be responsible for covering piping as shown on plan details.

3.4 Upon completion instruct the owner/operator in the use of the system. Provide three (3) copies of instruction manual and list all steps in starting, shutting down and reactivating the system. Verify that all work and operations are in conformance with local fire department requirements.

3.5 Penetration of Fire Rated Wall:

Contractor shall seal around fire rated walls with 3M sealant complying with UL System #147 for single pipe and single pipe with insulation. Use 3M sealant complying with UL System #570 for multiple pipe penetrations.

4. SITE

4.1 Contractor shall provide and install pipe, fire hydrants and post indicating valve at building. Provide tap and pay any associated fees. Provide any required pits, meters, backflow preventer etc.

4.2 Contractor shall verify acceptance of backflow preventer with the local authority.

4.3 Site pipe and fittings shall comply with the requirements of NFPA-24 and AWWA Standard shall be rated to operate at 150 psi minimum. Pipe shall also comply with the requirements of the local authority. Pipe shall be thrust blocked and rated per NFPA 24. Pipe shall be installed and tested per NFPA 24.

4.4 As a minimum site pipe beyond 5'0" of the building shall meet the requirements of the local authority. As a minimum this pipe shall be C-900 with D.I. fittings rated at 150 psi.

4.5 Contractor shall provide site fire hydrant. Hydrant installation and threads shall comply with the requirements of the local fire department.

4.6 Underground pipe shall be installed per the requirements of NFPA-24 as a minimum. Pipe shall have a minimum burial depth of 3'-0". Trench shall be clear of all rocks and other abrasive materials. Bottom of trench shall be compacted to 98% of Standard Proctor per ASTM-D-698, or per the instructions of the Soils Engineer. Fill shall be placed in 6" lifts and each lift shall be compacted to 98% Standard Proctor, per ASTM-D-698, or per the instructions of the Soils Engineer. Compacted fill shall be flush with grade and the excavation shall be seeded and fertilized.

4.7 Minimum burial depth shall be 3'-0". Contractor shall refer to final grade to determine the minimal burial depth.

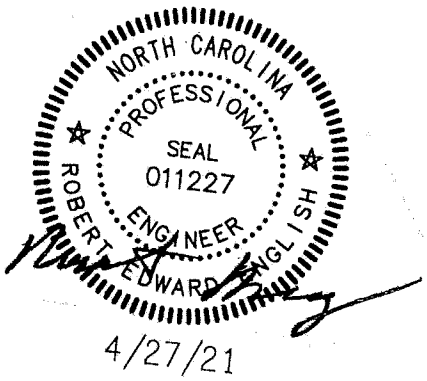
4.8 Contractor shall cut and patch all areas where lines are run under asphalt. Follow 4.6 in backfilling area. For the last 8" provide 6" of ABC base followed by 2" of asphalt top. Asphalt mix shall comply with State DOT regulations.

4.9 Pipe shall be hydrostatically tested at 200 psi minimum for 2/hours minimum. contractor shall follow guidelines outlined in the AWWA C-600-82 Standards, Section IV, for Hydrostatic Testing. Pipe shall be filled with water slowly and all air shall be removed before testing. All pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until satisfactory to the Owner. Allowable leakage shall be .64 gph per 1000 feet of pipe for 6" diameter pipe.

4.10 Water system shall be disinfected per AWWA C-601-81 Standards, minimum for "Disinfecting Water Mains". As a minimum, system shall be chlorinated to 50 ppm and held for 24/hours minimum. Acceptable procedures shall be Tablet Method, Continuous Feed Method or Slug Method as outlined by AWWA. Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate as required by Standard Methods. No hose or fire hydrant shall be used in collection of samples. A corporation cock may be installed in the main with copper tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use. Refer to AWWA Standards for tap details.

END OF SECTION

PRUITTHEALTH CRYSTAL COAST
140 BED NURSING FACILITY
BEAUFORT, NC



DIVISION 17. HEATING, VENTILATING & AIR CONDITIONING SPECIFICATIONS

I. GENERAL

1.1 Description of Work

A. Work under this Section includes but is not necessarily limited to furnishing and installing the following:

1. Split system heat pumps and air conditioning units
2. VRF system for resident rooms
3. ERV with VRF coil for two isolation rooms and exam room area
4. Package terminal heat pump system for the maintenance building
5. Duct installation and duct work
6. Registers, grilles and diffusers
7. Controls and control wiring
8. Exhaust fans, duct, caps and louvers
9. Electric duct heaters and electric wall heater
10. Dryer exhaust duct for dryers
11. Kitchen hood system
12. Kitchen dishwasher hood system
13. Dedicated outside air systems (DOAS) and (DOAC)

B. All work under this contract shall be accomplished in strict accordance with State and Local codes. Where these plans and specifications are in conflict with such codes, the codes shall govern. HVAC Contractor shall notify Architect or Engineer of such conflicts in writing prior to receipt of bids.

C. The General Conditions of the Contract are part of this contract.

D. Contractor in bidding certifies that he has State Contractors licenses and any local licenses required for the work being bid.

E. Installation shall comply with OSHA Standards.

F. The Mechanical Contractor shall provide all materials, perform all work and test and pay all fees necessary to make the heating, air conditioning and venting systems operable and ready for use by the Owner.

G. All mechanical components shall be installed, supported, and restrained in accordance with the State Building Code requirements for seismic and wind

design. It shall be the responsibility of the Contractor to retain a Professional Engineer competent in this field for this design. All required inspections for these designs shall be performed by this Engineer and paid for by the Contractor. For one possible source for this service contact Seismic Control and Isolations, Inc. Phone: 910 799-5204.

H. The Engineer is not responsible for job site safety.

1.2 Connection to Equipment Furnished by Others

Connection to equipment furnished by others shall be done as indicated on drawings.

1.3 Intent

The intent of these specifications and the accompanying drawings is to convey as reasonably as possibly the requirements for a complete job ready for the building to operate. The Contractor shall take this into consideration and include in his bid such allowances for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner. This paragraph is not intended to hold the Contractor responsible for the design or to require him to furnish equipment not remotely indicated, but insure that a complete job will be provided without requests for minor "extras".

1.4 Coordination

A. Coordinate work with other prime contractors. Notify Architect of apparent conflicts early to expedite construction. If structural damages appear imminent, stop work and notify Architect for decision before resuming operations.

B. Locations shown are approximate. The Contractor shall refer to the architectural plans for exact measurements in the placement of equipment, outlets, fixtures, etc. Where the locations are not clear, the Contractor shall obtain the exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required.

C. Changes in duct or piping design caused by obstructions shall be submitted in sketch form for study and comment prior to execution. Additional cost will not be allowed for this type work.

D. Furnish roof curbs for Mechanical equipment to Roof Contractor for installation.

E. Coordinate with Fire Alarm Contractor for location of any duct detectors and location of smoke detectors as they relate to the location of supply and return grilles.

1.5 Shop Drawings

A. Shop drawings shall be submitted on all major items of equipment. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact item being offered clearly identified and the submittal shall be identified with the project. A minimum of five (5) sets shall be submitted to the Engineer for approval. Shop drawings shall include the following as a minimum:

1. All equipment furnished new and accessories. Including air conditioning units, heaters, fans and through the wall heat pumps.

2. Registers, grilles, diffusers, and louvers.

3. Duct work shop drawings of all heating and cooling units.

B. Requests to substitute other materials or products for those specified shall be sent in writing to the Owner. Requests shall be accompanied by engineering data, specification sheets, etc., as necessary to fully identify and appraise the products.

C. Approval of equipment will not relieve the Contractor of noncompliance with the specification even if such approval is made in writing, unless the Engineer is called to the non-conforming features by letter accompanying the submittal data.

II. PRODUCTS

2.1 Equipment Schedules

See plans for the following schedules as applicable:
Heating, Cooling and Ventilating Equipment; Registers, Grilles and Louvers; Exhaust Fans; Energy Recovery Fans, Accessories.

2.2 Condensation Piping

Condensate drain piping shall be Type ABS or PVC pipe of size recommended by manufacturer or as shown on drawing. Install with trap at air handler and pitch to allow free drainage. Support on 8' centers or more frequently as needed to avoid sag. Provide tee and plug at changes of direction. (Minimum condensate line is 1") Route concealed to exterior French drain or arrange for indirect connection to plumbing system. Provide and install condensate pumps and power, where necessary, for proper drainage at no additional cost to the Owner. Insulate condensate pipe with 1/2" minimum Armaflex type insulation.

2.3 Ductwork

A. Shall be built in accordance with ASHRAE and SMACNA guidelines. Furnish and install all supply, return and ventilation ductwork shown, together with splitters, deflectors, dampers, etc. This work shall be all constructed of new, galvanized prime grade steel sheets. The gauges of metal to be used and the construction and bracing of joints shall be in accordance with the ASHRAE guide recommendations and SMACNA Standards.

B. Tape with pressure sensitive tape (duct tape) at all sheet metal joints.

C. Support from building structure on strap hangers not over 8' apart.

D. Use manufactured turning vanes in any elbow where indicated on the drawings.

E. Dampers shall be built of 20 gauge metal with blade riveted to square rod or assembled on fabricated pivots. Locking quadrant shall be on accessible area of duct and clearly visible.

F. Flexible connectors on supply and return side of all units shall be 3" wide, of fireproof material and used to isolate noise between equipment and ductwork.

G. Round runouts, where used, shall be built in accordance with the above standards, and each runout shall also have manufactured side takeoff, adjustable quadrant damper mounted in round collar, and segment of flexible duct, unless noted otherwise, UL listed and labeled as class 0 or 1 flexible air duct in accordance with UL181 and having flame spread index of not more than 25 and a smoke developed index of not more than 50. Where indicated on drawings return air flexible duct shall be same. Quadrant damper to be 22 gauge easily adjustable manually with exterior handle and it not be mounted in side take-off. (Note that a maximum of 14ft. of flexible duct is to be used, with moderate serpentine routing and both ends are to be fastened to sheet metal with "panduit fitting").

H. Rectangular main return duct shall be galvanized sheet metal with 3" minimum for full-backed fiberglass insulation rated R=8 minimum.

I. Rectangular main supply duct shall be galvanized sheet metal duct with 3" minimum for full-backed fiberglass insulation rated R=8 minimum.

J. Ventilation duct shall be of sheet metal construction and shall not be insulated.

K. Fresh air makeup duct shall be galvanized steel duct with 1" duct wrap.

L. Dryer duct shall be 28ga minimum.

M. All supply and return grilles shall have fully insulated back unless noted otherwise.

N. All intake openings shall be protected with a corrosion resistant screen with openings greater than ½" and not greater than 1".

O. All exhaust openings (except dryer exhaust) shall be protected with a corrosion resistant screen with openings not less than ¼" and not greater than ½".

2.4 Low Ambient Control

Provide manufacturer's recommended low ambient control for compressor operation to 30 degree F.

2.5 Special Attention of The HVAC Contractor Is Called To The Following Provisions:

A. Where ducts, registers, grilles, or diffusers penetrate fire-rated wall or ceiling: Provide U/L approved protection as required by the roof/ceiling design assembly. See the Architectural Plans for the UL design assembly number. Installation shall be per manufacturer's instructions and shall comply with the requirements of the local authority, and all State review agencies.

B. Supply plenums to have manual reset limit switch to shutdown heater over temperature.

C. Where ducts penetrate smoke partitions, provide smoke dampers as shown Smoke dampers to be Class II with 24 V control circuit. Control wiring by Mechanical Contractor is to interlock air handling unit and smoke dampers (as applicable) and smoke detectors as indicated on Mechanical Plans. For exhaust fans, smoke dampers to interlock with fire alarm panel. Mechanical Contractor to provide leads for connection by Electrical Contractor.

D. Provide access doors for all fire dampers, smoke dampers and for duct mounted smoke detectors to be as specified in Subsection 3.4A.

E. Complete manufacturer's installation instructions must be strictly followed and a copy provided on site for use by inspector.

F. All air handlers or fan coils shall be placed over emergency overflow drain pans - 4" deep, soldered joints or 22 gage metal - Also provide a float switch to override fan in the event of condensate accumulation.

G. All radiation fire, smoke dampers, and fire/smoke dampers shall be UL approved

for the application. All dampers shall be installed per manufacturer's instructions and those instructions shall be available to the State Inspector the day of the final inspection. Radiation and fire dampers shall also be installed per detail on the plans.

I. All thermostat cable shall be UL approved for the application.

2.6 Duct Insulation

Insulate all supply and return ducts with fiberglass duct wrap insulation with 2 mils thick (minimum) aluminum foil covering. The insulation shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50. The insulation shall be spot glued to the duct at 6 inches on centers and tightly taped with 3" SMACNA approved glass fabric tape and mastic. The minimum installed R-value of the insulation shall be 8.0.

2.7 Refrigerant Line

A. Insulate with 1½" minimum of insulation (conductivity not exceeding 0.27 BTU in/hr·ft²·°F) or manufacturers recommendation. Use whichever is most restrictive.

B. Factory-provided refrigerant piping sets shall be allowed.

2.8 Thermostats

A. Heat-cool thermostat will be deluxe type by M-H, GE or Trane with automatic changeover built-in emergency heat switch and supplementary heater operating light. Thermostats shall comply with all State energy code requirements for health care facilities.

B. Furnish transparent locking type covers for thermostat.

C. Mount thermostats at 48 inches to top of base. (Verify this height with the Owner)

D. Thermostat locations - as shown on plans or as directed by Architect.

2.9 Bases for Equipment:

Provide curbs for roof top units and discharge caps as applicable.

III. EXECUTION

3.1 Routing of Piping

The Contractor is required to coordinate such routing with others; to line up work true to

adjacent spaces and in workmanlike manner; and to use only short radius 90 and 45 degree elbows. Where required, piping to be sturdily supported and separated in a manner satisfactory to the Architect.

3.2 Electrical Work

A. The Electrical Contract includes complete power to HVAC power terminals, for the air conditioning, heating and ventilating equipment.

B. From the load side of these first terminals inside the units, the Air Conditioning Contractor shall be responsible for extending and internal wiring as necessary for power and control of the equipment he furnishes, providing power to condensate pumps, providing such additional safety switches, starters, junction boxes, etc., as may be required for full operation. HVAC Contractor is responsible for verifying that power terminals have been properly supplied prior to operating equipment.

C. All control wiring except fire alarm interconnection is in this contract and shall be routed in raceway. (See Electrical Specifications for Standards.)

D. All materials and workmanship shall be in accordance with the National Electrical Code and Local codes. All wiring shall be color-coded, and As-Built wiring diagram prepared showing all connections and color of wiring, and delivered to the Owner and Architect.

E. Furnish certificate for acceptance of control wiring from local Electrical Inspector prior to acceptance by Owner.

F. Electrical circuit sizes and number are based on the manufacturer of the equipment specified, and it shall be the responsibility of the Heating and Air Conditioning Contractor to change any and all electrical work in order to fit equipment other than that specified. The Heating and Air Conditioning Contractor shall coordinate with the Electrical Contractor and the Owner to assure that all units are properly connected and shall check wiring prior to starting units.

G. Mechanical Contractor shall be responsible for all power wiring for condensate pumps.

3.3 Exhaust Fans

Mechanical Contractor shall provide exhaust fans shown with required duct. The Electrical Contractor will provide power wiring to these fans. Mechanical Contractor shall also provide discharge caps and curbs.

3.4 Service Access

A. In all instances, Contractor is responsible for providing service access as required in manufacturer's installation instructions and Mechanical Code. If such access is not available, notify Architect and attempt to see if necessary changes can be worked out with other trades. If not, do not install equipment, which does not meet manufacturer's requirements for accessibility. In no case shall Contractor bid, submit, or install equipment in situations that do not meet that manufacturer's warranty requirements. Where otherwise impossible to provide access, furnish and install access panels as may be required to service all equipment.

B. All access panels in toilets and shower rooms shall be stainless steel.

3.5 Other Controls

A. Provide and install means to shut down all common area air handlers with remote low voltage toggle in an accessible location only to authorized personnel and clearly labeled. Shunt switch and plate to be red in color, and mounted in ganged assembly. Contractor to provide Bakelite identification plaque at each individual switch.

B. Install low voltage interconnection with smoke detectors in full compliance with manufacturer's requirements. All fire alarm wiring outside air handlers is to be by the fire alarm subcontractor.

3.5 Testing and Adjusting

Upon completion of installation, HVAC contractor is to:

1. Adjust fan drives to get required and rated CFM.

2. Balancing ventilation and air conditioning systems by taking velometer readings at outlets to achieve within 10% of the specified CFM in each grille, diffuser, AHU, fan and outside air duct except for DOAS units. DOAS unit shall be balanced to achieve within 5% of specified CFM.

3. Test and adjust entire temperature and fan control sequence.

4. Adjust entire installation so as to minimize noise and vibration from fans, compressors, starter, and relays.

5. Replace any defective items.

6. Eliminate any compressor hot-gas pulsation by use of mufflers, flexible connectors, etc.

7. Correct any equipment or component, which is generating objectionable noise, in the opinion of the Engineer.

8. Contractor shall have a balancing report of the HVA/C system and shall make the report available to the State Inspector the day of the inspection.

3.7 Clean Up

A. During construction, the Contractor shall keep the site clear of debris.

B. After completion of work and before final inspection, all trash and debris resulting from this contractor's work and that which is in and around his equipment shall be removed from the job, leaving the equipment clean.

C. Provide clean filters in each unit when turned over to the Owner.

3.8 Operator's Manual and Diagram

A. The Contractor shall prepare in two (2) copies a manual describing the proper maintenance and operation of the system. This manual shall not consist of standard factory instructions (although these may be included) but shall be prepared to describe this particular job.

B. The manual shall be bound, indexed, dated and signed by the Contractor.

C. Qualified representatives of the HVAC Contractor shall meet with the designated representatives of the Owner; and the Owner's representative shall be instructed in the proper operation and maintenance of the control system and other systems.

3.9 Guarantee

Materials and workmanship shall be guaranteed for one (1) year from date of completion. In addition, compressors shall bear a non-prorated five (5) year warranty.

3.10 Related Work

A. All holes shall be drilled or cut, do not break holes.

B. The Mechanical Contractor shall do all cutting, patching, and painting necessary to install all equipment as required under this contract, and shall establish all finished when cutting and patching occur to their original condition. Qualified workers shall do all cutting and patching work. (i.e. dry wall cutting and patching shall be done by qualified dry wall craftsmen.)

C. Duct dimensions refer to the inside dimensions of free air space.

D. Mechanical Contractor shall paint intake caps to match the roof color.

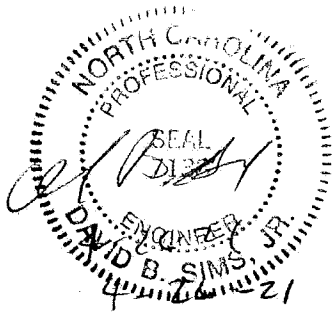
E. Pipe Penetration of Fire Rated Wall:

1. Contractor shall seal around fire rated walls with sealant complying with the appropriate UL system for single pipe and single pipe with insulation. Use sealant complying with appropriate UL system for multiple pipe penetrations.

F. Installation shall comply with OSHA standards.

G. In case of conflict between the plans and specifications or conflict between information presented on the plans or in the specifications, then the most restrictive shall take precedent.

END OF SECTION



PRUITTHEALTH CRYSTAL COAST
140 BED NURSING FACILITY
BEAUFORT, NC

DIVISION 26 00 00

ELECTRICAL SPECIFICATIONS

26 01 00 - GENERAL PROVISIONS

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1.0 GENERAL REQUIREMENTS:

1.1 Shop Drawings shall be submitted to the Architect for approval in accordance with the Drawings.

1.2 The failure or omission of the Contractor to receive or examine any form, document or to be thoroughly familiar with the site shall in no way relieve the Contractor of obligation with respect to the Contract.

1.3 In case of conflict between the plans and specifications or conflict between information presented on the plans or in the specifications, then the most restrictive shall take precedent.

1.4 All electrical components shall be installed, supported, and restrained in accordance with the North Carolina Building Code requirements for seismic design. It shall be the responsibility of the Contractor to retain a Professional Engineer competent in this field for this design. All required inspections for these designs shall be performed by this Engineer and paid for by the Contractor. For one possible source for this service contact Seismic Control and Isolations, Inc. Phone: 910 799-5204.

2.0 ELECTRICAL CONTRACTOR'S SCOPE OF WORK

2.1 Work shall include but not be limited to:

2.1.1 The Contractor shall provide a complete and operating electrical installation in accordance with the Drawings and this Specification. This shall include all required labor, materials, apparatus,

supervision, insurance, permits and permit fees, power company connection fees, etc.

2.1.2 The Contractor shall install a complete and functional raceway system and lighting system; also terminal boards, outlet boxes, etc., power wiring, safety disconnect switches, lighting system etc. for all electrically powered equipment furnished and installed under other Divisions of these Specifications and/or existing equipment to be reused.

2.1.3 The Contractor shall install a complete grounding system in accordance with the National Electrical Code, all state and local building codes.

2.1.4 The Contractor shall install a complete fire alarm system, a complete nurse call system, a complete mag lock door security system, and a complete paging and intercom system.

2.1.5 The Contractor shall install a complete raceway system with wire and wall jacks for a telephone system and data system. Provide and install wire from wall jacks to panel and provide jacks in wall. Terminate phone at the existing phone panel and terminate data at the TV panel and the remote IT closets. Telephone and data equipment shall be by the Owner. Use CAT-6e cable for both phone and data.

2.1.6 The Contractor shall install a complete raceway system with fiber optic and coaxial cable for a cable TV system with wall boxes, adaptors and coaxial cable run from the wall boxes to the existing TV panel. TV equipment shall be provided by Cable TV Contractor or Owner.

2.1.7 Provide both power and service side connections.

2.1.8 Provide redundant grounding with hospital grade receptacles in all patient care areas including patient rooms, common baths, physical therapy and doctor's offices as well as wherever patients may go.

3.0 WORK NOT INCLUDED IN ELECTRICAL CONTRACTOR'S SCOPE OF WORK

3.1 The following items of work are not included in the Electrical Contractor's Scope of Work:

3.1.1 Furnishing and installing motors for heating, ventilation, air conditioning (HVAC) and plumbing equipment. The Contractor shall be responsible for review of all electrical equipment and electrical load data furnished by other contractors and to make all necessary changes in sizes, number of poles and wires, trip ratings, etc. of circuit breakers, wire, conduit, safety switches, etc. as required to accommodate the equipment actually furnished, in lieu of, the equipment defined at the time of the Contract.

3.1.2 Furnishing and installing controls for the HVAC system and plumbing system; except where otherwise specified herein and/or shown on the Drawings. Installation of all 120 Volt controls shall be the responsibility of the Electrical Contractor.

3.1.3 Furnishing and installing the telephone equipment and any other associated equipment and the cable TV equipment. The Contractor shall be responsible for providing blank cover plates for the telephone and cable TV boxes that are not in service at project completion. Contractor shall prewire for phone and TV and provide the outlet boxes.

4.0 REGULATIONS AND PERMITS

4.1 All electrical work, equipment and materials furnished and installed under this Contract shall conform to the requirements of the latest editions of the following: the National Electrical Code, the National Fire Protection Association, the National Electrical Safety Code, the Occupational Safety and Health Act, United States Department of Health, Education and Welfare, Federal Specifications, the State Building Code, American National Standards Institute, Illuminating Engineering Society, Insulated Power Cable Engineers Association, National Electrical Manufacturers' Association, Institute of Electrical and Electronics Engineers, Occupational Safety and Health Act (OSHA) regulation and any other governmental or local authorities having jurisdiction.

4.2 This Contractor shall procure all necessary permits from the authorities having jurisdiction, shall pay all associated charges, shall arrange at the proper time for all inspections required by the authorities and shall furnish the Architect with evidence of the permits before commencing the Work. Furthermore, three copies of the final electrical inspection certificate shall be furnished to the Architect by this Contractor prior to his application for final payment.

5.0 STANDARDS

5.1 All material and equipment shall be listed, labeled or certified by Underwriters' Laboratories, Inc. (UL), where such standards have been established. Equipment and material which are not covered by UL standards will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory and the local and state inspection agencies.

6.0 MATERIAL AND EQUIPMENT

6.1 Materials and/or equipment installed in this construction shall be new and unused, unless specifically specified herein and/or shown on the Drawings to be salvaged and reused from existing construction.

6.2 The Contractor shall submit to the Architect, within 10 days following award of the contract, a list of materials and equipment for approval that he proposes to use on the project.

6.3 Material and equipment furnished shall be new and of current production by manufacturers regularly engaged in the manufacture of such items, for which replacement parts are available.

6.4 Equipment and materials shall be delivered to the site and stored in original containers, suitably sheltered from the elements, but readily accessible for inspection by the Architect until installed. All items subject to moisture damage (such as lighting fixtures) shall be stored in dry, heated spaces.

7.0 PERFORMANCE OF EQUIPMENT

7.1 Plans are schematic only. It is the responsibility of the Contractor to refer to architectural drawings for dimensions and exact location of walls, doors, shelving, cabinet elevations, door swings, etc. and any omissions shall be made by this Contractor at no extra cost to the owner.

7.2 Complete and working systems are required, whether every small item of material or details are shown and/or specified or not.

7.3 All materials, equipment and appurtenances of any kind shown on the Drawings or specified or required for the completion of the Work shall be completely satisfactory and acceptable in operation, performance and capacity.

7.4 Any material which is damaged prior to acceptance by the Owner, will be held to be defective material

and shall be removed and replaced with the proper and acceptable materials, equipment and/or appurtenances or put in proper and acceptable working order without additional cost to the Owner.

8.0 SHOP DRAWINGS, SUBMITTAL DATA AND PROCEDURES

8.1 The Contractor shall submit shop drawings, certified prints, literature and catalog cuts sheets to the Architect for all major items of equipment and materials for review and approval. All shop drawings for the project shall be submitted at one and the same time.

8.1.1 Approval of equipment will not relieve the Contractor of non-compliance with the specification even if such approval is made in writing, unless the engineer is called to the non-conforming features by letter accompanying the submittal data.

8.2 The Contractor shall certify all Shop Drawings with a suitable approval stamp placed on each shop drawing submitted for approval. The Contractor shall also certify that all Contractor furnished equipment can be installed in the allocated spaces and locations.

8.3 At least one set of all "approved" shop drawings, certified prints, etc., shall be maintained at the job site and available to the representative of the Architect.

8.4 No materials or equipment shall be placed on the job site, or installed in the Work, without prior written approval by the Architect.

8.5 Submit Shop Drawings for the following, as well as other Shop Drawings as may be requested later:

8.5.1 Panelboards and Circuit Breakers.
8.5.2 Lighting Fixtures
8.5.3 Disconnecting Switches
8.5.4 Nurse's Call System
8.5.5 Door Security System
8.5.6 Paging and Intercom System
8.5.7 Fire Alarm System

9.0 IDENTIFICATION

9.1 All electrical distribution panels shall be identified with nameplates 3/4 inch by 2-1/2 inches with block type, square cut characters not less than 1/4 inch in height. They shall be made up of two laminated white plastic sheets bonded with a middle sheet of black plastic and characters engraved in one white sheet to the depth of the black plastic. Nameplates shall be installed with stainless steel sheet metal screws, two per nameplate.

9.2 All receptacles and switches shall have engraved laminated coverplates with the circuit home run engraved on the name plate.

10.0 EQUIPMENT FOUNDATIONS

10.1 All floor-mounted electrical equipment shall be installed on a 4-inch high foundation pad, unless otherwise approved in writing by the Architect. All foundation pads shall be furnished and installed by this Contractor. The provision of all concrete equipment foundations required for equipment furnished and/or

installed under these Specifications shall be in accordance with Division 3, Concrete Work. Foundations shall be of sufficient mass to suit the equipment furnished and as recommended by the manufacturer of the equipment.

11.0 CUTTING AND PATCHING

11.1 The Contractor shall provide all cutting and patching, all necessary chases and openings, sleeves and lintels and frames etc. for this work. This contractor shall use craftsmen skilled in the trade involved.

11.2 Fire or smoke stop shall be provided when electrical raceways pass through a fire partition or when outlet boxes or panel cans are placed in walls. See architectural drawings for fire wall identification.

12.0 ACCESS PANELS

12.1 Access doors shall be provided in walls and ceilings where required to permit proper access to junction boxes and any other such devices which require maintenance or service. Doors placed in walls, partitions or other fire-rated construction shall have a label signifying the same fire rating.

12.2 The Contractor shall provide the access panels required for this work.

13.0 WIRE GAUGE

13.1 The sizes of conductors and thickness of metals shown on the Drawings or specified herein shall be understood to be American Wire Gauge.

14.0 PAINTING

14.1 Devices, cover plates, trim, etc., for panelboards and cabinets shall not be installed until painting has been completed.

14.2 All painting of electrical components in finished areas shall be done under other Divisions of these specifications.

15.0 COORDINATION OF WORK

15.1 The Contractor shall be responsible for all electrical work under this Contract. The Contractor shall be held responsible for visiting the site and thoroughly familiarizing himself with the existing conditions and also any contractual requirements as may be set forth in the other divisions of these specifications. No extras will be considered because of additional work necessitated by obvious job conditions that are not indicated on the Drawings.

15.2 This work shall be installed in cooperation with other trades installing interrelated work. The Contractor shall cooperate with all other contractors and the Owner in the scheduling of this work. In particular this Contractor shall coordinate sprinkler head locations with the Sprinkler Contractor and duct detector and smoke detector locations in reference to register locations with the Mechanical Contractor.

15.3 The Contractor shall notify the General Contractor of any power shut downs required during the course of construction.

16.0 INSPECTION AND TESTS

16.1 All electrical work must be complete at the time of final inspection. Upon completion of the Work, all

parts of the electrical installation shall be tested for operation and proven free of unwanted grounds and other defects. Final tests shall be in accordance with 2017 NETA ATS standards and accomplished by use of required equipment, for example, megger testing of circuits, etc.

16.2 All overload devices, including equipment furnished under other contracts, shall be set and adjusted to suit the load conditions and ensure selective coordination of the system.

16.3 All conductive surfaces in the patient vicinity shall be tested so as not to exceed the potential differences as stated in NEC 517.15. Refer to NEC Handbook, Section 517 for further information.

17.0 SHOP DRAWINGS, OPERATION AND MAINTENANCE DATA

17.1 The Contractor shall prepare six (6) complete sets of Shop Drawings; installation, operating and maintenance manuals; catalog data for all pieces of equipment furnished under his work. Upon conclusion of the project, service manuals shall be delivered to the Owner's representative and a receipt obtained.

18.0 CLEANUP OF PREMISES AND EQUIPMENT

18.1 The premises shall be cleaned of all remaining debris and the entire installation left clean and in first-class operating condition.

19.0 WARRANTY

19.1 This Contractor and his surety shall guarantee in writing for a period of one year from the date of final acceptance that all materials, equipment and labor furnished by him are free from defects. This Contractor shall further guarantee that if any piece of material or equipment is found to be defective within the guarantee period because of faulty manufacture or faulty installation (in the opinion of the Architect), he will replace, install and test such material or equipment without any further expense to the Owner.

19.2 At least three copies of all guarantees and certificates shall be furnished to the Architect by the Contractor.

END OF SECTION

26 02 00 - BASIC MATERIALS AND METHODS

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1.0 SYSTEM ARRANGEMENT

1.1 The secondary electrical distribution system shall be a three phases, four wire, and 120/208 volts system. The system shall utilize a common neutral and be provided with circuit protective devices so arranged to make for a fully rated selective system.

1.2 The system is designed to operate on 60-hertz frequency and all devices shall be arranged to function satisfactorily when provided at nominal nameplate values.

2.0 FEEDERS

2.1 Feeders shall be concealed within the building construction wherever possible. Exposed feeder runs will be permitted in crawl spaces, mechanical and service rooms, storage areas and other similar unfinished spaces.

2.2 Size of feeders shall be as shown on the Drawings and conductors shall be of type specified herein.

3.0 BALANCING

3.1 The systems shall be connected as shown on the Panelboard Schedules so that the loads shall be balanced over the phases.

3.2 The system of feeder and branch circuits for power and lighting shall be connected to panelboard busses in such a manner that loads connected thereto will be balanced on all phases as closely as practicable. Should there be any unfavorable condition of balance on any part of the electrical systems; the Contractor shall make such changes that may be required to remedy the unbalanced condition at no additional cost to the Owner.

4.0 BRANCH CIRCUIT WIRING

4.1 The grouping of outlets on individual circuits as shown on the Drawings shall be adhered to. Switched lighting outlets and receptacles or miscellaneous power receivers shall not be connected to the same circuit, unless so shown on the Drawings. Branch circuit wiring may be trunked to the extent allowable by the National Electrical Code.

5.0 ELECTRICALLY POWERED EQUIPMENT WIRING

5.1 All electrical equipment furnished under the General, HVAC, or Plumbing Divisions of this Specification will be furnished with a full complement of control equipment and all other items necessary for satisfactory operation, unless otherwise stated on the Contract Drawings or in the Specifications. All control circuit wiring for equipment furnished by the Mechanical Contractor will be installed by the Mechanical Contractor as indicated in Divisions 15 and 17 of these Specifications. The Contractor shall be responsible for furnishing and installation of all raceway, wiring, etc. for 120 volt and greater power circuitry, as well as all circuits specified herein and/or as shown on the Drawings.

5.2 The Contractor shall provide disconnect switches and motor starting equipment as required for all single and three phase, electrically powered equipment as shown on the Drawings and/or as required by national, state or local codes and/or as required for intended operation or if integral disconnecting devices are furnished with the equipment.

5.3 All exhaust fans will be provided with integral disconnect switch under the Mechanical Division of this Specification or as required by the Schedule of Equipment Connections.

6.0 GROUNDING

6.1 All electrically powered equipment, cabinets, boxes, conduit and metal raceway shall be grounded in accordance with the National Electrical Code. The ground system shall originate in the electric utilities' ground system and must meet the requirement of the National Electric Code. If the grounding system does not meet with the present N.E.C. requirements, the contractor shall be required to bring the building grounding system up to the national, state and local code requirements.

6.2 All ground cables shall be electrically connected to the system ground which shall be electrically and mechanically connected to an acceptable grounding electrode system installed by the Contractor. The main grounding system shall include an electrical connection to an acceptable cold water service pipe routed underground, outside the building for a distance not less than ten feet and to copper ground rods as required by national, state and local codes and the electric utility.

6.3 Neutral wires for the lighting system shall not be used to ground miscellaneous conduits. A separate ground wire; color coded per the National Electrical Code shall be installed and connected in all raceway

systems unless otherwise specifically specified herein.

6.4 Ground rods shall be 3/4 inch diameter by 10 foot long, sectional type, copper clad steel and Underwriters' Laboratories listed and labeled. Ground rods shall be as manufactured by Copperweld Steel Company, ITT Blackburn or Power Line Hardware Company.

6.5 All ground wires required by the National Electrical Code and/or the utility company and/or local building authorities shall be installed by the Contractor.

6.6 The resistance between the grounding system and absolute earth shall not exceed 3 ohms and shall be measured by the Contractor in the presence of the Architect's representative.

6.7 Panelboard bonding: The equipment grounding terminal busses of the normal and essential branch circuit panelboard serving the same individual patient vicinity shall be bonded together with an insulated copper conductor not smaller than N. 10 AWG.

7.0 UNDERGROUND WORK

7.1 Underground work shall include all raceways and cables required under this Contract. All underground installations shall be in accordance with the applicable provisions of the National Electric Code.

7.2 All excavation, backfilling and grading work for electrical underground service shall be done by this Contractor in accordance with the Architect's requirements as specified in these specifications.

7.3 Minimum conduit burial depth shall be in accordance with the National Electrical Code.

8.0 CONDUIT

8.1 All wiring shall be installed in a raceway system as specified for nursing homes herein unless otherwise specified herein and/or shown on the Drawings. NM cable can be installed where code allows in concealed areas.

8.2. Rigid heavy wall steel conduit shall be furnished and installed for the following:

- In masonry walls below grade.
- In vertically poured concrete walls.
- Exposed in any outdoor area.
- Where subject to severe physical damage.
- Transition through the concrete slab.

8.3 Electrical metallic tubing shall be used for all other above grade applications and rigid nonmetallic conduit shall be allowed for all other below grade applications unless specifically called out on the plans.

8.4 A maximum of 3'-0" liquid-tight, flexible metallic conduit shall be provided for connection of all motors and other electrical or mechanical equipment where subject to movement and vibration and also, where subjected to one or more of the following:

- Exterior location
- Moist or humid areas where condensate can accumulate
- Corrosive atmosphere
- Presents of water

- Presents of oil or grease
- Frequent removal for maintenance

A maximum of 3'0" metallic conduit (Greenfield) shall be allowed for connection to light fixtures.

8.5 Hospital Grade Armor clad cable can be used in concealed areas.

9.0 CONDUIT MATERIAL

9.1 Rigid steel conduit shall be made of hot-dipped galvanized steel with a zinc coating, conforming to the latest requirements of ANSI and the Federal Specifications. Conduit shall bear the manufacturers and Underwriters' Laboratories label. Fittings shall be standard threaded couplings, locknuts, bushings and elbows. Locknuts shall be of the bonding type with sharp edges for digging into the metal wall of an enclosure. Bushings shall be of the metallic insulating type and consist of an insulating insert molded into the metallic body of the fitting.

9.2 Electrical metallic tubing shall be of hot-dipped galvanized steel with a zinc coating, conforming to the latest requirements of ANSI and the Federal Specifications. Tubing shall bear the manufacturer's and Underwriters' Laboratories labels. Couplings and connectors shall be "concrete tight" or "rain tight" and shall be of the gland and ring compression type. The connectors shall have an insulated throat. The Contractor may use set screw type fittings for EMT conduits which are larger than two inches in diameter when a separate ground wire is provided.

9.3 Rigid nonmetallic conduit for direct burial installation or for exposed or concealed applications above ground shall be extruded polyvinyl chloride compound (PVC) rated for use with 90 degree C conductors and minimum Schedule 40. The PVC conduit and fittings shall be resistant to sunlight, moisture and corrosive agents and shall be of sufficient strength to withstand abuse, such as by impact and crushing in handling and during installation. A ground wire shall be provided for each rigid nonmetallic conduit. The conduit shall conform to the latest requirements of ANSI and the Federal Specifications. The nonmetallic conduit shall bear the manufacturer's and Underwriters' Laboratories labels. Conduit fittings shall be as recommended by the conduit manufacturer. All PVC conduit joints shall be "solvent welded" for water-tight connections. Nonmetallic conduits shall be supported and/or expansion joints installed in exact accordance with the manufacturers recommendations and the National Electrical Code to permit adequate lineal movement to allow for expansion and contraction of the conduit due to temperature changes.

9.4 Flexible metallic conduit shall be made of hot-dipped galvanized steel with a zinc coating, comprised of a single strip, continuous flexible, interlocked convolutions, forming a smooth internal wiring channel. The flexible metallic conduits and fittings shall be approved for grounding. The conduit shall conform to the latest requirements of ANSI and the Federal Specifications. The conduit shall bear the manufacturer's and Underwriters' Laboratories labels. Conduit fittings shall incorporate a threaded grounding cone, a steel or plastic compression ring and a gland for tightening. Connectors shall have an insulated throat.

9.5 Liquid-tight type flexible metallic conduit shall be similar to the flexible metallic conduit specified above except the conduit shall be provided with a liquid-tight jacket of flexible polyvinyl chloride (PVC).

10.0 CONDUIT INSTALLATION

10.1 Conduit installation shall be in accordance with the National Electrical Code, Underwriters' Laboratories, NECA 1 Standards and as herein specified.

10.1 Conduits terminating in steel boxes shall be provided with an approved bushing and locknuts inside and

outside of the box.

10.2 All conduits shall be securely supported from the building structure by straps or pipe hangers on supporting assemblies. All conduits shall be supported in accordance with the National Electrical Code and the manufacturer's recommendations.

10.3 All flexible conduit connections shall be provided with a copper bonding jumper or other approved grounding device. All flexible conduit connections shall be installed to allow 20 percent slack.

10.4 In all instances where recessed (flush or semi-flush mounted) type panelboards are installed, provide a 1-inch conduit for each three future circuits for which "space" or "spare circuit breaker" provisions have been made in the panelboard. A minimum of one 1-inch conduit shall be installed if one or two "spare" or "spaces" have been provided in the panelboard. These conduits shall extend between the panelboard cabinet and an accessible ceiling or attic space, basement or crawl space and capped.

10.5 Conduits shall not be installed in concrete floor slabs except at grade levels.

10.6 Any exposed conduit must, in general, be routed parallel with the bridling lines and shall be installed in straight lines, plumb and level.

10.7 A separation of at least 6 inches shall be maintained between conduits and hot water lines.

11.1 Conduits crossing expansion joints in buildings or conduits installed between buildings shall be provided with approved slip joint fittings. Conduit electrical continuity shall be maintained by a properly sized copper bonding jumper or other approved grounding device.

12.0 JUNCTION, PULL BOXES AND TERMINAL BOXES

12.1 Electrical boxes and fittings shall be in accordance with the National Electrical Contractor's Association's "Standard of Installation." At all locations, a box of proper type and size to satisfy the intended requirement shall be provided. Boxes shall be rigidly secured in the position, set true and square.

13.0 OUTLET BOXES

13.1 Electrical boxes and fittings shall be in accordance with the National Electrical Contractor's Association's "Standard of Installation." At all locations shown on the Drawings, an outlet box of the proper type and size to satisfy the intended requirement shall be provided. Boxes shall be rigidly secure in position, set true and square.

14.0 600 VOLT CONDUCTORS AND CABLE

14.1 Unless otherwise specified herein, all conductors for lighting, power feeders, controls and branch circuit wiring shall be rated 600 volt and 98 percent conductivity copper. All conductors shall be type THWN/THHN, THW or XHHW with an insulation rated temperature rise of 75 degree C unless otherwise specified herein or shown on the Drawings. Fire alarm system control wiring shall be Type THWN insulation unless otherwise required by the system manufacturer.

14.2 Wire size No. 10 and smaller shall be solid. Wire size No. 8 and larger shall be Class B stranded. All control cabling shall be stranded. Minimum wire size shall be No. 12 for power or lighting, No. 14 for control, unless otherwise specified herein, shown on the Drawings or required by an equipment manufacturer.

14.3 Fixture wire shall be minimum No. 14 with 90 degree C insulation.

14.4 Conductors in vertical raceways shall be supported in accordance with the National Electrical Code. Only Underwriters' Laboratories and cable manufacturer approved pulling compounds shall be used to assist in the pulling of wire.

14.5 All conductors No. 14 AWG through No. 6 AWG shall be THHN/THWN. All conductors No. 4 AWG through 600 MCM shall be THHN/THWN or THW.

14.6 All conductors with the same color insulation shall be connected to the same phase and the conductors for systems of different voltages shall be of different colors and shall be coded as follows:

14.7 Aluminum wire to the MDP and main panels with Owner approval.

120/208

Phase	Color
A	Red
B	Black
C	Blue
Neutral	White
Ground	Green

Power conductors and neutral sized No. 4 AWG or larger can be taped for color phase identification. Conductors shall be taped at both ends of the termination.

15.0 600 VOLT CONDUCTOR SPLICES

15.1 All splicing shall be done in outlet boxes, wire troughs or junction boxes only. No splices will be allowed in distribution panels. Feeders shall not be spliced.

16.0 PANELBOARDS

16.1 Panelboards shall be of the dead front type with main lugs or main circuit breaker, bus rating and branch circuit protectors in the quantity and of the rating shown on the Drawings. Panelboards shall be suitable for mounting as shown on the Drawings and shall be of a compatible or of the same manufacturer that is presently installed in the existing building.

16.2 The branch circuit portions of the panelboard shall comprise the required and indicated number of interchangeable, non-combustible, bolt-on, thermal-magnetic circuit breaker sections; single or multiple pole, rated not less than 20 ampere unless otherwise shown on the Drawings.

16.3 Circuit breakers shall be readily removable from the front of the panelboard without disturbing adjacent units. They shall have a quick-make and quick-break toggle mechanism, nonfusible contacts with inverse time short circuit characteristics. Multipolar units with handle ties are not acceptable.

16.4 Circuit breakers shall have an interrupting rating as shown on the Drawings. In all cases, the circuit breakers shall be coordinated with the short circuit rating of the associated panelboard. Circuit breakers that series rated must be UL listed for that series connection. Circuit breakers and lugs shall be listed for use with copper conductors with full 75°C insulation rating.

16.5 Bus bars and all current-carrying parts of the panelboard, exclusive of circuit breakers, shall copper sized in accordance with the requirements of the Underwriters' Laboratories.

16.6 Circuit directory holders shall be metal frames welded to the inside of each cabinet door and have a transparent cover under which shall be placed neatly-typed schedules outlining circuits controlled.

16.7 Where a circuit breaker location is shown as a "Space" on the Drawings, it shall have a cover and be completely ready to receive a circuit breaker of the size and type shown or specified. Where a circuit breaker location is shown a "Spare" it shall contain a circuit breaker of the size and type shown on the Drawings.

16.8 Panelboards shall be as manufactured by General Electric, Square "D", Eaton or accepted equal.

16.9 Load centers can be used for smaller panels with Owner approval.

17.0 SAFETY SWITCHES

17.1 Safety switches shall be of a size shown on the Drawings, two or three pole, fusible or non-fusible and contained in a NEMA 1 enclosure for indoor and NEMA 3R enclosure for outdoor applications. All switches shall be standard-duty type and have quick-make, quick-break operation. Switches serving as motor disconnect means shall be horsepower rated.

17.2 All multi-motor condensing units, outdoor units or package units must have fused protection or enclosed "HACR" circuit breakers.

17.3 All fuses installed in series with circuit breakers or other circuit protective devices shall be coordinated for proper operation.

17.4 Safety switches shall be as manufactured by General Electric, Square "D", Eaton or accepted equal.

18.0 LOCAL SWITCHES

18.1 Local wall switches shall be heavy duty, specification grade, quiet operating type rated for 20 ampere at 120 Volts. Switches shall be supplied with integral grounding screw.

18.2 Where more than one switch is installed in an outlet, they shall be covered by a common wall plate. Coverplates shall be plastic.

18.3 Single pole, 3-way, or 4-way switches shall be as manufactured by Pass & Seymour, Hubbell, Leviton, Cooper or accepted equal.

18.4 Color of cover plates and switches shall be by the Architect except for circuits on Emergency Power, which shall be Red.

19.0 RECEPTACLES

19.1 All receptacles shall be hospital grade, conforming to NEMA WD-1, WD-6, DSS W-C-596G and UL-498. Receptacles shall be rated for 20 amperes at 125 Volts. All Resident Rooms shall have tamper proof receptacles.

19.2 All receptacles and coverplates for normal power shall be plastic. Color for all receptacles and cover plates, except for those on Emergency Power, shall be selected by the Architect. Emergency receptacle devices and coverplates shall be red. Exterior coverplates shall be weatherproof.

19.3 Ground fault receptacles shall meet or exceed Underwriters' Laboratories Standard 943 and ANSI

C73.12 of the latest date; shall meet Underwriters' Laboratories Class A requirements and shall be Underwriters' Laboratories listed and labeled. Receptacles shall be NEMA 5-20R and suitable for accepting either 15 or 20 ampere plugs. Receptacles shall be rated for 125 volt, with feed through design for downstream protection as required.

19.4 The Contractor shall be responsible for furnishing and installation of ground fault receptacles in all locations required by the National Electrical Code.

19.5 Ground fault receptacles shall be as manufactured by Pass & Seymour, Hubbell, Leviton, Cooper or accepted equal.

20.0 COVERPLATES

20.1 Provide blank coverplates for all un-used telephone and television outlets. Coverplates shall be furnished to match plates used for receptacles and local switches.

END OF SECTION

26 03 00- LIGHTING SYSTEMS

1.0 LIGHTING SYSTEMS

1.1 The Contractor shall furnish and install a complete complement of luminaries, ballasts, drivers, LED modules and required associated appurtenances including all lamps and accessory wiring. The Contractor shall provide all labor and materials necessary to assemble, install and test the specified equipment to form a complete, functional and attractive lighting system. It is agreed that the Architect shall be the sole judge of acceptable performance and appearance of the lighting system. The lighting equipment shall be as specified herein and/or as shown on the on the Drawings.

1.2 Fixtures and/or fixture outlet boxes shall be provided with hangers to adequately support the complete weight of the fixture.

1.3 Fixtures mounted on outlet boxes shall be rigidly secured to a fixture stud in the outlet box. Hickeys or extension pieces shall be installed where required to facilitate proper installation.

1.4 Unless otherwise directed, all pendant supported fixtures within the same room or area shall be installed in plumb and uniform height from the finished floor and in a straight line. All adjustments to fixture mounting height shall be made during installation in accordance with Architects direction.

1.5 Flush-mounted recessed fixtures shall be installed so as to completely eliminate light leakage between the frame and finished surface. Fixture housing, frame or canopy shall provide a suitable cover for the fixture outlet box or fixture opening. Recessed fixtures shall be boxed or blanketed to maintain the ceiling fire rating as necessary.

1.6 Special purpose lamps shall be of a type recommended by the fixture manufacturer for the specific luminaire. General use incandescent lamps shall be clear type, rated 125 volts. All inoperable lamps or LED modules shall be replaced with new lamps/modules during the course of construction, up to and including the date of final acceptance of the Work by the Owner. All luminaries shall be aligned, lenses and diffusers cleaned and all paint splatter, dirt, debris removed, etc. from installed fixtures prior to final acceptance of the Work by the Owner.

1.7 The Contractor shall consult the room finish schedule as to the type of ceiling construction. The Contractor shall submit with the shop drawings to the Architect, a written confirmation that the room finish schedule and the type of ceiling construction has been reviewed by the Contractor and that the shop drawings submittals for the fixtures submitted are suitable for the application. Absolutely no construction extras will be allowed for fixtures that are not suitable for the application. The Contractor shall be totally responsible for ordering the proper fixtures with hardware for installation in or on the specified ceiling.

1.8 Fixtures shall be installed at mounting heights as shown on the Fixture Schedule. A complete schedule of mounting heights for all lighting fixtures shall be submitted by the Contractor for approval.

1.9 The Contractor shall furnish all necessary additional auxiliary supporting hardware for mounting fixtures and shall make all necessary field adjustments for fixtures. Surface mounted fixtures shall be supported directly from the building structure.

1.10 LED drivers shall be UL 1310 and UL 879A Class 2 compliant. Drivers shall be electronic low-voltage, dimming protocol as indicated on drawings and in coordination with control system, unless noted otherwise. Drivers shall use connection cooling and shall have an operating temperature range of -40 to 55 degrees C. Drivers shall be listed for the environment in which they are located. Driver mean time between failures shall be

greater than 100,000 hours at full load and 25 degrees C ambient. EMC shall be compliant of 47CFR, Part 2, Part 15, and Cispr PUB, 22 Class B. Drivers shall have over-voltage, over-current and short-circuit protection with auto recovery

1.11 All lighting fixtures with louvers or lens shall be provided with hinges, latches and/or safety catches to facilitate safe, convenient cleaning and relamping. Recessed fixtures shall be installed to permit removal from below.

1.12 Where plastic diffusers are specified, diffusers shall be 100% virgin acrylic, of .125 inch thick KSH-12 or approved equal unless otherwise noted.

1.13 All incandescent fixtures shall be prewired, shall have thermal protection and shall be identified as thermally protected except as permitted in the National Electrical Code. The integrity of the fire rating for the ceilings shall be maintained with the installation of any recessed fixture.

1.14 LED modules: Dimming shall be equal in range and quality to a commercial grade incandescent dimmer. Quality of dimming to be defines by dimming range, freedom from perceived flicker or visible stroboscopic flicker, smooth and continuous change in level (no visible steps in transitions), natural square law response to control input and stable when input voltage conditions fluctuate over what is typically experienced in a commercial environment. Demonstration of this compliance to dimming performance will be necessary for substitutions or prior approval. Ten-year expected life while operating at maximum case temperature and 90 percent non-condensing relative humidity. Driver must limit inrush current: Meet or exceed NEMA 410 driver inrush standard of 430 Amps per 10 Amps load with a maximum of 370 Amps – seconds. Withstand up to a 1,000 volt surge without impairment of performance as defined by ANSI C62.41 Category A. No visible change in light output with a variation of plus/minus 10 percent in line voltage input. Total Harmonic Distortion less than 20 percent and meet ANSI C82.11 maximum allowable THD requirements at full output. THD shall at no point in the dimming curve allow imbalance current to exceed full output THD. Driver should be UL recognized under the component program and shall be modular for simple field replacement. Drivers that are no UL Recognized or not suited for field replacements will not be considered

1.15 LED lamps shall use a 3-step MacAdam ellipse of the 4000K points on the Planckian Locus (color binning). Color-rendering index, CRI shall be 80 to 85. Lamps shall have an R9 value greater than 50, measured under the same conditions as the CRI. LED lamps shall be dimmable without flicker from 5-100%. Power factor shall be no less than 0.9. Lamp life shall be greater than 25,000 hours and lumen maintenance shall be greater than 80% on initial output at 40% of rated life.

1.16 Exit signs shall be stencil face with six inch high, red letters on a white background and shall be of the universal mounting type. Directional arrows shall be provided, where shown on the Drawings or required by Authorities Having Jurisdiction. Exit signs shall be on emergency circuit with automatic generator back-up and shall comply with UL-924.

1.17 Where battery powered emergency lighting is specified and/or shown on the Drawings, the Contractor shall solidly wire the unit to a junction box located adjacent to the unit. Receptacle type connections are not acceptable.

END OF SECTION

26 04 00 - COMMUNICATIONS

TABLE OF CONTENTS

1.0 GENERAL

1.1 The communication systems shall include empty raceway systems with pullwires, etc. for the fire alarm system, the telephone system, and the nurse's call system or as required by the National Electrical Code, the State Codes and the local building codes.

2.0 FIRE ALARM SYSTEM

2.1 Provide a complete addressable system for the facility complete with dual line dialer.

2.2 The Contractor shall furnish and install all conduit panel, wiring, outlets and equipment as shown on the Drawings and/or herein specified. All system components specified herein, as well as their installation, shall comply with applicable standard of the National Electrical Code, National Fire Protection Association, state Building Code and local codes governing the installation of Life Safety Systems. All equipment shall be Underwriters' Laboratories listed for Fire Alarm System use.

2.3 System shall be installed in accordance with the manufacturer's recommendations and shall be installed and connected under the direction and supervision of a manufacturer's representative. Upon completion of installation, the manufacturer's representative shall perform all operational tests and adjustments and certify in writing that the system is properly installed and functions as specified (see also Testing below).

2.4 Shop drawings and complete wiring diagrams are required for approval. The Contractor shall coordinate all voltage, relay, contact, etc., requirements with other equipment before submitting shop drawings.

2.5 All wiring shall be in a completely separate conduit system or if allowed by state and local codes fire rated cable may be used in concealed areas and color coded to allow ease of identification of the different circuitry required for the system (i.e. separate color coding for zoning, signal circuits, auxiliary controls and annunciator wiring). When multiple zoning exists, that wiring shall be numbered to match the corresponding building zone numbers. The same method shall apply to signal circuits. The color code shall be maintained throughout the system. Conduit shall be 3/4" minimum and boxes shall be painted RED. Minimum wire sizes shall be 14 ga for alarm circuits and 18 ga for signal circuits. Alarm circuits shall use large enough wire to keep voltage drops within manufacturer's recommendations.

2.6 Testing of the system shall be as called for herein and in exact accordance with the manufacturer's recommendations:

2.6.1 Firing voltage of each detector head shall be tested by the manufacturer's representative, by detector serial number, and recorded. This information shall be attached to letter of certification.

2.6.2 The manufacturer's authorized representative shall provide supervision of final system panel connections, perform a complete functional test of the system, and submit a written report to the Contractor attesting to the proper operation of the completed system.

2.6.3 Upon completion of the installation and after satisfactory testing of the system by the Contractor in the presence of the equipment supplier, the Contractor shall test the system in the presence of the Engineer, Fire Marshal, and/or Owner's representative and other authorities having jurisdiction. The manufacturer shall furnish to the Owner a one-year contract marked "paid in full" effective from the date of acceptance for maintenance and inspection (2 inspections) of the manufacturer's equipment.

2.7 The Contractor shall provide the following warranty for the fire alarm system:

2.7.1 All equipment shall be warranted by the manufacturer for a period of one year following acceptance. The warranty shall include: parts, labor, and field service.

2.8 System Operation:

2.8.1 The operation of any manual pull station, automatic smoke detector, area or duct mounted) heat detector, pressure switches associated with the sprinkler system or any other system alarm indicator, shall cause all alarm signals, both audible and visual to energize.

2.8.2 The zone from which the alarm originated shall be indicated at the control panel, both audibly and visually. The appropriate initiation zone alarm LED shall pulse on alarm and shall be illuminated continuously after it has been acknowledged at the control panel.

2.8.3 Auxiliary control relays for air handling equipment shut, and magnetic door holders and other auxiliary functions shall energize upon alarm conditions.

2.8.4 The control panel shall have the necessary provisions for transmitting a signal to the local authorities. The fire alarm equipment supplier shall be responsible for verifying the approved method of connection to the responding authority and furnishing additional equipment and/or components as may be required to accomplish this connection such as a digital transmitter, dialer, etc. The Contractor shall pay all the fees required to make the connection to the receiving agency. Coordinate all charges and responsibilities with the monitoring service, Telephone Company and owner as required.

2.9 The fire alarm system shall use a 120 volt emergency power source.

2.10 In event of failure of operating power, an open or ground condition on the system wiring, the trouble signals (both audible and visual) shall actuate at the control panel. In addition, the associated circuit trouble LED shall illuminate to indicate the circuit with an open or ground. It shall be possible to silence audible trouble signals by means of silencing switches; however, it shall not be possible to extinguish the visual signals until the disarrangement has been corrected. Upon correction of the trouble condition, the audible trouble signal shall sound until the silencing switch is returned to normal.

2.11 In the event of a valve closure that activates a tamper switch, the trouble signals (both audible and visual) shall activate at the control panel. In addition, the associated circuit trouble LED shall illuminate to indicate the tamper switch closure. By means of a silencing switch, it shall be possible to temporarily silence the audible alarm. The audible alarm shall reactivate automatically on a periodic basis until the system is corrected. It shall not be possible to extinguish the trouble light until the system is corrected.

2.12 Equipment shall consist of the following:

2.12.1 Panel shall be addressable, capable of monitoring and displaying all locations. Panel shall be recessed.

2.12.2 Manual Stations: Manual stations shall be flush mounted type and shall be constructed of high impact, red Lexan with raised lettering. The break glass rod station shall have a hinged front with key

lock to discourage vandalism and tampering. Stations which utilize screwdrivers, Allen wrenches, etc. will not be accepted. Stations shall be keyed alike with the Fire Alarm Control panel. When station is operated, handle shall lock in a protruding manner to facilitate quick visual identification of the activated station. Manual stations shall be located not more than four feet above the finished floor to the center of the box. Stations shall be located not more than five feet from each designated exit way and the travel distance shall not exceed 200 feet.

2.12.3 Smoke Detectors: Area smoke detectors shall be of the solid state photoelectric type and shall sense both visible and invisible products of combustion. The detectors shall have a two wire system operation and permit 360 degree smoke entry. The visual supervision shall be a pulsing LED and alarm conditions shall be a constantly lit LED at full brilliance.

2.12.4 Combination Audio Visual Signal: Audio visual fire alarm signal shall be surface mounted with flasher. Units shall be red in color. The unit shall mount on a standard four inch electrical box. A matching trim plate shall be supplied. The lens shall be lettered red "FIRE". Units shown as chime shall be supplied with single stroke chime and shall meet the sound level as required by ANSI Std. and shall be located in the patient areas as shown on the drawings. The units indicated as weatherproof shall be mounted on a weatherproof box. Audio Visual Signal devices shall meet ADA requirements.

2.12.5 Visual Signal: Visual fire alarm signal shall be surface mounted with flasher. Units shall be RED in color. The unit shall mount on a standard four inch electrical box. A matching trim plate shall be supplied. The lens shall be lettered RED "FIRE". Visual signal devices shall meet ADA requirements.

2.12.6 Heat Detectors: Heat detectors shall have the same requirements as the area smoke detectors and shall contain an integral heat detector as rated in degrees as shown on the drawings.

2.12.7 Duct Mounted Smoke Detectors: Duct mounted smoke detectors shall be supplied with the same features and operation as the above listed area smoke detectors. Each detector shall be supplied with duct mount housing and sampling tubes, sized according to duct width. Smoke detectors located in the HVAC supply ducts shall shutdown all associated fans and close their dampers when in the alarm mode. The alarm shall be displayed at the Fire Alarm Control Panel.

2.12.8 Back boxes for master fire alarm panel and any other non-standard outlet box mounted equipment shall be furnished by the fire alarm equipment manufacturer.

2.12.9 Magnetic Door Holders: The electromagnetic door holder devices shall hold fire and smoke barrier doors until released by an alarm condition. The door holders shall have approximately 35 lbs. holding power. The magnetic door holders shall operate through the contacts of the control panel and be flush mounted. The door holders shall be 24 volt operation and be supplied with transformer. All door holders' circuits shall be separately fused.

2.12.10 Mechanical Shutdown: All HVAC units shall be shut down through the auxiliary contacts of the control panel after an alarm condition has been initiated from any zone. Furnish auxiliary contacts. This does not include the unit heaters in the Patient rooms.

2.12.11 Pressure Switches: Pressure switches shall be supplied and installed by the Sprinkler Contractor. The unit shall measure air pressure and be the diaphragm type.

2.12.12 Tamper Switch: Gate valve supervisory type and shall have normally closed and normally open contacts. This device shall supervisor the valve in the normally closed or open position and shall initiate a supervisory signal to the control panel when the valve is moved two or more turns. The supervisory signal shall be a separate and distinct signal and shall not be a trouble indication of the water flow zone. It shall only totally be muted by restoration of the valve position to normal position.

2.12.13 The Contractor shall furnish all duct mounted smoke detectors. If required, the Contractor shall turnover the duct mounted detectors to the Mechanical Contractor for installation. The Contractor shall coordinate the installation with the Mechanical Contractor.

2.12.14 Battery: The Fire Alarm Control Panel shall contain a battery of sufficient capacity to provide 24 hours of monitoring and 10 minutes of alarm during a total power outage. Charge battery as needed.

2.13 FIRE ALARM NOTIFICATION

2.13.1 Provide a notification system connected to a UL approved receiving system. Provide all connection fees.

3.0 TELEPHONE AND DATA SYSTEMS

3.1 Telephone services shall be fed from a set of 8" x 4" x ¾" plywood panels with #6 insulated ground to electrical system ground. Contractor shall provide all conduits and seals through rated walls as required for wire and phone jacks. Provide conduit connections as called for on the plans.

3.2 Provide boxes and conduit for the phone and data systems. Use a 4" x 4" receptacle box with a drywall flange with a 2" x 4" opening. Route a 1" conduit into the accessible area of the ceiling and provide a pull string.

3.3 Contractor shall provide blank coverplates for all non-used boxes.

3.4 Provide all other conduit shown on the plans.

3.5 The telephone system shall be provided by others. The telephone system shall be connected to the Public Address (Paging) System.

3.6 All wiring and jacks shall be by Contractor. Use CAT 6e cabling. Run dedicated wire to each wiring device; terminate at panel and tag. Provide jacks and cover plates.

4.0 NURSE CALL

4.1 Nurse call system brand shall be approved by the Owner.

4.2 General: The contractor shall furnish all labor, equipment and materials for the installation of an audio visual nurses call system. Note: Audio visual to mean a system which emits an audible tone and illuminates a visual light indicator.

4.3 Operation: See Nurse Call Notes on Nurse Call Plans.

4.4 General: All wiring shall be per manufacturer's specifications and rated for nurse call system use.

4.5 Installation: The manufacturer's authorized representative shall provide supervision of the final system panel connections, perform a complete functional test of the system, and submit a written report to the contractor attesting to the proper operation of the completed system.

Upon completion of the installation and after satisfactory testing of the system by the contractor in the presence of the equipment supplier, the contractor shall test the system in the presence of the Engineer or the Owner's representative and other authorities having jurisdiction.

4.6 See plans for control at bed.

4.7 Warranty: All equipment shall be warranted by the manufacturer for a period of one year following

acceptance. The warranty shall include parts, labor and field service.

4.8 Provide all required 120V critical power needed for a complete operating system.

5.0 DOOR MONITOR SYSTEM

5.1 General: The Contractor shall furnish all labor, materials, equipment for the installation of a complete and operational door security system

5.2 Door security system shall be a magnetic lock system.

5.3 See the plans for further information

5.4 Installation: The manufacturer's authorized representative shall provide supervision of the final system panel connections, perform a complete functional test of the system and submit a written report to the Contractor attesting to the proper operation of the completed system.

Upon completion of the installation and after satisfactory testing of the system by the Contractor in the presence of the equipment supplier, the Contractor shall test the system in the presence of the Engineer and/or the Owner's representative and other authorities having jurisdiction.

5.5 Contractor shall coordinate duplicate the existing door monitoring system required.

5.6 Contractor shall provide all 120V critical power needed for a complete installation.

5.7 Warranty: All equipment shall be warranted by the manufacturer for a period of one year following acceptance. The warranty shall include parts, labor and field service.

6.0 PAGING AND INTERCOM SYSTEM

6.1 General: The Contractor shall furnish all labor, material, equipment for the installation of a complete and operational paging system which shall be connected to the existing system.

6.2 Installation: The manufacturer's authorized representative shall provide supervision of the final system panel connections, perform a complete functional test of the system and submit a written report to the contractor attesting to the proper operation of the completed system.

Upon completion of the installation and after satisfactory testing of the system by the contractor in the presence of the equipment supplier, the contractor shall test the system in the presence of the Engineer or the Owner's representative and other authorities having jurisdiction.

6.3 Warranty: All equipment shall be warranted by the manufacturer for a period of one year following acceptance. The warranty shall include parts, labor and field service.

6.4 Provide fire rated cap for any speakers that penetrate fire rated ceilings.

6.5 System shall tie into the telephone system.

6.6 Speakers shall be 8" diameter and shall be recessed wherever possible.

7.0 CABLE TELEVISION SYSTEMS

7.1 Cable TV services shall be fed from a set of 8" x 4" x ¾" plywood panels with #6 insulated ground to electrical system ground. Contractor shall provide all conduits and seals through rated walls as required for wire and phone jacks. Provide conduit connections as called for on the plans.

7.2 Provide boxes and conduit for the cable TV system. Use a 4" x 4" receptacle box with a drywall flange with a 2" x 4" opening. Route a 1" conduit into the accessible area of the ceiling and provide a pull string.

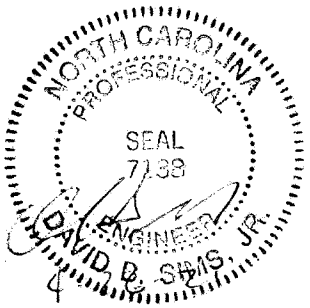
7.3 Contractor shall provide blank coverplates for all non-used boxes.

7.4 Provide all other conduit shown on the plans.

7.5 The Cable TV system shall be provided by others.

7.6 All wiring and jacks shall be by Contractor. Run fiber optic main and run branch service to the boxes with coaxial able. Verify wiring with CATV contractor.

END OF SECTION



PRUITTHEALTH CRYSTAL COAST
140 BED NURSING FACILITY
BEAUFORT, NC

DIVISION 26 32 00

EMERGENCY GENERATOR SYSTEMS

1.0 GENERAL DESCRIPTION

1.1 The emergency generator set shall consist of a diesel engine directly coupled to an electric generator, together with the necessary controls and accessories to provide continuous electric power to the building emergency systems for the minimum duration of a 96-hour failure of the normal power supply.

1.2 The Contractor shall furnish and install the engine generator with overcurrent protection complete with fuel transfer pump, battery, battery charger, muffler, radiator with duct flange, control panel, automatic transfer switch(s), remote annunciator panel(s), temporary generator connection equipment and all other accessories required for an operational and code compliant system.

2.0 GENERAL REQUIREMENTS

2.1 Approval: The emergency generator set, accessories and the installation of the emergency generator set shall be of a type and shall comply with the latest edition of the National Fire Protection Association (NFPA) 54, the NFPA 110 Level 1 System, the National Fuel Gas Code, the Electrical Generating Systems Association, the National Electrical Code and all state and local building codes.

2.2 Material and Workmanship: The material and workmanship used in the manufacture of this equipment shall be of the highest quality consistent with the current standards for like equipment, and the equipment shall be manufactured in such a manner so as to conform to the latest applicable NFPA, IEEE, ANSI, ISA, NEMA and EIA Standards.

2.3 Tests: Equipment shall be completely assembled and tested at the factory prior to shipment. Certified copies of the data obtained during these tests shall be submitted to the Architect and /or Owner.

2.3.1 Final tests shall be conducted at the site, after installation has been completed, in the presence of the Architect's representative and Authority Having Jurisdiction. The Contractor shall have the emergency generator manufacturer furnish a service representative to operate the engine during the tests, to check all details of the installation and to instruct the Owner's representatives in operation and maintenance. The Contractor shall coordinate and be responsible for the refilling of the main fuel tank at the completion of the field tests. Tests shall include but not be limited to the following:

1. NFPA 110 Acceptance Testing Requirements

2. Prior to engine start-up, all accessories that normally function while the unit is standing by shall be checked. These components shall include the block heater, the battery charger, etc.

3. The unit shall be started up under the test mode to check for exhaust and fuel leaks, proper actuation of the gas shutoff solenoid valve, correct cooling air flow, vibration during operation and normal and emergency line to line and line to neutral no-load voltage.

4. All transfer switch timers shall be adjusted to final settings prior to initiation of this automatic start-up, transfer of load and automatic shutdown test.

2.4 The equipment supplier shall be liable for any latent defects due to faulty materials or workmanship in the equipment, which may appear within one (1) year from the date of equipment start-up. This liability shall be limited to the cost of correcting such defects.

2.5 The maximum voltage drop from nominal voltage for the starting of the motor load shall not exceed 15%. The system supplier shall assume all responsibility for the system delivering the specified KVA or KW at no more than the specified voltage dip.

2.6 Maintainability: The emergency generator supplier shall maintain a parts stock and service facility within a radius of 125 miles of the installation. Factory trained service personnel and parts shall be readily available within 24 hours of a request.

2.7 Warranty: The Contractor and the associated emergency generator system supplier shall warranty the emergency generator system for any latent defects due to faulty materials or workmanship in the equipment and/or installation which may appear within one (1) year from the date of equipment start-up. This liability will be limited to the cost of correcting such defects.

3.0 **EQUIPMENT**

3.1 Generator Set:

3.1.1 Basis of Design Manufacturer: Caterpillar, Acceptable Manufacturers shall be: Cummins, MTU, Generac and Kohler.

3.1.2 The emergency generator set shall be rated as follows, with engine driven fan or without:

Kw (as specified on the drawings) Usable Standby
Power at 0.8 power factor
120/208 volts 3 phase, 4 wire
60 Hertz
1800 RPM
Weatherproof Enclosure

3.2 These ratings shall be substantiated by the manufacturer's standard published curves. Special ratings are not acceptable. The set must be capable of supplying the specified usable KW for the duration of an interruption of utility power without exceeding its safe operating temperature.

3.3 Engine: The engine shall be liquid cooled, four-cycle, diesel powered. The engine shall be equipped with cartridge lube oil and dry air filters; lube oil cooler, full pressure lube oil pump, unit mounted electric solenoid fuel shutoff valve and secondary fuel pressure regulator. The engine shall be cooled by a unit mounted radiator, blower fan and coolant pump. The engine oil drain valve shall have provisions for installation of a drain hose extension.

3.4 The engine and generator shall be torsionally compatible to prevent damage to either the engine or generator.

3.5 Generator: The generator shall be three phase, four wire, 60 Hertz, self-ventilated, drip proof construction with a single maintenance fee bearing. The generator shall meet NEMA Standard MG-1 for temperature rise for Class F insulation. The stator, rotor and other insulation shall be vacuum impregnated with Class F epoxy varnish. The excitation system shall be a brushless system, employing generator-mounted volts per hertz solid-state regulator. Voltage regulation shall be plus/minus 2% from no load to full load.

3.6 A shock mounted, generator control panel shall be installed on the generator set in an approved

location and provided with all necessary indicators and controls to meet all NFPA requirements and shall include the following:

1. Generator mounted with vibration isolators and nameplates attached.

2. AC Voltmeter, 3-1/2 inch, 2% accuracy, 0-250 volts.

3. AC Ammeter, 3-1/2 inch, 2% accuracy, 0-400 amperes with required current transformers, if required.

4. Ammeter and Voltmeter phase selector switches.

5. Frequency meter, 3-1/2 inch dial type, 0.5% accuracy, 45 to 65 Hz.

6. Selector switch with "AUTO", "MANUAL", "OFF" and "RESET" positions.

7. Voltage adjustment rheostat allowing manual adjustment of the output voltage within a range of approximately plus/minus 10%.

8. Panel illumination lights and switch.

9. Individual fault indicating lights to indicate engine shutdown due to high coolant temperature, low oil pressure, overspeed and overcrank and a single normally closed, held open "Trouble" contact for remote alarm. All control circuits shall be fuse protected. Indicating lights shall be provided for high battery voltage, low battery voltage, system ready and all other indications to meet NFPA requirements.

10. Two (2) normally open and two (2) normally closed contacts for activating remote accessories (i.e. engine start circuit relay, etc.) rated 10 amps at 120 volt A.C. and all necessary time delay relays, as required, to meet the specified voltage drop requirements.

11. Remote Emergency-Stop Pushbutton: Provide one emergency-stop pushbutton within site of generator location.

3.7 The automatic Start-Stop System shall be 120 volt suitable for complete two wire start/stop control based on closure of a contact indicating failure of the normal (utility) power supply. The system shall be designed to stop five minutes after the normal power supply has been re-established. Controls shall include shutdown for low oil pressure, high coolant temperature, and overspeed. Shutdown circuitry shall, upon their operation, cause the starting circuit to be locked open until manually reset. Overcrank protection shall be provided. Overvoltage protection shall be provided to shutdown the unit after a one second condition of 15 percent or more overvoltage has occurred.

3.8 An engine block heater shall be provided. The heater shall be furnished with all necessary electrical controls to maintain the engine jacket coolant at a proper temperature to meet the start-up requirements of NFPA and shall automatically disconnect from the power supply whenever the engine starts. The engine block heater shall be for operation on single phase, 120 or 208 volt, 60-hertz power supply.

3.9 The battery charger shall be a completely automatic voltage regulated, float type and shall be capable of maintaining the batteries at full charge. It shall have a high charging rating, compatible with the batteries, to fully charge the battery in eight (8) hours when the battery is 50 percent discharged. When the batteries have reached full charge, it shall automatically reduce the charge rate to a continuous float charge. The charger shall be designed for direct conduit connection and shall operate from a single phase, 120-volt, 60-hertz power supply and shall include:

1. Output DC magnetic circuit breaker or fuses.
2. Output DC voltmeter.
3. Output DC ammeter.
4. The battery charger shall be so designed that it shall not be damaged and shall not trip its circuit protective device during engine cranking or it shall be disconnected from the battery during the engine cranking period. The charger may be individually wall-mounted or mounted in the emergency generator control panel.
5. The battery shall be the equipment manufacturer's recommended size and shall be lead-acid type with minimum capacity to provide 90 seconds total cranking time a 0 degree F without recharging. The battery shall be rated a minimum of 90-ampere hours. The batteries shall be encased in hard rubber or plastic and shall be furnished with the proper cables and connectors, together with a rack and standard maintenance accessories. The Contractor shall mount the battery as close as practical to the engine. The battery shall be provided with a 48 month warranty for the replacement of the batteries if found to be defective.

3.10 Base and Mounting: A factory installed, neoprene or combination spring and neoprene vibration isolation system shall be provided between the engine-generator and the welded steel base of the emergency generator set to eliminate transmission of vibration to the floor slab.

3.11 Utility Connections: All connections to the generator set shall be flexible.

3.12 Cooling System: The generator set shall be equipped with a thermostat temperature control, coolant pump and engine mounted radiator sized to maintain safe operation at a 110 degree F maximum ambient at an altitude of 40 feet above sea level. A pusher type fan shall be used directing the airflow from the engine through the radiator. The entire cooling system shall be filled with 50% ethylene glycol antifreeze solution. The unit shall be provided with a radiator duct flange suitable for attachment to an intake cooling air duct furnished by others.

4.13 The generator shall be rated for exterior service and shall have an aluminum acoustic enclosure.

4.0 FUEL SYSTEM

4.1 Comply with NFPA 30 and NFPA 37

4.2 Sub-Base Storage Tank: This tank to be furnished with the generator. Under base, main fuel oil tank with float switch and fuel level indication shall be furnished and installed by the Contractor. The fuel tank shall be a coated steel tank where permitted by state and local authorities. The emergency system shall include low fuel level contacts for remote alarm. If necessary to guard against loss of prime to pump, a check valve shall be mounted on pump intake. The emergency system shall include a float switch, fuel level gauge and standard control panel. Tank shall be double wall.

4.2.1 Underground monitoring system for fuel leakage shall be installed where required by the local and/or state authorities. The tank shall be diked per NFPA.

4.3 Fuel Oil Piping: Piping, including mounting of the any required fuel tanks, shall be furnished and installed under this Specification and shall be the responsibility of the Contractor. All piping shall be sized and installed in exact accordance with the emergency generator manufacturer's recommendations and shall meet all applicable codes and regulations.

5.0 EXHAUST SYSTEM

5.1 The generator set supplier shall provide a critical-type silencer, with flexible exhaust fitting for remote mounting, properly size and installed, according to the manufacturer's recommendation. The silencer shall be mounted so that its weight is not supported by the engine. Exhaust pipe size shall be sufficient to ensure that measured exhaust back pressure does not exceed the maximum limitations specified by the generator set manufacturer.

5.2 Exhaust piping shall be furnished and installed under this Specification and shall be the responsibility of the Contractor. The exhaust system shall be designed and installed to comply with all applicable codes and regulations. Exhaust piping shall be Schedule 40 black iron pipe, unless otherwise specified herein and/or recommended by the emergency generator manufacturer. Where possible, sweep elbows with radius of at least three times the pipe diameter shall be provided. Provisions shall be provided for thermal expansion of the exhaust system.

5.3 The exhaust system shall have a condensate drain trap of the wye or tee type with drain plug install in a horizontal section of rigid exhaust pipe between the engine exhaust manifold and the exhaust silencer. The condensation trap shall be designed for removal of condensate away from the emergency generator set.

5.4 A minimum 12-inch, flexible, seamless stainless steel exhaust connection shall be provided between the engine exhaust outlet and the rest of the exhaust system. The flexible connection should be separated from the exhaust manifold by a length of six to eight inches of rigid pipe.

6.0 AUTOMATIC TRANSFER SWITCHES

6.1 The Contractor shall furnish and install automatic transfer switches suitable for service with the emergency generator set. The automatic transfer switches shall consist of a power transfer module and a control module, interconnected to provide complete automatic operation. The automatic transfer switches shall be mechanically held and electrically operated by a single solenoid mechanism energized from the source to which the load is to be transferred. The switches shall be rated for continuous duty for 100 percent inductive or resistive load and shall be inherently double throw. The switches shall be mechanically interlocked to ensure that the switch can be engaged in only one of the two possible positions, normal or emergency. All main contact shall be silver composition. The automatic transfer switches shall conform to the requirements of NEMA Standard ICS 2-447 and shall be Underwriters' Laboratories listed and labeled for use in emergency systems in accordance with Articles 517 and 700 of the National Electrical Code, NFPA 99 and NFPA 110.

6.2 The transfer switches shall be provided with:

6.2.1 Complete protection, close differential voltage sensing relays monitoring all three phases (pick-up set for 95% of nominal voltage, drop-out set for 85% of nominal voltage).

6.2.2 Voltage sensing relay on emergency source (pick-up set for 90% of nominal voltage).

6.2.3 Frequency sensing relay on emergency source, (pick-up set for 95% of nominal frequency).

6.2.4 Time delay on engine starting--adjustable from 1 second to 300 seconds (factory set at 3 second).

6.2.5 Time delay normal to emergency transfer--adjustable from zero second to 300 seconds (factory set at 1 second). The Contractor shall request time delay settings in accordance with the priority rating of their respective loads.

6.2.6. Time delay emergency to normal transfer adjustable 30 seconds to 30 minutes (factory set at 5 minutes), and time delay bypass switch shall be provided on door of the switch cabinet.

6.2.7 Unload running time delay for emergency engine generator cooling down-adjustable from 0 to 5 minutes (factory set at 5 minutes) unless the engine generator control panel includes the cool down timer.

6.2.8 Engine start contact - closes when normal source fails rated 10 ampere at 120 volt.

6.2.9 Four (4) normally open and four (4) normally closed auxiliary contact that operates when normal source fails (for miscellaneous controls).

6.2.10 Three (3) normally open and three (3) normally closed auxiliary contacts that indicate normal and emergency position of transfer switch.

6.2.11 Advance signal of transfer either direction (3 seconds) with automatic sequential restart of 1 to 9 loads after operation of the transfer switch. Reset sequential controls adjustable 2 to 60 seconds, factory set for 10 seconds unless otherwise specified. Interval between load control restart is equal for all steps. The above circuit shall be used to dump loads prior to transfer with sequential restart to step loads onto the emergency and normal sources.

6.2.12 Signal lights indicating normal or emergency position of the automatic transfer switch.

6.2.13 NEMA 1 enclosure for all the components except for exterior equipment, which shall be NEMA 3R as a minimum.

6.3 The transfer switches shall be a 3 pole, 4 wire with ground and shall have a withstand rating as follow:

Switches	RMS Symmetrical at 208V
100 to 225A	42,000
250 to 400A	42,000
600 to 1200A	65,000

6.4 The automatic transfer switches shall conform to the requirements of NEMA, standard ICS 2.447, and Underwriters Laboratories, UL-1008 and shall be Underwriters Laboratories listed and labeled.

7.0 REMOTE ANNUNCIATOR

7.1 Remote Annunciator shall be provided under the contract and shall be installed at a twenty-four hour manned nurse's station. This console shall include the follow indication signals in case of a possible malfunction of the emergency generator.

1. High Water temperature light
2. Low water temperature light
3. High battery voltage light
4. Low battery voltage light
5. Generator power light
6. System ready light
7. Alarm switch off light

8. Line power light
9. Overcrank light
10. Overspeed light
11. Low fuel light
12. Low oil pressure light
13. Alarm on/off switch
14. Reset switch
15. Test switch
16. Battery fuse
17. Annunciator horn
18. Permanently Installed Generator Disconnected from EPSS

8.0 SHOP DRAWINGS

8.1 Shop Drawings shall be submitted for approval on the diesel generating set. The Drawings shall be complete as "to be built" type and not the general outline drawings used for sales and guide layouts. Specific information shall be submitted as follows:

8.1.1 Diesel Generating Set: Furnish detailed drawings of the generating set and associated equipment. The drawings shall show certified dimensions and weights. The drawings shall also clearly indicate all connections to remote equipment. Furnish complete elementary diagrams of all electrical circuits and devices. Five copies of all drawings shall be submitted.

8.1.2 A composite wiring diagram of the entire emergency transfer system showing all wiring between the elevator controllers, the engine starting panel, emergency generator set and the power failure relay contacts mounted in the generator control panel.

END OF SECTION