ARCHER LODGE TOWN PARK
PICKLEBALL COURTS

2636 CASTLEBERRY ROAD, ARCHER LODGE, NC 27527

PROJECT MANUAL
Construction Documents & Specifications

Owner:

Town of Archer Lodge
14094 Buffalo Road
Archer Lodge, NC 27527
Tel. 919-359-9727

Landscape Architect:

Susan Hatchell
Landscape Architecture, PLLC

711 W. North Street
Raleigh, NC 27603
Tel. 910-444-9209

February 9, 2026

This seal applies to the following specifications:

Division 01 – General Requirements

Section 011000	Summary
Section 011400	Work Restrictions
Section 012000	Project Meetings
Section 012700	Unit Prices
Section 013000	Submittals
Section 013200	Construction Progress Documentation
Section 015000	Temporary Facilities and Controls
Section 015639	Temporary Tree and Plant Protection
Section 016000	Cleaning Up
Section 017000	Execution Requirements
Section 017200	Project Record Documents
Section 017700	Closeout Procedures
Section 019000	Geotechnical Testing

Division 2 Site Work

Section 020050	Mobilization
Section 029200	Seeding

Division 31 Earthwork

Section 311000	Site Clearing
Section 312000	Earth Moving
Section 312500	Sedimentation and Erosion Control

Division 32 Exterior Improvements

Section 321123	Aggregate Base Course
Section 321227	Asphalt Pickleball Court and Coating
Section 321313	Concrete Paving
Section 323114	Athletic Fence and Gates
Section 328061	Pickleball Court Nets

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Division 32 Exterior Improvements

Appendix A

LIST OF CONSTRUCTION DRAWINGS

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STATE OF NORTH CAROLINA
STANDARD FORM OF INFORMAL CONTRACT AND GENERAL CONDITIONS

FOR

Town of Archer Lodge
Archer Lodge Town Park Pickleball Courts
2636 Castleberry Road
Archer Lodge, North Carolina 27527

SCOPE OF WORK

Project scope includes site grading, sediment and erosion control, three pickleball courts with athletic fence and gates, concrete sidewalk, and seeding, as well as other Work indicated in the Contract Documents.

NOTICE TO BIDDERS

Sealed bid for this work will be received by:

David Bone
Town Administrator
Town of Archer Lodge
14094 Buffalo Road
Archer Lodge, North Carolina 27527
(919) 359-9727

up to **2:00 PM**, on Wednesday, March 25, 2026, and immediately thereafter publicly opened and read aloud in the Archer Lodge Town Hall Conference Room.

Complete plans and specifications and contract documents have been provided via email. Please contact Mindy Arthur at mindy@susanhatchell.com with any questions.

Bidders must be licensed contractors in the State of North Carolina. A Bid Bond must accompany each bid. The Successful Bidder will be required to furnish a Construction Performance Bond and a Construction Payment Bond as security for the faithful performance and the payment of all bills and obligations arising from the performance of the Contract. Contractor and all Subcontractors will be required to conform to the labor standards set forth in the Contract Documents. To demonstrate qualifications to perform the Work, Bidder may be required to submit written evidence on financial data, previous experience, present commitments, and other such data as may be requested by Owner.

No bid may be withdrawn after the opening of bids for a period of 30 days. The Owner reserves the right to reject any or all bids and waive informalities. Bids shall be made only on the BID/ACCEPTANCE form provided herein with all blank spaces for bids properly filled in and all signatures properly executed.

Please note on the envelope – **Archer Lodge Town Park Pickleball Courts**
Attn: David Bone
March 25, 2026
Contractor's Name
Contractor's License Number

BID/ACCEPTANCE FORM

for

Archer Lodge Town Park Pickleball Courts
2636 Castleberry Road
Archer Lodge, North Carolina 27527

Project scope includes site grading, sediment and erosion control, three pickleball courts with athletic fence and gates, concrete sidewalk, and seeding, as well as other Work indicated in the Contract Documents.

We are in receipt of Addendum _____1 _____2 _____3 _____4

The undersigned, as bidder, proposes and agrees if this bid is accepted to contract with the Town of Archer Lodge for the furnishing of all materials, equipment, and labor necessary to complete the construction of the work described in these documents in full and complete accordance with plans, specifications, and contract documents, and to the full and entire satisfaction of the Town of Archer Lodge and the Design Team for the sum of:

BASE BID: Dollars $

UNIT PRICES

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

No. 1	Silt Fence	LF	Unit Price ($)_____
No. 2	Silt Fence Outlet	EA	Unit Price ($)_____
No. 3	Seeding and Mulching	SY	Unit Price ($)_____
No. 4	Asphalt Pavement	TN	Unit Price ($)_____
No. 5	Aggregate Base Course	TN	Unit Price ($)_____
No. 6	Concrete Pavement	SY	Unit Price ($)_____
No. 7	Acrylic Court Coating	SY	Unit Price ($)_____
No. 8	Chain-link Fence (10’ height)	LF	Unit Price ($)_____
No. 9	Chain-link Fence (4’ height)	LF	Unit Price ($)_____

Respectively submitted this _____day of _____ 20_____

_____

(Contractor's Name)

Federal ID#:_____ By:_____

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

_____ Address:_____
(Proprietorship or Partnership)

Attest: *(corporation)* Email Address:_____

(***Corporate Seal****)*

By:_____ License #:_____

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

ACCEPTED by the TOWN OF ARCHER LODGE

Total amount of accepted by the owner: _____

BY:_____TITLE:_____

Date: _____

GENERAL CONDITIONS

1. GENERAL

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

2. DEFINITIONS

Owner: "Owner" shall mean, The Town of Archer Lodge

Contractor: "Contractor" shall mean the entity that will provide the services for the Owner.

Designer: The **designer(s)** are those referred to within this contract, or their authorized representatives. The Designer(s), as referred to herein, shall mean architect and/or engineer responsible for preparing the project plans and specifications. They will be referred to hereinafter as if each were of the singular number, masculine gender.

Contract Documents: "Contract Documents" shall consist of the Notice to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawing and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the bid; the contract; the performance bond if applicable; and insurance certificates. All of these items together form the contract.

INTENT AND EXECUTION OF DOCUMENTS

The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a complete job. In case of discrepancy or disagreement in the Contract Documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.

In such cases where the nature of the work requires clarification by the Designer/ Owner, the Designer/ Owner shall furnish such clarification. Clarifications and drawings shall be consistent with the intent of the Contract Documents, and shall become a part thereof.

4. AS-BUILT MARKED-UP CONSTRUCTION DOCUMENTS

Contractor shall provide one complete set of legible "as-built" marked-up construction drawings and specifications recording any and all changes made to the original design during the course of construction. In the event no changes occurred, submit construction drawings and specifications set with notation "No Changes." The Designer/Owner must receive "As-built" marked-up construction drawings and specifications before the final pay request can be processed.

5. SUBMITTAL DATA

The Contractor awarded the contract shall submit all specified submittals to the Owner/Designer. A minimum number of copies as specified by the owner, of all required submittal data pertaining to construction, performance and general dimensional criteria of the components listed in the technical specifications shall be submitted. No material or equipment shall be ordered or installed prior to written approval of the submittals by the Designer/Owner. Failure to provide submittal data for review on equipment listed in the technical specifications will result in removal of equipment by the Contractor at his expense if the equipment is not in compliance with the specifications.

6. SUBSTITUTIONS

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until five (5) days prior to the receipt of bids or by the date specified in the pre bid conference, when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

a. Name, address, and telephone number of manufacturer and supplier as appropriate.

b. Trade name, model or catalog designation.

c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.

d. Detailed comparison with specified products including performance capabilities, warranties, and test results.

e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum*.*

7. WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

The contractor shall maintain, in readable condition at his job site one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the owner, designer or his authorized representative.

The contractor shall maintain at the job site, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after acceptance of the project.

8. MATERIALS, EQUIPMENT, EMPLOYEES

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

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

c. Upon notice, the contractor shall furnish evidence as to quality of materials.

d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth

and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; the designer prior to the opening of bids shall make such approval or disapproval. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.

e. The designer is the judge of equality for proposed substitution of products, materials or equipment.

f. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.

g. The Contractor shall cooperate with the designer and the owner in coordinating construction activities.

h. The Contractor shall maintain qualified personnel and effective supervision at the site at all times during the project, and exercise the appropriate quality control program to ensure compliance with the project drawings and specifications. The designer is responsible for determining compliance with the drawings and specifications.

9. CODES, PERMITS AND INSPECTIONS

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

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

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

All fire alarm work shall be in accordance with the latest State Construction Office (SCO) *Guidelines for Fire Alarm Installation* (NFPA72). Where the contract documents are in conflict with the SCO guidelines, the SCO guidelines shall govern. The Contractor shall be responsible for all the costs for the correction of the work where he installs it in conflict with the latest edition of the SCO *Guidelines for Fire Alarm Installation*..

*****Inspection and certification of compliance by local authorities is necessary if an architect or engineer was not employed on the project, or if the plans and specifications were not approved and the construction inspected by the State Construction Office.

10. PROTECTION OF WORK, PROPERTY, THE PUBLIC AND SAFETY

a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times, except as indicated in the Supplemental General Conditions.

b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other

materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.

c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.

d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around it. He shall barricade all walks, roads, etc., as directed by the designer 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.

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

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

i. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 13(b).

j. Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

11. SUBCONTRACTS AND SUBCONTRACTORS

The Contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The Contractor agrees that no contractual relationship exists between the subcontractor and the Owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the Contractor.

12. CONTRACTOR-SUBCONTRACTOR RELATIONSHIPS

The Contractor agrees that the terms of these Contract Documents shall apply equally to each Subcontractor as to the Contractor, and the Contractor agrees to take such action as may be necessary to bind each Subcontractor to these terms. The Contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to Contractor-Subcontractor relationships. The Owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

13. CHANGES IN THE WORK AND CLAIMS FOR EXTRA COST

a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.

b. Except in an emergency endangering life or property, no change shall be made by the contractor except upon receipt of approved change order from the designer, countersigned by the owner

authorizing such change. No claim for adjustments of the contract price shall be valid unless this procedure is followed. Should a claim for extra compensation by the contractor be denied by the designer or the owner, the contractor may pursue his claim in accordance with G.S. 143-135.3.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "c(1)" or Method "c(2)" or both.

c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:

1. Where the extra work involved is covered by unit prices quoted in the proposal, or subsequently agreed to by the Contractor, Designer, Owner and State Construction Office the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, except is such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c (2) herein. If neither party elects to proceed under c (2), then unit prices shall apply.

2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.

d. Under Paragraph “b” and Methods "c(2)" above, the allowances for overhead and profit combined shall be as follows: all contractors (the single contracting entity (prime), his subcontractors(1st tier subs), or their sub-subcontractors (2nd tier subs, 3rd tier subs, etc.) shall be allowed a maximum of 10% on work they each self-perform; the prime contractor shall be allowed a maximum of 5% on contracted work of his 1st tier sub; 1st tier, 2nd tier, 3rd tier, etc. contractors shall be allowed a maximum of 2.5% on the contracted work of their subs. ; Under Method "c(1)", no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under Method "c(2)" and Paragraph (b) above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.

e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:

1. The actual costs of materials and supplies incorporated or consumed as part of the work;

2. The actual costs of labor expended on the project site; labor expended in coordination, change order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or on the project site.

3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker’s compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed thirty percent (30%) of the actual costs of labor;

4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; and temporary facilities required for the work;

5. The actual costs of premiums for bonds, insurance, permit fees and sales or use taxes related to the work.

Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.

f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods. All change orders shall be supported by a unit cost breakdown showing method of arriving at net cost as defined above.

g. Change orders shall be submitted by the contractor in writing to the owner/designer for review and approval. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to the contractor's proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order, within seven (7) days of receipt.

At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

h. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.

i. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.

14. ANNULMENT OF CONTRACT

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety (if applicable) of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the contractor, or the surety (if applicable) shall fail to take over the work to be done under this contract within seven (7) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all

contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety (if applicable). In case the expense so incurred by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety (if applicable) shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety (if applicable) shall be liable and shall pay to the owner the amount of said excess.

15. TERMINATION FOR CONVENIENCE

a. Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience, after notification to the contractor in writing via certified mail. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.

b. Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as approved by Owner; (3) plus ten percent (10%) of the cost of the balance of the work to be completed for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

16. OWNER'S RIGHT TO DO WORK

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after seven (7) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

17. REQUESTS FOR PAYMENT

Contractor shall refer to the Supplemental General Conditions for specific directions on payment schedule, procedures and the name and address where to send applications for payments for this project. It is imperative that invoices be sent only to the above address in order to assure proper and timely delivery and handling.

The Designer/Owner will process all Contractor pay requests as the project progresses. The Contractor shall receive payment within thirty (30) consecutive days after Designer/Owner's approval of each pay request. Payment will only be made for work performed as determined by the Designer/Owner.

Retainage:

a. Retainage withheld will not exceed 5% at any time.
b. The same terms apply to general contractor and subcontractors alike.
c. Following 50% completion of the project no further retainage will be withheld if the contractor/subcontractor has performed their work satisfactorily.
d. Exceptions:
    1. Owner/Contractor can reinstate retainage if the contractor/subcontractor does not continue to perform satisfactorily.

2. Following 50% completion of the project, the owner is authorized to withhold additional retainage from a subsequent periodic payment if the amount of retainage withheld falls below 2.5%.

Final payment will be made within forty-five (45) consecutive days after acceptance of the work, receipt of marked-up “as-built” drawings and specifications and the submission both of notarized Contractor's affidavit and final pay request. All pay requests shall be submitted to the Designer/Owner for approval.

THE CONTRACTOR'S FINAL PAYMENT AFFIDAVIT SHALL STATE: "THIS IS TO CERTIFY THAT ALL COSTS OF MATERIALS, EQUIPMENT, LABOR, SUBCONTRACTED WORK, AND ALL ELSE ENTERING INTO THE ACCOMPLISHMENT OF THIS CONTRACT, INCLUDING PAYROLLS, HAVE BEEN PAID IN FULL."

18. PAYMENTS WITHHELD

The designer with the approval of the Owner may withhold payment for the following reasons:

a. Faulty work not corrected.

b. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.

c. To provide for sufficient contract balance to cover liquidated damages that will be assessed.

d. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:

i. Claims filed against the contractor or evidence that a claim will be filed.

ii. Evidence that subcontractors have not been paid.

When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor as provided in G.S. 143-134.**1.** As provided in G.S. 143-134.1(e), the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.

19. MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall document that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. **Worker’s Compensation and Employer's Liability**

The contractor shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of $100,000.

b. **Public Liability and Property Damage**

The contractor shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property

damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury:	$500,000 per occurrence
Property Damage:	$100,000 per occurrence / $300,000 aggregate

In lieu of limits listed above, a $500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

c. **Property Insurance (Builder's Risk/Installation Floater)**

The contractor shall purchase and maintain property insurance until final acceptance, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and sub-subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

d. **Deductible**

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor.

e. **Other Insurance**

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

f. **Proof of Carriage**

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

20. ASSIGNMENT

No assignment of the Contractor's obligations or the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the Owner and solely as a convenience to the Contractor, the Owner may: (1) forward the Contractor's payment check directly to any person or entity designated by the Contractor, and (2) include any person or entity designated by Contractor as a joint payee on the Contractor's payment check. In no event shall such approval and action obligate the Owner to anyone other than the Contractor, and the Contractor shall remain responsible for fulfillment of all contract obligations.

21. CLEANING UP AND RESTORATION OF SITE

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

At the end of construction, the contractor shall oversee and implement the restoration of the construction site to its original state. Restoration includes but not limited to walks, drives, lawns, trees and shrubs, corridors, stairs and other elements shall be repaired, cleaned or otherwise restored to their original state.

22. GUARANTEE

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

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

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

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

23. STANDARDS

All manufactured items and/or fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving a connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate State inspector which customarily requires the label or re-examination listing or identification marking of appropriate safety standard organization, such as the American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and/or National Electrical Manufacturers Association for electrically operated assemblies; or the American Gas Association for gas operated assemblies, where such approvals of listings have been established for the type of device offered and furnished. Further, all items furnished shall meet all requirements of the Occupational Safety and Health Act (OSHA), and State and federal requirements relating to clean air and water pollution.

All equipment and products must be independent third party tested and labeled (UL, FM, or CTS) before final connections to Owner services or utilities.

24. TAXES

a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).

b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).

c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work and such costs shall be included in the bid proposal and contract sum.

d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable and such costs shall be included in the bid proposal and contract sum.

e. **Accounting Procedures for Refund of County Sales & Use Tax**

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement as of April 1, 1991 from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was

delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

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

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

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

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

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

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

25. EQUAL OPPORTUNITY CLAUSE

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

26. MINORITY BUSINESS PARTICIPATION

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority business in total value of work for each State building project.

For construction contracts with a value of less than $300,000, the Owner has the responsibility to make a good faith effort to solicit minority bids and to attain the goal. The contractor shall include with his bid a completed Identification of HUB Certified/Minority Business Participation form. Contractor shall submit completed Appendix E MBE Documentation for Contract Payments form with final payment request.

For construction contracts with a value of $300,000 or greater, the contractor shall comply with the document *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Identification of Minority Business Participation, Affidavits A, B, C, and D, and Appendix E. These forms provided herein are hereby incorporated and made a part of this contract.

27. ACCESS TO PERSONS AND RECORDS

The State Auditor shall have access to persons and records as a result of all contracts or grants entered into by the Owner in accordance with General Statute 147-64.7. The Owner's internal auditors shall also have the right to access and copy the Contractor's records relating to the Contract and Project during the term of the Contract and within two years following the completion of the Project/close-out of the Contract to verify accounts, accuracy, information, calculations and/or data affecting and/or relating to Contractor's requests for payment, requests for change orders, change orders, claims for extra work, requests for time extensions and related claims for

delay/extended general conditions costs, claims for lost productivity, claims for lost efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from Owner and/or its project representatives.

28. GOVERNING LAWS

This contract is made under and shall be governed by and construed in accordance with the laws of the State of North Carolina. The Contractor shall comply with all applicable federal, State and local laws, statutes, ordinances and regulations including, but not limited to, the Omnibus Transportation Act of 1991 and its implementing regulations.

29. CONTRACTOR EVALUATION

The contractor's overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State projects. In addition to final evaluation, an interim evaluation may be prepared during the progress of project. The owner may request the contractor's comments to evaluate the designer.

SUPPLEMENTARY GENERAL CONDITIONS

TIME OF COMPLETION
The Contractor shall commence work to be performed under this Contract on a date to be specified in written order from the Designer/Owner and shall fully complete all work hereunder within 120 (one hundred and twenty) consecutive calendar days from the Notice to Proceed. For each day in excess of the above number of days, the Contractor shall pay the Owner the amount of five hundred dollars ($500) as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified.

If the Contractor is delayed at any time in the progress of his work by any act or negligence of the Owner, his employees or his separate contractor, by changes ordered in the work; by abnormal weather conditions; by any causes beyond the Contractor's control or by other causes deemed justifiable by Owner, then the contract time may be reasonably extended in a written order from the Owner upon written request from the contractor within ten days following the cause for delay. Time extensions for weather delays, acts of God, labor disputes, fire, delays in transportation, unavoidable casualties or other delays which are beyond the control of the Owner do not entitle the Contractor to compensable damages for delays. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents.

BID BOND
Each proposal shall be accompanied by a cash deposit or a certified check drawn on a bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the Owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

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

MINORITY BUSINESS PARTICIPATION
The Town of Archer Lodge follows the Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts. A copy of the Guidelines is included in the Project Manual.

NO BURNING IS ALLOWED ON SITE.

GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, construction manager at risk, and alternative contracting methods, on State construction projects in the amount of $300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

SECTION A: INTENT

It is the intent of these guidelines that the State of North Carolina, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded shall cooperate and in good faith do all things legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

SECTION B: DEFINITIONS

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
   a. Black, that is, a person having origins in any of the black racial groups in Africa;
   b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
   c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
   d. American Indian, that is, a person having origins in any of the original peoples of North America; or
   e. Female

2. Minority Business - means a business:
   a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
   b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3. Socially and economically disadvantaged individual - means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".

4. Public Entity - means State and all public subdivisions and local governmental units.

5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.

6. Designer – Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina to perform architectural or engineering, work.

7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.

9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the State of North Carolina to perform construction work or repair.

10. Subcontractor - A firm under contract with the prime contractor or construction manager at risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in his subcontract.

SECTION C: RESPONSIBILITIES

1. Office for Historically Underutilized Businesses, Department of Administration (hereinafter referred to as HUB Office).

   The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:
   a. Identify those areas of work for which there are minority businesses, as requested.
   b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
   c. Assist in the determination of technical assistance needed by minority business contractors.

   In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:
   (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
   (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
   (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
   (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
   (5) The HUB Office also oversees the minority business program by:
      a. Monitoring compliance with the program requirements.
      b. Assisting in the implementation of training and technical assistance programs.
      c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
      d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. State Construction Office
   The State Construction Office will be responsible for the following:

   a. Furnish to the HUB Office a minimum of twenty-one days prior to the bid opening the following:
      (1) Project description and location;
      (2) Locations where bidding documents may be reviewed;
      (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
      (4) Date, time and location of the bid opening.
      (5) Date, time and location of prebid conference, if scheduled.

   b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general statutes regarding minority-business participation, including the bidders' responsibilities.

c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
d. Reviewing of minority business requirements at Preconstruction conference**.**
e. Monitoring of contractors' compliance with minority business requirements in the contract documents during construction.
f. Provide statistical data and required reports to the HUB Office.
g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

3. Owner
Before awarding a contract, owner shall do the following:

a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
b. Attend the scheduled prebid conference.
c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
    1. A description of the work for which the bid is being solicited.
    2. The date, time, and location where bids are to be submitted.
    3. The name of the individual within the owner's organization who will be available to answer questions about the project.
    4. Where bid documents may be reviewed.
    5. Any special requirements that may exist.
d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with corresponding total dollar value of the bid and affidavit listing good faith efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award to the State Construction Office.
g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
h. Review prime contractors' pay applications for compliance with minority business utilization commitments prior to payment**.**
i. Make documentation showing evidence of implementation of Owner's responsibilities available for review by State Construction Office and HUB Office, upon request

4. Designer
Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
c. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S.143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with

corresponding total dollar value of the bid and affidavit listing Good Faith Efforts, or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of award.

e. During construction phase of the project, review "MBE Documentation for Contract Payment" – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.
f. Make documentation showing evidence of implementation of Designer's responsibilities available for review by State Construction Office and HUB Office, upon request.

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors
Under the single-prime bidding, the separate-prime biding, construction manager at risk and alternative contracting methods, contractor(s) will:

a. Attend the scheduled prebid conference.
b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification will include the following:
   (1) A description of the work for which the subbid is being solicited.
   (2) The date, time and location where subbids are to be submitted.
   (3) The name of the individual within the company who will be available to answer questions about the project.
   (4) Where bid documents may be reviewed.
   (5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

   If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.
d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.
e. Identify on the bid**,** the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).
f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.
g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.
h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.
i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), "MBE Documentation for Contract Payment" – (Appendix E), for designer's review.
j. During the construction of a project, at any time**,** if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office in writing**,** of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.

k. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.
l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. Minority Business Responsibilities
While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

SECTION 4: DISPUTE PROCEDURES
It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

SECTION 5: These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: www.nc-sco.com

SECTION 6: In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.

MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: http://www.nc-sco.com

MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts **or** affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, **with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.**

OR

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

(1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.

(2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.

(3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.

(4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

(5) Attending any prebid meetings scheduled by the public owner.

(6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.

(7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

(8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

(9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

(10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

(Revised on 3/14/2003)

Identification of HUB Certified/ Minority Business Participation

I,_____,
(Name of Bidder)
do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category	**HUB Certified (Y/N)

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

The total value of minority business contracting will be ($)_____.

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of_____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ❑ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ❑ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ❑ **3** – **(15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ❑ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ❑ **5** – **(10 pts)** Attended prebid meetings scheduled by the public owner.
- ❑ **6** – **(20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ❑ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ❑ **8** – **(25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ❑ **9** – **(20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ❑ **10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of_____, County of_____

Subscribed and sworn to before me this _____day of _____20____

Notary Public_____

My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20___

Notary Public _____

My commission expires _____

Do not submit with bid Do not submit with bid Do not submit with bid Do not submit with bid

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.
This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

SEAL

Signature:_____

Title:_____

State of _____, County of _____
Subscribed and sworn to before me this _____day of _____20____
Notary Public_____
My commission expires_____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____day of _____20____

Notary Public_____

My commission expires _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____ _____ as principal, and _____, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto the State of North Carolina* through _____ as obligee, in the penal sum of _____ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of _____ 20__

WHEREAS, the said principal is herewith submitting proposal for and the principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

INTENTIONALLY LEFT BLANK

FORM OF PERFORMANCE BOND

Date of Contract: _____

Date of Execution: _____
Name of Principal (Contractor) _____

Name of Surety: _____

Name of Contracting Body: _____

Amount of Bond: _____

Project

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above-named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

_____
Contractor: (Trade or Corporate Name)

_____
(Proprietorship or Partnership)

By: _____

Attest: (Corporation)

Title_____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

_____
(Surety Company)

Witness:

By: _____

_____

Title: _____
(Attorney in Fact)

Countersigned:

_____

(Surety Corporate Seal)

_____
(N.C. Licensed Resident Agent)

_____

_____
Name and Address-Surety Agency

_____

_____
Surety Company Name and N.C.
Regional or Branch Office Address

FORM OF PAYMENT BOND

Date of Contract: _____

Date of Execution: _____
Name of Principal (Contractor) _____

Name of Surety: _____

Name of Contracting Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

_____
Contractor: (Trade or Corporate Name)

_____
(Proprietorship or Partnership)

By: _____

Attest: (Corporation)

Title_____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

_____
(Surety Company)

Witness:

By: _____

_____

Title: _____
(Attorney in Fact)

Countersigned:

_____

(Surety Corporate Seal)

_____
(N.C. Licensed Resident Agent)

_____

_____
Name and Address-Surety Agency

_____

_____
Surety Company Name and N.C. Regional or Branch Office Address

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification:

1. Project Location: Archer Lodge Town Park
   2636 Castleberry Road
   Archer Lodge, North Carolina 27527

B. Owner: Town of Archer Lodge, North Carolina

C. Contact: Mike Gordon
Interim Town Administrator
Town of Archer Lodge
14094 Buffalo Road
Archer Lodge, North Carolina 27527

D. Designer: Susan Hatchell Landscape Architecture, PLLC
711 W. North Street
Raleigh, North Carolina 27603

E. The work consists of the following:

Project scope includes site grading, sediment and erosion control, three pickleball courts with athletic fence and gates, concrete sidewalk, and seeding, as well as other Work indicated in the Contract Documents.

END OF SECTION 011000

SECTION 011400: WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to area shown on the plans.
2. Owner Occupancy: Allow for Owner occupancy of site.
3. Tree Protection Fencing and Silt Fencing shall be installed as shown on plans.
4. It is the option of the Contractor to provide additional chain-link fencing to protect work from vandalism or the general public from hazardous conditions.

END OF SECTION 011400

SECTION 012000: PROJECT MEETINGS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Specifications Sections, apply to this Section.

PART 2 - PROJECT MEETINGS

2.0 SUMMARY

A. This section specifies administrative and procedural requirements for project meetings including but not limited to:

1. Pre-Construction Conference
2. Pre-Installation Conferences
3. Coordination of Meetings
4. Progress Meetings

2.1 PRE-CONSTRUCTION CONFERENCE

A pre-construction conference and organizational meeting shall be scheduled at the Project site or other convenient location no later than 15 days after execution of the Agreement and prior to commencement of construction activities. The meeting shall be conducted to review responsibilities and personnel assignments.

A. Attendees: The Owner, Owner's Representative, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to include matters relating to the Work.

B. Agenda: Discussion of items of significance that could affect progress will include such topics as:

Tentative construction schedule
Critical Work sequencing
Designation of responsible personnel
Procedures for processing field decisions and Change Orders
Procedures of Contract Documents
Submittals of Shop Drawings, Product Data and Samples
Preparation of record documents
Use of the premises
Office, Work and storage areas
Equipment deliveries and priorities
Safety procedures
First aid
Housekeeping
Working hours

2.2 COORDINATION MEETINGS

The Landscape Architect will conduct project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.

A. Representation is required at each meeting by every party currently involved in coordination or planning for the construction activities involved.

B. The Landscape Architect will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

2.3 PROGRESS MEETINGS

Progress meetings will be conducted at the project site on bi-weekly intervals. Coordinate dates of preparation of the payment requests with meetings held in the last week of the month.

A. Attendees: In addition to representatives of the Owner, and the Contractor, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress. The Contractor shall be represented by the resident superintendent.

B. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.

C. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time. The present and future needs of each entity present will be reviewed, including such items as:

    Interface requirements
    Time
    Sequences
    Deliveries
    Off-site fabrication problems
    Access
    Site utilization
    Temporary facilities and services
    Hours of work
    Hazards and risks
    Housekeeping
    Quality and Work standards
    Change Orders
    Documentation of information for payment requests

D. Reporting: After each progress meeting, copies of minutes of the meeting will be distributed to each party present and to other parties who should have been present. Attendance will be noted in the minutes.

E. Schedule Updating: Contractor to revise the construction schedule as needed. Contractor to issue a revised schedule at progress meetings.

END OF SECTION 012000

SECTION 012700 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:

1. Division 1 Sections for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for a description of the work that requires establishment of the following unit prices.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: See Division 0: Bidding and Contracting – Bid/Acceptance Form

END OF SECTION 012700

SECTION 013000: SUBMITTALS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplemental Conditions and other Volume 1 Specification Sections, apply to this Section.

1.1 SUMMARY

This Section specifies administrative and procedural requirements for submittals required for performance of the work, including:

Contractor's construction schedule
Submittal Schedule
Daily construction reports
Shop Drawings
Product Data
Samples

1.2 SCHEDULE

A. The Contractor shall prepare and submit to the Landscape Architect a schedule of submittals and Shop Drawings within twenty (20) days from the date of award of the Contract. The schedule shall fix dates for submission and the lead time for each submittal as related to requirements for return receipt of submittals, thereby expediting delivery of materials to maintain the progress of Work. It is understood that this schedule shall be subject to change from time to time.

B. No work shall be performed or materials ordered involving submittals, shop drawings and samples until approval of such has been received.

1.3 GENERAL REQUIREMENTS

A. Shop, erection, and setting drawings, certificates, catalog cut sheets, and schedules required for work of various trades, shall be checked before submission as hereinafter specified, by technically qualified employees of the Contractor for accuracy and compliance with Contract Documents. All submittals shall be stamped and signed by the Contractor certifying to such a check and shall be accompanied by a transmittal signed by the Contractor.

B. Shop drawings and samples shall be dated and contain: name of project, description or names of equipment, materials and items and complete identifications of locations at which materials or equipment are to be installed.

C. For standard catalog cut sheets and illustrated items not requiring special Shop Drawings, the Contractor shall submit six (6) copies: four (4) to be retained by the Landscape Architect and two (2) to be returned to the Contractor for compliance with Contract Documents.

D. When catalog cut sheets are submitted, the specific item to be considered shall be identified by the same nomenclature and/or item number used on the Drawings or in the Specifications. The same identification shall be used on Shop Drawings.

E. Contractor shall clearly identify items on submittals by highlighting or circling model numbers and listing quantities.

1.4 ADMINISTRATIVE SUBMITTALS

A. Refer to Volume 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits
2. Applications for Payment
3. Performance and Payment Bonds
4. Insurance Certificates
5. List of Subcontractors
6. Schedule of Values

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Landscape Architect's CAD files shall be provided to Contractor for Contractor's use in connection with Project, subject to the following condition:

1. Contractor shall use CAD files at his/her own risk. Any variations or discrepancies shall be reported to Landscape Architect prior to construction.

PART 2 - SUBMITTAL PROCEDURES

2.1 COORDINATION

A. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
3. The Landscape Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
4. Deviations: Highlight or otherwise specifically identify deviations from the Contract Documents on submittals.

2.2 PROCESSING

Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.

A. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Landscape Architect shall promptly advise the Contractor when a submittal being processed must be delayed for coordination.

B. If an immediate submittal is necessary, process the same as the initial submittal. Allow two weeks for reprocessing each submittal.

C. No extension of Contract Time shall be authorized because of failure to transmit submittals to the Landscape Architect sufficiently in advance of the Work to permit processing.

2.3 SUBMITTAL PREPARATION

Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

A. Provide a space approximately 4" x 5" on the label or beside the block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

B. Include the following information on the label for processing and action taken:

1. Project name
2. Date
3. Name and address of Landscape Architect
4. Name and address of Contractor
5. Name and address of Subcontractor
6. Name and address of supplier
7. Name of manufacturer
8. Name and title of appropriate Specification Section
9. Drawing number and detail references, as appropriate

2.4 SUBMITTAL TRANSMITTAL

A. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Landscape Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1. On the transmittal, record relevant information and requests for data.
2. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that indicates the information complies with Contract Document requirements.

PART 3 - CONTRACTOR’S SCHEDULE

3.1 CONTRACTOR’S CONSTRUCTION SCHEDULE

A. It is the responsibility of the Contractor for General Work, acting in the capacity of Project Expediter, to fully develop, submit and maintain a Critical Path Method (CPM) Schedule developed in conjunction with the "Schedule of Values". Submit within 14 days of the date established for "Commencement of Work".

1. Scheduling System: Indicate all Contract requirements and update the schedule monthly or more frequently if so directed by the Landscape Architect. Submit updated Contractor’s Construction Schedule with payment application. Use the information developed for scheduling, coordinating and monitoring all Work on this Project (including all activities of Prime Contractors, Subcontractors, equipment vendors and suppliers).
2. Secure time commitments for performing critical elements of the Work from parties involved.

3.2 PROGRESS REPORTING

A. Review and update the progress each month or more frequently and submit with a narrative report as part of the monthly review and update. Include in the narrative report, a description of any problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates with an explanation of corrective action taken or proposed.

1. After completion of a review and approval of the Owner, generate an updated CPM schedule and issue to the Owner, Landscape Architect and other Prime Contractors in PDF format.

3.3 DAILY CONSTRUCTION LOG

A. Maintain a daily construction log, recording the following information concerning events at the Site:

1. List of Subcontractors at the Site
2. Approximate count of personnel at the Site, high and low temperatures, general weather conditions (to the extent that the conditions affect project)
3. Accidents and unusual events
4. Meetings and significant decisions
5. Stoppages, delays, shortages, losses
6. Emergency procedures
7. Orders and requests of governing authorities
8. Change Orders received, implemented
9. Services connected, disconnected
10. Equipment or system tests and start-ups
11. Partial completions, occupancies
12. Substantial Completions authorized
13. Visitors to the Construction site, including inspectors, representatives, government officials, etc.

PART 4 - SHOP DRAWINGS

4.1 GENERAL

A. The Landscape Architect shall review such drawings, schedules, and data only for conformance with the design concept of the project and compliance with the information given in the Contract Documents. The Contractor shall make any corrections required by the Landscape Architect and shall resubmit the corrected shop drawing for final review.

B. The Landscape Architect shall not undertake the determination of dimensions, which by their nature, must be established from field measurements. The determination of such dimensions shall be a part of the Contractor’s checking and coordination of Shop Drawings to be reviewed by the Landscape Architect.

C. The Contractor shall furnish additional copies of approved drawings as may be required for the use of other trades and/or contractors; distribution shall be the responsibility of the Contractor.

D. The final review of Shop Drawings by the Landscape Architect shall not relieve the Contractor from the responsibility of conforming to the Contract Documents unless there is

an accompanying letter from him, which explicitly states that a deviation is to be made and written approval is obtained for such deviation, nor shall final review of Shop Drawings relieve him of the responsibility for errors in or coordination of his work.

E. It is the Contractor's responsibility to make all necessary field measurements prior to submitting shop drawings.

4.2 SUBMITTALS

Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

A. Shop Drawings include fabrication and installation drawings, schedules, patterns, templates and similar drawings. Include the following information:

1) Dimensions
2) Identification of products and materials included
3) Compliance with specific standards
4) Fabrication and installation drawings
5) Roughing-in and setting diagrams
6) Templates and patterns
7) Schedules
8) Notation of coordination requirements
9) Notation of dimensions established by field measurements
10) Seal and signature of professional engineer if specified
11) Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring

B. Sheet size: Except for templates, patterns, and similar full size drawings, submit Shop Drawings on sheets at least 8 1/2 x 11" but no larger than 24" x 36".
C. Initial Submittal: Submit six (6) blue or black line prints for the Landscape Architect to review; two (2) will be returned.
D. Final Submittal: Submit six (6) blue or black line prints. Four (4) prints will be retained, two (2) returned. One of the prints returned shall be marked up and maintained as a "Record Document".
E. Do not use Shop Drawings without an appropriate final stamp indicating final action taken in connection with construction.
F. Contractor is completely responsible for accurate field measurements.

PART 5 - PRODUCT DATA

5.1 PRODUCT DATA

Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing in diagrams and templates, standard wiring diagrams, and performance curves. Where Product Data must be specifically prepared because standard printed data is not suitable for use, submit as "Shop Drawings"
.

A. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

1. Manufacturer's printed recommendations
2. Manufacturer's product specifications
3. Manufacturer's installation instructions
4. Standard color charts
5. Standard product operation and maintenance manuals
6. Compliance with specified trade association standards
7. Compliance with recognized testing agency standards
8. Application of testing agency labels and seals
9. Notation of dimensions verified by field measurement
10. Notation of coordination requirements

B. Do not submit Product Data until compliance with requirements of Contract Documents has been confirmed.

5.2 PRELIMINARY SUBMITTAL

Submit a preliminary single-copy of Product Data where selection of options is required.

5.3 SUBMITTALS

Submit six (6) copies of each required submittal. Of the six (6) copies, the Landscape Architect will retain four (4) and will return the others marked with action and corrections or modifications required. The copies will be distributed as follows; one (1) copy to the contractor, one (1) copy to the sub consultant, one (1) copy to the sub contractor, and one (1) copy to the owner. One (1) copy will be retained for the maintenance manual.

A. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

5.4 DISTRIBUTION

Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of the construction activities. Show distribution on transmittal forms.

A. Do not proceed with installation until a copy of applicable Product Data is in the installer's possession. Do not permit use of unmarked copies of Product Data in connection with construction.

PART 6 - SAMPLES

6.1 SAMPLES

Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.

A. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Include the following:

1. Generic description of the Sample
2. Sample source
3. Product name or name of the manufacturer
4. Compliance with recognized standards
5) Availability and delivery time

B. Submit Samples for review of kind, color, pattern and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

1. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than three) that show approximate limits of the variations.
2. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

6.2 PRELIMINARY SUBMITTALS

Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

A. Preliminary submittals shall be reviewed and returned with the Landscape Architect's mark indicating selection and other action.

6.3 SUBMITTALS

Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit six (6) sets; two (2) will be returned marked with the action taken.

A. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.

B. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

C. Sample sets may be used to obtain final acceptance of the construction with each set.

D. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

PART 7 - CONTRACTOR'S REVIEW

7.1 Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to the Landscape Architect.

The Contractor is completely responsible for verifying field measurements and dimensions for accuracy as well as compliance with Contract Drawings.

Contractor is responsible for verifying shop drawing's compliance with plans and applicable building codes.

7.2 APPROVAL STAMP

Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

PART 8 - LANDSCAPE ARCHITECT'S ACTION

8.1 LANDSCAPE ARCHITECT'S ACTION

Except for submittals for record, information or similar purposes, where action and return is required or requested, the Landscape Architect will review each submittal, mark to indicate action taken, and return promptly. Compliance with specified characteristics is the Contractor's responsibility.

8.2 ACTION STAMP

The Landscape Architect will mark the submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

A. Approved: Where submittals are marked "Approved" that part of the Work covered by the submittal may proceed, provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
B. Approved as Noted: When submittals are marked "Approved as Noted" that part of the Work covered by the submittal may proceed, provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
C. Disapproved: When submittal is marked "Disapproved", do not proceed with that part of the Work covered by the submittal. This includes purchasing, fabrication, delivery, or other activities. Revise or prepare a new submittal in accordance with the notation; resubmit without delay. Repeat as necessary to obtain a different action mark.
D. Do not permit submittals marked "Resubmit" to be used at the Project site or elsewhere where Work is in progress.

8.3 PARTIAL SUBMITTALS

Partial Submittals are not acceptable, will be considered non-responsive, and will be returned without review.

END OF SECTION 013000

SECTION 013200: CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Construction Schedule.
2. Submittals Schedule.
3. Weekly construction reports.
4. Construction photographs.

B. Related Sections include the following:

1. Division 1 Section 013000: "Submittals" for submitting schedules and reports.
2. Division 1 Section 017700: "Closeout Procedures" for submitting photographic negatives as Project Record Documents at Project closeout.

1.3 DEFINITIONS

A. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration.

1.4 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Submittals Schedule: Submit two copies of schedule to Landscape Architect. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Name of subcontractor.
3. Description of the Work covered.
4. Scheduled date for Owner’s final release or approval.

C. Construction Schedule: Submit two printed copies to Landscape Architect.

1. Submit an electronic copy of schedule in PDF format.

1.5 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, and payment requests.
   1. Secure time commitments for performing critical elements of the Work from parties involved.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Provide to Landscape Architect a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

2.2 CONSTRUCTION SCHEDULE

A. Submit proposed Critical Path Method (CPM) construction schedule to Landscape Architect within seven days of date established for the Notice to Proceed. Provide updated construction schedules with each pay application.

1. Indicate each significant construction activity separately
2. For each activity indicate early and late start and early and later finish dates
3. Include review and resubmittal times indicated in “Submittal Procedures” section in the schedule
4. Monitor construction and update schedule and for reporting progress. Indicate an estimated completion for each activity
5. Note the critical path on the schedule
6. Indicate completion in advance of date for substantial completion and allow for administrative procedures necessary for certification of substantial completion

2.3 REPORTS

A. Daily Construction Reports: Prepare a construction report recording the following information concerning events at Project site and make available on-site for review:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Orders and requests of authorities having jurisdiction.
10. Change Orders received and implemented.
11. Construction Change Directives received.
12. Services connected and disconnected.

PART 3 - EXECUTION

3.1 CONSTRUCTION SCHEDULE

A. Construction Schedule Updating: At monthly intervals, and to be submitted with each pay application, update schedule to reflect actual construction progress and activities. Issue schedule with each pay application.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made.

2. As the Work progresses, indicate Actual Completion percentage for each activity.
3. Distribution: Distribute copies of approved schedule to Owner and Architect.
4. Include with schedule a report that indicates every change to the approved schedule including, but not limited to: changes in logic, duration, actual start and finishes and activity durations.

3.2 CONSTRUCTION PHOTOGRAPHS

A. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.

B. Preconstruction Photographs: Before starting construction, take color photographs of Project site and surrounding properties from different vantage points. Show existing conditions adjacent to property.

C. Periodic Construction Photographs: Take photographs monthly, coinciding with cutoff date associated with each pay application. Select vantage points to best show status of construction and progress since last photographs were taken. Provide hard copies or electronic copies to Landscape Architect with pay applications.

D. Final Completion Construction Photographs: Take photographs after date of Substantial Completion for submission as Project Record Documents.

END OF SECTION 013200

SECTION 015000: TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements, as necessary, for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

B. Temporary utilities include, but are not limited to, the following:

1. Drainage.
2. Water service and distribution.
3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
4. Electric power service.

C. Support facilities include, but are not limited to, the following:

1. Temporary roads and paving.
2. Dewatering facilities and drains.
3. Project identification and temporary signs.
4. Waste disposal facilities.
5. Storage and fabrication sheds.
6. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:

1. Environmental protection.
2. Stormwater control.
3. Site enclosure fence.
4. Security enclosure and lockup.
5. Barricades, warning signs, and lights.
6. Fire protection.

E. Related Sections include the following:

1. Division 1 Section 013000: "Submittals" for procedures for preparing and delivering submittals.

1.3 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum.

B. Water Service and Electric Power Service: Water service and Electric power service is included in the budget/cost of work.

1.4 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Within fifteen (15) days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

1.5 QUALITY ASSURANCE

A. Standards: Comply with ANSI A10.6, National Electrical Contractor's Association's (NECA) "Temporary Electrical Facilities," and National Fire Protection Association (NFPA) 241.

1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electric Service: Comply with NECA, National Electrical Manufacturer's Association (NEMA), and Underwritters Laboratories, Inc. (UL) standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.

1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Owner. Provide materials suitable for use intended.

B. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum six (6) feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

C. Water: Potable.

2.2 EQUIPMENT

A. General: Provide equipment suitable for use intended.

B. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

C. Self-Contained Toilet Units: Single-occupant prefabricated units of chemical, type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

D. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

E. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

F. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of complete permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

C. Sanitary Facilities: Provide temporary toilets, and wash facilities. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
3. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

D. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.

1. Install power distribution wiring overhead and rise vertically where least exposed to damage.
2. Connect temporary service to Owner's existing power source, as directed by electric company officials.

E. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
2. Provide warning signs at power outlets other than 110 to 120 V.
3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.
4. Provide metal conduit enclosures or boxes for wiring devices.
5. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Locate storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
2. Provide incombustible construction for sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.

B. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

C. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.

2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
3. Remove snow and ice as required to minimize accumulation.

D. Waste Disposal Facilities: Provide waste collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section 017000: "Execution Requirements" for progress cleaning requirements.

1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

E. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.

1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

See Division 31, Section 311000: “Site Clearing” of these specifications for protection of bench marks, existing utilities and other existing work remaining.

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.

B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.

C. Tree and Plant Protection: Install temporary fencing located as indicated on contract drawings or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.

D. Construction Area Delineation: Provide means necessary to provide a secure site and provide access to non project areas of the site.

E. Safety: The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

F. Water Protection: The Contractor at all times shall protect excavation and trenches from rain water, spring water, ground water, backing up of drains or sewers, and all other water. He shall provide all necessary pumps, equipment and enclosures to provide this protection.

G. Temporary Drainage: The Contractor shall construct and maintain all necessary temporary drainage, and shall do all pumping necessary to keep excavation and low areas free of water.

H. Snow and Ice: The Contractor shall remove all snow and ice as may be required for proper protection and execution of Work.

I. Guard Light: The Contractor shall provide and maintain guard lights at all barricades, obstructions in streets, roads or sidewalks, and at all trenches or pits adjacent to public walks or roads.

J. Cold Weather: During cold weather, the Contractor shall protect all work against damage. If low temperatures make it impossible to continue operations safely (in spite of cold weather precautions), Contractor shall cease work and shall so notify the Landscape Architect.

3.5 WEATHER PROTECTION, TEMPORARY HEAT, VENTILATION AND AIR CONDITION

A. The Contractor shall provide at his own expense all weather protection, temporary heat or cooling and fuel as necessary to carry on the work expeditiously during inclement weather and to protect all work and materials against injury from dampness and cold.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary controls. To minimize waste and abuse, limit availability of temporary controls to essential and intended uses. Protect permanent systems from damage.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

3.6 EQUIPMENT

A. All equipment used for temporary facilities shall be standard products, meeting code requirements of applicable specification sections.

3.8 INSTALLATION AND MAINTENANCE

The Contractor shall:

a) Install temporary facilities in a neat and orderly manner and make structurally sound and safe throughout.
b) Maintain facilities to give continuous service and to provide safe working conditions. Modify and extend services as work progress requires.
c) Install facilities for distributions as detailed on Drawings, or as required to render service. Locate all facilities to avoid interference with, or hazards to, traffic areas, personnel areas, storage areas, cranes and work of other contracts.
d) Securely erect and anchor portable toilets to prevent dislocation. Service as often as necessary to prevent accumulation of waste and creation of unsanitary conditions.

3.9 TERMINATION AND REMOVAL

Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference

with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the property of the Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section 017700: "Closeout Procedures."

END OF SECTION 015000

SECTION 015639: TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

B. Related Sections include the following:

1. Division 01 Section "Summary" for limits placed on Contractor's use of the site.
2. Division 01 Section "Temporary Facilities and Controls" for temporary tree protection.
3. Division 31 Section "Site Clearing" for removal limits of trees, shrubs, and other plantings affected by new construction.
4. Division 31 Section "Earth Moving" for building and utility trench excavation, backfilling, compacting and grading requirements, and soil materials.

1.3 DEFINITIONS

A. Tree Protection Zone: Area surrounding individual trees or groups of trees to remain during construction and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

C. Certification: Certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

D. Maintenance Recommendations: For care and protection of trees affected by construction during and after completing the Work.

1.5 QUALITY ASSURANCE

A. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1. Before tree protection and trimming operations begin, meet with representatives of authorities having jurisdiction, Owner, Architect, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.

B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than **2 inches** in diameter; and free of weeds, roots, and toxic and other nonsoil materials.

1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.

C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Silt/Tree Protection Fencing: Fencing fixed in position and meeting the following requirements.

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft. ; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.

a. Height: **4 feet**.
b. Color: High-visibility orange, nonfading.

E. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

1. Size and Text: **As shown on Drawings**.
2. Lettering: **3-inch**-high minimum, **black** characters on **white** background.

F. Organic Mulch: Triple shredded hardwood, free of deleterious materials.

PART 3 - EXECUTION

3.1 PREPARATION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas within drip line of trees to remain and other areas indicated.

1. Apply **3-inch** average thickness of organic mulch. Do not place mulch within **6 inches** of tree trunks.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

E. Maintain tree protection zones free of weeds and trash.

F. Do not allow fires within tree protection zones.

3.2 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.

1. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.

2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

D. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.3 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.

B. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees, unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

C. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

D. Moderate Fill: Where existing grade is more than 6 inches but less than 12 inches below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:

1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
2. Place filter fabric with edges overlapping 6 inches minimum.
3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.4 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period.

C. Pruning Standards: Prune trees according to ANSI A300 (Part 1).

D. Cut branches with sharp pruning instruments; do not break or chop.

E. Chip removed tree branches and dispose of off-site.

3.5 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots.

B. Remove and replace trees indicated to remain that die or are damaged during construction operations.

1. Provide new trees of same size and species as those being replaced; plant and maintain as specified in Division 32 Section "Plants."
2. Provide new trees of 6-inch caliper size and of a species selected by Architect when damaged trees more than 6 inches in caliper size, measured 12 inches above grade, are required to be replaced. Plant and maintain new trees as specified in Division 22 Section "Plants."

C. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand.

3.6 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

END OF SECTION 015639

SECTION 016000: CLEANING UP

PART 1 - GENERAL

1.1 GENERAL

A. The requirements specified in this section are in addition to those described in the General Conditions.

B. All debris and waste materials shall become the property of the Contractor, and shall be removed from the site as it accumulates and so as to comply with anti-pollution laws.

C. Burning or burying of rubbish and waste materials on the project site is not permitted.

D. Disposal of volatile fluid wastes such as mineral spirits, oil, or paint thinner in storm or sanitary sewer systems is not permitted, nor shall such materials be deposited anywhere on the project site.

PART 2 - MATERIALS

2.1 MATERIALS

A. The Contractor shall:

1. Use only cleaning materials recommended by the manufacturer of surfaces to be cleaned.
2. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

PART 3 - EXECUTION

3.1 EXECUTION DURING CONSTRUCTION

A. The Contractor shall provide suitable containers and locate on site for collection of waste materials, rubbish, and debris.

B. The Contractor shall not allow mud, earth droppings and dust from movement of vehicles to accumulate for more than one half day before removal from paved areas. At no time shall any accumulation be allowed which will create a hazard to safety or bad public relations.

PART 4 - FINAL CLEANING

4.1 FINAL CLEANING

A. At completion of construction and just prior to acceptance, the Contractor shall conduct a final inspection of the site. The Contractor shall remove grease, oil, dirt, stains, and other foreign materials within contract limits that are not part of the finished construction.

B. The Contractor shall repair, patch and touch up any marred surfaces to match adjacent finishes.

END OF SECTION 016000

SECTION 017000 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections include the following:

1. Division 1 Section 013000: "Submittals"
2. Division 1 Section 017700: "Closeout Procedures"

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning Work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of all elements to remain and to be demolished. Verify all salvageable material with the Owner.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for Work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

    a. Description of the Work.
    b. List of detrimental conditions, including substrates.
    c. List of unacceptable installation tolerances.
    d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine floors and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

2.2 PREPARATION

A. Existing Utility Information: Obtain information necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

    1. Do not proceed with utility interruptions without Owner's written permission.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Landscape Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

2.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Landscape Architect promptly. Landscape Architect is not responsible if descrepancies are noted by the Contractor but are not reported to the Landscape Architect prior to construction.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

    1. Establish benchmarks and control points to set lines and levels at each stage of construction and elsewhere as needed to locate each element of Project.
    2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify the Landscape Architect when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Owner.

E. Use of Landscape Architect's CAD drawings is at Contractor's own risk. Landscape Architect is not responsible if discrepancies are discovered but not reported.

F. The Contractor shall demolish and replace any work that does not meet the intentions of the drawings or that has unresolved discrepancies that are not brought to the Landscape Architect's attention prior to construction.

2.4 FIELD ENGINEERING

A. Identification: Existing benchmarks, control points, and property corners are noted in the drawings.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Owner. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Owner before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two (2) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

2.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Landscape Architect.

F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

2.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with current requirements in National Fire Protection Association (NFPA) 241 for removal of combustible waste materials and debris.
2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period to the extent possible for normal events.

2.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If required, a factory-authorized service representative shall inspect field-assembled components and equipment installation.

2.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
B. Comply with manufacturer's written instructions for temperature and relative humidity.

2.9 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 017000

SECTION 017200: PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 017000 "Execution Requirements" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints.
2) Landscape Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned record prints and one set of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit **one paper copy and one digital copy** of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit **one paper copy and one digital copy** of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order.
k. Changes made following Landscape Architect's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings, completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Landscape Architect.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

PART 3 – EXECUTION

3.1 MAINTENANCE OF RECORD DOCUMENTS

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Landscape Architect's reference during normal working hours.

END OF SECTION 017200

SECTION 017700: CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section 013200: "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.
2. Division 1 Section 017000: "Execution Requirements" for progress cleaning of Project site.
3. Divisions 2 for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit 2 copies of specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit 2 copies of Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Submit changeover information related to the Owner’s occupancy, use, operation, and maintenance.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

11. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Landscape Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Landscape Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by the Landscape Architect, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 requirements.
2. Submit certified copy of Landscape Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Landscape Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Landscape Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit (3) three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Owner
d. Name of Contractor.
e. Page number.

1.6 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Owner's reference during normal working hours.
B. Record Drawings: Maintain and submit one original and one copy of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

    a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
    b. Accurately record information in an understandable drawing technique.
    c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
    d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
3. Mark important additional information that was either shown schematically or omitted from original Drawings.
4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit (2) copies of Project's Specifications, including addenda and contract modifications. Mark copies to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Note related Change Orders, Record Drawings, where applicable.

D. Miscellaneous Record Submittals: Assemble (2) copies of miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Assemble two (2) complete sets of operation and maintenance data indicating the operation and maintenance of each piece of equipment. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Maintenance Data:

    a. Manufacturer's information, including list of spare parts.
    b. Name, address, and telephone number of Installer or supplier.
    c. Maintenance procedures.
    d. Maintenance and service schedules for preventive and routine maintenance.
    e. Maintenance record forms.
    f. Sources of spare parts and maintenance materials.
    g. Copies of maintenance service agreements.
    h. Copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Owner for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 DEMONSTRATION AND TRAINING

A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Provide instruction at mutually agreed-on times.
2. Schedule training with Owner with at least 10 days' advance notice.

B. Develop an instruction session that includes training for all equipment as required by individual Specification Sections. Include instruction for the following:

1. Review of documentation.
2. Adjustments.
3. Maintenance.
4. Repair.

3.2 FINAL CLEANING

A. Cleaning: Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface and apply a layer of mulch.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    f. Remove labels that are not permanent.
    g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

        1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

    h. Leave Project clean and ready for occupancy.

B. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

PART 4 - GUARANTEE

A. Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of Work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

B. The Contractor shall remedy any defects in the Work, and pay all expenses for any damage to other Work resulting there from, which shall appear within a period of one (1) year from the date of final acceptance of the work unless a longer period is specified elsewhere. The Owner shall give notice of observed defects with reasonable promptness. Mechanical equipment that carries a manufacturer’s warranty will be considered guaranteed for the extent of the warranty only.

C. The Contractor shall submit to the Landscape Architect, before final acceptance, two (2) copies of all warranties, guaranties, and surety bonds on the Work, as required in the Contract Documents. All such documents shall show the name of the Project, location, and name of the Owner.

END OF SECTION 017700

SECTION 019000: GEOTECHNICAL TESTING

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Division 31 Section 312000: “Earth Moving”

B. Appendix A: Report of Subsurface Investigation and Geotechnical Engineering Evaluation, June 11, 2020

1.1 SCOPE

A. Contractor shall coordinate with the Geotechnical Engineer hired by the Town of Archer Lodge. Testing required includes:

1. Supervision and in place measurement for all undercut excavations. See Division 31 Section 312000: “Earth Moving”
2. Proof roll as outlined in technical specifications. See Division 31 Section 312000: “Earth Moving”

B. Geotechnical firm shall have a minimum of five years of experience in the field completing the above services.

C. Geotechnical firm shall prepare written reports outlining services performed and test results for all testing and services. Copies of all reports shall be sent to the Landscape Architect immediately by fax, as well as hard copies mailed within 24 hours of receipt. In the event that undercut is encountered, the Landscape Architect shall be notified immediately, prior to the beginning of any removal operation.

END OF SECTION 019000

SECTION 020050: MOBILIZATION

PART 1 - GENERAL

1.1 SUMMARY

A. This work shall consist of the mobilization of the Contractor's forces and equipment necessary for performing the work required under this Contract.

B. It shall include the purchase of Contract Bonds; transportation of personnel, equipment and operating supplies to the site; establishment of other necessary facilities at the site; and other preparatory work at the site.

1.2 PAYMENT

A. The amount of mobilization shall not exceed five (5) percent of the total Contract amount. Payment for the bid item "Mobilization" shall be a maximum of 2½ percent of the total amount bid on each of the first two partial pay estimates less retainage provided in the General Conditions.

END OF SECTION 020050

SECTION 029200: SEEDING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes Specifications for subgrade preparation, topsoil spreading, topsoil testing, fine grading, providing fertilizer, permanent seeding including all labor, material, maintenance, and equipment to complete the Work.

1.2 REFERENCES AND AGENCY STANDARDS

A. Some products and execution are specified in this section by reference to published specifications or standards of the following:

1. N.C. Department of Agriculture (NCDA)
2. U.S. Department of Agriculture (USDA)
3. Association of Official Seed Analysts (AOSA)

1.3 SUBMITTALS

A. Soil Report: Submit 14 days prior to any soil preparation Work taking place on site.

B. Samples: Submit three samples and Manufacturer's certified, guaranteed analysis of the following items:

1. Soil amendments
2. Fertilizers and chemicals

C. Submit seed vendor's certified statement, product labels, and tags as well as any other data from all bags for grass seed mixture, stating botanical and common name, percentage by weight and percentages of purity, germination, and weed seed to the Landscape Architect for approval. Only Blue Tag Certified varieties shall be accepted.

D. All Work shall be under the supervision and guidance of a qualified and Registered North Carolina Licensed Landscape Contractor with documented experience in performing Landscape Work of comparable size, scope, and quality. Submit name and license number of Landscape Contractor with qualification information after bidding, before award of Contract.

E. Maintenance Instructions: Recommended procedures to be established by the owner for maintenance of turf during a calendar year.

F. Redline drawings of changes: Submit a neatly prepared set of red line drawings showing all changes to the Contract Drawings that were made in the field during installation. Include measurements and dimensions to show locations of changes, as well as quantities, varieties, etc. Submit prior to substantial completion.

1.4 QUALITY ASSURANCE

A. Installer shall be a qualified and Registered North Carolina Licensed Landscape Contractor, with documented experience in performing Landscape Work of comparable size, scope, and quality.

B. It is required that the Work specified herein be observed by the Landscape Architect. The Contractor shall request observance at least 24 hours in advance of the time such observance is required. Observance can be requested during the following portions of the Work:

1. Preliminary grading and soil preparation
2. Observation of the size and condition of seed and rejection of unsatisfactory or defective material
3. When finish grading has been completed, and before the planting of seed
4. When seeding has been completed

C. Soil and Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant nutrient content of all existing or imported soil on the site.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver seed in original sealed, labeled, and undamaged containers. Only use fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analyst's (AOSA's) "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Notify Landscape Architect of sources of planting materials seven (7) days in advance of delivery to site. Submit name and type of seed, location, contact person and phone number.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not broadcast or drop seed when wind velocity exceeds five (5) miles per hour. Seeding shall not be performed during any other weather conditions which may adversely affect landscape materials and planting conditions.

1.7 SITE CONDITIONS AND SCHEDULING

A. Plant seed only after finish grades are established. Landscape Work shall not begin until structures, utilities, paving, and other improvements, which require access to or through planting areas, have been installed and accepted by the Landscape Architect.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil shall not contain stones, lumps, roots or any other extraneous material harmful to plant growth larger than one (1) inch in any dimension and shall conform to ASTM D 5268, pH range of 5.5 to 7 pH. When the topsoil has less than a 5.5 pH value, it shall be increased by applying pulverized limestone at a rate necessary to attain an approximate 6.5 pH value.

B. Material stripped from the following sources shall not be considered suitable for use as topsoil:

1. Chemically contaminated soils
2. Areas from which the original surface has been stripped and/or covered over as borrow pits, open mines, demolition sites, dumps and sanitary landfills
3. Wet excavation or Soil obtained from agricultural land, bogs, or marshes
4. Topsoil furnished from sources outside the limits of the Project shall have a minimum organic content of not less than six percent (6%) by weight

C. Soil Analysis Report

1. Provide soil tests which include the following requirements:

   a. Soil Fertility: Half-saturation percent, pH, salinity, nitrate, ammonium, phosphate, potassium, calcium, magnesium
   b. Agricultural Suitability: pH, salinity, boron, Sodium Absorption Ratio (SAR) using saturation paste extract
   c. Particle Size/Appraisal: pH, salinity, organic percent, USDA Particle size
   d. Germination (bio-assay) test.

2. The Soil Analysis Report shall include a statement that the laboratory has reviewed the Project Planting Specifications contained in Section 029200 – Seeding, and that its recommendations respond to the specific needs of the Project.

2.2 FERTILIZER

A. The quality of all fertilizer and all operations in connection with the furnishing of this material shall comply with the requirements of the North Carolina Fertilizer Law and with the rules and regulations, adopted by the North Carolina Board of Agriculture (NCBA) in accordance with the provisions of said law, in effect at the time of sampling. All fertilizer shall be subject to sampling and testing by the Landscape Architect, or by an authorized representative of the North Carolina Department of Agriculture (NCDA), or both.

B. Dry fertilizer shall have been manufactured from cured stock. During handling and storing the fertilizer shall be cared for in such a manner that it shall be protected against hardening, caking, or loss of plant food values. Any hardened or caked fertilizer shall be pulverized to its original condition before being used.

C. Liquid fertilizer shall be stored and cared for after manufacture in a manner that shall prevent loss of plant food values, and a homogeneous blend of plant food elements shall be maintained or reblended to the original condition immediately before use. Fertilizer shall be delivered to the site accompanied by a delivery slip, in an unopened original container, bearing the Manufacturer's guaranteed chemical analysis of the composition of the fertilizer.

D. Fertilizer for establishing turf shall have a commercial designation of 10-10-10 or any 1-1-1 ratio fertilizer containing a minimum ten percent (10%) nitrogen, ten percent (10%) available phosphoric acid and ten percent (10%) soluble potash.

E. If the fertilizer is to be applied with mechanical spreader in the dry form, a minimum of 75 percent (75%) shall pass a No. 8 sieve and a minimum of 75 percent (75%) shall be retained on a No. 16 sieve, and the maximum free moisture content shall be two percent (2%).

F. Fertilizer for establishing sod shall be any 1-2-2 ratio fertilizer containing a minimum of five percent (5%) nitrogen, ten percent (10%) available phosphoric acid and ten percent (10%) soluble potash.

G. If fertilization is planned to take place after April 15, first consult with the Landscape Architect since adjustments in this operation may be necessary for the late spring and summer season.

2.3 LIME

A. The quality of all limestone and all operations in connection with the furnishing of this material shall comply with the requirements of the North Carolina Lime Law and with the rules and regulations, adopted by the North Carolina Board of Agriculture in accordance with the provisions of said law, in effect at the time of sampling. All limestone shall be subject to sampling and testing by the Landscape Architect, or by an authorized representative of the North Carolina Department of Agriculture (NCBA), or both.

B. Pulverized, agricultural grade, dolomitic limestone shall be composed of not less than 85 percent (85%) calcium and magnesium carbonates to not less than 40 percent (40%) calcium and magnesium oxides. Lime shall be ground to such fineness that 60 percent (60%) shall pass through a 100 mesh sieve and 100 percent (100%) shall pass through a ten (10) mesh sieve. Coarser material shall be acceptable, provided the specified rates of application are increased proportionately on the basis of quantity passing the 100-mesh sieve.

C. The Contractor shall be responsible for determining lime and nutrient application rates based on the recommendations of laboratory soil tests. The Contractor shall take site samples as necessary to be representative of any significant variations in site soils. The test results shall indicate recommendations for lime, phosphorus, and potassium. The results of the tests shall be submitted to the Landscape Architect along with the Contractor's proposal for rate of lime and nutrient application.

D. Each delivery of pulverized limestone shall be accompanied by a delivery slip indicating its weight and certified analysis of its chemical composition and gradation, including calcium and magnesium oxide equivalents.

2.4 LAWN SEED MIXTURE

A. The following type of permanent seed shall be planted in areas denuded by construction or as shown on Contract Drawings:

1. Common Bermuda seed

B. All seed shall have a minimum purity of 98 percent (98%) and a germination rate of 85 percent (85%).

C. Provide fresh, clean, new crop seed complying with the tolerance for purity and germination established by the Association of Official Seed Analysts of North America (AOSA). Provide seed of the grass species, proportions and minimum percentages of purity, germination and maximum percentage of weed seed, as specified.

D. All seed shall be labeled to show that it is within the requirements of the United States Department of Agriculture (USDA) or North Carolina Department of Agriculture (NCDA) as to purity, germination and presence of restricted or prohibited weeds. All seed shall be Blue Tag Certified. Tags or copies of tags from all seed bags shall be submitted to the Landscape Architect.

E. Common weeds that are restricted or prohibited include:

Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy, Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimblewill, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel and Brome Grass, and any other noxious weeds as identified by the North Carolina Department of Agriculture (NCBA).

2.5 MULCH AND BINDERS

A. Straw mulch shall be threshed stalks of oats, wheat, rye, or barley reasonably free from mildew, mature seedbearing stalks, roots, or bulblets of Johnson Grass, Nutgrass, Sandbur, Wild Garlic, Wild Onion, Bermuda Grass, Crotalaria, and Witchweed, and free from an excessive amount of restricted noxious weeds according to the most current definition by the North Carolina Board of Agriculture (NCBA), and also there shall be compliance with all applicable State and Federal domestic plant quarantines. Mulch shall have been approved by the Landscape Architect before being used. Straw shall be clean and air dry.

B. Straw mulch that is matted or lumpy shall be loosened and separated before being used.

C. Binders for mulch shall be one of the following:

1. Emulsified asphalt, Grades CSS-1, CSS- 1H, SS-1, or SS- 1H. Emulsified asphalts of the slow-setting (SS) types shall conform to AASHTO M140. Cationic emulsified asphalts of the slow setting (CSS) types shall conform to AASHTO M 208 emulsified asphalt Grade SS-1 shall conform to ASTM D977 and be non-toxic and free of plant growth or germination inhibitors
2. Fiber mulch made from wood or plant fibers containing no growth or germination-inhibiting materials
3. Synthetic plastic emulsion shall be mixable with all normally available water when diluted to any proportions. After drying, the synthetic plastic binder shall no longer be soluble or dispersible in water but shall remain tacky until the grass seed has germinated. The plastic binder shall be physiologically harmless to humans or animals, and shall not have phytotoxic or crop-damaging properties
4. Vegetable based gels which can be classified as naturally occurring, powder based hydrophilic additives formulated to provide gels, which, when applied under curing conditions shall form membraned networks of water insoluble polymers. The vegetable gel shall be physiologically harmless to humans or animals, and shall not have phytotoxic or crop damaging properties.

2.6 HERBICIDES AND PESTICIDES

A. Pre-emergent herbicide shall be used as recommended by a licensed Pesticide Consultant and approved by the Landscape Architect.

B. Herbicides, including pre-emergent herbicide, shall be compatible with indicated materials.

C. The herbicide program shall specify the waiting period between spraying and seeding and sodding.

D. Herbicides shall not sterilize the soil.

PART 3 - EXECUTION

3.1 COORDINATION

A. Prior to beginning work, Contractor must verify that all underground utilities are in place.

B. Contractor is responsible for the protection of existing trees or vegetation to remain. Any damage inflicted by the Contractor shall be repaired without any additional cost to the Owner.

3.2 PLANTING SEASON

A. No execution of seeding shall occur on frozen ground.

3.3 EXCAVATION AND BACKFILL

A. Excavate and backfill areas to be seeded as indicated and specified herein.

B. Excavations for soil removal shall be to within six inches (6”) of back of curb or edge of walk. The Contractor shall be responsible for protecting and maintaining the integrity of compacted base rock and subgrade materials under paving and curbs, and for protecting all other structures in the excavated areas. Review with the Landscape Architect the distance to remain away from other structures within the excavated areas. Do not undercut sides of excavation. Damage to base rock, subgrade, paving, curbs or structures shall be repaired or replaced at no cost to the owner. Remove and legally dispose of asphalt debris, concrete and base rock from the site.

C. Deeper excavations shall be required if obstructions, contaminated soils, or aggregate base are encountered at bottom of excavations. Construction debris, contaminated soils, and aggregate base which have been exposed by construction operations shall be removed, and topsoil shall be provided to fill such holes and depressions.

D. Backfill areas to be seeded with topsoil. Prior to installing topsoil, scarify the bottom of the excavation to a six-inch (6”) depth. Scarify or undercut sides of excavations. The Contractor shall be responsible for protecting base rock and subgrade compaction under adjacent paving and curbs. Provide topsoil backfill in three-inch (3”) lifts. Incorporate the first three-inch (3”) lift of topsoil into the existing soil at the bottom of the excavation and tamp firmly.

3.4 ROUGH GRADING

A. Rough grade all areas prior to any seeding. Fill depressions with soil as needed or remove surplus soil and float areas to a smooth uniform grade. Slope all turf areas to drain. Roll, scarify, rake, and level as necessary to obtain true, even surfaces. Rough grading shall be inspected and approved by the Landscape Architect before soil preparation begins.

B. Seeded areas shall be thoroughly wetted down.

3.5 SOIL PREPARATION FOR SEEDING

A. A Rotovator, chisel plow or cultivator shall be used to work the soil to a depth of six inches (6”). After this operation, all stones, one inch (1”) or larger in any dimension, and other debris such as

wires, cables, tree roots, pieces of concrete, clods, weeds, vegetation, grass, and lumps shall be removed. Hand rake tree protection areas to a depth of one inch (1”). If necessary, additional topsoil shall be used to fill depressions that might collect water, except where depressions exceed eight inches (8”) in depth. In this case, subsoil shall be added and covered with four inches (4”) of topsoil.

B. Protect structures, utilities, sidewalks, pavements, vehicles, trees, shrubs, and plantings from damage caused by soil preparation.

C. All waste material and debris resulting from preparation of existing soil shall be legally disposed of off site at no expense to the owner.

D. The storage piles of topsoil and the areas from which stored topsoil has been removed, within the property limits of the Project, shall be fertilized and seeded as indicated on Contract Drawings.

E. The topsoil shall be spread on a previously prepared surface in a uniform layer, to produce a compacted minimum thickness of four inches (4”) in depth, which shall be incorporated into the soil. The surface of topsoil shall then be scarified to provide an improved zone between slope and topsoil. Slopes steeper than two to one (2:1) shall not be bladed smooth. Tractor drawn raking equipment that compacts turf areas shall not be allowed.

F. Areas with topsoil outside the limits of work shall be protected against damage caused by the delivery, handling and/or storage of materials, by washouts or to drainage diversion, by workmen, or by equipment. Any such damage shall be repaired by grading, fertilizing, seeding or sodding, replanting, and mulching at no cost to the owner.

G. Where either embankment or excavation slopes become eroded during the Work and before acceptance, repairs shall be made at no cost to the owner.

3.6 DRY APPLICATION METHOD OF LIME AND FERTILIZER

A. Fertilizing shall be carried out as soon as possible.

B. Only seed areas as indicated on the Contract Drawings shall be fertilized per this specification.

C. Soil Amendments, Fertilizers, and Cultivating:

1. Provide soil amendments, chemicals, and fertilizers for both imported and approved on-site soils. These are minimum requirements. Provide such additional amendments and chemicals as are required by the soil reports
2. Spread soil amendment and fertilizer evenly over all turf areas at the rates required by the soil report
3. After approval of amendment and fertilizer applications by the Landscape Architect, incorporate soil amendments and fertilizers into the top six inches (6”) of soil by repeated rotary-hoe cultivation.

D. When the soil has a pH value of less than 5.5 pH, sufficient pulverized dolomitic limestone shall be evenly spread to increase the soil pH value to an optimum 6.5 pH.

E. The quantity of pulverized limestone required shall be in proportion to its magnesium and calcium oxide content.

F. Mechanical seeders, seed drills, landscape seeders, cultivator seeders, and fertilizer spreaders may be used when fertilizer is applied in dry form. Hand operated seeding devices may be used when fertilizer is applied on areas which are inaccessible to mechanical seeders.

G. Soil shall be lightly rolled with a lawn roller that has been filled one-third (1/3) full of water to firm and settle the soil.

H. Watering: At completion of soil amendment and fertilizer installation, water the soil in all landscaped areas for a period of 14 days. Maintain sufficient soil moisture at all times to induce weed seed germination, but not to saturate the soil. Soil shall be moist to a minimum depth of 24 inches.

3.7 FINISH GRADING

A. When weeding and soil conditioning have been completed and soil has been thoroughly water settled, all landscaped areas shall be finish graded for placement of plant materials.

B. Tops and bottoms of all Slopes: Round tops and bottoms of slopes and drainage swales. Adjust and warp slopes at intersections of cuts and fills to flow into each other or into the existing natural ground surface without a noticeable break. Cuts and fills shall have a maximum slope of three feet (3’) horizontally to one foot (1') vertically, unless otherwise shown on the Contract Drawings.

C. Finished grades shall be in accordance with the grading details in the Contract Drawings. All seeded areas shall slope uniformly for positive drainage. Grades not otherwise indicated on the Contract Drawings shall be uniform levels or slopes between points where elevations are given, or between points established by walks, paving, curbs or catch basins. Finish grades shall be smooth, even, and on a uniform plane with no abrupt change of surface and no erosion scars.

D. Grading shall provide for natural runoff of water without low spots or pockets. Flow line grades shall be accurately set and shall be not less than two percent (2%) gradient unless otherwise indicated and approved by the Landscape Architect.

E. Finish grade of earth in landscaped areas shall be one-fourth inch (¼”) below the top of adjacent pavement, curbs or headers, pull and utility boxes, and utility structures unless indicated otherwise on the Contract Drawings.

F. Tractor drawn raking equipment or any other construction equipment that compacts planting areas shall not be allowed.

G. Where beds are intended to drain across pavements, the uphill grade shall be flush with the pavement; the downhill grade shall be one-half inch (½”) to three-fourths inches (¾”) below the pavement grade.

H. Maintain ground surfaces to the finish grades as shown on the Contract Drawings, and add or remove any topsoil that may be required to correct any settlement or erosion that occurs prior to the date of Final Acceptance.

3.8 SEEDING PROCEEDURES

A. Sowing of seed shall be done only after the prepared topsoil, to which lime, fertilizer and other amendments have been added as specified, has been thoroughly settled by rainfall or artificial watering.

B. Sowing of seed shall not occur until finish grading has been accepted by the Landscape Architect.

C. Do not use wet seed or seed that is moldy or otherwise damaged.

D. Sow seed at the above rate, and rake seed lightly into top one-eighth inch (1/8”) of topsoil, roll lightly, and water with fine spray.

E. Lawn areas shall be seeded evenly with a mechanical spreader or seeding machine at a rate of six (6) pounds per 1000 square feet. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

F. The method of seeding may be varied at the discretion of the Contractor on his own responsibility to establish a smooth, uniformly grassed lawn.

G. Watering shall be performed as necessary until a firm root mass is established. Each watering shall be performed until water infiltrates through the root zone and into the topsoil zone. Watering shall be performed in a manner that provides equal distribution and coverage to all areas seeded.

H. After a firm root mass is established and before the turf reaches the height of three inches (3”), the area shall be mowed with a machine that does not produce ruts, contribute to soil compaction, or in any way damage the turf. At the time of Final Acceptance, all turf shall be alive, healthy, and established.

3.9 MULCHING AND TACKING OF SEEDED AREAS

A. Seeded areas shall be mulched in a straw uniformly spread, one inch (1”) to one and one half inches (1 ½”) thick layer, as a loose measurement, and shall be bound in place with approved binder.

B. Binder shall be applied uniformly over mulch with an applicator or other suitable equipment.

C. When bonding mulch by spraying with binder, take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

D. Straw mulch shall be left in place and allowed to disintegrate.

E. If any straw mulch is displaced before the grass has made a growth of one and one half inches (1 ½”), the area shall be refertilized, reseeded and remulched without additional compensation.

3.10 LAWN RENOVATION

A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Re-establish lawn where settlement or washouts occur or where minor re-grading is required.

B. Remove and dispose of all existing turf from diseased or unsatisfactory lawn areas legally off-site at no expense to the owner; do not bury in soil.

C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

D. Mow, dethatch, core aerate, and rake existing lawn.

E. Remove weeds or other foreign materials before seeding and legally dispose of them off-site. Where weeds are extensive, apply selective herbicides as required.

F. Till stripped, bare, and compacted areas thoroughly to a soil depth of six inches (6”). Do not cultivate under the drip line of existing trees to be preserved.

G. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top four inches (4”) of existing soil. Provide new planting soil to fill low spots and depressions and to meet finish grades.

H. Apply seed according to specifications.

I. Water newly planted areas and keep moist until new lawn is established.

3.11 MOWING AND WATERING

A. Until the Project is finally accepted, the Contractor shall be required to mow as needed and maintain seed between two inches (2”) and four inches (4”) in height. The Contractor shall be required to repair or replace, or both, all seeding and mulching that is defective or becomes damaged.

B. Provide watering of all lawn areas as required to promote growth up to 60 days after substantial completion or until final completion.

3.12 SATISFACTORY LAWNS

A. Satisfactory Seeded Lawn: At the end of the maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 95 percent (95%) over any 10 sq. ft. and bare spots not exceeding five inches (5”) by five inches (5”).

B. Re-establish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.13 CLEANUP AND PROTECTION

A. The Contractor shall dispose of excess materials, soils, stones, debris, branches, paper, leaves, and rubbish resulting from this Work. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Thoroughly clean all pavements, walks, building surfaces, or automobiles parked nearby.

C. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

D. The Contractor shall remove from the site all equipment and other articles used.

E. Upon completion of Work, the site shall be left in a neat and orderly condition.

F. All damage to existing construction caused by landscaping operations shall be repaired to the satisfaction of the Owner at the Contractor's expense.

G. Protect all Landscape Work and materials from damage due to landscape operations, operations by other Contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged Landscape Work as indicated.

3.14 PRELIMINARY TO FINAL INSPECTION

A. At completion of the Work of this Section, the Contractor shall request a preliminary inspection to determine the condition of the turf areas.

B. Inspection shall be requested two (2) working days in advance.

C. The Contractor and Landscape Architect shall be represented at the inspection.

D. Construction considered ready for inspection shall conform to the following requirements:

1. All turf shall be healthy and free of infestations and weeds
2. Debris shall be removed and legally disposed of from the turf area, pavements shall be broom cleaned, and foliage shall be washed clean
3. All turf shall be installed in place as indicated and specified on Contract Drawings
4. All equipment shall be removed from the site.

3.15 FINAL INSPECTION AND ACCEPTANCE

A. Final inspection shall be for the completed Landscape Work and shall be made at the conclusion of the Landscape Work upon written notice requesting such inspection submitted by the Contractor to the Landscape Architect, at least seven (7) days prior to the anticipated date.

B. At the final inspection, the Landscape Architect shall determine the condition of the turf areas. Acceptance of this Work shall be contingent upon proper maintenance and the establishment of vigorous turf materials. Turf areas which are dead, unhealthy, or missing, whether by disease, neglect, vandalism, or any other reason, shall be replaced with the same seed originally specified and following these same specifications for installation.

C. Contractor shall prepare four (4) neatly prepared copies of all final submittals required for submission to the Landscape Architect. See Section 1.03 herein for a list of submittals.

D. Acceptance After Inspection: The Contractor shall be notified in writing of acceptance of all Work of this section for maintained turf. Maintenance or other remaining Work to be done shall be subject to re-inspection before acceptance.

3.16 MAINTENANCE AND TURF ESTABLISHMENT

A. Maintain Work of this section from time of installation until the final inspection, plus the 60 days specified after final completion. Maintenance shall include: Watering of seeded and overseeded areas as needed for growth conditions; repairs to seeded and overseeded areas and other necessary operations. Seeded areas shall be protected and replanted as necessary to establish

a uniform stand of the specified turf until acceptance. When seeded areas are ready for final inspection, the maintained turf areas shall be neatly mowed to the uniform height of approximately two and one half inches (2 ½"). The lawns shall be considered established only when the specified turf is vigorous and growing well after two to three (2-3) mowings, in addition to meeting the other requirements specified.

B. At the time of acceptance following final inspection, the Contractor shall continue routine maintenance responsibilities for the turf under this Contract for 90 days.

END OF SECTION 029200

SECTION 311000: SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Temporary erosion and sedimentation control.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow.

D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.

E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.

G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.

B. Topsoil stripping and stockpiling program.

C. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

D. Burning: No burning is allowed on site.

1.7 QUALITY ASSURANCE

A. Topsoil Stripping and Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

1.8 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.

B. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.

C. Tree- and Plant-Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."

D. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 015639 "Temporary Tree and Plant Protection."

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.4 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Remove tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 10 feet.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.6 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Burning tree, shrub, and other vegetation waste is not allowed on site.

C. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000

SECTION 312000: EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for walks, pavements, and turf and grasses.
3. Excavating and backfilling for buildings and structures.
4. Subbase course for concrete walks and pavements.
5. Subbase course and base course for asphalt paving.

B. Related Requirements:
1. Section 311000 "Site Clearing" for site stripping, grubbing, and stripping topsoil.
2. Section 029200 “Seeding” for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct preexcavation conference at Project site.

1. Review methods and procedures related to earthmoving, including, but not limited to, the following:

    a. Personnel and equipment needed to make progress and avoid delays.
    b. Coordination of Work with utility locator service.
    c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
    d. Extent of trenching by hand or with air spade.
    e. Field quality control.

1.5 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D2487.
2. Laboratory compaction curve according to ASTM D698.

B. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.6 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 311000 "Site Clearing" are in place.

D. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.

E. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards protection zones.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487, Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487, Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.

I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and zero to 5 percent passing a No. 4 sieve.

J. Sand: ASTM C33/C33M; fine aggregate.

K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

    a. 24 inches outside of concrete forms other than at footings.
    b. 12 inches outside of concrete forms at footings.
    c. 6 inches outside of minimum required dimensions of concrete cast against grade.
    d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
    e. 6 inches beneath bottom of concrete slabs-on-grade.

f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or 42 inches wide.

B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.

a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 24 inches outside of concrete forms other than at footings.
b. 12 inches outside of concrete forms at footings.
c. 6 inches outside of minimum required dimensions of concrete cast against grade.
d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
e. 6 inches beneath bottom of concrete slabs-on-grade.
f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or 42 inches wide.

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 SUBGRADE INSPECTION

A. Notify Owner's third-party testing agency when excavations have reached required subgrade.

B. If Owner's third-party testing agency determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.9 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.10 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.13 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place subbase course **and base course** on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course **and base course** under pavements and walks as follows:

1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Place base course material over subbase course under hot-mix asphalt pavement.
3. Shape subbase course and base course to required crown elevations and cross-slope grades.
4. Place subbase course and base course 6 inches or less in compacted thickness in a single layer.
5. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
6. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D698.

C. Pavement Shoulders: Place shoulders along edges of subbase course and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D698.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

E. Testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2937, and ASTM D6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.
3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.15 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 312500: SEDIMENTAION AND EROSION CONTROL

PART 1 - GENERAL

1.1 RULES AND REGULATIONS FOR EROSION AND SEDIMENT CONTROL

A. Regulations of the State of North Carolina, Department of Environment, Health, and Natural Resources, North Carolina Sediment Control Commission, promulgated pursuant to the provisions contained in the Sedimentation and Pollution Control Act of 1973, and subsequent amendments, shall apply regarding any land disturbing activity and protection of the site of the Work and neighboring properties during execution of the Work.

1.2 PAYMENT

A. Payment for temporary silt fencing shall be per linear foot; and construction entrances shall be paid per each item.

B. All items shall be paid at the contract unit prices bid, to include materials, installation and maintenance during the contract period.

PART 2 - PRODUCTS

2.1 TEMPORARY SILT FENCE

A. Filter Fabric: This shall be a porous silt fence fabric approved by the Landscape Architect.

B. Posts: These shall be steel, of a minimum length as indicated on the Drawings, and sufficient to hold wire, fabric, and full sediment load without failure.

C. Wire Fabric: This shall be welded wire fabric of size and thickness as detailed on the Drawings. New rolls of wire fabric shall be used with no deformities or unusual bends.

D. Wire Ties: As detailed on the Drawings.

2.2 WASHED STONE

A. 57 washed stone shall be used for temporary construction entrances, as defined by NCDOT specifications.

PART 3 - EXECUTION

3.1 GENERAL

A. Temporary and permanent erosion control measures shall be provided for the Work as required on the Drawings or as directed by the Landscape Architect.

B. All permanent erosion control devices shall be incorporated into the Work at the earliest practicable time.

C. Temporary erosion control measures shall be coordinated with permanent erosion control measures to ensure continuous erosion and sediment control throughout the construction and post-construction periods.

3.2 MAINTENANCE

A. The Contractor shall check erosion control measures for stability and operation following every runoff-producing rainfall, but in no case less than once each week. Any necessary repairs shall be made immediately to maintain all measures as designated. The sediment shall be removed from the sediment traps when storage capacity is approximately 50 percent full. Stone shall be cleaned or replaced when the sediment pool no longer drains properly.

3.3 TEMPORARY CONSTRUCTION ENTRANCE

A. These shall be built in accordance with the Drawings and maintained throughout construction. Tracking of mud and debris on public rights-of-way will not be allowed at any time.

3.4 TEMPORARY MEASURES

A. Certain erosion control measures are noted as "temporary" on the Drawings and shall be removed from the site after project completion, after stabilization and approval of the Owner.

END OF SECTION 312500

SECTION 321123: AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes Specifications for the construction of a base composed of approved aggregate material hauled to the site, placed as shown on the Drawings, compacted and shaped to conform to the lines, grades, depths, and typical sections shown on the Drawings or as directed by the Landscape Architect.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE

A. The aggregate base course shall consist of crushed stone or crushed gravel. This material shall conform to the Requirements of Aggregate Base Course, as designated by the North Carolina Department of Transportation, Standards and Specifications for Roads and Structures.

PART 3 - EXECUTION

3.1 HAULING AND PLACING MATERIAL

A. The aggregate material shall be placed on the subgrade to the specified depth and in such a manner as to prevent segregation. Where the required compacted thickness of the base is eight inches or more, the base material shall be spread and compacted in two or more approximately equal layers. The maximum compacted thickness of any one layer shall be approximately six inches (6”). Each layer of material shall be compacted, tested and approved before placing succeeding layers of base material or pavement.

B. No material shall be placed on frozen subgrade or base. Hauling equipment shall not be operated on subgrade or a previously completed layer of base material soft enough to rut or weave beneath the equipment. The maximum speed of trucks traveling over any part of the subgrade or base shall be 20 miles per hour.

C. The Contractor shall utilize methods of handling, hauling, and placing material which will minimize segregation and contamination. If segregation occurs, changes may need to be made to the methods to minimize segregation, and may also require mixing on the road which may be necessary to correct any segregated material. No additional compensation will be allowed for the work of road mixing as may be required. Aggregate which is contaminated with foreign materials to the extent that base course will not adequately serve its intended use shall be removed and replaced by the Contractor at no additional cost to the Owner, regardless of prior acceptance.

3.2 SHAPING AND COMPACTION

A. Immediately after the placing of a layer of the base, the Contractor shall begin machining and compacting the layer. Each layer of base shall be maintained to the required density prior to placing the next layer. Each layer of the base shall be compacted to a density equal to at least 100% of that obtained by compacting a sample of the material in accordance with ASHTO-T180 (Modified Procter). The base material shall be compacted

at a moisture content which is approximately what is required to produce the maximum density indicted in the above test method. The Contractor shall dry or add moisture to the material when required to provide a uniformly compacted and acceptable base.

B. The final layer of the base material shall be shaped to conform to the lines, grades, and typical sections shown on the plans or established by the Landscape Architect. When completed, the base course shall be smooth, hard, dense, unyielding and well bonded. The thickness of the base shall be within a tolerance of plus or minus 1/2” (one-half inch) of the base thickness specified.

3.3 MAINTENANCE

A. The Contractor shall provide adequate drainage to protect the subgrade and base until the project is completed. The grader shall maintain the surface of the base by watering, machining, and rolling or dragging where necessary to prevent damage by weather or traffic. Where the base or subgrade is damaged, the Contractor shall repair the damaged area; reshape the base to the required lines, grades, and typical sections; and recompact the base to the required density at no cost to the Owner.

END OF SECTION 321123

SECTION 321227: ASPHALT PICKLEBALL COURT AND COATING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish all material, labor, services and related items required to complete work indicated on drawings and/or specifications. The items of work to be performed shall include but are not necessarily limited to the complete installation of pickleball court surfacing and playing lines.

1.2 REFERENCES

A. American Sports Builders Association (ASBA).

B. USA Pickleball Association (USAPA) Rules of Pickleball.

1.3 QUALITY ASSURANCE

A. Contractor Qualifications:

1. The Contractor must be experienced in pickleball court construction work of the highest professional quality and have facilities and personnel adequate for the work specified. The Contractor must submit evidence of courts built and completed within the last five years of similar complexity and scope (asphalt, court surfacing, equipment installation, etc.) for approval by the Owner and Landscape Architect prior to commencing the work. The Contractor must also acquaint himself with all the work related to site improvements and other work which might affect preparation for or installation of pickleball courts.

B. Testing shall be done under the supervision of the Contractor and in accordance with the General and Supplementary Conditions of the Contract.

1.4 SUBMITTALS

A. The Contractor shall submit to the Landscape Architect materials containing the following information:

1. Contractor Qualifications
2. Materials to be used and the proposed method of application and procedures to be followed.
3. Manufacturer’s Material Safety Data Sheets (MSDS) for all coatings and paints prior to their delivery to the site.
4. Manufacturer’s recommended methods of installation for all coatings and paints for approval prior to the commencement of the work.

PART 2 - PRODUCTS

2.1 FINISH MATERIALS

A. Asphalt Surfacing: Hot plant mix having a maximum aggregate size of 3/8” and a minimum aggregate size of 1/4".
B. Coating Material: 100% acrylic emulsions, formulated with acrylic resins, mineral fillers, color fast pigments and approved silica sand

C. No asphalt emulsion coats will be accepted.

D. Playing Lines: All lines shall be painted with textured white line paint, provided by the approved manufacturer. The use of traffic, oil, alkyd or solvent-vehicle type paints is absolutely prohibited.

PART 3 - EXECUTION

3.1 BARRIERS

A. The Contractor shall erect and maintain barricades, canopies, guards, lights and warning signs to the extent required by law and as is prudent for the protection of the public and protection of the work.

3.2 SLOPE REQUIREMENT

A. All excavating, filling, and grading requirements and compacting work of the subbase should be performed so that the finished court surface is 2” above the surrounding ground and slopes at 1% (1:100). Each court must slope on a true plane from side to side. The court should never be sloped from the net line to the baseline, from the baseline to the netline, from the sides to the centerline or from the centerline to the sides.

3.3 AGGREGATE BASE COURSE

A. Material: A base course of bituminous concrete mixture; crushed aggregate; processed/recycled asphalt or processed/recycled concrete should be installed over the subgrade. The specified material should meet applicable ASTM specifications. Compacted thickness will be a minimum of of 8”.

B. Spreading and Compacting: The material should be spread by methods and in a manner that produces a uniform density and thickness. The material thus spread should be compacted to 95% minimum Proctor Test with equipment that provides uniform density. Each layer of material shall be sampled, tested, compacted, and approved prior to placing succeeding layers of base material or pavement.

C. No base material shall be placed on frozen subgrade or base; no base material shall be placed that will not be covered by a subsequent layer of the pavement structure during the same construction season. Any defects that may develop in the completed base course shall be acceptably repaired at no cost to the Owner.

D. Tolerances: Surface of the base course as compacted should not vary more than 1/2” from the true plane of the court.

3.4 APRON

A. A 9" apron will be added around the perimeter of the court to help prevent the intrusion of vegetation, facilitate landscape maintenance, and improve the overall cosmetics of the court. Fencing should be installed after paving and prior to surfacing.

3.5 ASPHALT LEVELING COURSE

A. A leveling course of a hot plant mix having a maximum aggregate size of 3/8” to 3/4” in accordance with specifications of the state's Department of Transportation and/or the

Asphalt Institute should be constructed over the base course to a compacted thickness of not less than 1-1/2”.

B. This hot plant mix should be spread and compacted by methods and in a manner that produces a uniform density and thickness. The finished intermediate course should not vary more than 1/4" in 10', when measured in any direction.

3.6 ASPHALT SURFACE COURSE

A. General Description: A surface course of a hot plant mix having a maximum aggregate size of 3/8” and a minimum aggregate size of 1/4" should be constructed over the hot mix intermediate course to a compacted thickness of not less than 1-1/2”.

Suggested Mix Design:

Screen	% Passing
1/2	100
3/8	90-100
#4	55-85
#50	7-23
#200	2-10

Thickness: Not less than 1”.

Liquid Asphalt Bitumen: Minimum 5.5% by weight.

Aggregate Type: Crushed stone, gravel, shale, limestone, etc. Foreign materials, i.e., pyrite, clay, ferrous compounds, dirt and organic material are not acceptable.

Cure Time: Follow coating manufacturer's recommendations (typically 14-30 days, depending on the time of year and rainfall). Minimum 14 days before application of playing surface. Asphalt will cure more slowly in cooler temperatures.

Voids Content: Minimum as specified by the Department of Transportation or State Highways Department, but in no case should void content exceed 7%.

B. Spreading and Compacting: This hot plant mix should be spread and compacted by methods and in a manner that produces a uniform density and thickness

C. Surface Tolerance: The finished surface of the court should not vary more than 1/8" in 10' when measured in any direction.

3.7 WATER TESTING

A. Check the finished surface of the asphalt for puddles by flooding the entire paved area with water. Any puddle holding water deeper than a five cent piece (nickel) should be outlined with chalk and filled.

3.8 COATING MATERIALS

A. Coating materials should be 100% acrylic emulsions, formulated with acrylic resins, mineral fillers, color fast pigments and approved silica sand. All products must be pure acrylic containing no asphalt or tar emulsions, nor vinyl, alkyd pure non-acrylic resins. Both filler and finish coats should be fully pigmented, assuring the Owner a uniform finish and consistent color throughout. The color system shall be factory mixed compounds requiring only the addition of water at the job site except for the addition of specified sand where

called for in the specifications. All materials shall be delivered to the job site in sealed containers with the manufacturer lable affixed.

1. Preparation: New asphalt pavement shall cure for fourteen days prior to application of any surfacing materials. The surface to be coated shall be inspected and made sure to be free of grease, oil, dust, dirt, and other foreign matter before starting work.

2. Colored Texture Coats: Once the surface has been properly prepared and has cured, the next step is the application of the texture materials as recommended by the manufacturer of the color finish system to achieve a uniform texture on the court. Application rates should be expressed in undiluted gallons per square yard.

3. Color Finish: The final coat may or may not contain aggregate, depending upon the finish desired. It is recommended that, wherever feasible, the finish coat be applied parallel to the net in the inbounds area. Application rate should be expressed in undiluted gallons per square yard.

3.9 COLOR SELECTION AND FINISH

A. Color to be determined by the Owner. Contractor to submit color samples for approval prior to installation.

3.9 APPLICATION OF THE COLOR MATERIALS

A. The coating materials should be installed in multiple applications in the selected and approved colors, so as to form a true, uniform texture and color. Minor aesthetic differences may be seen when viewing the court from different angles and under different light conditions. Application work should be performed by skilled mechanics in a workman-like manner and in accordance with the manufacturer’s standard printed instructions. No work should be performed when rain is imminent. Air temperature should be 50 degrees Fahrenheit and rising for application. Surface temperatures below 50 degrees Fahrenheit and above 140 degrees Fahrenheit may not allow proper film formation. Each coat must dry completely before next application. Between each coat, inspect entire surface. Any defects should be repaired. Scrape surface to remove any lumps, and broom or blow off all loose material. Coating manufacturer's recommendations, the applicator's recommendations and local conditions should also be considered.

3.10 PLAYING LINES

A. Dimensions: Base and playing lines shall be two inches (2") wide. Lines shall be accurately located and marked in accordance with the rules of the USA Pickleball Association. All lines shall be painted with textured white line paint, provided by the manufacturer. Playing lines shall be taped, and the tape sealed/primed and then painted to provide straight lines with sharp edges.

3.11 GUARANTEES

A. The manufacturer shall guarantee the material in writing for a period of two (2) years from date of Physical Completion against chalking, checking, fading discoloration, or other adverse effects from ultraviolet rays of the sun, from weather moisture, or from weather temperatures.

B. The Contractor shall further guarantee that all work performed under this section shall be free from defects in material and workmanship. Upon notice in writing from the Owner to

the Contractor within two (2) years of Physical Completion of the project, the Contractor shall, at no expense to the Owner, make necessary repairs or replacements of the defective work in question. During this period of guarantee, the Owner shall perform normal maintenance, repairing pickleball racquet damage and cleaning.

3.12 CLOSE OUT

A. Cleaning: Upon completion, the Contractor shall remove all containers, surplus materials and debris, and leave the site in a clean and orderly condition acceptable to the Landscape Architect and Consultant.

B. Maintenance: The installer shall make recommendations to the Contractor in writing of the procedures to follow in protecting and maintaining the pickleball courts until Final Completion. The Contractor shall provide the Landscape Architect with a complete set of maintenance and repair procedures.

END OF SECTION 321227

SECTION 321313: CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. The Work covered by this section consists of the subgrade preparation, form work, reinforcement, jointing, placing, finishing and curing of concrete Work.

1.2 INDUSTRY STANDARDS

A. Some products and execution methods are specified in this section by reference to published specifications or standards of the following, with respective abbreviations used.

AASHTO:	American Association of State Highway and Transportation Officials.
ACI:	American Concrete Institute
ASTM:	American Society for Testing & Materials
AWS:	American Welding Society
PS:	U. S. Product Standards

PART 2 - PRODUCTS

2.1 CONCRETE

A. Standard weight, ready mixed concrete conforming to ASTM C94-73a and having the following properties:

1. Maximum size aggregate of 3/4 inch.
2. Non-vibrated slump between 2.5 and 4 inches.
3. 3,500 psi minimum compressive strength at 28 days.
4. Concrete shall be air entrained to provide an air content of 6.0 percent plus or minus 1/4 percent. Air entraining agents shall meet the requirements of AASHTO M154.
5. Water used shall be clean and free from oil, salt, acid, alkali, organic matter, or other substances injurious to the finished product.
6. Maximum water-cement ratio of 0.532

2.2 Reinforcing Bars

A. Deformed bars conforming to ASTM A 615-72, Grade 40, American manufacture. Size as detailed.

2.3 Wire Reinforcing

A. Steel fabric reinforcement shall be cold drawn steel wire, spot welded at intersections, or approved manufacturer, ASTM A186-79, with wire minimum yield strength of 70,000 psi, except welded intersections shall be spaced not greater than 12” in the direction of principal reinforcement.

2.4 Forms

A. Forms shall be of either wood or steel of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Forms shall be straight and free of distortion and defects. Bent, twisting, split or defective materials will not be permitted.

PART 3 - EXECUTION

3.1 FORM WORK

A. Forms shall be straight, true to plane, plumb, and shall be braced to prevent displacement during concrete placing. Forms shall be tight to prevent leakage of concrete. All inside form surfaces shall be thoroughly coated with commercial quality form oil.

3.2 JOINTS

A. Provide expansion and control joints in accordance with the contract Drawings.

3.3 PLACING CONCRETE

A. Preparation Before Placing:

1. No concrete shall be placed until forms and subgrades have been inspected by the Landscape Architect.
2. Before concrete is placed, clean all mixing and transporting equipment; and remove debris, ice, water, and deleterious material from forms and reinforcement which would affect quality or appearance of concrete, or inhibit bond of concrete to reinforcing.
3. Provide runways and access to areas to be placed which will protect forms and reinforcement from displacement.
4. Place concrete on a firm, dry subgrade. In no case place concrete on frozen subgrade.

B. Conveying: Convey concrete from mixer to place of final deposit by methods which will prevent separation or loss of materials. Equipment for conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete from delivery end to point of deposit without separation of materials.

C. Depositing:

1. Do not mix nor pour concrete when atmospheric temperature is below 40 degrees F., nor when such temperatures are expected within two days.
2. Deposit concrete as nearly as practicable in its final position to avoid segregation due to re-handling or flowing. Maximum free fall of concrete shall be 3 feet.
3. Deposit concrete at a rate so that concrete is plastic at all times, and is being integrated with concrete which is still plastic. Deposit continuously until concrete work between construction joints is complete.
4. Consolidate concrete thoroughly by suitable means during placement. Work thoroughly around reinforcement and embedded items, and into corners of forms.
5. Spade concrete thoroughly along forms and expansion joints.
6. Where surface mortar is basis of finish of concrete, work coarse aggregate back from forms without formation of surface voids.

7. Vibrators may be used provided they are used by experienced operators, and provided forms have been designed against deflection and displacement by vibrated concrete.
8. Tamp and screed concrete true to grade and section. Do not trowel concrete (after darbying) until surface water has evaporated.

3.4 FINISHES

A. Broom Finish: Bring to correct level with straightedge and strike off. Bring to a smooth surface (free of bumps and hollows) with bull float or darby. Sprinkling dry cement, or mixture of dry cement and sand, is not permitted. Do not work concrete further until water sheen has disappeared, and/or mix has stiffened sufficiently so that the weight of a man leaves only a slight imprint. Apply a fine broom finish at this time as final finish, in direction shown on Drawings.

3.5 REMOVAL OF FORMS

A. After a minimum of 24 hours remove forms carefully. Do not damage face of concrete or chip tooled edges.

3.6 PROTECTION AND CURING

A. All exposed surfaces of concrete shall be protected from premature drying. Freshly placed concrete shall be protected against wash by rain.

END OF SECTION 321313

SECTION 323114: ATHLETIC FENCE AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. The Work covered by this section consists of the PVC coated chain-link fencing, gates, and accessories.

1.2 SUBMITTALS

B. Changes in specifications may not be made after the published date of bid. All submittals of substitutions must be approved before bid date.

C. Shop drawings of fence with all dimensions, details, and finishes. Drawings must include post foundations.

D. Product data: Manufacturers catalog indicating materials and a letter certifying that all conditions of the specifications have been met.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Products from other qualified manufacturers who have five years or more experience manufacturing PVC coated chain-link fencing will be considered by the architect as equal if they meet all specifications for design, size gauge of metal parts and fabrication.

B. Chain-link fence must be obtained from a single source.

2.2 CHAIN-LINK FENCE FABRIC

A. PVC coated over galvanized steel wire per ASTM F 668, Class 2a – Extruded and Adhered (Bonded). Wire to have 75,000 psi (517 MPa) tensile strength.

B. Chain-link fence fabric shall be made of steel wire helically wound and interwoven in such a manner as to provide a continuous mesh without knots or ties except in the form of knuckling or twisting the ends of the wire to form the desired selvage of the fabric. Height of twelve (12) feet, 2” (50 mm) diamond mesh, and a core wire diameter of 9 gauge (50 mm). The wire breakload or strength to be 1200 lbf. Color: black.

C. Selvage of fabric knuckle top; knuckle bottom.

2.3 PVC COATED STEEL FRAME FENCE MEMBERS

A. Steel pipe (SS40) per ASTM F 1083 having a minimum yield strength 30,000 psi (205 Mpa) and minimum tensile strength 48,000 psi (330 MPa). Pipe coated by hot dipped methods. Minimum 1.8 oz/ft2 (55 g/m2) of surface.

B. An outer coat of PVC in accordance with ASTM F 1043 in a thickness of 10-15 mils (0.254–0.381 mm) to be applied by thermal fusion process in color to match fabric.

C. End and Corner Post 3” OD, 3.117 lbs/ft (4.64 kg/m)

D. Line (intermediate) Post 2½” OD, 2.281 lbs/ft (3.30 kg/m)

E. Rail and Braces 15/8” OD, 1.830 lbs/ft (2.72 kg/m)

2.4 FITTINGS (ALL PVC COATED)

A. Chain-link fence fittings per ASTM F 626. All ferrous metal fittings to be galvanized and coated with PVC to match framework and fabric.

B. Post caps: Steel, cast iron or aluminum alloy; must be weatherproof to prevent moisture intrusion into post. Intermediate or line post tops to have loop for top rail when specified.

C. Rail ends: Formed steel or iron, designed to provide secure connection of top rails to terminal post and brace or other rails to terminal and intermediate posts.

D. Sleeves: Lengths of top rails to be connected using 6” (152 mm) sleeves that allow for expansion or contraction of the rail.

E. Tie Wire: 9 gauge [0.148" (3.76 mm)] galvanized steel or aluminum for attachment of chain link fabric to rails. Hog rings attach fabric to tension wire to be 12½ GA [0.0985” (2.502 mm)].

F. Fabric bands and rail bands to be pressed steel.

G. Tension (stretcher) bars made of one continuous piece of steel, aluminum, or fiberglass, ¼” x ¾”. Provide one bar per end or gate post and two bars per corner or pull post.

H. Tension wire: Galvanized steel wire, 7 gauge, [0.177” (4.5 mm)], having a tensile strength of 75,000 psi (517 MPa).

I. Truss rods & tightener: Rod minimum diameter 3/8”.

J. Fasteners: All nuts and bolts to be galvanized and field painted to match fence.

2.5 SETTING MATERIALS

A. Concrete: Minimum 28 day compressive strength of 3,000 psi (20 MPa).

2.6 GATES

A. Gates shall be of the dimensions and at the locations shown on the drawings or as directed by the Landscape Architect.

B. Gate posts shall be three (3) inches O.D. SS40 galvanized steel pipe and set forty-eight (48) inches deep in concrete.

C. Gate frames shall be of 2” O.D. SS40 galvanized welded and galvanized after construction.

D. Gate fabric shall be nine (9) gauge galvanized link fabric woven in a two (2) inch diamond mesh and locked in standard chain link form. PVC coated over galvanized steel wire per ASTM F 668, Class 2a – Extruded and Adhered (Bonded). FABRIC SHALL BE KNUCKLED TOP AND BOTTOM.

E. Gates shall open 180 degrees and be equipped with pressed steel industrial type hinges and a latch suitable for attaching a padlock.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify areas to receive fencing are completed to final grades and elevations.

B. Property lines and legal boundaries of work to be clearly established by the General Contractor or property owner.

3.2 CHAIN-LINK FENCE FRAMING INSTALLATION

A. Install chain-link fence in accordance with ASTM F 567.

B. Space line posts equidistant at ten feet (10') maximum center to center of posts.

C. Set terminal posts at beginning and end of each continuous length of fence and where abrupt changes in grade or direction of fence occur (30º or more).

D. Set posts in concrete. Dig holes having a diameter four (4) times the diameter of the post, and 6" (152 mm) deeper than the bottom of the post. Forms are not necessary or recommended. Crown concrete at top to shed water (except for tennis courts).

E. Check each post for vertical and top alignment.

F. Securely attach brace rail and truss rod at midpoint of all fences 6' high and over, or any, fence without top rail. Adjust rod to insure posts remain vertically plumb after fabric is stretched. One brace per end or gate post. Two braces per corner or pull post.

G. Tension Wire: Install tension wire at bottom of fabric. Install tension wire before stretching fabric and attach to each post with ties. Secure tension wire to fabric with 12½ gauge hog rings 24" OC. Tension wire to be PVC coated. (Bottom tension wire is optional.)

H. Top rail: Install lengths, 21' (6400 mm). Connect joints with sleeves for rigid connections for expansion/contraction.

I. Center rails are to be installed when fence fabric is 12' (3658 mm) or higher, or when shown on drawings.

J. Bottom rails (optional) to be installed when shown on drawings.

3.3 CHAIN-LINK FABRIC INSTALLATION

A. Fabric: Install fabric on security side and attach so that fabric remains in tension after pulling force is released. Leave approximately 2" (50 mm) between finish grade and bottom selvage. Attach fabric with wire ties to line posts at 15" (381 mm) on center and to rails, braces, and tension wire at 24” (600 mm) on center.

B. Stretcher bars: Thread tension bar through fabric and attach to terminal posts with bands or clips spaced maximum of 15” (381 mm) on center.

3.4 CLEANING

A. Clean up debris and remove from the site.

END OF SECTION 323114

SECTION 328061: PICKLEBALL COURT NETS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Work covered by this section consists of providing all equipment, materials, and labor necessary to furnish and install pickleball court nets, complete as indicated on the drawings and as specified. Work shall include:

1. Furnish and install pickleball nets and posts in concrete foundations as detailed on the plan drawings.
2. Furnish and install center strap and anchor in concrete foundations as detailed on the plan drawings.

1.2 SUBMITTALS

A. Product Data

3. Submit manufacturer's printed product data and specifications for each product used, including details of construction relative to materials, dimensions, gauges, profiles, method of mounting, specified options, and finishes.

B. Samples

1. Submit manufacturer's samples of pickleball nets. Samples shall be a minimum of 12” x 12”.

1.3 COORDINATION

A. Pickleball net post and center strap anchor footings for the asphalt courts shall be installed prior to the construction of the court slabs.

B. All pickleball court net posts, nets, and center straps shall be installed after the completion of the acrylic court surfacing.

1.4 QUALITY ASSURANCE

A. Unless otherwise indicated, all pickleball court equipment and its installation shall conform to the rules of pickleball of the USA Pickleball Association (USAPA).

1.5 WARRANTY

A. Provide manufacturer's standard written warranty for each accessory or equipment item.

PART 2 – PRODUCTS

2.1 PICKLEBALL NETS, POSTS, AND CENTER STRAP ANCHORS

A. Pickleball Net Posts

1. Net posts shall be 3” round posts, as indicated on the drawings, fabricated from minimum 11 gauge (0.125 in.) steel with acrylic urethane or baked on polyester

powder coat finish. Posts shall be equipped with welded net lacing rods, steel cable sheaves on top, automatic locking, fully internal winding system with removable handle and net anchoring hooks or eyes. The dead end post shall be fitted with appropriate hardware to firmly anchor the end of the cable. Net post color shall be black.

B. Net Post Sleeves

1. Each post shall be provided with an aluminum, galvanized steel, or PVC coated steel ground sleeve. The sleeves shall be of the dimensions necessary to provide a smooth fit between the post and sleeve. All sleeves are to be provided by the same manufacturer as that of the net posts, with no exceptions. A PVC ground sleeve cap shall be provided with each sleeve.

C. Center Strap Anchor

1. The center strap anchor shall be a minimum 9” length by 1.5” diameter galvanized steel or aluminum pipe type anchor equipped with a riveted or welded minimum 3/16” (0.1875) in.) center pin at one end and deformed or crimped edge at the other end to allow for secure anchoring within the concrete footing.

D. Pickleball Net

1. A standard sized net 22’-0” wide by 3’-0” high at the ends and 2’-10” high at the center shall be provided for each court. The netting portion of the net shall be fabricated with a minimum 0.118’ (3.0 mm) diameter black braided polyethylene cord with a minimum breaking strength of 300 lbs. The netting shall be woven with a 1.75” square mesh with the top five rows (minimum) woven with double cord. The net head band shall be fabricated from a double layered white polyester duck fabric sewn at the bottom with a minimum of four rows of polyester lock stitching. The side pockets and bottom band of the net shall be fabricated from black abrasion resistant 18 oz. vinyl, sewn with a minimum of two rows of lock stitching. Net grommets shall be spur type nickel plated brass. The net shall be supplied with two polished fiberglass net dowels. The net shall also be supplied with a minimum 7/32” diameter PVC coated braided galvanized steel cable with a minimum breaking strength of 2,800 lbs. Net cables shall be fitted with a mechanically spliced loop on either end for secure attachment to net posts.

E. Center Strap

1. Center strap hold-downs shall be fabricated from 2” wide, white polyester webbing with quick adjustable hardware. The center strap shall be fitted with a minimum 2” long rust-resistant swivel snap hook for attachment to the center strap anchor.

2.2 CONCRETE

A. Concrete for net post and center strap anchor foundations shall be air-entrained type Portland cement concrete with the minimum 28 day compressive strength of 3,500 PSI.

PART 3 – EXECUTION

3.1 NET POST FOUNDATION

A. Net post foundation shall be installed prior to the construction of the court slabs.

B. Verify and mark locations of the center of the net post according to USAPA regulations: 22’-0” center to center for net posts. All net post locations shall be in accordance with the project drawings.

C. Set net post sleeves in concrete foundation of the minimum dimensions and specific shapes indicated in the drawings. If local soil conditions dictate, the dimensions of the concrete shall be increased to insure an adequate and stable net post foundation. The net post foundation shall be constructed so as to not cause cracking of other damage to the pavement or court surface. Sleeves shall be set plumb and true. Concrete shall be poured to undisturbed earth.

D. The top of the concrete foundation shall be set just below the fine aggregate cushioned layer. The top of the manufacturers net post sleeve shall be set flush with the elevation of the finished court playing surface.

3.2 CENTER STRAP ANCHOR AND ANCHOR FOUNDATION

A. Center strap anchor foundation shall be installed prior to the construction of the court surface.

B. Carefully core through the existing court pavement and excavate in the aggregate base course and subsoil the same size as the center strap anchor footing base dimension. Exercise care so as to create a clean-cut vertical excavation or slightly belled at the bottom.

C. Set center strap anchor in concrete foundation of the minimum dimension and shape indicated on the drawings. The center pin of the anchor shall be installed parallel to the net. The center strap anchor foundation shall be constructed so as to not cause cracking or other damage to the pavement or court slabs.

3.3 PICKLEBALL NET

A. Install pickleball nets only after concrete net post foundations have achieved their full 28 day compressive strength and after the completion and thorough curing of the court surface system. The pickleball net shall be installed in accordance with the USAPA regulations. The net shall be securely attached to the net posts with net lacing. The pickleball net shall be fully stretched between net posts so that the net is butted to the face of the lacing rods. Nets shall be installed with sidepocket dowels in place. Install center strap and tighten strap to the regulation net height shown on the drawings.

END OF SECTION 328061

TERRATECH
ENGINEERS • INC
Geotechnical Engineering
Environmental Consulting
Construction Materials Testing

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Archer Lodge Town Park

Archer Lodge, North Carolina

prepared for

Town of Archer Lodge

Prepared by

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Environmental Consulting
Construction Materials Testing

June 11, 2020

Mr. Mike Gordon
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Report of Subsurface Investigation
and Geotechnical Engineering Evaluation
Archer Lodge Town Park
Archer Lodge, North Carolina
Our Project Number 121-20-101460

Gentlemen:

TerraTech Engineers, Inc. has completed the authorized subsurface investigation and engineering evaluation for the above referenced project. The enclosed report describes our investigative procedures and presents the results of our testing and evaluation along with comments regarding the geotechnical aspects of this project.

We appreciate the opportunity to work with you on this subsurface investigation and engineering evaluation and are prepared to follow up with the recommended construction materials testing services.

If you have any questions concerning this report, please contact us.

Sincerely,

TerraTech Engineers, Inc. (C-1356)

Brock Horsley, P.E.
Geotechnical Engineer

Christopher S. Pilz, P.E.
Principal Geotechnical Engineer

SCOPE OF SERVICES

The scope of this study was outlined in our proposal 8314-N dated May 15, 2020. The main objective of the study was to evaluate the subsurface conditions at the subject site and to make recommendations regarding the geotechnical aspects of site preparation. More specifically, the scope of this investigation included the following objectives:

(1) To evaluate the existing subsurface soil and ground water conditions within the specifically requested areas.

(2) To provide recommendations for site preparation and site grading, including our evaluation of the excavation characteristics of the encountered materials and recommendations for earth slope design.

(3) To provide recommendations for foundation design, including our evaluation of the suitability of a shallow foundation system, and allows soil bearing pressure for support of shallow foundations.

(4) To provide recommendations for ground water control if it appears necessary.

(5) To provide recommendations for achieving high density structural fill capable of satisfactorily supporting the proposed construction.

(6) To provide recommendations for thickness and material types for the planned asphalt pavement systems in the proposed roadways.

(7) To provide pertinent recommendations for construction quality control measures.

INVESTIGATIVE PROCEDURES

Field Investigation

The subsurface investigation consisted of ten (10) soil test borings in the proposed construction area. The approximate locations of the test borings are shown on the Boring Location Plan (Figure 1) included in the Appendix. The test borings were performed to a planned depth of approximately 10 feet below the existing ground surface or auger refusal.

The locations of the test borings were identified in the field by our representative by using GPS coordinates measuring distances and angles from existing site reference points. No survey of the site was available at the time of this report. Our scope of services did not include surveying of the planned construction areas or the locations of the test borings. In general, the locations of the test borings should be considered approximate.

The test borings were performed using the procedures described in ASTM-1586. Drilling was completed with an ATV-mounted drill rig equipped with a traditional safety hammer (Method B). Standard Penetration Testing (SPT) was performed at selected intervals in the test borings to evaluate the strength, relative density and consistency of the soils encountered. The penetration resistance, in conjunction with soil classifications, provides some indication of the engineering characteristics of the soils encountered.

Detailed descriptions of the soils encountered in each of the test borings are provided in the Test Boring Records included in the Appendix. Ground water conditions, penetration resistances, and other pertinent information are also included. Because our samples are taken at discrete locations and depths, variations in the materials could be present that are not detected by our industry standard testing procedures used for this project and cannot be delineated in the Test Boring Record.

Laboratory Investigation

The laboratory investigation consisted of a physical examination and classification of all samples obtained from the drilling operation. Classification of the soil samples was performed in general accordance with ASTM D-2488 (Visual-Manual Procedure for Description of Soils). Soil classifications include the use of the Unified Soil Classification System described in ASTM D-2487 (Classification of Soils for Engineering Purposes). The Visual-Manual procedure used for soil classification is a qualitative analysis performed in conjunction with the education, experience and professional judgment of our geotechnical engineer. Qualitative analysis of soil properties, such as those referenced in ASTM D-2487, could result in different soil classifications. In these instances, adjustments to the design and construction may be necessary, depending on the actual conditions. The soil classifications also include our evaluation of the geologic origin of the soils. Evaluations of geologic origin are based on our experience and interpretation and may be subject to some degree of error.

GENERAL SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The subject site consists of an approximately 25.38 acre parcel located southeast of the intersection of Castleberry Road and Steeler Lane in Archer Lodge, North Carolina. The subject site consists of an agricultural field with a wooded area in the southeast portion of the site. A stockpile of rip-rap sized rocks is present near the west central portion of the site. Agricultural fields and wooded areas are present to the south, west, and east of the site, and residences are present to the north of the site. A pond is present to the southeast of the site. Based on our review of the Johnston County GIS map, the ground surface across the site has a maximum relief of approximately 32 feet. The ground surface across the subject site slopes downward from northwest to southeast.

Regional Geology

Based on a review of geologic maps, it appears the site is located close the fall line between the Coastal Plain and Piedmont Geologic Provinces. Because the site is located close to the fall line, the Coastal Plain soils in this area are typically shallow: in the tens of feet. Beneath the Coastal Plain soils, Piedmont soils, which have been formed by the in-place weathering of the underlying metamorphic and igneous crystalline rock, are typically encountered. Piedmont residual soils generally consist of silts and clays near the ground surface which become coarser grained with depth and increasingly resemble the underlying parent rock. Alluvial deposits are common in the areas of creeks and streams.

Coastal Plain soils generally consist of marine sediments deposited during successive periods of fluctuating shoreline. The formations tend to dip slightly seaward, and several are exposed at the surface in bands paralleling the coast. Many beds exist only as fragmented, erosional remnants with more continuous strata located above and below. The soils typically classify as sands, silts, and clays, with irregular deposits of shells. Some of the existing formations contain predominantly plastic clays interbedded with strata of sands and poorly consolidated limestones. Others contain predominantly sands with localized deposits of highly plastic clays.

General Subsurface Conditions

A surficial layer of topsoil was encountered in all of the test borings except B-8 to a depth of approximately 2 inches below the existing ground surface. The thickness of topsoil materials will be generally quite variable and could be significantly different at other locations on the site. The reported topsoil thickness should not, therefore, be used for detailed quantity estimates. Previously cultivated soils were encountered at the existing ground surface in test boring B-8 and beneath the topsoil in all of the other test borings to a depth of approximately 1 foot below the existing ground surface. The previously cultivated soils consisted of clayey sand (SC).

Beneath the previously cultivated soils in all of the test borings, soils that are typical of the Coastal Plain soils were encountered. The Coastal Plain soils consisted of clayey sands (SC) and sandy clays (CL) extending to the boring termination depth of approximately 10 feet below the existing ground surface. Standard penetration resistances in the upper approximate 3 feet of the Coastal Plain soils ranged from 2 to 12 blows per foot. Standard penetration resistances below the upper 3 feet of the Coastal Plain soils ranged from 5 to 49 blows per foot.

For more detailed descriptions of subsurface soil and ground water conditions, please refer to the Test Boring Records included in the Appendix.

PROPOSED CONSTRUCTION

Project information has been provided by Mr. Patrick Perez with NV5. We understand that the proposed construction includes three baseball fields, a football field, a soccer field, a volleyball court, two pickleball courts, restroom buildings, associated parking and driveway areas, and one permanent pond. Structural loading conditions for the structures is not currently known. However, for the purposes of this report we have estimated loading conditions with maximum column and wall loads of 15 kips 3 kips per foot, respectively. If actual loading conditions are greater than these assumed maximums, please contact us to review our recommendations.

Traffic volumes in the planned pavement areas are not currently known. For purposes of this report, we have estimated traffic of 3,000 automobiles per day and 2 dumpster trucks per week. If actual traffic volumes are greater than these assumed maximums, please contact us and we will review our recommendations for their applicability.

EVALUATIONS AND RECOMMENDATIONS

The following recommendations are based on the information available on the proposed construction, the data obtained from our field and laboratory investigation, and our experience with soils and subsurface conditions similar to those encountered at this site. Please note that the soil test borings represent a very small statistical sampling of subsurface conditions. Therefore, conditions may be encountered during construction that are substantially different than those indicated by the borings. In these instances, adjustments to the design and construction may be necessary depending on actual conditions.

General Site Preparation

All trees, underbrush, weeds, grass, topsoil, roots, highly organic previously cultivated soils, and other deleterious materials should be removed from the proposed construction area. Special attention should be given to the removal of tree stumps within the proposed construction area. Extensive root systems and localized soft soils are commonly encountered during removal of large tree stumps. Site clearing, grubbing, and stripping should be performed only during dry weather conditions. Operation of heavy equipment on the site during wet conditions could result in excessive mixing of topsoil and organic debris with clean underlying soils.

Previously cultivated soils were encountered in all of the test borings and should be expected in other portions of the site where former agricultural fields are present. These soils often contain topsoil and organic laden soils to depths greater than normal topsoil depths. If these soils have an organic content greater than 3% and 5% by weight in building areas and roadways, respectively, they should be removed or mixed with structural fill soils to reduce their organic content. If these soils contain or are remediated to contain an organic content less than recommended, they will likely have to be moisture conditioned and compacted in-place prior to placement of structural fill. Options for remediation of these soils can be discussed onsite prior to development and should be based on laboratory organic content testing performed by us.

After completion of site clearing, stripping of topsoil, and remediation of cultivated soils, we recommend that proofrolling operations be performed. All areas of the site which are to receive fill should be proofrolled prior to placement of structural fill. Areas of proposed excavation should be proofrolled after rough finished subgrade is achieved. Proofrolling should be performed using a loaded dump truck weighing at least 25 tons. Proofrolling should be accomplished by performing at least 3 passes in each of two perpendicular directions within entire construction areas, and 10 feet beyond. Any unsuitable materials that may be present, and any low consistency soils that are encountered which cannot be adequately densified in place,

should generally be removed and replaced with well compacted fill material placed in accordance with the Structural Fill section of this report. Proofrolling should facilitate the identification of soft surficial soils but should not be expected to reveal soft conditions more than 2 feet below the ground surface at the time of proofrolling.

Soft, very loose, or loose soils were encountered in the upper approximately 3 feet of test borings B-1, B-2, B-3, B-5, B-6, and B-8 and in the upper approximately 5.5 feet in test boring B-7, and it is likely that some soft/loose near surface soils may be encountered in unexplored portions of the site. Depending on the conditions encountered at the time of construction and the planned grading, it is possible that excavation and replacement of the soft/loose near surface soils with structural fill soils will be required. Therefore, we recommend that an allowance be provided in the contract documents for undercut of soft soils. As an alternative, where the soft, wet soils do not extend to depths greater than 2 feet below the ground surface, drying and recompacting the soils in-place may reduce the volume of undercut required.

While no ground water was encountered in our test borings, in all of the test borings a high permeability soil (sand) is present above a low permeability soil (clay). This condition is conducive to a perched ground water condition. Therefore, we anticipate that removal of soft/loose soils and control of ground water will likely be required in this area prior to placement of structural fill. Consideration should be given to excavating ditches in areas where a high perched ground water condition is present. The ditches would help dry the near surface soils and would reduce the volume of undercut that may be necessary if the perched ground water condition is not remediated early in the site development process. This condition can be evaluated by our representative during site development activities.

Although we did not perform an evaluation along Castleberry Road, it is our experience that soft, wet and otherwise unsuitable soils are often present along existing roadways. This may present challenges during the widening of Castleberry Road, if road widening is required. In these areas, we expect that the soft, wet soils will require removal prior to fill placement or roadway construction. Furthermore, it is likely that underground utilities are present in the area of the proposed road widening. Our experience indicates that variable backfill conditions are likely present in these areas. Therefore, to limit undercut depths and to avoid disturbance of existing underground utilities, the use of geotextile fabrics and geogrids may be necessary to support the planned pavement structure above existing underground utilities. Recommendations for roadway support should be provided by our representative based on conditions that are encountered at the time of construction.

We recommend that site preparation operations be performed during times of dry weather. While wet weather can occur at any time during the year, the summer and early fall are times when drier weather is generally prevalent. Scheduling site grading during this time frame would reduce the probability of softening of the near surface soils from inclement weather conditions. If the existing Coastal Plain soils at the site become softened from exposure to inclement weather, they should be dried, if necessary, and compacted to a minimum of 95 percent of their standard Proctor maximum dry density prior to fill placement operations or roadway construction.

During site preparation, burn pits or trash pits may be encountered. On sites located in developed areas this is not an unusual occurrence. All too frequently such buried material occurs in isolated areas which are not detected by the soil test borings. Any buried waste construction debris or trash which is found during the construction operation should be thoroughly excavated, and the waste material should be removed from the site.

Excavation Characteristics

The majority of the previously cultivated soils and Coastal Plain soils at the project site should generally be excavatable with conventional soil excavation equipment, such as scrapers, loaders, etc. However, harder Coastal Plain soils (N>35) may be difficult to excavate using standard soil excavation equipment. Ripping of harder soils may be required to efficiently achieve excavation using a Caterpillar 322 track mounted excavator (or similar equipment) equipped with a ¾ cubic yard bucket and rock teeth.

Earth Slopes

Temporary construction slopes should be designed in strict compliance with the most recent OSHA regulations. The test borings indicate that most soils at the site are Type B (clayey soils) or Type C (sands) as defined in the *Occupational Safety and Health Standards for the Construction Industry* (*29 CFR, Part 1926, Subpart P), July 1, 2001*. This dictates that temporary construction slopes in clayey soils be no steeper than 1 horizontal to 1 vertical and in sandy soils no steeper than 1.5 horizontal to 1 vertical for excavation depths of up to 20 feet. Any alluvial soils and some sandy soils may require flatter slopes. A competent person as defined by OSHA guidelines should be present to determine the type of material exposed during trench excavations. Temporary construction slopes should be closely observed for signs of mass movement: tension cracks near the crest, bulging at the toe of the slope, etc. If potential stability problems are observed, the geotechnical engineer should be immediately contacted. The responsibility for excavation safety and stability of construction slopes should lie solely with the contractor.

We recommend that permanent cut or fill slopes be no steeper than 2.5 (H) to 1.0 (V) to maintain long term stability and to provide ease of maintenance. Slopes constructed steeper than 2.5 (H) to 1.0 (V) could be highly susceptible to erosion, will be difficult to maintain, and could experience large scale slope failure in some instances. The crest or toe of cut or fill slopes should be no closer than 15 feet to any building foundation. The crest or toe should be no closer than 5 feet to the edge of any pavements.

Ground Water Control

As stated above, due to the presence of sands above clays across the site, it is conducive to a perched ground water condition. Therefore, some ground water control measures may be required during site development, as recommended in the General Site Preparation section of this report. If shallow ground water is encountered, we expect that control of ground water in shallow excavations, including foundation and utility trench excavations, may be performed by pumping directly from the trench excavations. If pumping from trench excavations proves to be ineffective, then the use of well points or other methods may be required. Pumping from dewatering trenches should be done with care to prevent loss of soil fines, boils, or instability of slopes. In certain cases, gravity flow in a trench may be sufficient for effective dewatering.

We must emphasize that dewatering requirements will be dictated by ground water conditions at the time of construction. The contractor should use a technique or combination of techniques which achieves the desired result under actual field conditions.

Foundation Design

After the above described site preparation and site grading are complete, it is our opinion that the proposed structures may be supported on conventional shallow foundations. Based on the test boring results, and our past experience, we recommend that the shallow foundations be designed using an allowable soil bearing

pressure of 2,000 pounds per square foot (psf). We recommend a minimum width of 18 inches for continuous wall footings and 24 inches for isolated column footings to prevent localized shear failure. Footings should bear at a minimum depth of 18 inches below the prevailing exterior ground surface elevation to provide the recommended bearing capacity and to reduce the potential for problems associated with frost heave.

Soft/loose near surface soils were encountered in most of the test borings, and it is possible that soft/loose soils will be present in portions of the footing excavations. Therefore, foundation excavation examinations will be a critical part of foundation construction. Detailed footing examinations should be performed in each footing excavation prior to placement of reinforcing steel. These evaluations should be performed by our representative to confirm that the design allowable soil bearing pressure is available. The footing examinations should be performed using a combination of visual observation, hand rod probing, and dynamic cone penetrometer testing. Dynamic cone penetrometer testing, as described in ASTM STP-399, should be performed at each column footing location and at no greater than 20-foot intervals in continuous wall footings. We recommend that any soft or otherwise unsuitable soils encountered during the footing examinations be removed and replaced with compacted ABC stone or consolidated, washed #57 stone.

We must emphasize the importance of quality control during the placement of structural fill. Performance of building foundations which are supported by structural fill material will depend largely on achieving the recommended level of compaction on fill materials. Compacted soil densities less than the recommended percentage of the standard Proctor maximum dry density could result in excessive foundation settlement.

Exposure to the environment may weaken the soils at the foundation bearing surface if they are exposed for extended periods of time. If the foundation bearing surface becomes softened due to exposure, the soft soils should be removed prior to placement of concrete.

Concrete Slabs-On-Grade

Based on our test boring results, we recommend that a design modulus of subgrade reaction (k) value of 100 pounds per cubic inch (pci) be used for concrete slabs-on-grade. This recommended value assumes that the subgrade soils and fill soils will be compacted to a minimum of 98 percent of their standard Proctor (ASTM D-698) maximum dry density in the upper 12 inches and that all highly plastic clay soils will be removed and replaced with low plasticity compacted structural fill soils.

In order to provide a stable base for construction activity, and to prevent inclement weather from adversely affecting the concrete slab-on-grade, we recommend that all slab-on-grade construction be underlain by a minimum 4-inch thickness of aggregate base course (ABC) stone in accordance with NCDOT Specifications for gradation. The stone layer should be adequately tamped using mechanical means to provide a firm base for the concrete floor slab.

Construction activities and exposure to the environment often cause deterioration of the prepared slab-on-grade subgrade. Therefore, we recommend that the subgrade soils be evaluated by our representative immediately prior to floor slab construction. This evaluation may include a combination of visual observations, proofrolling observations, and field density tests to verify that the subgrade has been properly prepared. If soft areas are encountered, recommendations for remedial measures should be provided by our project geotechnical engineer.

Pavement Design Recommendations

Based on the above described site preparation recommendations, we anticipate that the pavement area subgrade soils will generally consist primarily of sandy clays and clayey sands. These materials may

reasonably have a California Bearing Ratio (CBR) ranging from approximately 5 to 15, if compacted to at least 100% of the standard Proctor maximum dry density in the top 8 inches. The CBR could be different than these assumed values if off-site fill materials are imported.

For purposes of pavement design, we have used a California Bearing Ratio of 7 for the pavement subgrade soils and the loading conditions described previously in this report. Based on the AASHTO design method, a 20-year design life, and our past experience, we suggest the following design pavement section for the subdivision streets:

2.5 inches Bituminous Concrete Surface Course
8 inches Aggregate Base Course

The bituminous concrete surface course should be a type S9.5B in accordance with division 6 of the current NCDOT Standard Specifications. Aggregate base course stone should be in accordance with Division 5 of the current NCDOT Standard Specifications. Proper subgrade compaction and adherence to the NCDOT and project specifications, along with pavement maintenance operations, are critical to proper pavement performance.

Suitability of Excavated Material for Reuse as Structural Fill

Based on the field and laboratory investigation performed, most of the Coastal Plain soils encountered were sandy clays and clayey sands. These soils should generally be suitable for use as structural fill on the site. Some moisture conditioning will likely be required to obtain the recommended level of compaction. The existing cultivated soils can be utilized as fill if the organic content is sufficiently low, as previously discussed in this report.

Structural Fill

In order to achieve high density structural fill, the following recommendations are offered:

(1) Materials selected for use as structural fill should be free of vegetable matter, waste construction debris, and other deleterious materials. The material should not contain rocks having a diameter over 3 inches. It is our opinion that the following soils represented by their USCS group symbols will typically be suitable for use as structural fill: (ML), (CL), (SM) and (SC). Due to the potential for developing a perched ground water condition, the following soils may require remedial measures if utilized as structural fill: (SW), (SP), (SP-SM), and (SP-SC). At depths greater than 3 feet below finished grades, the following soil types will typically be suitable for use as structural fill: (CH) and (MH). The following soil types are considered unsuitable: (OL), (OH), and (Pt).

(2) Laboratory Proctor compaction tests and classification tests should be performed on representative samples obtained from the proposed borrow material to provide data necessary to determine acceptability and for quality control. The moisture content of suitable borrow soils should generally not be more than 3 percentage points above or below optimum at the time of compaction. Tighter moisture limits may be necessary with certain soils.

(3) Suitable fill material should be placed in thin lifts (lift thickness depends on type of compaction equipment, but in general, lifts of 8 inches loose measurement are recommended). The soil should be compacted by mechanical means such as steel drum or sheepsfoot rollers. Proofrolling with rubber tired, heavily loaded vehicles may be desirable at approximately every third lift to bind the lifts together and to seal the surface of the compacted area thus reducing potential for absorption of surface water following a rain. This sealing operation is

particularly important at the end of the workday and at the end of the week. Within small excavations, we recommend the use of "wacker packers" or diesel sled tamps and loose lift thicknesses of 4 to 6 inches to achieve the specified compaction.

(4) We recommend that structural fill be compacted to a minimum of 95% (98% at subgrade) of the standard Proctor maximum dry density (ASTM D-698). The in-place maximum dry density of structural fill should be no less than 90 pounds per cubic foot (pcf). Fill in roadway areas should be placed and compacted in accordance with the current NCDOT Standard Specifications.

(5) An experienced soil engineering technician should take adequate density tests throughout the fill placement operation to verify that the specified compaction is achieved. It is particularly important that this be accomplished during the initial stages of the compaction operation to enable adjustments to the compaction operation, if necessary.

ADDITIONAL SERVICES RECOMMENDED

Additional engineering and testing services recommended for this project are summarized below:

(1) Site Preparation Observations: Proofrolling should be observed by our representative to determine if remedial measures are necessary in certain instances. Removal of any encountered unsuitable soils should be monitored by our representative to verify that adequate, but not excessive, removal is accomplished.

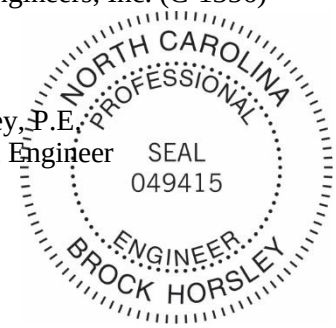
(2) Quality Control of Fill Placement and Compaction: We recommend that an experienced engineering technician witness all required filling operations and take sufficient in-place density tests to verify that the specified degree of compaction has been achieved. Soil engineering judgments will be involved and should be made by our project geotechnical engineer with information provided by our engineering technician.

(3) Footing and Slab Evaluations: Footing and slab areas for this project should be evaluated by our representative. The purpose of these evaluations will be to verify that the design soil bearing pressure is available and that subgrade areas are properly prepared.

(4) Pavement Components Testing and Inspection: Pavement components should be tested and inspected during and following construction to verify compliance with project plans and specifications.

The attached Appendix completes this report.

Sincerely,
TerraTech Engineers, Inc. (C-1356)



Brock Horsley, P.E.
Geotechnical Engineer

Christopher S. Pilz, P.E.
Principal Geotechnical Engineer

BPDH/sk

APPENDIX

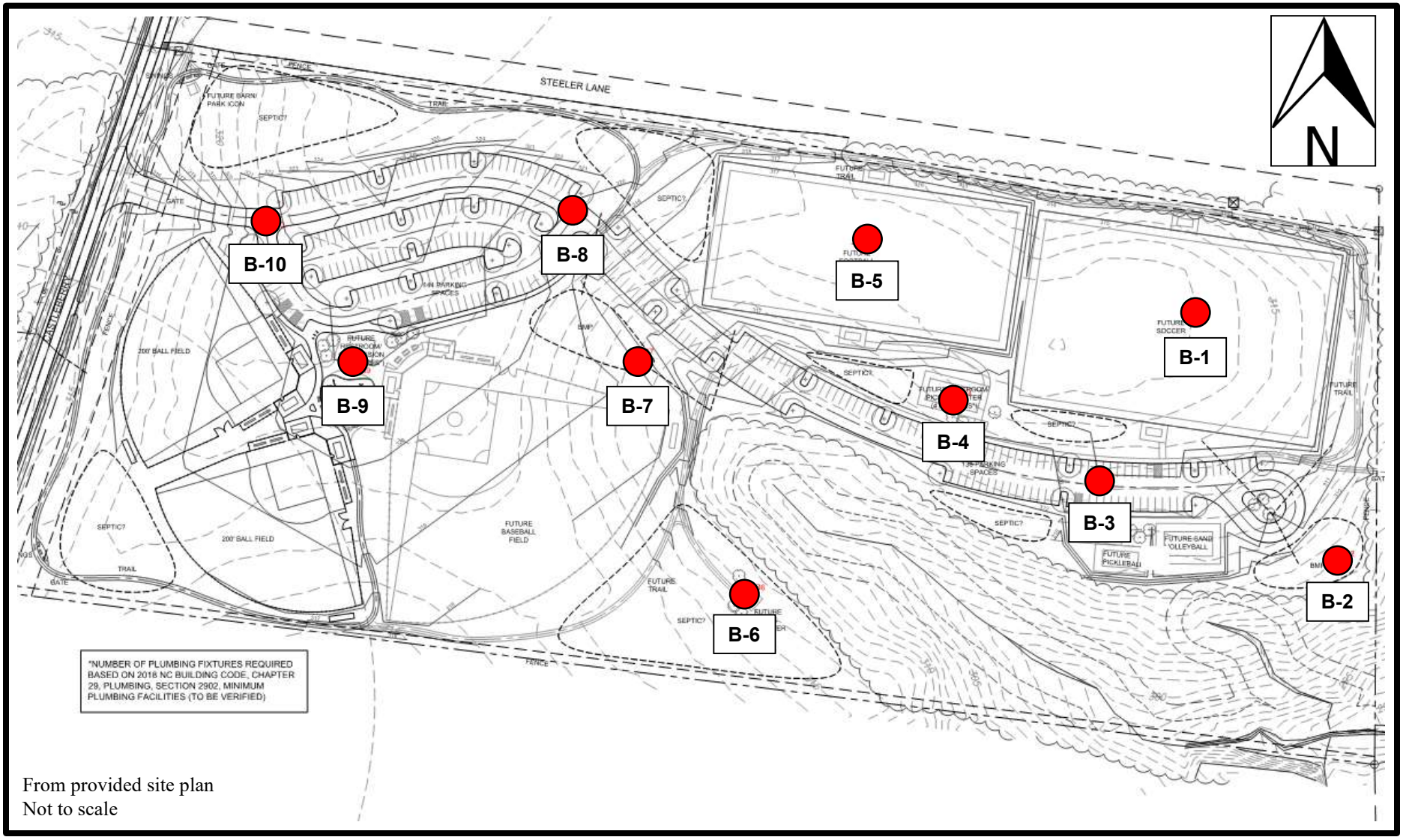


Figure 1. Boring Location Plan

TerraTech Engineers, Inc. (C-1356)
4905 Professional Court
Raleigh, NC 27609
919-876-9799

Project: Archer Lodge Town Park
Archer Lodge, North Carolina
Our Project Number 121-20-101460

TERRATECH
ENGINEERS • INC

Symbols and Nomenclature

▮	Undisturbed Sample (UD)
●	Standard penetration resistance (ASTM D-1586)
100/2”	Number of blows (100) to drive the spoon a number of inches (2)
W-O-H, R	Weight of Hammer, Weight of Rods
AX, BX, NX	Core barrel sizes for rock cores
65%	Percentage of rock core recovered
RQD	Rock quality designation - % of core 4 or more inches long
▼	Water table at least 24 hours after drilling
▼	Water table one hour or less after drilling
△	Loss of drilling water
A	Atterberg Limits test performed
C	Consolidation test performed
GS	Grain size test performed
T	Triaxial shear test performed
P	Proctor compaction test performed
18	Natural moisture content (percent)

Penetration Resistance Results

	SPT Penetration (blows/ft)		
Sands	Traditional Hammer	Automatic Hammer (90%)	Relative Density Descriptor
	0-4	0-3	very loose
	5-10	4-7	loose
	11-20	8-14	firm
	21-30	15-20	very firm
	31-50	21-34	dense
	over 50	over 34	very dense

	SPT Penetration (blows/ft)		
Silts and Clays	Traditional Hammer	Automatic Hammer (90%)	Approx. Consistency Descriptor
	0-1	0-1	very soft
	2-4	2-3	soft
	5-8	4-5	firm
	9-15	6-10	stiff
	16-30	11-20	very stiff
	31-50	21-34	hard
	over 50	over 34	very hard

Drilling Procedures

Soil sampling and standard penetration testing performed in accordance with ASTM D-1586. The standard penetration resistance is the number of blows of a 140-pound hammer falling 30 inches to drive a 2-inch O.D., 1.4-inch I.D. split spoon sampler one foot. Core drilling performed in accordance with ASTM D-2113. Undisturbed sampling performed in accordance with ASTM D-1587.

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Soft red gray fine to medium sandy clay (CL) (COASTAL PLAIN)			1-1-1	●
		3.0			
4				7-14-14	●
6	Very stiff red gray fine to medium sandy clay (CL)				
				7-10-11	●
8					
		10.0			
10	BORING TERMINATED			8-11-11	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-1

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Soft red gray fine to medium sandy clay (CL) (COASTAL PLAIN)			1-1-2	●
		3.0			
4				8-12-14	●
6	Very stiff red gray fine to medium sandy clay (CL)				
8				6-9-11	●
		10.0			
10	BORING TERMINATED			4-7-9	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-2

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Soft red gray fine to medium sandy clay (CL) (COASTAL PLAIN)			1-1-2	●
		3.0			
4				6-10-11	●
6	Very stiff to stiff red gray fine to medium sandy clay (CL)				
				7-13-14	●
8					
		10.0			
10	BORING TERMINATED			7-9-5	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-3

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Stiff red gray fine to medium sandy clay (CL) (COASTAL PLAIN)			2-4-8	●
		3.0			
4				7-15-18	●
6	Hard to very stiff red gray fine to medium sandy clay (CL)				
				8-13-10	●
8					
		10.0			
10	BORING TERMINATED			6-8-11	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-4

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Very loose brown gray clayey medium to coarse sand (SC) (COASTAL PLAIN)			2-2-2	●
		3.0			
4	Very stiff red gray fine to medium sandy clay (CL)			5-8-16	●
6					
				6-11-11	●
		8.0			
8	Dense red gray clayey fine to coarse sand (SC)				
		10.0			
10	BORING TERMINATED			8-28-21	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-5

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Loose brown gray clayey medium to coarse sand (SC) (COASTAL PLAIN)			3-3-2	●
		3.0			
4	Very stiff red gray fine to medium sandy clay (CL)			5-10-11	●
		5.5			
6					
8	Dense red gray clayey fine to coarse sand (SC)			16-18-20	●
		10.0			
10	BORING TERMINATED			17-24-25	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-6

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2				1-1-2	●
	Very loose to loose brown gray clayey medium to coarse sand (SC) (COASTAL PLAIN)				
4				1-2-3	●
		5.5			
6	Firm red gray fine to medium sandy clay (CL)				
				2-3-4	●
8		8.0			
	Very stiff red gray fine to medium sandy clay (CL)				
		10.0			
10	BORING TERMINATED			8-11-12	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-7

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Very loose brown gray clayey medium to coarse sand (SC) (COASTAL PLAIN)	3.0		2-2-2	●
4				4-4-7	●
6	Stiff to very stiff red gray fine to medium sandy clay (CL)			6-9-11	●
8					
10	BORING TERMINATED	10.0		6-8-8	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-8

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2	Firm red gray fine to medium sandy clay (CL) (COASTAL PLAIN)			2-3-4	●
		3.0			
4				4-6-11	●
6	Very stiff to hard red gray fine to medium sandy clay (CL)				
				6-10-11	●
8					
		10.0			
10	BORING TERMINATED			7-19-21	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-9

Project Number: 121-20-101460

Date Drilled: 6/3/20

TEST BORING RECORD

TERRATECH ENGINEERS • INC

Depth	Description	Elev.	Water Level	Blow Counts	Standard Penetration Test Blows per Foot 20 40 60 80
	Topsoil (Approximately 2 inches)				
	Brown gray clayey medium to coarse sand (SC) (PREVIOUSLY CULTIVATED SOILS)	1.0			
2				1-3-4	●
	Firm to stiff red gray fine to medium sandy clay (CL) (COASTAL PLAIN)				
4				3-6-9	●
		5.5			
6					
	Very stiff red gray fine to medium sandy clay (CL)			5-10-12	●
8					
		10.0			
10	BORING TERMINATED			9-12-15	●
12					
14					

Water Level 24 hr.: Boring Backfilled Upon Completion

Water Level 1 hr.: Not Encountered

TerraTech Engineers, Inc.
4905 Professional Court
Raleigh, NC 27609

Boring Number: B-10

Project Number: 121-20-101460

Date Drilled: 6/3/20