



INVITATION FOR BIDS

TOWN OF ROLESVILLE

502 Southtown Circle
Rolesville, NC 27571
Office (919) 556-3506

ISSUE DATE: 7/22/2021
TITLE: 2021 Resurfacing Project
BID REFERENCE #:

All inquiries for information concerning instructions to the bidder, bid submission requirements, or procurement procedures shall be directed to:

Isaac Poelman, Public Works Superintendent
919.556.3506
Isaac.poelman@rolesville.nc.gov

All inquiries for information concerning scope of work or project specifications shall be directed to:

Joseph Turner, PE, WITHERSRAVENEL, Inc
919.812.2976
jturner@withersravenel.com

Bids will be received by the Town of Rolesville, NC until 2:00 pm EST, Tuesday August 24th, and then publicly opened and read aloud at the Town of Rolesville, Town Council Chambers: 502 Southtown Circle Rolesville, NC 27571. Emailed bids cannot be accepted.

In compliance with this Invitation for Bids and to all the terms and conditions imposed herein, the undersigned offers and agrees to furnish the goods described in accordance with the attached signed bid.

Firm Name: _____ Date: _____

Address: _____ Phone: _____

By: _____

(Typed)

(Signature in Ink)

TOWN OF ROLESVILLE

2021 Resurfacing Project

Summary Bid Response Form

DATE OF ADVERTISING: 7/22/2021

DATE OF PRE-BID CONFERENCE: 8/2/2021

DATE OF BID: 8/24/2021

NAME OF BIDDER: _____

ADDRESS: _____

NC LICENSE NO.: _____

TOTAL BASE BID (Numerical): _____

TOTAL BASE BID (Written): _____

BID DEPOSIT 5%: _____

BY: _____ Title: _____
(Printed Name)

BY: _____
(Signature in ink)

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ADVERTISEMENT FOR BIDS

Location: Rolesville, North Carolina

Project: 2021 Rolesville Resurfacing Project

Separate sealed Bids will be received by the Town of Rolesville, NC for the repairs, milling, patching and overlay of specified road sections in Rolesville, NC.

The Town of Rolesville is an Equal Opportunity Employer. Small businesses, minority owned businesses, women owned businesses, businesses owned by low and moderate-income persons and Disadvantage Business Enterprises (DBE's) are encouraged to bid.

Bids will be received by the Town of Rolesville, NC until 2:00 pm (EST Council Chambers Clock), Tuesday August 24th, and then publicly opened and read aloud at the Town of Rolesville, First Floor- Town Council Chambers: 502 Southtown Circle Rolesville, NC 27571

A Pre-bid Conference will be held August 2nd, 2021, at 2:00 p.m. at the Town of Rolesville, First Floor- Town Council Chambers: 502 Southtown Circle Rolesville, NC 27571. Attendance at the Pre-bid Conference is strongly encouraged for all bidders, but is not mandatory.

The Contract Documents may be examined at the following locations:

Town of Rolesville - Monday through Friday, 8 am to 5 pm

All contractors bidding on this project must be pre-qualified by the North Carolina Department of Transportation in order to be considered for contract award. In addition, all prime contractors must have a Dun and Bradstreet DUNS ® Number. All Contractors must have proper licenses as required under the state laws governing their respective trades. Each proposal shall be accompanied by a bid bond in the amount of 5% of the bid total. The Town of Rolesville reserves the right to waive any informalities or minor defects or reject any and all bids

PROPOSAL FORM

PROPOSAL FOR THE RESURFACING OF VARIOUS STREETS, IN THE TOWN OF ROLESVILLE, NORTH CAROLINA

DATE: _____

TOWN COUNCIL TOWN
OF ROLESVILLE
ROLESVILLE, NORTH CAROLINA

Ladies and Gentlemen:

The undersigned bidder has carefully examined the Form of Contract, the Form of Contract Bonds, the General Conditions, the Special Conditions, the Plans and Specifications, all of which are acknowledged to be a part of the proposal, and the Proposal Form; and he has also carefully examined the site of the proposed work. The undersigned bidder agrees to bind himself on award to him by the Town Council of the Town of Rolesville under this proposal, to execute within ten (10) days, in accordance with such award, a contract with necessary surety bonds, of which contract this proposal and the plans and specifications shall be a part, to provide all necessary machinery, tools, labor, and other means of construction, and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said project within the time limit specified below.

In addition to all other agreements and assurances, the undersigned bidder understands and hereby agrees as follows:

1. If this contract is awarded to him, he must, upon completion of this contract, or at any other time requested, furnish to the Town of Rolesville an accurate itemized statement of North Carolina Sales Tax paid on materials, supplies, equipment and any other items charged to this contract.
2. The bidder further agrees to begin work within 30 calendar days from date of contract notice to proceed.
3. The bidder represents and agrees to complete the entire project by within 180 calendar days of the issued Notice to Proceed.

Submitted this _____ day of _____, 20__.

Name of bidder: _____

Address: _____

ADDITIONAL BIDDER'S CERTIFICATION

Acceptance of Terms

In submitting this Proposal, the undersigned agrees that this bid will remain in effect for a period of 60 days following the opening of the Bids, that the undersigned agrees to enter into a Contract with the Owner, if awarded, on the basis of this Proposal, and that the undersigned agrees to complete the work in accordance with the Contract Documents.

Non-Collusion in Bidding

The Bidder specifically agrees to abide by all applicable provisions of Article 3 of Chapter 133 of the North Carolina General Statutes. By submission of this Bid, each Bidder and each person signing on behalf of any Bidder certifies, and in case of a joint Bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

1. The prices in this Bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Bidder or with any competitor;
2. Unless otherwise required by Law, the prices quoted in the Bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly, to any other Bidder or to any competitor; and
3. No attempt has been made or will be made by the Bidder to induce any other person, partnership, or corporation to submit or not to submit a Bid for the purpose of restricting competition.

Type of Business

The undersigned hereby represents that it is a (corporation, partnership, an individual or limited liability company). If a corporation, the undersigned further represents that it is duly qualified as a corporation under the Laws of the State of North Carolina and it is authorized to do business in this State.

Firm Name: _____

Firm Type: _____

Authorized Signature: _____

Title: _____

Date: _____

Address of Firm: _____

BID BOND FORM

NORTH CAROLINA BID BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE _____ as PRINCIPAL, and _____ as SURETY, who is duly licensed to act as corporate surety in North Carolina, are held and firmly bound unto the Town of Rolesville, North Carolina, a municipal corporation, as Obligee, in the penal sum _____ Dollars, as 5% Bid Bond, 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____. The condition of this obligation is such, that whereas, the said Principal is herewith submitting the attached proposal for the 2021 Rolesville Resurfacing Project and the Principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143- 129, as amended.

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 bonds for the faithful performance thereof, and the payment of all sums due for labor and materials, 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 bonds as required by G.S. 143-29, as amended, the Surety shall, upon demand, forthwith pay to the Obligee the amount set forth in the first paragraph hereof. Power of Attorney from the Surety to its Attorney-in-Fact is attached hereto.

IN WITNESS WHEREOF, the above bound 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.

(ATTACH POWER OF ATTORNEY)

Name of Principal: _____
(IF APPLICABLE)

ATTEST:

By: _____
(Indicate Capacity)

By: _____
(Indicate Capacity)

(AFFIX CORPORATE SEAL IF APPLICABLE)

Name of Corporate Surety

By: _____
Attorney-in-Fact

INSTRUCTIONS TO CONTRACTOR

DO NOT REMOVE FROM CONTRACT

Please observe the following in executing the attached contract:

1. The Town may contract with various categories of legal entities; and the legal requirements for proper execution (signing, witnessing, etc.) differ as to each_

- a. If the contract is with an individual, that individual should sign the agreement exactly as his name is set out
- b. Execution on behalf of a corporation, authorized corporate officer must sign, with 2D officer signing to attest (which is 2D officer's verification of authority and signature authenticity), plus corporate seal affixed. The following are corporate officers allowed to sign for the corporation: president; vice-president; chairman; CEO; CFO; and Treasurer. The following officers are typically authorized to attest: secretary; vice president, trust officer; clerk to board; cashier (only for banks); and their assistants or deputies.

A sole corporate officer may sign, accompanied with a notary's acknowledgement, using the corporate acknowledgement form.

- c. If the agreement is with a partnership (General Partnership or Limited Partnership), a general partner must sign and his/her/its signature must be notarized.
 - d. LLC - LLC "Manager" or "managing member" must sign with proper notary acknowledgement.
2. After signing the contract, the appropriate notary's acknowledgement, either in the corporate form or individual/partnership form should be completed.
 3. The Performance and Payment Bonds should be attached to the Contract package. Bonds are required by law on construction and repair contracts subject to formal bidding requirements (N.C.G.S. § 143-129 et seq. -- \$300,000.00 for construction. They should be signed by the contractor, and his signature should be acknowledged with the appropriate acknowledgement form. Next, the bonds, in approved form, must be signed by the authorized agent of the Surety Company issuing the bonds, and an executed Power of Attorney document authorizing the agent to sign must accompany the bond documents. Bonds should not be dated. Bonds will be dated on or after the contract date by the Town.
 4. The instrument should not be dated, except by the last person executing the contract, normally the Town Clerk.
 5. Non-discrimination provisions should be included with the contract, as should applicable Certificates of Insurance with proper and timely coverage indicated.
 6. All modifications or deletions should be initialed or signed by representatives of both the Contractor and the Town.
 7. Five (5) original copies of the contract are sent to the Contractor for execution. These five originals should be signed and returned to the Town of Rolesville for final execution, after which two copies will be returned to the Contractor. One copy may be retained by the Contractor and the other, for the use of the bonding company(s).
 8. The minority business firm listing is to be completed and submitted as part of the contract. Additional pages may be added as needed. All backup information related to solicitation of minority participation shall be copied and submitted with the contract.

CONSTRUCTION CONTRACT for the TOWN OF ROLESVILLE

This Construction Contract for the Town of Rolesville (the "Agreement") is made and entered into this the _____ day of _____, 20____ by and between the TOWN OF ROLESVILLE, NORTH CAROLINA, a municipal corporation of the State of North Carolina ("Owner") and _____(the "Contractor"). Owner and Contractor are, collectively, the "Parties" and individually, a "Party."

The Project: 2021 Rolesville Resurfacing Project
Name and Location: Town of Rolesville
502 Southtown Circle, Rolesville, NC 27571

The Designer is: WithersRavenel
115 Mackenan Drive, Cary, NC 27511

1. **CONTRACT DOCUMENTS.** The "Contract Documents" consist of this Agreement, General Conditions of the Contract for Construction ("General Conditions"); Specifications; Drawings; Addenda issued prior to execution of the Agreement; other documents listed in Paragraph 19 of the Agreement (if any); and Modifications executed by the Parties after execution of the Agreement; and, for public Projects, the Owner's Advertisements to Bid or Invitations to Bid, the Owner's Instructions to Bidders, the Contractor's Bid or Proposal, Performance and Payment Bonds, and Certificates of Insurance (together, the "Contract"). The Contract Documents form the Contract and are fully a part of the Contract as if attached to the Agreement or repeated herein. In the event of conflicts among the Contract Documents, the Specifications shall take precedence over the Drawings, and the Supplementary Conditions shall take precedence over the General Conditions. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Owner and a Subcontractor or Sub-subcontractor.

The Owner and Contractor agree that should the Contractor utilize the services of a Subcontractor for any Work under this Contract, the Subcontractor shall be required to comply with all terms and conditions of this Contract and any and all Contract Documents entered into between the Owner and Contractor and any of its Subcontractors shall require the same of their Subcontractors.

2. **WORK.** The Contractor shall fully execute the Work described in the Contract Documents or reasonably inferable by the Contractor as necessary to produce the results intended by the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.
3. **RELATIONSHIP OF THE PARTIES.** The Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Designer and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve information required by the Contractor and to make payments to the Contractor, both in accordance with the requirements of the Contract Documents.
4. **DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION.** The Work required by the Contract shall be commenced by the Contractor not later than 30 calendar days after the Owner's notice to the Contractor to proceed and the entire work shall be completed not later than 180 calendar days after the date of notice to proceed.

The Contractor acknowledges and recognizes that the Owner is entitled to full and beneficial occupancy and use of the completed Work following expiration of the Contract Time as defined above, and that the Owner has entered into, or will enter into, binding agreements with third parties based upon the Contractor's achieving Substantial Completion of the Work within the Contract Time. The Contractor further acknowledges and agrees that if the Contractor fails to complete substantially

or fails to cause the Substantial Completion of any portion of the Work within the Contract Time, the Owner will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be difficult to ascertain. Therefore, the Owner and Contractor agree that the Owner shall be entitled to liquidated damages for the Contractor's failure to complete substantially or failure to cause Substantial Completion of any portion of the Work within the Contract Time as set forth below.

If the Contractor fails to complete substantially or fails to cause the Substantial Completion of any Work within the Contract Time, the Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, the following per diem amounts commencing on the upon the first day following expiration of the Contract Time and continuing until the date that the Contractor achieves Substantial Completion of the entire Work. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed completion of the Work: \$500.00 per day.

The Owner may deduct liquidated damages described above from any unpaid amounts then or thereafter due the Contractor under this Contract. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be payable by the Contractor to the Owner at the demand of the Owner, together with interest from the date of the demand at a rate equal to the prime interest rate as published by the Wall Street Journal.

Notwithstanding anything to the contrary in the Contract, if the Owner is unable to recover any portion of liquidated damages in accordance with the terms and conditions above because any portion thereof is found to be unenforceable or invalid as a penalty or otherwise, then the Owner shall be entitled to recover from the Contractor all of the Owner's actual damages in connection with any failure by the Contractor to complete substantially to achieve Substantial Completion of the Work within the Contract Time, including without limitation, consequential damages.

5. CONTRACT SUM AND PAYMENT

5.1 Owner agrees to pay for services, satisfactorily performed, in accordance with the Contract Documents. Unless otherwise specified, Contractor shall submit an Application for Payment in the manner described in Article 9 of the General Conditions. Payment will be processed promptly upon receipt and upon approval of the Application by Owner.

5.2 Unit prices, if any, are as follows:

See BID FORM attached after project Affidavit.

6. PROGRESS PAYMENTS. Based upon Applications for Payment submitted to the Designer by the Contractor and Certificates for Payment issued by the Designer pursuant to Sections 9.5 and 9.6 of the General Conditions, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in Sections 9.3, 9.4, and 9.7 of the General Conditions.
7. FINAL PAYMENT. Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when (1) the Contract has been fully performed by the Contractor and all requirements expressed in Sections 9.3 and 9.11 of the General Conditions have been satisfied except for those requirements set forth in Sections 11.2 and 11.3 of the General Conditions and any other requirements which necessarily survive final payment; and (2) a final Certificate for Payment has been issued by the Designer; such final payment shall be made by the Owner not more than 30 days after the issuance of the Designer's final Certificate for Payment.
8. INDEMNIFICATION. The Contractor's indemnification obligations connected with the Contract are set forth in Paragraph 3.17 of the General Conditions.
9. NOTICES. All notices which may be required by this Contract or any rule of law shall be effective when received by the following individuals through personal delivery or by certified mail at the

following addresses:

FOR: TOWN OF ROLESVILLE

Isaac Poelman
Public Works Superintendent
919.556.3506

isaac.poelman@rolesville.nc.gov

FOR: CONTRACTOR



10. NON-DISCRIMINATION. Contractor shall not discriminate against any employee or applicant for employment because of age, sex, race, creed, national origin, or disability. Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated fairly and legally during employment with regard to their age, sex, race, creed, national origin, or disability. In the event Contractor is determined by the final order of an appropriate agency or court to be in violation of any non-discrimination provision of federal, state, or local law, or this provision, this Contract may be canceled, terminated or suspended in whole or in part by Owner, and Contractor may be declared ineligible for further Owner contracts.
11. HEALTH AND SAFETY. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs required by OSHA and all other regulatory agencies while providing services under this Contract.
12. NON-ASSIGNMENT. This Contract is not assignable by either Party, by operation of law or otherwise, except as provided in Section 12.2 of the General Conditions.
13. MODIFICATION. This Contract may be modified only by a written agreement executed by both Parties.
14. TERMINATION OR SUSPENSION. This Contract may be terminated by the Owner or the Contractor as provided in Article 13 of the General Conditions. The Work may be suspended by the Owner as provided in Section 13.4 of the General Conditions.
15. E-VERIFY. As a condition of payment for services rendered under this Contract, Contractor shall comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes. Further, if Contractor provides Work utilizing a Subcontractor, Contractor shall require the Subcontractor to comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes as well. Contractor shall verify by affidavit compliance of the terms of this section upon request by the Owner.
16. IRAN DIVESTMENT ACT. Contractor attest that it is not listed on the Final Divestment List created by the State Treasurer pursuant to N.C.G.S. 143-6A-4. Individuals or companies on the Final Divestment List are ineligible to contract or subcontract with Local Government Units. (See N.C.G.S. 143C-6A-6(a).) It is Contractor's responsibility to monitor its compliance with this restriction. Contracts valued at less than \$1,000 are exempt from this restriction.
17. DIVESTMENT FROM COMPANIES THAT BOYCOTT ISRAEL. Contractor certifies that it has not been designated by the North Carolina State Treasurer pursuant to N.C.G.S. 147-86.81 as a company engaged in the boycott of Israel. It is Contractor's responsibility to monitor compliance with this restriction. Contracts valued at less than \$1,000 are exempt from this restriction.
18. INSURANCE AND BONDS
 - 18.1 CONTRACTOR'S INSURANCE. Contractor agrees to purchase at its own expense insurance coverages to satisfy the following minimum requirements and to secure the required insurance prior to performing Work. A certificate reflecting the following minimum coverages shall accompany this Agreement:
 - Workers' Compensation Insurance - Limits of no less than \$1,000,000 for each

accident and each employee. Waivers of Indemnity are not recognized by the North Carolina Department of Insurance and will not be accepted by the Town of Rolesville.

- Commercial General Liability - Combined single limits of no less than \$1,000,000 each occurrence, and \$2,000,000 in the aggregate. This insurance shall include Comprehensive Broad Form Coverage including contractual liability. It shall provide coverage for claims including (1) damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person; (2) personal injury and advertising injury; (3) damages because of physical damage to or destruction of tangible property, including the loss of use of such property; (4) bodily injury or property damage arising out of completed operations; and (5) the Contractor's indemnity obligations under Section 3.17 of the General Conditions. The following language must be endorsed onto the policies and listed on Certificate of Insurance: "Town of Rolesville is named additional insured as its interests may appear."
- Commercial Automobile Liability - Automobile Liability covering vehicles owned and non- owned vehicles used by the Contractor, with policy limits of no less than \$1,000,000 per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance, and use of those motor vehicles along with any other statutorily required automobile coverage. Evidence of commercial automobile coverage is only necessary if vehicles are used in the provision of services under this Agreement and/or are brought on an Owner site. The following language must be endorsed onto the policies and listed on Certificate of Insurance: "Town of Rolesville is named additional insured as its interests may appear."

All insurance companies used by the Contractor must be licensed in North Carolina. Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor and shall provide the Owner no less than thirty (30) days' notice of cancellation, or any material change, to any insurance coverage required by this Contract.

18.2 PERFORMANCE BOND AND PAYMENT BOND. The Contractor has furnished and attached hereto a Performance Bond in the penal sum of \$_____, and a Payment Bond in the penal sum of \$_____, covering the faithful performance of this Contract and the payment of all obligations arising hereunder, in such form and content as the Owner may prescribe and with surety approved by the Owner. Should any surety upon the bond for the performance of this Contract become unacceptable to the Owner, the Contractor must promptly furnish additional security as may be required from time to time by the Owner to protect the interests of the Owner and of persons, firms and corporations supplying labor or materials in the performance of the work contemplated by the Contract.

19. INCORPORATION OF CONTRACT DOCUMENTS. The Contract Documents, except for Modifications issued after execution of this Contract, are enumerated as indicated:

- () Agreement
- () General Conditions of the Contract for Construction
- () Supplemental and Other Conditions
- () Advertisement to Bid
- () Instructions to Bidders
- () Contractor's Proposal
- () Performance Bond (w/Power-of-Attorney)
- () Payment Bond (w/Power-of-Attorney)
- () Certificate of Insurance

() Other – Exhibits

[]

20. The Agreement and the other Contract Documents described herein represent the entire and integrated agreement between the Owner and Contractor and supersede any and all prior negotiations, representations or agreements concerning the Project between the Parties, whether written or oral.

21. OTHER PROVISIONS.

21.1 If a court finds any provision of the Contract invalid or unenforceable, in whole or in part, the finding shall not affect the validity or enforceability of any other provision of the Contract or the remainder of the provision in question.

21.2 No act or failure to act by the Owner or Contractor constitutes a waiver of any right, remedy, obligation or duty afforded them under the Contract or Law, or approval of, or acquiescence in, any breach of contract or negligence of the other party, except as stated in the Contract or otherwise agreed in writing.

21.3 The Parties may sign this Agreement in counterparts. Together the counterparts shall constitute a complete document. Signatures transmitted electronically shall have the same effect as physical delivery of the paper bearing the original signatures.

SIGNATURE PAGE FOLLOWS

TOWN OF ROLESVILLE

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

By: _____

Finance Officer

Date: _____

CONTRACTOR

ATTEST:

By: _____

Print Name: _____

Title: _____

STATE OF NORTH CAROLINA
COUNTY OF _____

I, a Notary Public in and for the aforesaid County and State, do hereby certify that _____ personally appeared before me this day and acknowledged that he is _____ of _____, a North Carolina corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its _____, sealed with its corporate seal and attested by _____ as its _____.

Witness my hand and notarial seal this ____ day of _____, 20__.

Notary Public

(SEAL)

My commission expires: _____

PERFORMANCE BOND FOR CONTRACT

NOW ALL MEN BY THESE PRESENTS, that we, _____ the PRINCIPAL, hereinafter called Principal, and _____ as SURETY, hereinafter called Surety, and the above named, are held and firmly bound unto the Town of Rolesville, hereinafter called the Town, in the penal sum of \$ _____ DOLLARS (\$ _____), 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 Town, numbered 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 Town, 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 such modifications to the Surety being hereby waived, then this obligation to be void; otherwise it shall remain in full force and effect.

IN WITNESS WHEREOF, the above-mentioned 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.

Signed and sealed this _____ day of _____, 20_____. (To be dated by the Town)

(ATTACHED POWER OF ATTORNEY, IF APPLICABLE)

By: _____
PRINCIPAL

ATTEST: _____
Indicate Capacity

Secretary: _____

(AFFIX CORPORATE SEAL IF APPLICABLE)

By: Surety

Date: _____

ATTEST: _____
Indicate Capacity

STATE OF _____

COUNTY OF _____

Personally appeared before me the undersigned Notary Public _____ who, being first duly sworn, acknowledged the due execution of the foregoing instrument for the purpose therein stated.

Witness my hand and official seal this the _____ day of _____, 20____,

My Commission Expires: _____

Notary Public: _____ (SEAL)

CORPORATE ACKNOWLEDGEMENT

STATE OF _____

COUNTY OF _____

This is to certify that on the _____ day of _____, 20____, before me personally came _____, with whom I am personally acquainted, who, being by me duly sworn, says that (s)he is the President and is the Secretary of _____ Incorporated, the corporation described in and which executed the foregoing instrument; that (s)he knows the common seal of said corporation; that the seal affixed to the foregoing instrument is said common seal, and the name of the corporation was subscribed thereto by the said Secretary and the said corporate seal was affixed, all by order of the Board of Directors of said corporation, and that the said instrument is the act and deed of said corporation.

Witness my hand and official seal this the _____ day of _____, 20____, My

Commission Expires: _____

Notary Public: _____ (SEAL)

PARTNERSHIP ACKNOWLEDGEMENT

STATE OF _____

COUNTY OF _____

I, _____ Notary Public do hereby certify that
_____ General Partner of _____,
personally appeared before me this day and acknowledged the execution, with proper authorization, of the
foregoing instrument, all in accordance with partnership instruments recorded in Book _____,
Page _____, in the _____ County Registry, and that the instrument is the act and deed of the
partnership.

Witness my hand and official seal this the _____ day of _____, 20
_____, My Commission Expires: _____

Notary Public: _____ (SEAL)

PAYMENT BOND FOR CONTRACT

KNOW ALL MEN BY THESE PRESENTS, that we, _____, the PRINCIPAL, hereinafter called Principal, and _____ as SURETY, hereinafter called Surety, and the above named, are held and firmly bound unto the Town of Rolesville, hereinafter called the Town, in the penal sum of DOLLARS (\$ _____), 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 Town as referenced above and hereto attached;

NOW, THEREFORE, if the principal shall promptly make payment to all person supplying labor and 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 it shall remain in full force and effect.

IN WITNESS WHEREOF, the above-mentioned 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.

Signed and sealed this _____ day of _____, 20____. (To be dated by the Town)

(ATTACHED POWER OF ATTORNEY, IF APPLICABLE)

By: _____
PRINCIPAL

ATTEST: _____
Indicate Capacity

Secretary: _____

(AFFIX CORPORATE SEAL IF APPLICABLE)

By: _____ Date: _____
Surety

ATTEST: _____
Indicate Capacity

STATE OF _____

COUNTY OF _____

Personally appeared before me the undersigned Notary Public _____ who, being first duly sworn, acknowledged the due execution of the foregoing instrument for the purpose therein stated.

Witness my hand and official seal this the _____ day of _____, 20____,

My Commission Expires: _____

Notary Public: _____ (SEAL)

CORPORATE ACKNOWLEDGEMENT STATE OF

COUNTY OF _____

This is to certify that on the _____ day of _____, 20____, before me personally came _____, with whom I am personally acquainted, who, being by me duly sworn, says that (s)he is the President and _____ is the Secretary of _____ Incorporated, the corporation described in and which executed the foregoing instrument; that (s)he knows the common seal of said corporation; that the seal affixed to the foregoing instrument is said common seal, and the name of the corporation was subscribed thereto by the said Secretary and the said corporate seal was affixed, all by order of the Board of Directors of said corporation, and that the said instrument is the act and deed of said corporation.

Witness my hand and official seal this the _____ day of _____, 20____,

My Commission Expires: _____

Notary Public: _____ (SEAL)

PARTNERSHIP ACKNOWLEDGEMENT

STATE OF _____

COUNTY OF _____

I, _____ Notary Public do hereby certify that _____
General Partner of _____, personally appeared before me this day and
acknowledged the execution, with proper authorization, of the foregoing instrument, all in accordance with
partnership instruments recorded in Book _____, Page _____, in the _____ County Registry, and that the
instrument is the act and deed of the partnership.

Witness my hand and official seal this the _____ day of _____, 20____,

My Commission Expires: _____

Notary Public: _____

(SEAL)

PROCEDURE FOR REPORTING NORTH CAROLINA SALES TAX EXPENDITURES ON TOWN OF ROLESVILLE CONTRACTS

The following procedure in handling the North Carolina Sales Tax is applicable to this project. Contractors shall comply fully with the requirements outlined hereinafter, in order that the owner may recover the amount of the tax permitted under the law.

1. It shall be the general contractor's responsibility to furnish the owner documentary evidence showing the materials used and sales tax paid by the general contractor and each of his subcontractors. Any county sales tax included in the Contractor's statements must be shown separately from the state sales tax. If more than one county is shown, each county shall be listed separately.
2. The documentary evidence shall consist of a certified statement, by the general contractor and each of his subcontractors individually, showing total purchases of materials from each separate vendor and total sales taxes by each county paid each vendor. The certified statement must show the invoice number(s) covered and inclusive dates of such invoices. Copies of these invoices must also be provided to the town along with the sales tax report. State sales tax shall be listed separately from county sales tax. If more than one county is shown, each county shall be listed separately.
3. Materials used from general contractor's or subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.
4. The general contractor shall not be required to certify the subcontractor's statements.
5. The documentary evidence to be furnished to owners eligible for sales or use tax refunds covers sales and/or use taxes paid on building materials used by contractors and subcontractors in the performance of contracts with churches, orphanages, hospitals not operated for profit, educational institutions not operated for profit, and other charitable or religious institutions or organizations not operated for profit and incorporated cities, towns, and counties in this State. The documentary evidence is to be submitted to the above-named institutions, organizations, and governmental units to be included in claims for refunds to be prepared and submitted by them to obtain refunds provided by G.S. 105-164.14 and is to include the purchases of building materials, supplies, fixtures, and equipment which become a part of or annexed to buildings or structures being erected, altered, or repaired under contracts with such institutions, organizations or governmental units.

The Contractor or contractors to whom an award is made on this project will be required to follow the procedure outlined above.

The Contractor is advised that all requests for payment, partial or final, for work completed under this contract must include a sales tax report submitted in accordance with the procedures outlined above.

(REQUIRES AT TIME OF FINAL PAYMENT)

AFFIDAVIT

2021 ROLESVILLE RESURFACING PROJECT

Town of Rolesville
Project No. M2013-002
State of North Carolina
County of Wake

In the State of North Carolina, County of _____, being duly sworn, deposes and says that they are _____ and that they have full and official knowledge of all and every debt and obligation for labor and materials which have entered into and become a part of the public facilities constructed under Town of Rolesville Project Number M2013-002; and, acting in their official Capacity, and for the specific purpose of obtaining the funds due on this final estimate, they further depose and say that all debts or obligations for such labor and materials have been fully and completely paid and discharged in good and lawful money of the United States of America or by evidence of exchange or trade acceptances endorsed and guaranteed by a solvent National or State bank, and that there are no suits for damages against the Contractor, pending, prospective or otherwise, in consequence of their operations on the said project except as follows:

In witness whereof they have set their hand and seal,

I, _____ a notary public of the County and State aforesaid, hereby certify that personally known to me to be the affiant in the foregoing affidavit, personally appeared before me this day and having been by me duly sworn, deposes and says that the facts set forth in the above affidavit are true and correct.

Witness my hand and official seal this the _____ day of _____, 20____,

My Commission Expires: _____

Notary Public: _____ (SEAL)

BID FORM

County: _____

Date: _____

Contractor: _____

Signature: _____

Item No.	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
1	MOBILIZATION	LS	1		
2	TRAFFIC CONTROL	LS	1		
3	EXISTING ASPHALT REMOVAL (1.5-2.5 INCHES)	SY	9,900		
4	PROOF ROLL	H	5		
5	GEOTECHNICAL ALLOWANCE	LS	1		
6	UNDERCUT & HAUL ALLOWANCE	CY	165		
7	ASPHALT CONCRETE SURFACE COURSE (3" OF S9.5B)	TN	1,630		
8	ASPHALT CONCRETE BASE COURSE (4" OF B25.0B) (UNDERCUT PATCHING)	TN	340		
9	GEOGRID ALLOWANCE	SY	990		
10	MATERIAL HAUL (DEPTH TO REACH APPROPRIATE GRADE)	CY	2,810		
11	AGGREGATE BASE COURSE (8 INCHES)	TN	4,220		
12	REMOVE AND REPLACE CURB RAMPS	EA	3		
13	REMOVE AND REPLACE CURB AND GUTTER	LF	100		
14	PAVEMENT MARKING - 24" THERMO STOP BAR (120 mills)	LF	77		
15	PAVEMENT MARKING - 8" WHITE THERMOPLASTIC CROSSWALK (120 mils)	LF	80		
16	ADJUST EXISTING METER OR VALVE BOX	EA	27		
17	ADJUST EXISTING MANHOLE	EA	1		
SUBTOTAL:					
ALTERNATE 1 - PATCHING					
A1	GRANITE FALLS BOULEVARD	SY	45		
A2	VIRGINIA WATER DRIVE	SY	60		
ALTERNATE 1 SUBTOTAL:					

*Line items 6, 8, and 9 are allowances. Unit prices will be used for these in case contractor exceeds stated quantity.

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

1 ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

- 1.1.1 Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the Parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Designer or the Designer's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Designer or the Designer's consultants, or (4) between any persons or entities other than the Owner and the Contractor.
- 1.1.2 Contract Documents. The Contract Documents are enumerated in the Construction Contract for the Town of Rolesville (hereinafter, the Agreement).
- 1.1.3 Contractor. The Contractor is the person or entity identified as such in the Agreement, and is referred to throughout the Contract Documents as if singular in number. Unless otherwise stated, the term "Contractor" shall mean the General Contractor or the General Contractor's authorized representative(s).
- 1.1.4 Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.
- 1.1.5 Designer. The Designer is the Architect or Engineer registered in accordance with the provisions of Chapter 89C of the North Carolina General Statutes, is identified as such in the Agreement, and is referred to throughout the Contract Documents as if singular in number. Unless otherwise stated, the term "Designer" shall mean the Designer or the Designer's authorized representative(s).
- 1.1.6 Modification. A Modification is (1) a written amendment to the Agreement or to other Contract Documents signed by both Parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Designer.
- 1.1.7 Owner. The Owner is the Town of Rolesville. The term "Owner" shall mean the Owner or the Owner's authorized representative(s).
- 1.1.8 Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.
- 1.1.9 Project Manual. The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract, and Specifications.
- 1.1.10 Separate Contractor. The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements.
- 1.1.11 Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.
- 1.1.12 Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.2 EXECUTION, CORRELATION, AND INTENT

- 1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Contract.
- 1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the

worksite, is familiar with local conditions under which the Work is to be performed, has correlated personal observations with requirements of the Contract Documents, has checked and verified all worksite conditions.

- 1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.
- 1.2.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any Subcontractor.
- 1.2.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 OWNERSHIP AND USE OF DESIGNER'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS:

The Drawings, Specifications, and other documents prepared by the Designer are instruments of the Designer's service, which describe the Work to be executed by the Contractor. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Designer. The Owner will retain all common law, statutory, and other reserved rights, in addition to the copyright of the Drawings, Specifications, and other documents prepared by the Designer. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Designer, on request, upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Designer, and copies thereof furnished to the Contractor, are for use solely with respect to this Project; they are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects without the specific written consent of the Owner and Designer. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications, and other documents prepared by the Designer appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications, and other documents prepared by the Designer. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Owner's copyright or other reserved rights.

- 1.4 **CAPITALIZATION:** Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Articles, Sections, Paragraphs, Subparagraphs, and Clauses in the document or (3) the titles of other documents.

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

2 ARTICLE 2 OWNER

2.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

- 2.1.1 The Owner shall furnish plan and profile of existing Town utilities. The Contractor is responsible for locating all existing utilities prior to Work.
- 2.1.2 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments, and charges required for construction, use, or occupancy of permanent structures or for permanent changes in existing facilities.
- 2.1.3 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

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

2.2 OWNER'S RIGHT TO STOP THE WORK: If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

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

3 ARTICLE 3 CONTRACTOR

3.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.1.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Section 2.1, and shall at once report to the Designer any errors, inconsistencies, or omissions discovered. If the Contractor performs any construction activity when it knew or should have known that such work involves any errors, inconsistencies, or omissions in the Contract Documents without providing notice to the Designer, the Contractor shall assume full responsibility for such performance and shall bear the full costs for any required correction.

3.1.2 The Contractor shall take field measurements, verify field conditions, and shall carefully compare such field measurements, conditions, and other information known to the Contractor with the Contract Documents before commencing and construction activity. If the Contractor discovers errors, inconsistencies, or omissions it shall promptly report such conditions to the Designer.

3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Section 3.11.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures. The Contractor shall be solely responsible for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

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

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

3.2.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract (if any) to determine that such portions are in proper condition to receive subsequent Work.

3.3 LABOR AND MATERIALS

- 3.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- 3.3.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- 3.3.3 Materials, equipment, or items required for a complete job that are shown on the Drawings but not mentioned in the Specifications; or materials, equipment, or items required by the Specifications but not shown on the Drawings, shall be furnished and installed the same as if they were both shown on the Drawings and required by the Specifications.

3.4 WARRANTY

- 3.4.1 The Contractor warrants to the Owner and Designer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents; that the Work will be free from defects not inherent in the quality required or permitted; and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Designer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
 - 3.4.2 Except as otherwise specifically stated below, the Contractor shall guarantee his materials and workmanship against defect due to faulty materials or faulty workmanship or negligence for a period of twelve (12) months following Substantial Completion of the Work. Where the manufacturer's warranty on equipment or parts thereof exceeds twelve (12) months, the guarantee period on such equipment or parts thereof shall be extended to include the full warranty of the manufacturer. The Contractor shall repair or replace such defective materials, equipment, or workmanship to the full satisfaction of the Owner within the stipulated guarantee period without cost to the Owner.
 - 3.4.3 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.
- 3.5 TAXES:** The Contractor shall pay sales, consumer, use, and similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.6 PERMITS, FEES AND NOTICES

- 3.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract for Construction and which are legally required when bids are received or negotiations concluded.
- 3.6.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.
- 3.6.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Designer and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.
- 3.6.4 If the Contractor performs Work the Contractor knows or should have known it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Designer and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable

costs.

3.7 ALLOWANCES

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

3.7.2 Unless otherwise provided in the Contract Documents:

- 1 materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work;
- 2 allowances shall cover the cost to the Contractor of materials and equipment delivered to the site and all required taxes, less applicable trade discounts;
- 3 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances;
- 4 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by a Change Order. The amount of the Change Order shall reflect (a) the difference between actual costs and the allowances under Clause 3.7.2(2) and (b) changes in Contractor's costs under Clause 3.7.2(3). To the extent that any allowance is not fully used, then the unused amount of each allowance shall be credited to the Owner by a Change Order.

3.8 SUPERINTENDENT: The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing upon request.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.9.1 Promptly after being awarded the Contract, the Contractor shall prepare and submit for the Designer's review and comment a construction schedule for the Work. The schedule shall not exceed time limits provided in the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. If separate prime contracts are awarded by the Owner in connection with this Project, the Contractor shall additionally submit a Contractor's construction schedule for the Work to the General Contractor in order for the General Contractor to carry out its duties under Article 6.

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

3.9.3 The Contractor shall perform Work in general accordance with the most recent schedules.

3.10 DOCUMENTS AND SAMPLES AT THE SITE

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

3.11 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

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

- 3.11.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- 3.11.3 Samples are physical examples, which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.
- 3.11.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Designer is subject to the limitations of Paragraph 4.1.6.
- 3.11.5 The Contractor shall review, approve, and submit to the Designer Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.
- 3.11.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until the respective submittal has been reviewed and approved or other appropriate action taken by the Designer. Such Work shall be in accordance with approved submittals.
- 3.11.7 By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- 3.11.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Designer's review and approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the Designer in writing of such deviation at the time of submittal and the Designer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Designer's approval thereof.
- 3.11.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Designer on previous submittals.
- 3.11.10 Informational submittals upon which the Designer is not expected to take responsive action may be so identified in the Contract Documents.
- 3.11.11 When professional certification of performance criteria of materials, systems, or equipment is required by the Contract Documents, the Designer shall be entitled to rely upon the accuracy and completeness of such calculations and certificates.
- 3.12 USE OF SITE:** The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.
- 3.13 CUTTING AND PATCHING**
- 3.13.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.
- 3.13.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a Separate Contractor except with written consent of the Owner and of such Separate Contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably

withhold from the Owner or a Separate Contractor the Contractor's consent to cutting or otherwise altering the Work.

3.14 CLEANING UP

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

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

3.15 ACCESS TO WORK: The Contractor shall provide the Owner and Designer access to the Work in preparation and progress wherever located.

3.16 ROYALTIES AND PATENTS: The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Designer harmless from loss unless a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process, or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Designer.

3.17 INDEMNIFICATION

3.17.1 To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Owner, the Owner's elected officials, officers, directors, managers, agents, employees, and affiliated entities of any of them; the Designer, the Designer's consultants, agents, employees, and affiliated entities of any of them; and any parties which the Contract Documents require the Contractor to defend, indemnify, or hold harmless (altogether, the "Indemnified Parties") from and against any and all claims, losses, damages, demands, injuries, judgments, causes of action, suits, and liability of every kind including without limitation attorneys' fees and other litigation expenses incurred by an Indemnified Party (collectively, the "Indemnified Claims") for the following:

- 1 For bodily injury to or the death of any person, or damage to or destruction of tangible property (including the loss of its use) arising from the negligence of the Contractor or the Contractor's derivative parties (as "derivative parties" are defined by N.C. Gen. Stat. § 22B-1); provided, however, that the Contractor shall not be required to indemnify or hold harmless an Indemnified Party against any damages arising out of bodily injury to persons or damage to personal property proximately caused by or resulting from the negligence, in whole or in part, of such Indemnified Party.
- 2 For all Indemnified Claims not included in Subparagraph 1 above, in which the fault of the Contractor or its derivative parties (as "fault" and "derivative parties" are defined by N.C. Gen. Stat. § 22B-1) is a proximate cause of the loss, damage, or expense indemnified.
- 3 For all Indemnified Claims against the Indemnified Party arising from or relating to liens asserted under Chapter 44A of the General Statutes of North Carolina.

3.17.2 In any and all Indemnified Claims against the Indemnified Parties by an employee of the Contractor, to the fullest extent permitted by law, any indemnification obligation shall not be limited by amount or type of damages, compensation, or benefits payable by or for the Contractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

3.17.3 The obligations of the Contractor under this Section 3.17, shall not extend to the liability of the Designer, the Designer's consultants, and agents and employees of any of them arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or specifications, or (b) the giving of or the failure to give directions or instructions by the Designer, the Designer's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

3.17.4 If any indemnity obligation of the Contractor under this Section 3.17 or elsewhere in the Contract, is held to be unenforceable, Contractor shall indemnify and hold harmless the Indemnified Parties to the full extent permitted by Law. Further, the Contractor's liability resulting from its defense and indemnity obligations under the Contract is not limited or affected in any way by insurance coverage or lack thereof.

4 ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 DESIGNER'S ADMINISTRATION OF THE CONTRACT

- 4.1.1 The Designer will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative during construction through final payment, and with the Owner's concurrence, from time to time during the correction period described in Section 11.2. The Designer will advise and consult with the Owner. The Designer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.
- 4.1.2 The Designer will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Section 3.2. The Designer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Designer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.
- 4.1.3 Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Designer. Communications by and with the Designer's consultants shall be through the Designer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Designer.
- 4.1.4 Based on the Designer's inspections, observations, and evaluations of the Contractor's Applications for Payment, the Designer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.
- 4.1.5 The Designer will have authority to reject Work which does not conform to the Contract Documents. Whenever the Designer considers it necessary or advisable for implementation of the intent of the Contract Documents, the Designer will have authority to require additional inspection or testing of the Work in accordance with Paragraphs 12.7.2 and 12.7.3, whether or not such Work is fabricated, installed, or completed. However, neither this authority of the Designer nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Designer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.
- 4.1.6 The Designer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data, and Samples but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Designer's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or Separate Contractors, while allowing sufficient time in the Designer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Designer's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Article 3. The Designer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Designer, of any construction means, methods, techniques, sequences, or procedures. The Designer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

- 4.1.7 The Designer will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4.
- 4.1.8 The Designer will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.
- 4.1.9 The Designer will interpret and decide matters concerning performance under and requirements of the Contract documents on written request of either the Owner or Contractor. The Designer's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Designer shall be furnished in compliance with this Paragraph 4.1.9, then delay shall not be recognized on account of failure by the Designer to furnish such interpretations until 15 days after written request is made for them.
- 4.1.10 Interpretations and decisions of the Designer will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Designer will endeavor to secure faithful performance by both Owner and Contractor, and will not show partiality to either.
- 4.1.11 The Designer's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.
- 4.1.12 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 11.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Designer may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Designer to stop the Work shall not give rise to a duty on the part of the Designer to exercise this right for the benefit of the Contractor or any other person or entity.

4.2 CLAIMS AND DISPUTES

- 4.2.1 A Claim is a demand or assertion by one of the Parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time, or other relief with respect to the terms of the Contract. Claims include other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be made pursuant to the Dispute Resolution Procedure set forth in Section 4.4. The responsibility to substantiate Claims shall rest with the party making the Claim.
- 4.2.2 Decision of Designer. Claims, including those alleging an error or omission by the Designer, shall be referred initially to the Designer for action as provided in Section 4.4. A decision by the Designer shall be required as a condition precedent to mediation and litigation of a Claim between any Party involved in this construction Project as to all such matters arising prior to the date final payment is due, regardless of whether such matters relate to execution and progress of the Work or the extent to which the Work has been completed. The decision by the Designer in response to a Claim shall not be a condition precedent to litigation in the event (1) the position of Designer is vacant, (2) the Designer has not received evidence or has failed to render a decision within agreed time limits, or (3) forty-five (45) days have passed after the Claim has been referred to the Designer.
- 4.2.3 Time Limits on Claims. Claims by the Contractor must be made within ten (10) days after occurrence of the event giving rise to such Claim or within ten (10) days after the Contractor first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered.
- 4.2.4 Continuing Contract Performance. Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.2.5 Waiver of Claims: Final Payment. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

- 1 unsettled claims arising out of the Contract; or
- 2 failure of the Work to comply with the requirements of the Contract Documents; or
- 3 terms of special warranties required by the Contract Documents

Acceptance of final payment by the Contractor waives all Claims by the Contractor against the Owner except those previously asserted and remaining unsettled.

4.2.6 Claims for Concealed Or Unknown Conditions. If conditions are encountered at the site which are (a) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (b) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing Party shall be given to the other Party promptly before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. The Designer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Designer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified the Designer shall so notify the Owner and Contractor in writing stating the reasons, Claims by either party in opposition to such determination must be made within twenty-one (21) days after the Designer has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Designer for initial determination, subject to further proceedings pursuant to Section 4.4.

4.2.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (a) a written interpretation from the Designer, (b) a written order for a minor change in the Work issued by the Designer, (c) termination of the Contract by the Owner, Claim shall be filed in accordance with the procedure established herein. This Article, and Article 7, shall be the exclusive means by which the Contractor may claim additional cost or damages from the Owner, and the Contractor hereby waives any and all right to claim additional cost or damages by any other remedy including, without limitation, quantum meruit, subrogation, or implied contract.

4.2.8 Claims for Additional Time. If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary. Adverse weather conditions shall not be a basis for a Claim for additional costs.

4.2.9 Waiver of Claims for Consequential Damages. The Contractor waives Claims against the Owner for consequential damages arising out of or relating to this Contract except to the extent that such damages are covered and paid under a policy of insurance maintained by the Owner. This waiver includes damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work. This waiver is applicable, without limitation, to all consequential damages due to the Owner's termination in accordance with Article 13. Nothing contained in this Paragraph 4.2.9 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

4.3 INJURY OR DAMAGE TO PERSON OR PROPERTY: If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other Party, of any of the other Party's employees or agents, or of others for whose acts such Party is legally liable, written notice as such injury or damage, whether or not insured, shall be given to the other Party within a reasonable time not

exceeding ten (10) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Paragraphs 4.2.7 or 4.2.8.

4.4 DISPUTE RESOLUTION PROCEDURE

- 4.4.1 To prevent all disputes and litigation, it is agreed by the Parties that any Claim, question, difficulty, or dispute arising from this Contract or the construction process shall be first submitted to the Designer to address the issue. Upon review of the Claim, the Designer shall take one or more of the following preliminary actions within ten (10) days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the Parties indicating when the Designer expects to take action, (3) reject the Claim in whole or in part stating reasons for rejection, (4) recommend approval of the Claim by the other Party, or (5) suggest a compromise. The Designer may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.
- 4.4.2 If a Claim has been resolved, the Designer will prepare or obtain appropriate documentation.
- 4.4.3 If a Claim has not been resolved, the Party making the Claim shall, within ten (10) days after the Designer's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Designer, (2) modify the initial Claim and resubmit it to the Designer, or (3) notify the Designer that the initial Claim stands and submit the Claim for mediation pursuant to Paragraph 4.4.4, below.
- 4.4.4 A mediator shall address any properly submitted Claim, question, difficulty, or dispute arising from this Contract or the construction process, which has not been satisfactorily resolved by the Designer or Owner. The mediator's orders, decisions, and decrees shall be non-binding. Mediation, pursuant to this Paragraph, shall be a pre-condition to initiating litigation concerning the dispute. During the pendency of any dispute and after a determination thereof, the Parties to the dispute shall act in good faith to mitigate any potential damages including utilization of construction schedule changes and alternate means of construction. The mediator shall be agreed upon by the Parties and the Designer.
- 4.4.5 The mediation session shall be private. Prior to commencement of mediation, if requested by either Party or the mediator, the Parties and the mediator shall execute a written confidentiality agreement in accordance with the provisions of North Carolina law. All such mediation sessions shall be held in Wake County, North Carolina.
- 4.4.6 If, as a result of mediation, a voluntary settlement is reached the agreement shall be reduced to writing, and it shall be enforceable in the General Court of Justice in the Wake County, North Carolina, which shall be the exclusive venue and jurisdiction for disputes arising thereunder.
- 4.4.7 If the disputed issue cannot be resolved in mediation or either party disagrees with the results of the mediation, the parties may seek resolution in the General Court of Justice in the County of Wake and the State of North Carolina.
- 4.4.8 The dispute resolution procedure set forth in this Paragraph shall be made available to any party involved in this construction project including Owner, Contractor, Designer, Subcontractors, as well as Sub-subcontractors and is a precondition to initiation of litigation concerning the dispute.
- 4.4.9 The Parties shall share the mediator's fee and any filing fees equally.

5 ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

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

Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

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

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Designer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work, including (1) Heating, ventilating, and air conditioning, (2) Plumbing, (3) Electrical, and (4) General. The Designer will promptly reply to the Contractor in writing stating whether or not the Owner or the Designer, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Designer to reply promptly shall constitute notice of no reasonable objection.

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

5.3 The Contractor shall NOT substitute any person or company listed in the Contractor's original Bid Proposal, except (1) when one of the listed Subcontractor's bid is later determined by the Contractor to be non-responsible or non-responsive or the listed Subcontractor refuses to enter into a contract for the complete performance of the Work, or (2) with the approval of the Owner for good cause shown by the Contractor.

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

6 ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site.

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

6.1.3 The General Contractor shall provide for coordination of the activities of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the General Contractor (and the Owner and Designer as needed) in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor and Separate Contractors until subsequently

revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10 and 11.

6.1.5 The General Contractor shall be responsible for scheduling the work of all contractors; the maintenance of the progress schedule for all prime contractors for this Project; and for the notification of the Designer of any changes in the progress schedule.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and Separate Contractors (if any) reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

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

6.2.3 Costs caused by delays, by improperly timed activities, defective construction, or any other damages shall be borne by the party responsible therefor. The Owner shall not be liable nor responsible for any delays or damages to the Contractor caused by Separate Contractors or the Designer.

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

6.2.5 Claims and other disputes and matters in question between the Contractor and a Separate Contractor shall be subject to the provisions of Sections 4.2 and 4.4, provided the Separate Contractor has reciprocal obligations.

6.2.6 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.13.

6.3 OWNER'S RIGHT TO CLEAN UP: If a dispute arises among the Contractor, Separate Contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Section 3.14, the Owner may clean up and allocate the cost among those responsible as the Designer determines to be just.

7 ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

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

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Designer; a Construction Change Directive requires agreement by the Owner and Designer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Designer alone pursuant to Section 7.4.

7.1.3 Changes in the Work shall be performed under applicable Provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change

Directive, or order for a minor change in the Work.

- 7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.
- 7.1.5 Overhead and profit shall not exceed 15% of the value of labor and material for work performed by any contractor or Subcontractor. If the work is performed by a Subcontractor, the prime contractor's overhead and profit shall not exceed 5%.

7.2 CHANGE ORDERS

- 7.2.1 A Change Order is a written instrument prepared by the Designer and signed by the Owner, Contractor, and Designer, stating their agreement upon all of the following:
 - 1 a change in the Work;
 - 2 the amount of the adjustment in the Contract Sum, if any; and
 - 3 the extent of the adjustment in the Contract Time, if any.
- 7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Paragraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

- 7.3.1 A Construction Change Directive is a written order prepared by the Designer and signed by the Owner and Designer, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
- 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.
- 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
 - 1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
 - 2 unit prices stated in the Contract Documents or subsequently agreed upon;
 - 3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
 - 4 as provided in Paragraph 7.3.6.
- 7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Designer of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.
- 7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- 7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Designer on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case,

and also under Clause 7.3.3(3), the Contractor shall keep and present, in such form as the Designer may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Paragraph 7.3.6 shall be limited to the following:

- 1 costs of labor, including social security, old age, and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- 2 costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- 3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- 4 costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes related to the Work; and
- 5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Designer. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Designer for determination.

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

7.4 MINOR CHANGES IN THE WORK: The Designer will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Designer and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Designer's order for a minor change without prior notice to the Designer that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time. The Contractor shall carry out such written orders promptly.

8 ARTICLE 8 TIME

8.1 DEFINITIONS

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

8.1.2 The date of commencement of the Work is the date established in the Contract. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Designer in accordance with Section 9.9.

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

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the

Contract, the Contractor confirms that the Contract Time is a reasonable period for performing the Work. The Contractor and the Contractor's surety shall be liable for and shall pay the Owner such sums as shall be set forth in the Contract between Owner and Contractor as liquidated damages each calendar day of delay until the Work is substantially complete.

- 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by the Contract for Construction to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Designer, the Contractor shall notify the Owner and Designer in writing not less than five days before commencing the Work.
- 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

- 8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Designer, or of an employee of either, or of a Separate Contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidably casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending litigation, or by other causes which the Designer determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Designer may determine.
- 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.2.8.
- 8.3.3 Should the Work be interrupted or hindered by the Owner or Designer, the Contractor shall be entitled to an extension of time pursuant to Section 4.2 in an amount equal to such interruption or hindrance, but the Contractor hereby waives any claim for damages resulting from such interruption or hindrance.
- 8.3.4 Should the Work be delayed in whole by any act or acts of the Contractor, the Contractor shall not be entitled to an extension of time pursuant to Section 4.2, nor shall such delay constitute a claim either for damages or for loss of anticipated profits by the Contractor. Should the Work be delayed in part by any act or acts of the Contractor and in part by any act or acts of the Owner or Designer, the Contractor shall be entitled to an extension of time pursuant to Section 4.2 in an amount equal to that portion of the delay for which the Contractor is not responsible, but such delay shall not constitute a claim either for damages or for loss of anticipated profits by the Contractor.
- 8.3.5 Should the Work be delayed, interrupted or hindered, in whole or in part, by any act or acts of any separate prime contractors, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2.8 in an amount equal to such delay, interruption or hindrance but such delay, interruption or hindrance shall not constitute a claim for damages nor for loss of anticipated profits by the Contractor.

9 ARTICLE 9 PAYMENTS AND COMPLETION

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

9.2 **SCHEDULE OF VALUES:** Before the first Application for Payment, the Contractor shall submit to the Designer a Schedule of Values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Designer may require. This Schedule of Values, unless objected to by the Designer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least twenty (20) days before the date established for each progress payment, the Contractor shall submit to the Designer an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, supported by such data substantiating the Contractor's right to payment as the Owner or Designer may require, such as copies of requisitions from

Subcontractors and material suppliers and reflecting retainage if provided for elsewhere in the Contract Documents.

- 9.3.2 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.
- 9.3.3 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.
- 9.3.4 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.
- 9.3.5 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work.
- 9.3.6 Provided an Application for Payment is received by the Designer not later than the tenth (10th) day of a month, the Owner shall make payment to the Contractor pursuant to a Certificate of Payment within thirty (30) days.

9.4 RETAINAGE

- 1.1.2 To ensure proper performance of this Contract, Owner shall retain five percent (5%) of the amount of each approved Application for Payment until the project Work is 50% complete provided that the Contractor continues to perform satisfactorily and any non-conforming Work identified in writing prior to submission of the application has been corrected by the Contractor and accepted by the Owner. The project shall be deemed fifty percent (50%) complete when the Contractor's gross project invoices, excluding the value of materials stored off-site, equal or exceed fifty percent (50%) of the value of the contract, except the value of materials stored on-site shall not exceed twenty percent (20%) of the Contractor's gross project invoices for the purpose of determining whether the project is fifty percent (50%) complete.
- 1.1.3 After the Work is 50% complete, if the Owner determines the Contractor's performance is unsatisfactory and/or it has failed to correct non-conforming Work, the Owner may reinstate the retainage amount of 5% for each subsequent periodic Application for Payment until the Contractor's performance becomes satisfactory.
- 1.1.4 Notwithstanding the above, after the Work is 50% complete, the Owner may also withhold additional retainage from any subsequent periodic payment, not to exceed 5%, in order to allow the Owner to retain 2.5% total retainage through the completion of the Project.
- 1.1.5 Within sixty (60) days after the submission of a final pay application, the Owner with written consent of the Surety shall release to the Contractor all retainage on payments held by the Owner if (1) the Owner receives a certificate of Substantial Completion from the Designer or the Contractor, or (2) the Owner receives beneficial occupancy or use of the Project. However, the Owner may retain sufficient funds to secure completion of the Project or corrections to any Work. If the Owner retains funds, the amount retained shall not exceed two and one half times the estimated cost of the Work to be completed or corrected. Any reduction in the amount of retainage on payments shall be with the consent of the Contractor's Surety. Retainer provisions contained in Contractor's subcontracts may not exceed the terms and conditions for retainage provided herein. Contractor is further required to satisfy the

retainage provisions of N.C.Gen. Stat. §143-134.1(b2) with regard to subcontracts for early finishing trades (structural steel, piling, caisson, and demolition) and to coordinate the release of retainage for such trades from the retainage held by Owner from the Contractor pursuant to statute.

- 1.1.6 Nothing herein shall prevent the Owner from withholding payment to the Contractor in addition to the amounts identified herein for unsatisfactory job progress, defective construction not remedied, non-conforming Work, disputed Work, and/or third party claims filed against the Owner or reasonable evidence that a third party claim will be filed.

9.5 CERTIFICATES FOR PAYMENT

- 9.5.1 The Designer will, within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Designer determines is properly due, or notify the Contractor and Owner in writing of the Designer's reasons for withholding certification in whole or in part as provided in Paragraph 9.6.1.

- 9.5.2 The Designer's certification for payment shall constitute a representation to the Owner, based on the Designer's inspections at the site and on the data comprising the Contractor's Application for Payment, that the Work has progressed to the point indicated and that the inspections of the construction, repairs, or installations have been conducted with the degree of care and professional skill and judgment ordinarily exercised by a member of his profession; and that to the best of his knowledge and in the professional opinion of the Designer, the Contractor has fulfilled the obligations of such plans, specifications, and contract. The Designer's certification for payment shall be signed and sealed by the Designer and presented to the Owner. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion, and to specific qualifications expressed by the Designer. The issuance of a Certificate for Payment shall further constitute a representation by the Designer, that the Contractor is entitled to payment in the amount certified.

9.6 DECISIONS TO WITHHOLD CERTIFICATION

- 9.6.1 The Designer may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Designer's opinion, the representations to the Owner required by Paragraph 9.5.2 cannot be made. If the Designer is unable to certify payment in the amount of the Application, the Designer will notify the Contractor and Owner as provided in Paragraph 9.5.1. If the Contractor and Designer cannot agree on a revised amount, the Designer will promptly issue a Certificate for Payment for the amount for which the Designer is able to make such representations to the Owner. The Designer may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Designer's opinion to protect the Owner from loss due to:

- 1 defective Work not remedied;
- 2 third party claims filed or reasonable evidence indicating probable filing of such claims;
- 3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- 4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- 5 damage to the Owner or another contractor;
- 6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- 7 persistent failure to carry out the Work in accordance with the Contract Documents.

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

9.7 PROGRESS PAYMENTS

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

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

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

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

9.7.5 Payment to material suppliers shall be treated in a manner similar to that provided in Paragraphs 9.7.2, 9.7.3, and 9.7.4.

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

9.8 FAILURE OF PAYMENT: The Contractor shall not stop the Work for the failure of the Designer to issue a Certificate of Payment, or the Owner to make timely payment.

9.9 SUBSTANTIAL COMPLETION

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

9.9.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Designer a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility for the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Designer will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Designer's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Designer. The Contractor shall then submit a request for another inspection by the Designer to determine Substantial Completion.

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

9.9.4 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Designer, the Owner shall make payment, reflecting adjustment in

retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.10 PARTIAL OCCUPANCY OR USE

- 9.10.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Designer as provided under Paragraph 9.9.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Designer.
- 9.10.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Designer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.
- 9.10.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.11 FINAL COMPLETION AND FINAL PAYMENT

- 9.11.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Designer will promptly make such inspections and, when the Designer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Designer will promptly issue a Final Certificate for Payment stating that to the best of the Designer's knowledge, information and belief, and on the basis of the Designer's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said Final Certificate is due and payable. The Designer's Final Certificate for Payment will constitute a further representation that the conditions listed in Paragraph 9.11.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.
- 9.11.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Designer (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract for Construction to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5) if required by the Owner, other or additional data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests, or encumbrances rising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.
- 9.11.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Designer so confirms, the Owner shall, upon application by the Contractor and certification by the Designer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed and accepted is less than

retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Designer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

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

10 ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

- 10.1.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract and construction of the Project.
- 10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (hereinafter "APCB") which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Designer by phone and in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or PCB and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or PCB, or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Designer.
- 10.1.3 The Contractor shall not be required to perform without consent of Owner and Designer any Work relating to asbestos or PCB.

10.2 SAFETY OF PERSONS AND PROPERTY

- 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:
- 1 employees working on the Project and other persons who may be affected thereby;
 - 2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
 - 3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- 10.2.2 The Contractor shall comply with and give notices required by applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury, or loss.
- 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including erecting necessary barricades or other temporary walls and structures as required during the period of construction, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.
- 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- 10.2.5 The Contractor shall promptly remedy damage and loss to property referred to in Clauses 10.2.1(2) and (3), caused in whole or in part by the Contractor, Subcontractor, a Sub- subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1(2) and (3), except damage or loss attributable to acts or

omissions of the Owner or Designer and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Article 3. All costs to repair any damage and loss to property referred to in Clauses 10.2.1(2) and (3), shall be the sole responsibility of the Contractor and such repair or replacement shall be performed expeditiously without cost to the Owner.

- 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent, required under Section 3.8, unless otherwise designated by the Contractor in writing to the Owner and Designer.
- 10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.
- 10.2.8 Existing utilities have been identified and described in the Contract Documents insofar as information is reasonably available, however, it is the Contractor's responsibility to verify such information and to preserve all existing utilities whether shown in the Contract Documents or not. If utility conflicts are encountered by the Contractor during construction, Contractor shall file sufficient notice to the owners of the utilities so that they may make the necessary adjustments, as well as the Designer.

10.3 EMERGENCIES

- 1.1.7 In an emergency affecting the safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraphs 4.2.7, 4.2.8 and Article 7.

11 ARTICLE 11 UNCOVERING AND CORRECTION OF WORK

11.1 UNCOVERING OF WORK

- 11.1.1 If a portion of the Work is covered contrary to the Designer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Designer, be uncovered for the Designer's observation and be replaced at the Contractor's sole expense without change in the Contract Time.
- 11.1.2 If a portion of the Work has been covered which the Designer has not specifically requested to observe prior to its being covered, the Designer may request to see such Work and it shall be uncovered by the Contractor. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner or separate contractor shall be responsible for payment of such costs. If such Work is in accordance with the Contract Documents, the Owner, by appropriate Change Order, shall be charged with the cost of uncovering and replacement.

11.2 CORRECTION OF WORK

- 11.2.1 The Contractor shall promptly correct Work rejected by the Designer or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. The Contractor shall bear any and all costs of correcting such rejected Work, including additional testing and inspections and compensation for the Designer's services and expenses made necessary thereby.
- 11.2.2 If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Paragraph 9.10.1 or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found not to be in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this Paragraph 11.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

- 11.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- 11.2.4 If the Contractor fails to correct non-conforming Work within a reasonable time, the Owner may correct it in accordance with Section 2.2. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Designer, the Owner may remove it and store the salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Designer's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.
- 11.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.
- 11.2.6 Nothing contained in this Section 11.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Paragraph 11.2.2, relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

11.3 ACCEPTANCE OF NON-CONFORMING WORK

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

12 ARTICLE 12 MISCELLANEOUS PROVISIONS

- 12.1 GOVERNING LAW:** This Contract for Construction shall be governed by and in accordance with the laws of the State of North Carolina. All actions relating in any way to this Contract, shall be brought in the General Court of Justice in the County of Wake and the State of North Carolina, after exhausting the dispute resolution procedure set forth in Section 4.4, herein.
- 12.2 SUCCESSORS AND ASSIGNS:** The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives if any to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither Party to the Contract shall assign the Contract as a whole without written consent of the other. If either Party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.
- 12.3 WRITTEN NOTICE:** Where Contract Documents require one Party to notify or give notice to the other Party, such notice shall be provided in writing to the representative of the other Party designated in Paragraph 9 of the Agreement in the manners designated in the agreement.
- 12.4 RIGHTS AND REMEDIES:** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.
- 12.5 WAIVER OF A RIGHTS:** No action or failure to act by the Owner or Designer shall constitute an

obligation or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

12.6 COMPLIANCE WITH LAWS: Contractor represents that it is in compliance with all Federal, State, and local laws, regulations or orders, as amended or supplemented. The implementation of this contract will be carried out in strict compliance with all Federal, State, or local laws regarding discrimination in employment.

12.7 TESTS AND INSPECTIONS

12.7.1 Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and the Owner shall bear the costs of tests, inspections, and approvals. Should any retest be necessary due to the failure of the Work to pass the first test or for any other reason whatsoever, the Contractor shall bear all related costs of retests, inspections or re-inspections, and approvals. The Contractor shall give the Designer timely notice of when and where tests and inspections are to be made so the Designer may observe such procedures.

12.7.2 If the Designer, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Paragraph 12.7.1, the Designer will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Designer of when and where tests and inspections are to be made so the Designer may observe such procedures.

12.7.3 If such procedures for testing, inspection, or approval under Paragraphs 12.7.1 and 12.7.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Designer's services and expenses.

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

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

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

13 ARTICLE 13 TERMINATION OR SUSPENSION OF THE CONTRACT

13.1 TERMINATION BY THE CONTRACTOR

13.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 180 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

- 1 issuance of an order of a court or other public authority having jurisdiction;
- 2 an act of government, such as a declaration of national emergency, making material unavailable;
- 3 because the Designer has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.6.

13.1.2 If one of the above reasons exists, the Contractor may, upon seven (7) additional days' written notice to the Owner and Designer, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, not including overhead, profit, or damages.

13.2 TERMINATION BY THE OWNER FOR CAUSE

13.2.1 The Owner may terminate the Contract if the Contractor:

- 1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- 2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- 3 persistently disregards laws, ordinances, or rules or regulations or orders of a public authority having jurisdiction;
- 4 fails to abide by the Non-Discrimination requirements of Paragraph 10 of the Agreement; or,
- 5 is otherwise in substantial breach of a provision of the Contract Documents.

13.2.2 When any of the above reasons exist, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven (7) days' written notice, terminate employment of the Contractor and may, subject to any prior rights of surety:

- 1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor; and
- 2 finish the Work by whatever reasonable method the Owner may deem expedient.

13.2.3 When the Owner terminates the Contract for one of the reasons stated in Paragraph 13.2.1, the Contractor shall not be entitled to receive further payment.

13.2.4 If the unpaid balance of the Contract Sum does not cover the cost of finishing the Work, the Contractor shall pay the difference to the Owner. The amount to be paid to the Owner shall be certified by the Designer, upon application, and this obligation for payment shall survive termination of the Contract.

13.3 TERMINATION BY THE OWNER FOR CONVENIENCE

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

13.3.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall: (1) cease operations as directed by the Owner in the notice; (2) take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and (3) except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

13.3.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts, but not for overhead or profit on the Work not executed.

13.4 SUSPENSION BY THE OWNER FOR CONVENIENCE

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

13.5 BANKRUPTCY

13.5.1 The bankruptcy of the Contractor shall not terminate this Contract until such time that it is specifically rejected by the Trustee or Contractor in bankruptcy. During the election period the Contractor has to assume or reject this Contract, the Contractor shall continue to perform its Work under the Contract.

13.5.2 In the event the Contractor in Bankruptcy assumes the Contract, the Contractor shall apply progress payments to all of its unpaid obligations on this project before using any of these monies for either administrative expenses of the bankruptcy or as general assets of the estate.

14 ARTICLE 14 SECURITY OF NON-PUBLIC RECORDS

14.1 **SECURITY OF NON-PUBLIC RECORDS:** Pursuant to N.C. Gen. Stat. § 132-1.7 entitled, "Sensitive Public

Security Information”, public records, as defined in N.C. Gen. Stat. § 132-1, shall not include information containing specific details of public security plans and arrangements or the detailed plans and drawings of public buildings and infrastructure facilities. Therefore, all information provided, received, gathered, or obtained by Contractor containing specific details of public security plans and arrangements or the detailed plans and drawings of public buildings and infrastructure facilities shall be held confidential and shall be used by the Contractor only for the purpose of fulfilling the terms of this Contract. All plans and drawings shall be returned to the Owner, or otherwise destroyed at the direction of the Owner, upon termination or expiration of this Contract. Any breach of this Paragraph 14.1 by Contractor shall result in the immediate termination of this Contract.

STANDARD GENERAL PROVISIONS

All construction shall conform to pertinent OSHA requirements, Town of Rolesville Standards and Specifications, and NCDOT Standard Specifications for Roads and Structures. Editions in effect at the time of the bid date shall govern.

- 1) Construction Progress Schedule and Bi-Weekly Meetings
 - a) If the project timeline demonstrates the need, the Contractor shall provide, at the pre- construction conference, a completed Town of Rolesville progress schedule. The schedule shall be kept up to date and presented with each month's billing information and shall be made available at the bi-weekly progress meetings and at other times as may be deemed necessary by the Public Works Director or his representative. The Contractor will be represented at bi-weekly progress meetings during the construction of this project. The meetings will be held at the project site or in the Town offices as determined by the Town.
- 2) Progress Schedule Liquidated Damages
 - a) Failure to complete the work within the contract time will result in damages due to public inconvenience, obstruction and delay to traffic, safety and other considerations. For each consecutive calendar day in excess of the contract time specified, the Contractor shall pay, or have withheld monies due, a sum of FIVE HUNDRED DOLLARS (\$500.00) per day. This will be adjusted and assessed on a monthly basis at the time of each partial payment request based on the Contractor's progress in comparison with the approved progress schedule.
- 3) Formula for Calculating Liquidated Damages
 - i) A= Number of streets scheduled for completion accumulated by month. B = Days in month.
C = Number of streets scheduled for completion per day.
D = Number of streets scheduled for completion minus number of streets actually completed to date.
E = Number of days behind.
F = \$500.00 liquidated damages per day. G = Liquidated damages monthly total.
 - ii) $A/B=C$ $D/C=E$ $ExF=G$
- 4) Unit Bid Price
 - a) The unit bid price on the items in this contract shall include all materials, labor, equipment, and incidentals necessary to satisfactorily install said items completely in place and accepted unless otherwise mentioned in this contract document.
- 5) Point of Contact
 - a) The Contractor upon start of construction shall provide the Engineer with names, addresses, and telephone numbers of two people to be contacted after office hours in case of emergency.
- 6) Material Tickets
 - a) The Contractor shall turn in all material tickets for the purpose of payment to the Project Inspector on a daily basis.
- 7) Trenches
 - a) All trenches shall be back-filled and made safe at the end of each workday. Payment for installation of utility and drainage lines that requires open cut to existing pavement shall include the cost of pavement for repairs (including pavement saw cut and removal) as incidental to the installation of the utility. No separate payment will be made for this work unless otherwise specifically mentioned in this contract.
- 8) Subsurface Investigation
 - a) The Contractor shall make his/her own subsurface investigations. Any information obtained by the Town as a result of its own subsurface investigations will be made available upon request. This information is provided for informational purposes only and shall not relieve the Contractor of responsibility for making

his own investigations.

9) Traffic Control

- a) The Contractor shall provide all traffic control devices and signs to warn the traveling public in accordance with the latest Manual on Uniform Traffic Control Devices (MUTCD). Two-way traffic shall be maintained at all times, unless otherwise required by the traffic control plan. The Contractor shall indemnify and save harmless the Town of Rolesville and all its officials, agents and employees from all suits, actions or claims of any character, name or description brought for or on account of any injuries or damages received or sustained in providing traffic control services.

10) Materials and Equipment Storage and Parking

- a) When vehicles, equipment, and materials are not being actively used they shall be moved at least 30 feet away from the edge of any travel way open to traffic (or as directed by the Engineer). All debris shall be immediately moved to a location at least 30 feet from the edge of any travel way open to traffic. If vehicles, equipment, materials, and debris are protected by guardrail or barrier, a 5-foot minimum offset from the rail shall be used.

11) Personnel Parking

- a) All personnel involved with construction operations shall not park their personal vehicles within the right of way of the project limits for the duration of the construction project. The Contractor shall furnish a parking area that is located off the project limits. The Contractor shall be responsible for daily transportation of all employees to and from the provided parking area and the project site.

12) Sidewalk, Driveway, Curb & Gutter Removal and Replacement

- a) Care should be taken during construction to avoid damaging the existing sidewalk, curb & gutter and pavement outside the immediate construction area. If damaged, it shall be replaced in accordance with the NCDOT Standard Specifications for Roads and Structures/Town of Rolesville Standards, as determined by the Public Works Director, without extra cost to the Town. Prior to construction, the Contractor shall inspect the site and report to the Public Works Director any damages existing before construction.
- b) The Contractor shall be advised that when a portion of any area of concrete driveways, curb and gutter and pavement must be removed, all areas to be removed shall be defined by a machine-sawed joint, prior to removal. Saw cut of concrete driveway, curb & gutter and pavement are considered incidental to removal unless otherwise provided in the contract.

13) Maintenance of Mail Boxes, Signs, Miscellaneous Appurtenances

- a) The Contractor shall be required to maintain mailboxes, signs and all miscellaneous appurtenances impacted by construction activities in working order for the duration of construction as directed by the Engineer. Work on the same items shall be done in a timely manner. No separate payment for work on these items will be made as the work will be considered incidental to other items in the contract unless otherwise mentioned in the contract document.

14) Project Completion

- a) When the project is nearing completion the Town will obtain comments from the impacted property owners concerning items that are outstanding, yet to be completed. The Public Works Director will determine which items have sufficient justification to be included in the final punch-list, and the Contractor will be required to complete these items with no additional payment and in a timely fashion.

15) Video Record of Project Site

- a) The Contractor will video the project site in its entirety before construction begins, with emphasis on properties adjoining the project, drives, trees, appurtenances and other distinguishing features. Appropriate narration will include location and description of property and physical features. The Contractor will provide copies of the project tape in electronic format to the Town. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.

16) Coordination with Utility Companies (See Article 14 of DETAILS)

- a) Utilities as shown on the plans are intended to represent general locations only. It shall be the

responsibility of the Contractor, prior to construction, to contact appropriate utility owners and precisely locate utilities that could be affected by the proposed construction. If the utility belongs to the Town, the Contractor shall dig sample holes to uncover the utility. The digging of sample holes shall be coordinated with the Engineer who will determine the number of such holes and will schedule the Town Surveyor to locate utility vertical and horizontal locations. There is no line item to pay for digging work. Work is considered incidental to other pay items.

- b) The Contractor shall be responsible for repair of any damage to the utility as well as any other damage may be caused due to the disturbance of the utility. The Contractor will not be permitted to submit any claims for delays caused by utility relocation and proposed utility construction.
- c) The Town has coordinated designs of utility relocation with private utility owner representatives. Existing utility, design and conflict resolution plans are included as a part of the contract.
- d) The Contractor shall be responsible for coordinating concurrent construction directly with utility owner representatives. Coordination efforts and concurrent construction conflicts will be addressed and discussed during the pre-construction meeting. The Town, at the time of pre-construction conference, will provide names, addresses and telephone numbers of private utility owner representatives.
- e) All underground utilities may not have been identified. The Contractor shall call North Carolina One Call to identify underground utilities before starting any digging and/or excavation operation.
- f) The Contractor shall be responsible for field verifying heights and locations of power lines and will be required to maintain the distance from the power lines in accordance with local, State and Federal Safety regulations.

17) Protection of Existing Plants

- a) The work under this item shall consist of the protection of selected trees, shrubs, or other woody plants. The plants protective fencing shall meet the requirements of Town of Rolesville Standard Drawing
- b) Fencing shall encompass the plants to the drip-line. Deviations from this must be approved by the Engineer. Plant protective fencing shall be installed prior to beginning any construction on this project. Plant protective fencing shall be constructed at the locations as directed by the Engineer and in accordance with Town specification. The fencing shall be maintained in place until all construction operations in that particular area are complete. At completion, only light grading equipment such as small agricultural tractors shall be allowed on the plants' roots. Fill dirt no deeper than two inches shall be allowed under the limb spread of any plant. No building materials, dirt, or equipment shall be stored inside the protective fencing. Plants that die as a result of the Contractor's negligence shall be removed and replaced as directed by the Engineer at the Contractor's expenses. The new plant shall be guaranteed for a year, planted in the proper season, and planted with approved arboricultural specifications.
- c) The Contractor will be required to cooperate with other contractors, utility companies and others needing access to the project site as (approved by the engineer) to complete the work.

SPECIFICATIONS

SECTION 01010 – SUMMARY OF WORK

GENERAL

1.1 LOCATION OF WORK

- A. Waterstone Lane, Crestleigh Street, Crossington Court, Roncaro Court, and Pine Pearce Court in Rolesville, North Carolina.

1.2 WORK TO BE DONE

- A. The reconstruction and resurfacing of approximately 9900 SY of streets in the Town of Rolesville.
- B. Provide all labor, materials, equipment, tools, services and incidentals necessary to complete all work required by the Contract Documents to furnish and install all work as shown on the Drawings and specified herein.
- C. Complete the Work, in place, tested, and ready for continuous service. Perform or provide repairs, replacements and restoration required as a result of damages resulting from construction operations.
- D. Furnish and install all materials, equipment, and incidentals, which are reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents, or not.

1.3 DRAWINGS AND SPECIFICATIONS FURNISHED TO THE CONTRACTOR FOR CONSTRUCTION

- A. A total of (three) sets of Drawings and (three) sets of Specifications shall be furnished to the CONTRACTOR for construction at no charge. Additional sets may be purchased at the cost of reproduction.

1.4 ABBREVIATIONS AND REFERENCES

- A. Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the date of advertisement for bids, even if reference has been made to an earlier standard. Where standards, specifications or codes of the various technical societies, organizations or bodies have been referred to throughout the Specifications, the referenced standard, specification or code is hereby made a part of the Contract the same as if herein repeated in full.
- B. In the event of any conflict between any of these specifications, standards, codes or tentative specifications, and the Specifications, the latter shall govern.
- C. Reference to a technical society, organization, or body may be made in the Specifications by abbreviations, in accordance with the following list:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AGA	American Gas Association
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASME	American Society at Mechanical Engineers
ASTM	American Society of Testing Materials
AWS	American Welding Society
AWWA	American Water Works Association
DIPRA	Ductile Iron Pipe Research Association
EPA	Environmental Protection Agency
FED.SPEC.	Federal Specifications
IEEE	Institute of Electrical and Electronic Engineers
OSHA	Occupational Safety and Health Administration
NCDOT	North Carolina Department of Transportation
NEMA	National Electrical Manufacturers Association
NCDENR	North Carolina Department of Environment and Natural Resources

When no reference is made to a code, standard, or specification, the standard specifications of the ASTM, the ANSI, the ASME, the IEEE, or the NEMA shall govern.

1.5 LOCATION OF UNDERGROUND FACILITIES

- A. Obtain digging permits prior to start of excavation. Scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground where existing underground utilities are discovered. Verify the elevations of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated or discovered during scanning in locations to be traversed by piping, ducts, and other work to be installed. Verify elevations before installing new work closer than nearest manhole or other structure at which an adjustment in grade can be made.

1.6 CONSTRUCTION SEQUENCE

- A. Notify the OWNER and ENGINEER at least one week prior to starting construction activities.
- B. Notify the OWNER and ENGINEER at least 48 hours prior to starting excavation work.
- C. Install all erosion control measures prior to beginning land disturbing activities.

END OF SECTION

SECTION 01055 – RESPONSIBILITIES OF RESIDENT PROJECT REPRESENTATIVE

GENERAL

1.1 THE REQUIREMENT

- A. ENGINEER's Resident Project Representative (RPR) will act as directed by and under the supervision of the ENGINEER, and will confer with ENGINEER regarding his actions. Resident Project Representative's dealings in matters pertaining to the on-site work shall in general be only with ENGINEER and CONTRACTOR, and dealing with Subcontractors shall only be through or with the full knowledge of CONTRACTOR.

1.2 DUTIES AND RESPONSIBILITIES

- A. Schedules - Review the progress schedule, schedule of Shop Drawing submissions and schedule of values prepared by CONTRACTOR and consult with ENGINEER concerning their acceptability.
- B. Conferences - Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with ENGINEER and notify those expected to attend in advance. Attend meetings, and maintain and circulate copies of minutes thereof.
- C. Liaison
 - 1. Serve as ENGINEER's liaison with CONTRACTOR, working principally through CONTRACTOR'S superintendent and assist him in understanding the intent of the CONTRACT Documents. Assist ENGINEER in serving as OWNER's liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-site operations.
 - 2. As requested by ENGINEER, assist in obtaining from OWNER additional details or information, when required at the job site for proper execution of the project.
- D. Shop Drawings and Samples
 - 1. Receive and record data of receipt of Shop Drawings and samples, receive samples which are furnished at the site by CONTRACTOR, and notify ENGINEER of their availability for examination.
 - 2. Advise ENGINEER and CONTRACTOR or his superintendent immediately of the commencement of any work requiring a Shop drawing or sample submission if the submission has not been approved by the ENGINEER.
- E. Review of project, Rejection of Defective Work, Inspections and Tests
 - 1. Conduct on-site observations of the work in progress to assist ENGINEER in determining if the project is proceeding in accordance with the Contract Documents and that completed Work will conform to the Contract Documents.
 - 2. Report to ENGINEER whenever he believes that any work is unsatisfactory, faulty, or defective or does not conform to the Contract Documents, or does not meet the requirements of any inspections, tests or approval required to be made or has been damaged prior to final payment; and advise ENGINEER when he believes work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - 3. Verify that tests, equipment, and system start-ups and operating and maintenance instructions are conducted as required by the Contract Documents and in the presence of

- the required personnel, and that CONTRACTOR maintains adequate records thereof, observe, record, and report to ENGINEER appropriate details relative to the test procedures and start-ups.
4. Accompany visiting inspectors representing public or other agencies having jurisdiction over the project, record the outcome of these inspections, and report to the ENGINEER.
- F. Interpretation of Contract Documents - Transmit to CONTRACTOR ENGINEER's clarifications and interpretations of the Contract Documents.
- G. Modifications - Consider and evaluate CONTRACTOR's suggestions for modifications in Drawings or Specifications and report them with recommendations to ENGINEER.
- H. Records
1. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and sample submissions, reproductions of original CONTRACT Documents including all Addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract, ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other project related documents.
 2. Keep a diary or log book, recording hours on the job site, weather conditions (temperature, estimated wind direction and speed, rainfall amounts, and time of occurrence), data relative to questions of extras or deductions, list of visiting officials and representatives of manufactures, fabricators, suppliers and distributors, daily activities, decisions, observations in general and specific observations in more detail as the case of observing test procedures. Send copies to ENGINEER.
 3. Record names, addresses, and telephone numbers of all Contractors, Subcontractors and major suppliers of materials and equipment.
- I. Records
1. Furnish ENGINEER periodic reports as required of progress of the project and CONTRACTOR's compliance with the approved progress schedule and schedule of Shop Drawing submissions.
 2. Consult with ENGINEER in advance of scheduled major tests, inspections, or start of important phases of the project.
 3. Report immediately to ENGINEER upon the occurrence of any accident.
- J. Payment Requisitions
1. Review applications for payment with CONTRACTOR for compliance with the established procedure for their submission and forward them with recommendations to ENGINEER, noting particularly their relation to the schedule of values, work completed, and materials and equipment delivered at the site but not incorporated in the project.
- K. Certificates, Maintenance and Operation Manuals
1. During the course of the project, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by CONTRACTOR are applicable to the items actually installed; and deliver this material to ENGINEER for his review and forward to OWNER prior to final acceptance of the project.
- L. Completion
1. Before ENGINEER issues a Certificate of Substantial Completion, submit to CONTRACTOR a list of observed items requiring completion or correction.
 2. Conduct final inspection in the company of ENGINEER, OWNER, and CONTRACTOR and prepare a final list of items to be completed or corrected.
 3. Verify that all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance.

1.3 LIMITATIONS OF AUTHORITY

- A. Except upon written instructions of ENGINEER, Resident Project Representative:
1. Shall not authorize any deviation from the CONTRACT Documents or approve any substitute materials or equipment;
 2. Shall not exceed limitations on ENGINEER's authority as set forth in the CONTRACT Documents;
 3. Shall not undertake any of the responsibilities of CONTRACTOR, Subcontractor, or CONTRACTOR's Superintendent, or expedite the project;
 4. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the CONTRACT Documents;
 5. Shall not advise on or issue directions as to safety precautions and programs in connection with the project;
 6. Shall not authorize OWNER to occupy the project in whole or in part.

END OF SECTION

SECTION 01799 – CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 THE REQUIREMENT

- A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

1.2 FINAL INSPECTION

- A. When CONTRACTOR considers the Work is complete, he shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the OWNER's representative and are operational.
 - 5. Work is completed and ready for final inspection.
- B. The ENGINEER will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the ENGINEER consider that the Work is incomplete or defective:
 - 1. The ENGINEER will promptly notify the CONTRACTOR in writing, listing the incomplete or defective work.
 - 2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the ENGINEER that the Work is complete.
 - 3. The ENGINEER will reinspect the Work.
- D. When the ENGINEER finds that the Work is acceptable under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

1.3 REINSPECTION FEES

- A. Should the ENGINEER perform reinspection's due to failure of the Work to comply with the claims of status of completion made by the CONTRACTOR:
 - 1. OWNER will compensate the ENGINEER for such additional services.
 - 2. OWNER will deduct the amount of such compensation from the final payment to the CONTRACTOR.

1.4 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Evidence of compliance with requirements of governing authorities.
- B. Project Record Documents: To requirements of Specification Section 01720 - Project Record Documents.
- C. Warranties and Bonds: To requirements of Specification Section 01740 - Warranties and Bonds.
- D. Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions.

1.5 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the ENGINEER.
- B. Statement shall reflect the following:
 - 1. All adjustments to the Contract Sum
 - 2. The original Contract Sum
 - 3. Additions and deductions resulting from the following:
 - a. Previous Change Orders
 - b. Allowances
 - c. Unit Prices
 - d. Deductions for uncorrected Work
 - e. Deductions for liquidated damages
 - f. Deductions for reinspection payments
 - g. Other adjustments
 - 4. Total Contract Sum, as adjusted
 - 5. Previous payments
 - 6. Sum remaining due
- C. ENGINEER will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.6 FINAL APPLICATION FOR PAYMENT

- A. CONTRACTOR shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions of the Contract.

END OF SECTION

SECTION 01720 – PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 THE REQUIREMENT

- A. Maintain at the site for the OWNER one record copy of the following:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. ENGINEER's Field Orders or written instructions
 - 6. Approved Shop Drawings, Working Drawings, and Samples
 - 7. Field Test records
 - 8. Construction photographs
 - 9. All other construction related permits

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in CONTRACTOR'S field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. File documents and samples in accordance with CSI format.
- C. Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by the ENGINEER.
- E. As a prerequisite for monthly progress payments, the CONTRACTOR is to exhibit the currently updated "Project Record Documents" and survey data in accordance with Specification Section 01040 – Construction Surveying for review by the ENGINEER and OWNER.

1.3 MARKING DEVICES

- A. Provide felt tip marking pens for recording information in the color code designated by the ENGINEER.

1.4 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- C. Drawings
 - 1. Legibly mark to record actual construction the following:
 - a. Depths of various elements of foundation in relation to grade elevation
 - b. All underground piping with elevations and dimensions
 - c. Changes to piping location
 - d. Horizontal and vertical locations of underground utilities and appurtenances

- referenced to permanent surface improvements.
 - e. Actual installed pipe material, class, etc.
 - f. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure
 - g. Field changes of dimension and detail
 - h. Changes made by Work Change Directive, Field Order or Change Order
 - i. Details not on original contract drawings
 - j. Equipment and piping relocations
 - k. Major architectural and structural changes including relocation of doors, windows, etc.
 - l. Architectural schedule changes according to CONTRACTOR's records and shop drawings.
- D. Specifications and Addenda; legibly mark each Section to record the following
- 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed
 - 2. Changes made by Work Change Directive, Field Order or Change Order
- E. Shop Drawings (after final review and approval) - CONTRACTOR shall submit **five** sets of record drawings for each process equipment, piping, electrical system and instrumentation system.

1.5 SUBMITTALS

- A. At Contract close-out, deliver Record Documents to the ENGINEER for the OWNER.
- B. Final payment will not be released without delivery of the Record Documents to the ENGINEER.
- C. Accompany submittal with transmittal letter in duplicate, containing:
- 1. Date
 - 2. PROJECT title and number
 - 3. CONTRACTOR's name and address
 - 4. Title and number of each Record Document
 - 5. Signature of CONTRACTOR or his authorized representative

END OF SECTION

SECTION 31100 – SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

- A. Scope of Work:
1. Furnish all labor, equipment, materials, and incidentals necessary to perform and complete clearing site of incidental paving and curbs, debris, grass, trees, and other plant life in accordance with the plans. All materials and procedures shall be of the type specified herein.
- B. Section Includes:
1. Removing surface debris.
 2. Removing designated paving, curbs, and other above- and below-grade site improvements.
 3. Removing designated trees, shrubs, and other plant life.
 4. Removing abandoned utilities.
 5. Protecting existing vegetation to remain.
 6. Excavating and stockpiling topsoil.
- C. Submittals
1. Section 130000 – Submittals/Electronic Submittals: Requirements for submittals.
 2. Product Data: Submit data for herbicide and tree wound paint. Indicate compliance with applicable codes for environmental protection.
 3. Existing Conditions: Submit 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.
 - a. Use sufficiently detailed photographs or videotape.
 - b. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
 4. Record Drawings: Identify and accurately show locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.
- D. Definitions
1. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
 2. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
 3. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil. Includes the zone where plant roots grow.
 4. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, as indicated on Drawings or as designated by the ENGINEER.
 5. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.
- E. Quality Assurance
1. Conform to applicable codes for environmental requirements, disposal of debris, burning debris on site, and use of herbicides.
 2. Perform all work and provide materials in accordance with the requirements of federal, state, and local authorities having jurisdiction.

- a. Comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7 U.S.C. Section 136) for requirements on CONTRACTOR's licensing, certification and record keeping. Contact the command Pest Control Coordinator prior to starting work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Herbicide: Approved by authority having jurisdiction.
- B. Tree wound paint: Bituminous based paint of standard manufacture specially formulated for tree wounds.
- C. 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 degree 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify of existing conditions before starting work.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Wrap a 1-inch blue vinyl tie tape flag around each tree trunk at 54 inches above the ground.
- C. Identify waste area and salvage area for placing removed materials.
- D. Work on adjoining property will be not permitted without the written consent of the property owner and the ENGINEER. This includes, but is not limited to, temporary access to the Work, storage of materials, and any ground disturbing activities.

3.2 PREPARATION

- A. Call NC811 utility locating service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. The ENGINEER will designate all areas of growth or individual trees which are to be preserved due to their desirability for landscape or erosion control purposes.
- C. Do not commence site clearing operations until temporary erosion and sedimentation control and plant/tree protection measures are in place as specified.
- D. Carefully remove items indicated to be salvaged.
 - 1. Disassemble and/or remove indicated items as necessary to permit construction, and safely store items on OWNER's premises to prevent harm to the materials.
 - 2. Following construction, reassemble in the original location (or other onsite area designated by OWNER) in a manner that matches the assembly prior to its removal. If the salvaged item(s) are to be utilized by the OWNER offsite, the CONTRACTOR shall disassemble and store the items and coordinate with OWNER regarding the OWNER's transportation and reuse of these materials offsite.
- E. 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. Keep roads and walks free of dirt and debris at all times unless otherwise permitted by OWNER or authorities having jurisdiction. When permitted, dirt and debris shall be cleaned, swept, and removed at the end of each work day.
3. Provide alternate routes around closed or obstructed traffic ways if required by OWNER or authorities having jurisdiction.

3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
 1. Notify the ENGINEER immediately of damage to or an encounter with an unknown existing utility line. Repair damage to existing utility lines that are indicated or made known to the CONTRACTOR prior to start of clearing and grubbing operations at no additional cost to the OWNER.
- B. 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. Notify ENGINEER not less than three (3) days in advance of proposed utility interruptions.
 2. Do not proceed with utility interruptions without ENGINEER's written permission.
- C. Protect trees, plant growth (including root structure), and features designated to remain, as final landscaping.
 1. Trim all branches of trees to remain to such heights and in such manner as may be necessary to prevent interference with construction operations. Cut smoothly and neatly close to the whole of the tree or to main branches without splitting or crushing. Paint the cuts with an approved tree wound paint.
 2. Encircle the drip line of trees or groups of trees which are to remain adjacent to the work with plastic protection-zone fencing as may be necessary to protect them from piled material, equipment, or equipment operation.
 3. Chip removed tree branches and stockpile in approved areas, if approved by ENGINEER, or dispose of off-site.
 4. Protect all cultivated hedges, shrubs, and plants that might be injured by project operations. Promptly heel in any trees or shrubbery necessary to be removed and replanted. Perform heeling in and replanting under the direction of a licensed and experienced nurseryman. Replant in their original position all removed shrubbery and trees after construction operations have been substantially completed and care for until growth is reestablished.
- D. Remove trees, cultivated hedges, shrubs, plants and other landscape features injured by equipment operations to such a degree as to affect their growth or diminish their beauty or usefulness, and replace with equivalent, undamaged trees and landscape features.
 1. Obtain ENGINEER's approval before replacement.
- E. Protect bench marks, survey control points, and existing structures from damage or displacement.
- F. Protect existing site improvements to remain from damage during construction.
 1. Restore damaged improvements to their original condition, as acceptable to OWNER.
- G. The following practices are prohibited within plant 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.
 8. Heat sources, flames, ignition sources, and smoking.
- H. Do not direct vehicle or equipment exhaust towards protection zones.

3.4 CLEARING

- A. Clearing consists of the felling and cutting up, or the trimming of trees and the satisfactory disposal of the trees and other vegetation together with the down timber, snags, brush, and rubbish occurring within the areas to be cleared. Trees and other vegetation, except such individual trees, groups of trees, and vegetation, as indicated on the plans to be left standing, shall be cut off flush with or below the original ground surface trees, stumps, roots, brush, and other vegetation in areas to be cleared.
- B. Perform clearing only within the limits established by the plans, specifications, or the ENGINEER.
- C. Prevent damage by falling trees to trees left standing, to existing structures and installations, and to those under construction. When such damages occur, repair, remove, or otherwise resolve all damaged areas, utilizing generally accepted practices at no additional cost to the OWNER.
- D. Remove trees and shrubs within marked areas and where indicated. Remove stumps, main root ball, root system, logs, organic and metallic debris, brush, and refuse to depth of not less than 18 inches below the original soil surface in areas indicated to be grubbed and in areas indicated as construction areas under this contract.
 - 1. Use only hand methods for grubbing within protection zones.
 - 2. In embankment areas, when the depth of embankment exceeds 42 inches in height, sound stumps shall be cut off not more than 6 inches above the existing ground level and not grubbed. Unsound or decayed stumps shall be removed to a depth of approximately 2 feet below the natural ground surface.
 - 3. Fill depressions made by grubbing with suitable material and compact as specified to make the new surface conform with the existing adjacent surface of the ground.
- E. Clear undergrowth and deadwood, without disturbing subsoil.
- F. Apply herbicide in accordance with the manufacturer's label to remaining stumps to inhibit growth.

3.5 REMOVAL

- A. Remove debris, rock, demolished materials, extracted plant life, and waste materials, and legally dispose of them off site.
- B. Remove paving, curbs, slabs, gutters and, aggregate base as indicated on Drawings.
 - 1. Unless existing, full-depth joints coincide with line of demolition, neatly saw-cut along the line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.
- C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.
- D. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.
- E. Consider felled timber from which saw logs, pulpwood, posts, poles, ties, or fuelwood can be produced as saleable timber. Trim limbs and tops, and saw into saleable lengths for saw logs, pulpwood, poles, ties, and for fuelwood and stockpile in designated salvage area. Timber, steel and other merchantable goods and materials removed incidental to clearing and grubbing shall remain the property of individual property owners unless otherwise directed.
- F. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- G. Burn or bury materials on site only when permitted by the ENGINEER. Leave site in clean condition.
 - 1. Deposit all combustible matter at locations approved by authorities having jurisdiction. Combustible matter may be burned (with written approval of Fire Marshall or other authorities having jurisdiction) or disposed of as stated above. Adhere to all limitations and conditions set forth in the permit.
 - 2. Burning shall be done at such time and in such a manner as to prevent fire from spreading and to prevent any damage to adjacent cover and shall further be subject to all requirements of agencies having jurisdiction pertaining to the burning. Keep burning under constant attendance

until all fires have burned out or have been extinguished.

3.6 TOPSOIL EXCAVATION

- A. Remove sod and grass before stripping topsoil.
- B. Excavate topsoil to a depth of 6 inches from areas to be further excavated, landscaped, or regraded, without mixing with foreign materials for use in finishgrading.
 - 1. Remove subsoil and non-soil materials, including clay lumps, gravel, and other objects more than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
- C. Do not excavate wet topsoil. Handle topsoil only when the topsoil is dry or slightly moist.
- D. Stockpile topsoil without intermixing with subsoil in area designated on site to depth not exceeding 6 feet and protect from erosion.
 - 1. Stockpile surplus topsoil to allow for respreading deeper topsoil.
 - 2. Grade and shape stockpiles to drain surface water
 - 3. Do not stockpile topsoil within protection zones.
 - 4. Cover to prevent windblown dust and erosion by water.
 - 5. Stockpile material until disposal.
- E. Remove excess topsoil not intended for reuse and unsuitable topsoil from site.

END OF SECTION

SECTION 31150 – EXCAVATION, BACKFILL, AND COMPACTION

PART 1 GENERAL

1.1 THE REQUIREMENT

- A. Furnish all labor, materials, equipment, and incidentals necessary to perform all excavation, backfill, compaction, and grading required completing the work shown on the Drawings and specified herein.
- B. The work shall include, but not necessarily be limited to excavation, backfilling, grading, compaction, disposal of waste and surplus materials, placing crushed stone, construction of berms, and all related work such as sheeting, bracing and dewatering.
 - 1. All excavation, grading and trenching shall be considered UNCLASSIFIED EXCAVATION and included in scope of work to achieve the site lines, grades and cross sections to complete the project.
 - 2. All excavation, trenching and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards 29 CFR Part 1926.650 Subpart P and State requirements.
 - a. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
 - 3. Excavated topsoil and excess cut material will be stockpiled in temporary locations approved by the ENGINEER / OWNER. Excess material is to be removed from the site before completion of the project by the Contractor at no additional cost.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of the other requirements of the Specifications, all work herein shall conform to the applicable requirements of the following documents.
 - 1. North Carolina Department of Transportation Standard Specifications for Roads and Structures.
 - 2. ASTM C 127 - Test for Specific Gravity and Absorption of Coarse Aggregate
 - 3. ASTM C 136 - Test for Sieve Analysis of Fine and Coarse Aggregates
 - 4. ASTM D 422 - Particle Size Analysis of Soils
 - 5. ASTM D 423 - Test for Liquid Limit of Soils
 - 6. ASTM D 424 - Test for Plastic Limit and Plasticity Index of Soils
 - 7. ASTM C 535 - Test for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - 8. ASTM D 698 - Standard Method of Test for the Moisture - Density Relations of Soils Using a 5.5 lb. (2.5 kg) Rammer and a 12-inch (305 mm) Drop
 - 9. ASTM D1556 - Test for Density of Soil in Place by the Sand-Cone Method
 - 10. ASTM D1557 - Test for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lbs. (4.5 kg) Rammer and 18-inch (457 mm) Drop
 - 11. ASTM D2049 - Test Method for Relative Density of Cohesionless Soils
 - 12. ASTM D2167 - Test for Density of Soil in Place by the Rubber-Balloon Method
 - 13. ASTM D2216 - Test for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil Aggregate Mixtures
 - 14. ASTM D2487 - Test for Classification of Soils for Engineering Purposes
 - 15. ASTM D2922 - Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

1.3 SUBMITTALS

- A. Excavation support designs shall be prepared by a licensed professional engineer, registered in the State of North Carolina, having a minimum of five years of professional experience in the design and construction of excavation support systems.
- B. Submit a sealed copy of the required Engineering Certification Form in accordance with Section 01300 – Submittals prior to beginning work.

1.4 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Services
 - 1. Provide access for testing agency to perform soil testing and inspection services for quality control during earthwork operations.
 - 2. The OWNER will select a third-party testing agency.
 - 3. Testing agency will be paid by OWNER.
 - 4. Allow testing agency to inspect and approve subgrades and fill layers before construction work is performed.
- C. Compaction Testing
 - 1. The testing agency shall be NCDOT certified.
 - 2. Tests will be performed in accordance with applicable NC DOT, ASTM, or AASHTO standard methods, unless otherwise specified.
 - a. The optimum moisture content and the maximum density of each type of material used for structural fill and backfill will be determined in accordance with ASTM D698 or AASHTO T-99.
 - b. The field moisture content of materials being compacted will be determined by ASTM D2216 - Laboratory Determination of Moisture Content of Soil.
 - c. The field density of compacted material will be determined by ASTM D1556 - Test for Density of Soil in Place by the Sand-Cone Method, or by other acceptable in-place density testing method.
 - 3. Testing Frequency
 - a. Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. Frequency and location will be chosen by ENGINEER.
 - b. Fill improperly compacted shall be reopened to the depth directed, then refilled and compacted to the density specified at no additional cost to the OWNER. CONTRACTOR shall also be responsible for cost for re-inspections / testing.

1.5 JOB CONDITIONS

- A. Carefully maintain all reference points, property markers, right-of-way markers, benchmarks, etc., and accurately restore if disturbed.
- B. The presence of groundwater in the soil will not constitute a condition for which an increase in the contract price will be made.
- C. Existing Utilities
 - 1. CONTRACTOR is responsible for locating all utilities and protecting them from damage.
 - 2. Cooperate with OWNER and utility companies for maintaining services.
 - 3. Do not break utility connections without notifying utility or OWNER a minimum of 48 hours in advance and providing acceptable temporary services if required.
 - 4. Repair damage to existing utilities as directed by utility company.

PART 2 EXCAVATION & PLACEMENT

- A. All on-site material excavated from the project limits in order to achieve the site lines, grades, and cross sections shown on the plans shall be classified as **Unclassified** Excavation.
- B. All off-site borrow material shall be mined, haul on-site and placed in accordance with the plans and specifications. This material shall be classified as Offsite Borrow.
- C. During excavation, the site's topsoil shall be stripped and stored for reuse in final grading and/or landscape repair. During backfilling, subsoil shall be placed and compacted as required to a depth ranging from 6 to 12 inches below grade. The set aside topsoil shall be used to backfill the remainder except under pavement or any other structure. If prior work has mixed the native topsoil into the subsoil, the loamier portions of excavated soil shall be used to backfill the remainder. This soil should be compacted only to the point necessary to meet acceptable temporary rough grade and to meet safety requirements. Topsoil removal shall include but not be limited to excavation, hauling or re-hauling anywhere along the project, storing anywhere along the project, removal and disposal of undesirable and excess material, any temporary backfilling required, and maintaining the work. The areas set aside for stockpiles or materials storage shall be an area that's previously approved by the Engineer & Owner and shall not conflict with locations of planned improvements.
- D. Should topsoil exceeding average depths be encountered on this project, no adjustments will be made to any quantity nor will there be any additional compensation.
- E. Should hard rock be encountered requiring blasting for removal, a written PERMIT FOR BLASTING must be obtained from the Town of Rolesville Fire Department or the appropriate jurisdiction for a fee a MINIMUM of 24 hours before any explosive material or blasting agents are transported into the Corporate Limits of Rolesville, NC. Contractor shall work with permitting agency to notify all adjacent residents and determine if there is a need for monitoring. If monitoring is needed, Contractor should install and evaluate all seismic monitoring and respond with 24 hours to complaints and copy the Town with response and all coordination. This work shall be included in the item for Rock Excavation.
- F. Whenever encountered during work, remove any trash and non-natural debris. Remove all roots and pieces of wood or debris larger than two (2) inches in diameter.
- G. All suitable material removed in the excavation shall be used as far as practicable in the formation of embankments, subgrades, and shoulders, and at such other places as may be indicated on the plans or directed by the Engineer. Unsuitable material and excess excavated material not required for construction of embankments shall be properly disposed of in designated on-site at no additional cost to the Owner.
- H. The intersection of slopes with natural ground surfaces, including the beginning and ending of cut slopes, shall be uniformly rounded as shown on the plans or as may be directed by the Engineer. Concurrent with the excavation of cuts, the Contractor shall construct intercepting berm ditches or earth berms along and on top of the cut slopes at locations shown on the plans or designated by the Engineer. All slopes shall be finished to reasonably uniform surfaces acceptable for seeding and mulching operations. All protruding roots and other objectionable vegetation shall be removed from slopes.
- I. If the Contractor's excavation operations encounter graves, the operations shall be temporarily discontinued in the vicinity of the graves and not resumed until so directed by the Engineer & Owner.
- J. When the Contractor's excavation operations encounter artifacts of historical or archeological significance, the operations shall be temporarily discontinued in the vicinity of the artifacts and not

resumed until so directed by the Engineer. Disposition of the artifacts shall be in accordance with the requirements of the State Division of Archives and History.

- K. A tolerance of plus or minus 0.10 foot from the proposed grade will be permitted in the roadbed and athletic surface areas after it has been graded to a uniform surface. A tolerance of plus or minus 0.20 foot from the established grade will be permitted in all other site areas after it has been graded to a uniform surface. NOTE: The contractor may request and work with the Engineer and Owner to adjust final grades to meet the intended borrow quantities. The above tolerance will still apply to the adjusted final surface grades. The tolerances are important to maintain the proper playing surface drainage and cross-slopes.
- L. The final rough graded surface in all field areas shall be graded smooth and at a consistent slope in all playing areas to meet the tolerances listed above. The surface shall be free of any debris and covered with a minimum of 4" but not more than 8" of topsoil as previously stockpiled. All topsoil shall be screened and free of debris greater than one (1) inch in diameter prior to placement of said material. The screening and placement of topsoil shall be paid in accordance with the line item provide in the Bid Form.
- M. The Contractor shall be responsible during construction and until final acceptance for the maintenance of all work covered by this section.
- N. During construction and until final acceptance, the Contractor shall shape the excavated surface to provide for the drainage of surface runoff along and throughout the length of the cut, shall construct temporary ditches, and use any other methods necessary to maintain the work covered by this section so that the work will not contribute to excessive soil erosion.
- O. As much as practicable, the Contractor shall perform the work covered by this subsection and the construction of embankments in such a manner that cut and fill slopes will be completed to final slopes and grade in a continuous operation. The operation of removing excavation material from any cut and the placement of embankment in any fill shall be a continuous operation to completion unless otherwise permitted by the Engineer.
- P. If grading operations are suspended for any reason whatsoever, partially completed cut and fill slopes shall be brought to the required slope and the work of seeding and mulching or other required erosion control operations shall be performed. NOTE: Time period prior to stabilization cannot exceed 14 days or 7 days for diversion ditches, swales or slopes 3% or greater.

PART 3 PRODUCTS

3.1 SOIL

- A. Soils for bedding and backfill are described in the ASTM D2487 Figure 1 soils classification chart, and, for purposes of these Specifications, are grouped into five (5) categories as follows, according to their suitability for this application:
 - 1. Class I Soil - Angular, 6 to 40 mm (1/4" to 1½"), graded stone, including a number of fill materials that have regional significance, such as coral, slag, cinders, crushed stone, and crushed shells.
 - 2. Class II Soil - Coarse sands and gravels with maximum particle size of 40 mm (1-1/2"), including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil types GW, GP, SW, and SP are included in this class.
 - 3. Class III Soil - Fine sand and clayey gravels, including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil types GM, GC, SM, and SC are included in this class.
 - 4. Class IV Soil - Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil types MH, ML, CH, and CL are included in this class. These materials are not recommended for bedding, haunching, or initial backfill.
 - 5. Class V Soil - Includes the organic soils - types OL, OH, and PT, as well as soils containing

frozen earth, debris, rocks larger than 1-1/2 inches in diameter, and other foreign materials. These materials are not recommended for bedding, haunching, or initial backfill for any of the accepted pipe materials.

3.2 FILL MATERIALS

- A. Materials for use as fill shall be as described below. The CONTRACTOR shall notify the ENGINEER of the source of each material.
- B. Materials shall be furnished as required from approved off-site sources and hauled to the site.
- C. Common Fill
 - 1. Common Fill shall consist of mineral soil free from organic materials, loam, wood, trash, and other objectionable materials which may be compressible or which cannot be properly compacted.
 - 2. Unless otherwise approved by the Geotechnical Engineer, common fill shall not contain stones larger than 4 inches in largest dimension and shall have at least 60% passing the No. 4 sieve, a maximum of 60% passing the No. 200 Sieve, a maximum liquid limit of 60, and a maximum plasticity index of 25.
 - 3. Common Fill shall not contain granite blocks, broken concrete, masonry rubble, or other similar materials.
 - a. It shall have physical properties such that it can be readily spread and compacted during filling.
 - b. Snow, ice and frozen soil will not be permitted.
- D. Select Fill
 - Select Fill shall be as specified above for Common Fill except that the material shall contain no stones larger than two inches in largest dimension, a maximum of 50% passing the No. 200 Sieve, a maximum liquid limit of 50 and a maximum plasticity index of 15.
- E. Structural Fill
 - Structural Fill shall be used for construction under roadway, parking and future building areas as identified on the construction drawings.
- F. The soils shall be wetted or dried as necessary so that the moisture content during compaction is within 3% of the optimum moisture content as determined by ASTM D698.
- G. Highly micaceous and elastic silts shall not be used for Common, Select Fill, or Structural Fill.

3.3 STONE FOR STABILIZATION OF FOUNDATION

- A. Stone used for pipe bedding and trench stabilization shall meet the gradation requirements of standard aggregate size No. 57 or 67 as contained the Standard Specifications for Roads & Structures as published by the NC Department of Transportation, latest edition.

3.4 CRUSHED STONE

- A. All crushed stone shall be silica material that is sound, hard, durable, resistant to weathering, as defined by ASTM D2488 and shall be free of overburden, spoil, shale, limestone, and organic material.
- B. The stone shall be free of deleterious materials such as flat, elongated, friable, decomposed, or micaceous pieces. Broken pieces of concrete, asphalt, or brick are not acceptable.

- C. Crushed stone shall be of the size and type shown on the drawings.

3.5 RIP-RAP

- A. Provide NCDOT, Class A, B, I or II Rip Rap as shown on the drawings.
- B. Rip Rap shall comply with NCDOT Standard Specifications Section 1042 - Riprap.

PART 4 EXECUTION

4.1 GENERAL EXCAVATION

- A. General excavation is expected to consist of removing unsuitable soils identified during proofrolling. The bottom of the excavations shall be rendered firm and dry and, in all respects, acceptable to the ENGINEER.
- B. Excavation and dewatering shall be accomplished by methods that preserve the undisturbed state of subgrade soils. Soils which become soft, loose, "quick", or otherwise unsatisfactory for support of structures, earthen or man-made, as a result of inadequate excavation, dewatering, proofrolling, or other construction methods shall be removed and replaced as required by the ENGINEER at the CONTRACTOR's expense.
- C. Dewatering shall lower the groundwater to at least 1-foot below excavation subgrade and prevent "boiling" condition or detrimental under-seepage at the base of the excavation as specified herein.
- D. Excavation equipment shall be satisfactory for carrying out the work in accordance with the Specifications.
- E. Proof-roll exposed subgrades after stripping topsoil and organics with a minimum of two complete passes of a fully loaded tandem axle dump truck or similar rubber-tired construction equipment as approved by the ENGINEER.
 - 1. All proofrolling shall be conducted in the presence of the ENGINEER or designated representative.
 - 2. The ENGINEER may require excavation and replacement or other remediation as necessary to provide a firm, stable subgrade in areas that appear to be rutting, pumping, or otherwise appear unstable while proofrolling.

4.2 TRENCH EXCAVATION

- A. Excavation for all trenches required for the installation of pipes shall be made to the depths indicated on the Drawings and in such a manner and to such widths as will give suitable room for laying the pipe within the trenches, for bracing and supporting the trench sides and for pumping and drainage facilities.
 - 1. CONTRACTOR shall render the bottom of the excavations firm and stable and in all respects acceptable to the ENGINEER.
 - 2. The trench may be excavated by machinery to, or just below the designated subgrade provided that the material remaining in the bottom of the trench is not disturbed.
 - 3. Where pipe is to be installed in fill, fill shall be placed and compacted to at least 2 ft. above the top of the pipe (rough grade elevation) and then trenches re-excavated for pipe installation.
 - 4. After the trench has been excavated as required to assure the correct invert and a space has been excavated for the pipe bells, lower the pipe into the trench.
 - 5. The pipe shall be placed as near to the center of the trench allowing ample room for compaction on each side.

6. Where conflicts with the laying conditions below conflict with the City of Raleigh Utility bedding standards, the City of Raleigh standards shall apply.
- B. PVC Pipe
1. After excavation is completed, bed with 4" of Class I, Class II, No. 57 or No. 67 stone material to bring trench bottom to grade. Excavated native material may be used if material conforms to this specification.
 2. After the joint has been made backfill to spring line of pipe with Class I, Class II, No. 57 or No. 67 stone material.
 3. Compact backfill by hand tamping under the haunches of the pipe barrel to assure a firm circular bearing surface for the pipe taking care not to move or raise the pipe or in any way create a non-uniform bearing surface.
 4. Pipe 3' to 14' of depth
 - a. Continue Class I, Class II, No. 57 or No. 67 stone material to top of pipe in 8"- 12" layers and compact.
 5. Pipe 14' to 20' of depth
 - a. Continue Class I, Class II, No. 57 or No. 67 stone material to 6" above the top of pipe in 8"-12" layers and compact.
 6. Pipe greater than 20' of depth
 - a. Continue Class I backfill to 12" above the top of pipe in 8"-12" layers and compact.
 7. Backfilling to Grade
 - a. Backfill and compact from the top of embedment material to finished grade with satisfactory soil material, compacting to the density required for the area classification.
 - b. Place backfill in even 8" maximum loose lift layers and compact to the density required for the area classification.
 - c. The finished grade shall conform to elevations, slopes, and contours as indicated on the drawings.
 - d. The CONTRACTOR shall be held responsible for settlement over all trenches, and he shall be required to add material and compact as directed if such settlements occur.
- C. Ductile Iron Pipe
1. Pipe 3' to 14' of depth
 - a. After excavation and the joint has been made, bed with 4" of Class I, II, III, or IV bedding material. This may be the native trench bottom if material conforms to this specification.
 - b. Compact backfill by hand tamping under the haunches of the pipe barrel to assure a firm circular bearing surface for the pipe taking care not to move or raise the pipe or in any way create a non-uniform bearing surface.
 2. Pipe 14' to 20' of Depth
 - a. After excavation is completed, bed with 4" of Class I, Class II, No. 57 or No. 67 stone material to bring trench bottom to grade.
 - b. After the joint has been made backfill to spring line of pipe with Class I, Class II, No. 57 or No. 67 stone material.
 - c. Compact backfill by hand tamping under the haunches of the pipe barrel to assure a firm circular bearing surface for the pipe taking care not to move or raise the pipe or in any way create a non-uniform bearing surface.
 3. Pipe greater than 20' of depth
 - a. After excavation is completed, place 6" of Class I bedding material.
 - b. After the joint has been made, backfill with 4" to 6" of Class I bedding material.
 - c. Compact backfill by hand tamping under the haunches of the pipe barrel to assure a firm circular bearing surface for the pipe taking care not to move or raise the pipe or in any way create a non-uniform bearing surface.
 - d. Continue Class I backfill to 6" above the top of pipe in 8"-12" layers and compact.
 4. Backfilling to Grade

- a. Backfill and compact from the top of embedment material to finished grade with satisfactory soil material, compacting to the density required for the area classification.
- b. Place backfill in even 8" maximum loose lift layers and compact to the density required for the area classification.
- c. The finished grade shall conform to elevations, slopes, and contours as indicated on the drawings.
- d. The CONTRACTOR shall be held responsible for settlement over all trenches, and he shall be required to add material and compact as directed if such settlements occur.

4.3 ROCK EXCAVATION

- A. Rock Excavation on this project is considered on a unit price basis and consists of permitting, blasting and removal of rock material for establishing the required subgrade elevation for site grades and for pipe trenches, and shall include stockpiling excavated material and subsequent placement or disposal of it. No additional payment will be made for rock removal beyond the unit cost provided.
- B. If Rock is Classified through changes in the scope of the project:
 1. Trench Rock is defined as any material which cannot be dislodged by a Caterpillar Model No. 330 hydraulic trackhoe, or equivalent, without the use of hoe-ramming or blasting. This classification does not include material such as loose rock, concrete, or other materials that can be removed by means other than hoe-ramming or blasting, but which for reasons of economy in excavating, the CONTRACTOR chooses to remove by hoe-ramming or blasting.
 2. It is the responsibility of the CONTRACTOR to establish the top elevation of rock by test digging with an excavator at not greater than 50-foot intervals in the presence of the ENGINEER.
 3. The ENGINEER shall then establish the top elevation of the rock layer and compute the quantity of material to be classified as rock, and the CONTRACTOR shall be paid accordingly.
 4. There shall be no payment for rock excavated if the ENGINEER has not been notified to prepare measurements and confirm quantities in advance of such excavation.

4.4 BLASTING

- A. Where blasting is necessary to perform the required excavations, the number and size of the charges shall be subject to the acceptance of the ENGINEER.
 1. Explosives shall be of such quantity and power and used in such locations as will neither open seams nor otherwise disturb the rock outside the prescribed limits of excavation.
 2. As the excavation approaches its final limits, the depth of holes for blasting and the number of explosives used for each hole shall be reduced so that the underlying or adjacent rock will be neither disturbed nor shattered.
 3. No blasting shall be permitted within 50-feet of any existing structure.
 4. The CONTRACTOR shall monitor the blasting operations as necessary to ensure that the work is conducted safely and without causing excessive air or ground pressures or displacements.
 - a. This shall include measuring air and ground pressure by the use of two (2) seismographs.
 - b. When blasting, the acceptable level of vibration shall be no higher than 2 inches per second at any structure.
 - c. In residential and commercial areas, one seismograph shall be located near the closest existing structure on the same side of the street as the blast, while the second seismograph shall be located near the closest existing residential structure on the opposite side of the street.
 5. A blasting permit shall be obtained from the proper authorities.

6. Permit shall be obtained not less than 24-hours prior to transporting any explosive material or blasting agent.
7. The Fire Department may fix the hours of blasting.
8. Galvanometer shall be employed to check cap circuits.
9. CONTRACTOR shall maintain a blasting log for each and every shot containing not less than the following minimum information:
 - a. Date of shot
 - b. Time of shot
 - c. Crew Supervisor
 - d. Number and depth of holes
 - e. Approximate depth of overburden
 - f. Amount and type of explosive used in each hole
 - g. Type of caps used, i.e., instant or delay
 - h. Weather conditions
10. CONTRACTOR shall furnish ENGINEER with a copy of each blasting log.

4.5 MISCELLANEOUS EXCAVATION

- A. The CONTRACTOR shall perform all excavations necessary for the placing of seeding, sodding and plants, for constructing roadways, and any other miscellaneous earth excavation required under this Contract.

4.6 PROTECTION

- A. Sheeting and Bracing (if required)
 1. Furnish, put in place, and maintain such sheeting and bracing as may be required by Federal, State and local safety requirements to support the sides of excavations; to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction; and to protect adjacent structures from undermining or other damage.
 2. If the ENGINEER is of the opinion that at any location sufficient or proper supports have not been provided, he/she may order additional supports put in, and compliance with such order shall not relieve or release the CONTRACTOR from his/her responsibility for the sufficiency of such supports.
 3. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.
 4. Where soil cannot be properly compacted to fill a void, lean concrete shall be used as backfill.
 5. All voids shall be filled to the satisfaction of the ENGINEER. Sheeting and Bracing shall be installed and maintained in accordance with latest OSHA requirements and regulations.
 6. Construct the sheeting outside the neat lines of the foundation, unless indicated otherwise, to the extent deemed desirable for the method of operation.
 7. Sheeting shall be plumb and securely braced and tied in position.
 8. Sheeting and bracing shall be adequate to withstand all pressures to which the structure or trench will be subjected.
 9. Any movement or bulging that may occur shall be corrected to provide the necessary clearances and dimensions.
 10. All sheeting and bracing shall be carefully removed in such manner as not to endanger the construction or other structures, utilities, or property.
 11. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand, which must be approved by the ENGINEER, by ramming with tools especially adapted to that purpose, or otherwise as may be directed.
 12. The right of the ENGINEER to order sheeting and bracing left in place shall not be construed as creating any obligation on his/her part to issue such orders and his/her failure to exercise his/her right to do so shall not relieve the CONTRACTOR from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the CONTRACTOR to leave in place sufficient sheeting

and bracing to prevent any caving or moving of the ground.

13. No sheeting is to be withdrawn if driven below mid-diameter of any pipe and under no circumstances shall any sheeting be cut off at a level lower than 1-ft above the top of any pipe.

B. Drainage and Dewatering

1. At all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water into the excavated areas.
 - a. Groundwater shall be lowered to at least 1 foot below the bottom of excavations.
2. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.
 - a. Well or sump installations shall be constructed with proper sand filters to prevent drawing of finer grained soil from the surrounding ground.
3. Surface runoff shall be collected, drained to sumps, and pumped from the disposal unit to maintain an excavation bottom free from standing water.
4. Take all additional precautions to prevent uplift of any structure during construction.
5. Drainage shall be disposed of so that flow or seepage back into the excavated area will be prevented.
6. Flotation shall be prevented by maintaining a positive and continuous operation of the dewatering system. The CONTRACTOR shall be fully responsible and liable for all damages which may result from failure of this system.
7. Remove the dewatering equipment after the system is no longer required.
8. Take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater or surface water quality.

- C. Slope Stability - The CONTRACTOR shall be solely responsible for the stability of embankments, unbalanced fills, stockpiles, and all other construction operations.

4.7 GENERAL BACKFILL

- A. Materials placed in fill areas shall be placed to the lines and grades shown on the Drawings. Unless otherwise specified, Common Fill shall be used for backfill.
- B. Fill shall be placed in accordance with the Contract Document.
- C. Material conforming to the requirements of Common Fill shall be placed in layers having a maximum compacted thickness of 8-inches measured before compaction and shall be compacted to at least 95% of its maximum dry density. The upper 12 inches beneath pavements and structures shall be compacted to at least 98% of its maximum dry density.
- D. Select Fill shall be used where specified. Select Fill shall be placed in layers having a maximum compacted thickness of 8-inches measured before compaction and shall be compacted to at least 95% of the maximum dry density. The upper 12 inches beneath pavements and structures shall be compacted to at least 98% of its maximum dry density.
- E. Structural Fill shall be used where specified and shown on the Drawings. Structural fill shall be placed in maximum compacted lift thickness of 8 inches and shall be compacted to at least 95% of its maximum dry density. The upper 12 inches beneath pavements and structures shall be compacted to at least 98% of its maximum dry density.
- F. The surfaces of filled areas shall be graded to smooth true lines, conforming to grades indicated on the grading plan and no soft spots or uncompacted areas will be allowed in the work.
- G. No compacting shall be done when the material is covered with frost or is frozen or is too wet

either from rain or from excess application of water.

1. At such times, work shall be suspended until the previously placed and new materials have thawed and/or dried sufficiently to permit proper compaction.

- H. All backfill shall be placed at a moisture content within 3% of Standard Proctor (ASTM D698) optimum moisture content

4.8 COMPACTION

A. General

1. Control soil compaction during construction providing minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements

1. Compact soil to not less than the following percentages of maximum dry density for soils which exhibit a well-defined moisture density relationship determined in accordance with these specifications.

a. Structures

- 1) Compact top 12" of subgrade and each layer of backfill or fill material at 98% maximum dry density.

b. Pipes and Related Structures

- 1) Pipe bedding and embedment material to 90% maximum dry density.
- 2) Backfill and compact trenches in uniform layers from top of bedding and embedment material to finish grade to 95% maximum dry density.

c. Unpaved Areas

- 1) Compact top 6" of subgrade and each layer of backfill or fill material at 90% maximum dry density.

d. Pavements

- 1) Compact top 12" of subbase and each layer of backfill or fill material at 98% maximum dry density.

e. Crushed Aggregate Base Course

- 1) Compact top 12" of subgrade and each 6" layer of crushed aggregate base course material to 100% maximum dry density.

f. Embankment

- 1) Compact to a density not less than 95% maximum dry density at moisture contents ranging from -3% to +3% of optimum.

g. Moisture Control

- 1) Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, taking care to prevent free water appearing on surface during or subsequent to compaction operations.
- 2) Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
- 3) Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry.
- 4) Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by the soils testing agency.
- 5) Payment for replacement of material that is too wet to compact will not be considered unless the material is still unsuitable after air-drying.
- 6) The soils testing agency shall declare which materials are suitable or unsuitable.

4.9 ROAD SUBGRADE

- A. The road subgrade for bituminous, concrete, and crushed stone pavement areas in fill sections shall consist of a two-foot thick layer of Select Fill. The Select Fill shall be placed and compacted in accordance with the contract documents.

- B. The road subgrade for bituminous, concrete, and crushed stone pavement areas in cut sections shall consist of firm natural soils as approved by theENGINEER.
- C. Road subgrades shall be proof-rolled.

4.10 HANDLING OF SURPLUS MATERIAL

- A. Excavated materials shall not be removed from the site except as specified by the ENGINEER.
 - 1. Materials shall be neatly stockpiled on-site at locations directed by theOWNER.
 - 2. Excess materials shall be compacted and stockpiled in accordance with the CONTRACTOR's fill placement plan.
 - 3. CONTRACTOR shall provide erosion and sedimentation control measures as shown on the drawings and specified in the Contract Documents.

END OF SECTION

SECTION 31250 – EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. The work shown on the Drawings and specified herein shall constitute the erosion control plan for this project in conformance with the Sedimentation Pollution Control Act of 1973. The erosion control plan shown is based on the anticipated construction methods and sequence, and includes the permanent and temporary measures as required. The CONTRACTOR shall provide at no additional cost to the OWNER any other measures as may be required to prevent erosion as a result of construction activity at the site.
- B. Temporary erosion control measures shall include, but not be limited to, check dams, diversion ditches, silt fences, rip rap, grass, mulches, mats, fabric, netting, construction entrances, or any other methods or devices that are necessary to control or restrict erosion. Temporary erosion control measures may include work outside the right-of-way or construction limits where such work is necessary as a result of construction such as borrow pit operations, haul roads, plant sites, equipment storage sites, and disposal of waste or debris. The CONTRACTOR shall be liable for all damages to public or private property caused by silting or slides originating in areas used by the CONTRACTOR.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. All construction activities required under this project shall comply with the North Carolina Sedimentation Pollution Control Act of 1973 and the rules and regulations promulgated pursuant to the provisions of that law.
- B. North Carolina Sedimentation Control Commission Erosion and Sediment Control Planning and Design Manual, Latest Edition
- C. NCDOT Standard Specifications for Roads and Structures, Latest Edition
- D. In the event of conflict between the regulations listed above and the requirements of these Specifications, the more restrictive requirements shall apply.

1.3 CONTRACTOR'S RESPONSIBILITY

- A. CONTRACTOR shall be responsible for installing and maintaining erosion control devices as required to function properly and to satisfy the representatives of the North Carolina Land Quality Section, Division of Land Resources, Department of Environment and Natural Resources, and the ENGINEER.
- B. CONTRACTOR shall provide all of the necessary services to comply with the NPDES Stormwater discharge permit for construction activities (Permit No. NCG01000). This includes, but is not limited to, providing a rain gauge on site, monitoring rain events, checking all erosion and sedimentation control measures for stability and operation following each rainfall event or at least once per week, maintaining the monitoring log for the site, and keeping an up to date copy of the log and approved set of the erosion control plans on site at all times. This also includes the proper storage and disposal of materials.

The Contractor shall make any needed repairs immediately to maintain all control measures as designed. The Contractor shall retain all records of all monitoring information and copies of all reports required by the general permit during the construction of the project and provide these records to the Town with each pay request.

- C. CONTRACTOR shall clean out all sediment trapping devices when the device reaches 50% trap capacity and shall dispose of the sediment by spreading on the site in a protected area or by hauling away if not suitable for fill at no additional cost to the Owner.
- D. Any time delays experienced due to a shutdown by the N. C. Land Quality Section or due to unanticipated corrective work will not receive any time extensions on the contract.

1.4 SUBMITTALS

- A. Materials and facilities for temporary erosion control measures shall have been approved by the ENGINEER before being used. Any facilities or materials different from those shown on the Drawings or specified herein shall be submitted to the ENGINEER for approval.
- B. Product Data: Submit manufacturer's technical data and material samples for silt fence fabrics, ditch liner, filter cloth, matting for silt fence fabrics, and other manufactured materials if requested.
- C. Material Certificates: Submit material certificates signed by manufacturer and CONTRACTOR certifying specification compliance for posts, woven wire, filter stone, riprap, and other products if requested.
- D. Drawings: Submit scaled drawings of changes in facilities shown on Drawings and additional facilities proposed by CONTRACTOR.

1.5 GENERAL CONSTRUCTION SCHEDULE

- A. Notify the State of North Carolina Department of Environment and Natural Resources of construction commencement and schedule pre-construction conference if required by the State of North Carolina Environmental ENGINEER.
- B. Install construction entrances, silt fence, stone drains, check dams, and other measures as shown on the approved plan. Clear only as required to install these devices. Seed temporary diversions, berms, and basins immediately after construction.
- C. Begin clearing and grubbing. Delay grading in areas that would reduce the minimum dimensions of sediment control basins. Stockpile topsoil and suitable fill material. Install silt fence around stockpile areas. Dispose of unsuitable soils and all other waste materials off-site in a legal manner.
- D. Groundcover shall be provided within 14 calendar days following completion of any phase of grading.
- E. Permanent groundcover shall be provided for all disturbed areas within 14 calendar days following completion of construction activities.
- F. CONTRACTOR to conduct a weekly site inspection and after each rainfall event to determine which areas can be temporarily or eminently seeded, which devices need maintenance, repair, etc. and to ensure that the erosion control measures are performing adequately. Perform any necessary maintenance.

- G. Stabilize site as areas are brought to finished grade with vegetation or stone base. All areas to be paved shall be stabilized with stone as soon as they are brought to final grade. Maintain diversions, inlet protection, and sediment basins until site is completely stabilized.
- H. Fertilize, seed, and mulch all disturbed areas according to seeding schedule.
- I. When construction is complete and all areas are stabilized, call for an inspection by an environmental inspector.
- J. If site is approved, removed any temporary diversions, silt fences, stone drains, sediment traps, etc. and re-grade and seed or stabilize any resulting bare areas.
- K. When vegetation has become established, call for a final site inspection by an environmental inspector. Obtain certificate of completion and remove all erosion control measures within 30 days.

PART 2 PRODUCTS

2.1 SILT FENCE

- A. Comply with North Carolina Sedimentation Control Commission Erosion and Sediment Control Planning and Design Manual Section 6.62 - Sediment Fence.

2.2 EROSION CONTROL STONE

- A. Comply with NCDOT Standard Specifications for Roads and Structures Section 1610 - Erosion Control Stone.

2.3 CHECK DAM

- A. Comply with North Carolina Sedimentation Control Commission Erosion and Sediment Control Planning and Design Manual Section 6.83 - Check Dam.

2.4 DRAINAGE STONE

- A. Drainage stone, washed, uniformly graded mixture of crushed stone, or crushed or uncrushed gravel conforming to Coarse Aggregate No. 57 or ASTM C-33 to be used as specified.

2.5 SEPARATOR GEOTEXTILE FABRIC

- A. Separator geotextile fabric shall be a woven slit film or monofilament synthetic fabric consisting of polyester or polypropylene to be approved ENGINEER. Geotextile shall be treated to resist degradation due to exposure to ultraviolet light.

PART 3 EXECUTION

3.1 GENERAL

- A. The CONTRACTOR shall take whatever measures are necessary to minimize soil erosion and siltation and water, air, and noise pollution caused by his operations. The CONTRACTOR shall also comply with the applicable regulations of all legally constituted authorities relating to pollution prevention and control. The CONTRACTOR shall keep himself fully informed of all such regulations that in any way affect the conduct of the work and shall at all times observe and comply with all such regulations. In the event of conflict between such regulations and the requirements of the Specifications, the more restrictive requirements shall apply.
- B. The CONTRACTOR shall exercise every reasonable precaution throughout the life of the project to prevent the eroding of soil and the silting of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces, or other property.

- C. Prior to suspension of operations on the project or any portion thereof, the CONTRACTOR shall take all necessary measures to protect the construction area, including but not limited to, borrow sources, soil type base course sources, and waste areas, from erosion during the period of suspension.
- D. Install temporary and permanent erosion control measures in accordance with these Specifications and with the NCDOT Standard Specifications for Roads and Structures, Latest Edition.
- E. Permanent or temporary soil stabilization, which includes seeding, mulching, or ground cover sufficient to restrain erosion, must be applied to portions of the disturbed area in accordance with Section 329116 - Seeding and Mulching.
- F. Clean sediment transported onto public roads at the end of each day. Sediment shall be removed by shoveling or sweeping and be transported to a controlled disposal area. Street washing shall be allowed after sediment is removed in this manner.

3.2 TEMPORARY EROSION CONTROL MEASURES

- A. Provide diversion ditches and berms as necessary to prevent concentrated flow of water across disturbed areas.
- B. Stockpile excavated material on the opposite side of the utility trenches from the watercourses to the extent that is permissible.
- C. In the event that stockpiles are placed on the watercourse side of the trench, provide silt fence or silt berms with stone filter outlets along the entire length of the stockpile that is on the watercourse side of the trench. The placement of these measures shall be at no additional cost to the OWNER. Upon the completion of backfilling, the measures shall be removed and the site graded to its natural grade or as shown on plans.
- D. Maintain natural buffer zones along all watercourses sufficient to retain all visible siltation within the first 25% of the buffer width.
- E. Provide a settling basin with a gravel filter outlet for all water pumped from trenches or dewatering equipment. Pumping of that water directly into any stream, pond, or watercourse is prohibited.
- F. Temporary Silt Fencing
 - 1. Provide silt fences where shown on the Drawings and as necessary to prevent erosion.
 - 2. Install silt fence in accordance with the details shown on the Drawings.
 - 3. Repair silt fence when any fabric collapses, tears, decomposes, or becomes ineffective.
 - 4. Remove sediment deposits when sediment depth behind fence reaches 6".
 - 5. Filter fabric to be of polypropylene, nylon, polyester, or polyethylene yard with a standard strength of 30 lb./in. inch (minimum), 85% (minimum) filtering efficiency, and a slurry flow rate of 0.3-gal/sq.-ft./minute (minimum). Fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum construction life of six months.
 - 6. Posts to be 1.33 lb./linear foot steel.
 - 7. Install silt fence on low side of stockpiles and in locations shown on the Drawings. Extend fence around approximately 90% of the perimeter of the stockpile.
- G. Check Dams and Stone Drains
 - 1. Class B erosion control stone shall be used.
 - 2. Place filter fabric between soil, rip rap, and extend across ditch.
 - 3. Rip rap shall not exceed 24" in height at center and slope shall be 2:1.

4. Place riprap over the ditch banks to keep water from cutting around the dam.
 5. Construct check dam to dimensions shown on the Drawings.
- H. Sediment Traps
1. Strip topsoil and clear area where trap is to be located in accordance with Section 312000 – Excavation, Backfill, and Compaction.
 2. Place acceptable fill for the embankment in accordance with Section 312000 – Excavation, Backfill, and Compaction. Over fill the embankment 6” to allow for settlement.
 3. Construct the outlet section in the embankment. Place filter fabric between the soil and riprap. Extend the fabric across the crest of the spillway foundation and sides of the embankment.
 4. Clear the pond area below the elevation of the crest of the spillway to facilitate sediment cleanout.
 5. Construct the dam and stone spillway to the dimensions, elevations, and slopes as shown on the drawings.
 6. The Class “B” erosion control stone used in the stone section shall be a well graded mixture of stone with a d50 size of 9” and a maximum stone size of 14”. Work the small stones into the voids of the larger stones. Use No. 57 stone on the face of the spillway.
 7. Construct the stone spillway outlet section downstream past the toe of the embankment until stable conditions are reached. Shape the center to confine the outflow stream.
- I. Stream or Ditch Pipe Crossings
1. Complete pipe crossing in one working day. Carefully stabilize disturbed slopes by tamping with equipment buckets and mechanical or hand tamping. Distribute topsoil evenly on slopes and tamp.
 2. Where riprap is required, carefully place as shown on the details.
 3. Fertilize, seed, and mulch each crossing's slopes as soon as practicable after completing the crossing and in no case more than two weeks after disturbance of the slopes.
 4. Install excelsior blankets where indicated and immediately after permanent seeding in accordance with manufacturer's recommendations. Blankets shall be installed with the netting on top and the fibers in contact with the soil over the entire area. When excelsior blankets are installed in ditches, they shall be applied in the direction of the flow of water. When installed on slopes, the blankets shall be applied either horizontally or vertically, and end and sides shall be butted snugly and stapled in accordance with manufacturer's recommendations.
 5. The CONTRACTOR shall acceptably maintain erosion control measures installed by the CONTRACTOR.
- J. Fabric Inlet Protection
1. Space 2 x 4-inch wood (or equivalent metal) stakes evenly around the perimeter of the inlet a maximum of three feet apart, and securely drive them into the ground a minimum of 24” deep.
 2. To provide needed stability, frame with 2 x 4-inch wood strips around the crest of the overflow area at a maximum of 1.5 feet above the drop inlet crest.
 3. Place the bottom 12 inches of fabric in a trench and backfill the trench with at least four inches of crushed stone or 12 inches of compacted soil.
 4. Fasten fabric securely to the stakes and frame so that joints overlap to the next stake.
 5. It may be required to build a dike on the down slope side of the inlet in order to prevent bypass flow.
- K. Curb Inlet Protection
1. Lay concrete blocks on pavement 6” from curb inlet. Place blocks against the drain inlet for lateral support.
 2. Place at least one concrete block on its side in each bottom row of blocks.

3. Place wire mesh with ½" openings over all block openings used for drainage.
- L. Construction Entrance & Exit
1. Strip topsoil and clear area where trap is to be located in accordance with Section 312000 – Excavation, Backfill, and Compaction.
 2. Place gravel to the specified grade and dimension as shown on the drawings.
- M. Temporary Seeding and Mulching: See Section 329116 - Seeding and Mulching.

3.3 PERMANENT EROSION CONTROL MEASURES

- A. Pipe Outlet Stabilization
1. Ensure that the subgrade for the riprap and filter fabric follows the required lines and grades as shown on the drawings. Compact any fill required in the subgrade to the density of the surrounding undisturbed soil. Low areas in the subgrade on undisturbed soil shall be filled by increasing the thickness for the riprap.
 2. The riprap and filter fabric shall conform to the specified grade and dimension as shown on the drawings.
 3. Riprap may be placed by machine, but take care to avoid damaging the filter fabric.
 4. The filter fabric shall be protected from puncturing and tearing during installation. Repair damage fabric by removing the riprap and placing a new piece of fabric over the damaged area. All connecting joints shall overlap a minimum of 12-inches in all directions. Replace the entire filter fabric as directed by the OWNER or ENGINEER.
 5. The minimum thickness of the riprap shall be 1.5 times the maximum stone diameter.
 6. Construct the apron on zero grade with no over fall at the end. The top of the riprap at the downstream end shall be level with the receiving area.
 7. Construct the apron so it is properly aligned with the receiving stream.
 8. Immediately after construction, stabilize all disturbed area with the proper vegetate cover
- B. Permanent Seeding and Mulching: See Specification Section 329116 - Seeding and Mulching.

3.4 MAINTENANCE PLAN

- A. Due to the project size an erosion control plan is not required. To minimize project sedimentation, each outfall within the project area shall be inspected weekly and after each heavy-runoff producing rainfall. All needed repairs shall be made immediately to prevent further damage and erosion. Structures and measures that shall be inspected include: N/A
- B. Seeding, Fertilizing, and Mulching
1. Seeded areas shall be inspected for failure and necessary repairs shall be made within the same season, if possible.
- C. Silt Fence
1. Any fabric that collapses, tears, decomposes, or becomes ineffective, will be replaced immediately. Remove sediment deposits behind fence when sediment accumulates to 6".
- D. Rock Check Dams and Stone Drains
1. Inspect for significant erosion around the edges and between dams. Install protective riprap liners in portions of the channel where erosion occurs. Remove sediment accumulated behind the dams as required to prevent damage to channel vegetation. Add stones to dams as required to maintain design height and cross section.
- E. Sediment Traps
1. Sediment shall be removed from the trap and the trap shall be restored to its original constructed conditions when one foot of sediment has accumulated in the trap. The sediment will be disposed of and the contaminated part of the gravel will be replaced. The structure

shall be checked for damage and the spillway shall be maintained at a minimum of 1.5-feet below the low point of the embankment. Damage shall be repaired immediately and when settlement of the embankment occurs, fill shall be placed 6-inches above the design grade. Riprap will be replaced when displaced from the spillway.

- F. Inlet Protection
 - 1. Replace any fabric that collapses, tears, decomposes, or become ineffective will be replaced immediately. Remove sediment deposits behind fence when sediment accumulates to six inches.

- G. Pipe Outlet Stabilization
 - 1. Inspect riprap structure after heavy rains to see if any erosion around or below the structure or if stones have been dislodged. Immediately make all necessary repairs to prevent future damage.

- H. Construction Entrance & Exit
 - 1. Inspect construction entrances and exits for condition of surface. Top-dress with new stone when needed.

- I. Stockpiles
 - 1. Stockpiles shall be checked for sedimentation and stabilization.

END OF SECTION

SECTION 32150 – PAVING AND RESURFACING

PART 1 GENERAL

1.1 THE REQUIREMENT

- A. Furnish all labor, equipment, and materials and perform all operations in connection with the construction of asphalt concrete pavement, asphalt concrete overlay, reinforced concrete pavement, gravel roads, concrete curb and gutter, repair and reconstruction of existing asphalt concrete pavement, repair of existing gravel roads, and pavement markings complete as specified herein and as detailed on the Drawings.
- B. All new roads including the replacement of portions of the existing roads shall be to the limits, grades, thicknesses and types as shown on the Drawings.
 - 1. Patches for pipe crossings and areas damaged during the construction work shall be asphalt and/or gravel, depending upon the material encountered, unless otherwise indicated.

1.2 STANDARD SPECIFICATIONS

- A. Except as otherwise provided in the Specifications or on the plans, all work shall be in accordance with the North Carolina Department of Transportation Standard Specifications for Roads and Structures, latest edition unless otherwise noted except that any reference to "NCDOT", "Department" or "Unit" shall mean the "OWNER".
- B. When reference to these Specifications is intended, the description will be NCDOT Section _____ or NCDOT Specifications.
- C. Except with the approval of the ENGINEER, the placing of concrete or asphalt concrete surface paving shall be subject to the seasonal and weather restrictions set forth in NCDOT Standard Specifications for Roads and Structures.

1.3 QUALITY CONTROL

- A. CONTRACTOR will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
- B. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.
- C. All testing shall be in accordance with NCDOT Specifications.
- D. Asphalt Thickness
 - 1. In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
- E. Asphalt Surface Smoothness
 - 1. Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances per NCDOT Specifications.
- F. Asphalt In-Place Density
 - a. Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979.

- b. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
 - c. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - d. At least 2 core samples shall be taken.
 - e. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements. CONTRACTOR will be responsible for all additional testing due to unacceptable tests.
- 1. Testing Frequency
 - a. Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. Frequency and location will be chosen by ENGINEER. A bid allowance will be used to compensate CONTRACTOR for testing.

PART 2 MATERIALS

2.1 SELECT FILL

- A. The CONTRACTOR shall place select fill as necessary to complete the shoulders, subgrade foundation, and replacement for removed unsuitable material in accordance with NCDOT Section 200, Clearing and Grubbing and as specified.

2.2 GRAVEL

- A. All work including materials associated with gravel shall be in accordance with NCDOT Section 545, Incidental Stone Base unless otherwise noted.

2.3 AGGREGATE STABILIZATION

- A. All work including materials associated with Aggregate Stabilization shall be in accordance with NCDOT Section 510, Aggregate Stabilization unless otherwise noted.

2.4 AGGREGATE BASE COURSE (ABC)

- A. All work including materials associated with Aggregate Base Course shall be in accordance with NCDOT Section 520, Aggregate Base Course unless otherwise noted.
 - 1. Type "A" or "B" aggregate in accordance with NCDOT Section 1010 will be acceptable for this project.

2.5 ASPHALT TACK COAT

- A. All work including materials associated with asphalt tack coat shall be in accordance with NCDOT Section 605, Asphalt Tack Coat unless otherwise noted.

2.6 ASPHALT CONCRETE BASE COURSE (ACBC)

- A. All work including materials associated with asphalt concrete base course shall be in accordance with NCDOT Section 610, Asphalt Concrete Plant Mix Pavements unless otherwise noted.
 - 1. The job mix formula CONTRACTOR proposes to use shall be delivered to the ENGINEER at least 2-weeks prior to beginning paving operations.

2.7 ASPHALT CONCRETE SURFACE COURSE (ACSC)

- A. All work including materials associated with asphalt concrete surface course shall be in accordance with NCDOT Section 610, Asphalt Concrete Plant Mix Pavements unless otherwise noted.
 - 1. The job mix formula CONTRACTOR proposed to use shall be delivered to the ENGINEER at least two 2-weeks prior to beginning paving operations.

2.8 RIGID PORTLAND CEMENT CONCRETE PAVEMENT

- A. All work including materials associated with rigid concrete pavement shall be as specified.
 - 1. Class A concrete shall be used.
 - 2. Placement shall be as specified and NCDOT Section 700, General Requirements for Portland Cement Concrete Paving and Section 710, Concrete Pavement unless otherwise noted.

2.9 RIGID CONCRETE PAVEMENT REINFORCING

- A. Reinforcing, when applicable, shall be as shown on the Drawings and as specified.

2.10 CONCRETE CURB AND GUTTER

- A. Concrete shall be air-entrained by admixture only and proportioned and mixed for a 28- day minimum compressive strength of 3,500 psi as specified.
- B. Premolded expansion joint filler for expansion joints shall conform to ASTM D 1751 and shall be ½-inch thick, minimum.

2.11 CONCRETE SIDEWALK

- A. Concrete shall be air-entrained by admixture only and proportioned and mixed for a 28- day minimum compressive strength of 3,500 psi as specified.
- B. Premolded expansion joint filler for expansion joints shall conform to ASTM D 1751 and shall be ½-inch thick, minimum.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that sub grade is dry and in suitable condition to support paving and imposed loads.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment 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. Revise minimum weight or type of vehicle in first subparagraph below if required.
 - 3. Proof roll with an approved piece of equipment having a single-axle weight of at least 10 tons.
 - 4. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting and replace with compacted backfill or fill as directed.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Subgrade
 - 1. The subgrade where shown on the Drawings shall be aggregate stabilized by the addition and mixing of coarse aggregate with the top 3-inches of subgrade in accordance with NCDOT Section 500-2, Construction Methods.
- B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared sub grade is ready to receive paving.
- C. Tack Coat
 - 1. Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal/sq.yd
 - 2. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 3. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
- D. Proof-roll prepared sub grade surface to check for unstable areas and areas requiring additional compaction. Proof-rolling of prepared sub grade will conform to the NCDOT Section 260, Proof Rolling unless otherwise noted. OWNER's Representative shall observe proof-roll.
- E. Notify OWNER's Representative of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving. Allow to dry until proper condition to receive paving. Subsurface shall be free of any ice or debris.
- F. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces. Asphalt shall be feathered to match the elevation of adjoining concrete or asphalt pavement.

3.3 AGGREGATE BASE COURSE

- A. The base course of all paving shall be ABC.
 - 1. ABC shall be of the thickness shown on the Drawings and formed true to crown and grade.
 - 2. Gravel roads, including repair to existing gravel roads, shall be ABC.
 - 3. No fill material except new ABC shall be placed on top of existing gravel.

3.4 ASPHALT CONCRETE BASE COURSE

- A. Asphalt concrete base course shall be placed and compacted on the aggregate base course in layers not to exceed 2-inches and at the rate of not less than 110 pounds per square yard per inch of thickness.
 - 1. Thicknesses shall be as shown on the Drawings.

3.5 ASPHALT CONCRETE SURFACE COURSE

- A. Prior to placement of the asphalt concrete surface course, the base/binder course shall be inspected for damage or defects and repaired to the satisfaction of the ENGINEER.
 - 1. The surface of the base/binder course shall be approved by the ENGINEER.
- B. An asphalt tack coat shall be applied to the surface of the approved base/binder course as described in NCDOT Section 605.

1. Equipment for applying the tack coat shall be power-oriented pressure spraying or distributing equipment suitable for the materials to be applied and approved by the ENGINEER.
- C. The asphalt concrete surface course shall be placed and compacted on the base/binder course in layers not to exceed 2-inches and at the rate of not less than 110 pounds per square yard per inch of thickness.
 1. Thicknesses shall be as shown on the Drawings.

3.6 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

3.7 COMPACTION

- A. Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving per NCDOT Specifications.

3.8 TOLERANCES

- A. Thickness
 1. Compact each course to produce the thickness indicated within the following tolerances:
 - a. Surface Course
 - 1) Plus 1/4 inch, no minus
 - b. Crowned Surfaces
 - 1) Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.
- B. Surface Smoothness
 1. Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straight edge applied transversely or longitudinally to paved areas:
 - a. Surface Course
 - 1) 1/8 inch
 - b. Crowned Surfaces
 - 1) Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.9 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified.
- B. Allow paving to age for 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply marking in accordance with drawings and NCDOT Specifications.

3.10 RIGID PORTLAND CEMENT CONCRETE

- A. The subgrade and base course beneath Portland cement concrete pavement shall be

prepared in accordance with the applicable Sections of these Specifications and referenced NCDOT Standard Specifications for Roads and Structures.

1. The CONTRACTOR shall use an approved automatically controlled fine grading machine to produce final subgrade and base surfaces meeting the lines, grades, and cross sections (thicknesses) shown on the Drawings or established by the ENGINEER.
- B. The surface of the base shall be damp at the time the concrete is placed.
1. The CONTRACTOR shall sprinkle the base when necessary to provide a damp surface.
 2. The CONTRACTOR shall satisfactorily correct all soft areas in the subgrade or base prior to placing concrete.
- C. Hauling over the base course shall not be allowed except where specifically permitted by and in writing by the ENGINEER.
1. The ENGINEER may allow equipment-dumping concrete to operate on the base to the extent and under the conditions the ENGINEER deems necessary to facilitate placing and spreading the concrete.
- D. Installation of the rigid concrete pavement shall be in accordance with the details shown on the Drawings and Division 3 - Concrete.
1. The rigid concrete pavement shall cure a minimum of 10 calendar days and until the concrete has attained a minimum flexural strength of 550 psi as indicated by flexural strength testing.
 2. The CONTRACTOR shall coordinate and pay for all flexural strength testing with a minimum of four 6-inch by 6-inch by 20-inch beams for every 50 cubic yards of pavement concrete installed.
- E. Contraction joints shall be spaced at intervals as shown on the Drawings.
1. Transverse contraction joints shall be formed by an approved joint insert.
 2. Expansion joints shall be placed when the pavement abuts a structure using 1-inch expansion joint material (filler) and sealant as specified herein.

3.11 CONCRETE CURB AND GUTTER

- A. The expansion joint filler for concrete curb and gutters shall be cut to conform to the cross section of the curb.
1. Expansion joints shall be spaced at intervals of not more than 25-feet.
- B. Formed control joints shall be installed at intervals not exceeding 10-feet.
1. Depth of joint shall be the thickness of the curb and gutter.
- C. Curved forms shall be used where radii are indicated; straight segments shall not be permitted.
- D. Upon removal of the forms, exposed curb faces shall be immediately rubbed down to a smooth and uniform surface.
- E. No plastering shall be permitted.

3.12 CONCRETE SIDEWALK

- A. No concrete shall be placed until forms and subgrade have been approved by the OWNER.

- B. Expansion joints shall be placed at intervals not greater than 50-feet and between all rigid objects.
- C. Grooved construction joints shall be cut to a depth equal to but not less than the total slab thickness.
 - 1. Construction joints shall be placed at intervals equal to but not more than the width of the sidewalk.
- D. Sidewalk surface shall be finished to line and grade and cross section with a float, troweled smooth, and given a broom finish.

3.13 JUNCTION WITH OTHER PAVING

- A. Where new asphalt concrete pavement abuts existing asphalt concrete pavement, the existing pavement shall be cut back to insure obtaining the specified compaction of the new pavement courses and interlocking adjoining courses.
 - 1. Existing subbase courses shall be cut back from the subgrade level of the new pavement on a one-on-one slope into the existing pavement.
 - 2. The asphalt courses of the existing pavement shall be removed for additional 6-inches back from the slope.
 - 3. The edge of the existing asphalt courses shall be saw cut straight and true.
 - 4. The faces between new and existing asphalt courses shall receive an application of tack coat.
- B. Where new rigid concrete pavement abuts existing rigid concrete or asphalt concrete paving, the existing paving shall be saw cut straight and true.
 - 1. An expansion joint of a ½-inch minimum thickness with filler material and sealant shall be placed between the new concrete pavement and the existing rigid concrete or asphalt concrete paving.

3.14 ASPHALT CONCRETE OVERLAY

- A. Where asphalt concrete is to be placed over an existing asphalt or rigid concrete surface, the surfaces shall be thoroughly cleaned by power brooming.
- B. A tack coat shall be applied in accordance with NCDOT Section 605, Asphalt Tack Coat, of the NCDOT Specifications prior to installing the overlay.

3.15 SIGNAGE

- A. Erect signs in accordance with NCDOT Specifications.

3.16 DISPOSAL

- A. Remove excavated materials from project site and legally dispose of them.

END OF SECTION

SECTION 32920 – MISCELLANEOUS WORK AND CLEANUP

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to do the miscellaneous work not specified in other sections but obviously necessary for the proper completion of the work as shown on the Drawings.
- B. When applicable the CONTRACTOR shall perform the work in accordance with other sections of this Specification.
- C. When no applicable specification exists, the CONTRACTOR shall perform the work in accordance with the best modern practice and/or as directed by the ENGINEER.
- D. The work of this Section includes, but is not limited to, the following:
 - 1. Crossing and relocating existing utilities
 - 2. Restoring of driveways and sidewalks
 - 3. Cleaning up
 - 4. Incidental work
 - 5. Job photographs
 - 6. Protection and/or removal and reinstallation of signs
 - 7. Restoration of and replacement of curbing
 - 8. Protection and bracing of utility poles
 - 9. Restoring easement and rights-of-way
- E. Temporary facilities

PART 2 PRODUCTS

2.1 MATERIALS

- A. Materials required for this Section shall be the same quality of materials that are to be restored.
- B. Where possible, the CONTRACTOR may re-use existing materials that are removed.

PART 3 EXECUTION

3.1 CROSSING AND RELOCATING EXISTING UTILITIES

- A. This Item includes any extra work required in crossing culverts, water courses, including brooks and drainage ditches, storm drains, gas mains, water mains, electric, telephone, gas, and water services, and other utilities.
- B. This work shall include but is not limited to the following: bracing, hand excavation and backfill (except screened gravel) and any other work required for crossing the utility or obstruction not included for payment in other items of this specification.
- C. In locations where existing utilities cannot be crossed without interfering with the construction of the work as shown on the Drawings, the CONTRACTOR shall remove and relocate the utility as directed by the ENGINEER or cooperate with the Utility Companies concerned if they relocate their own utility.
- D. At pipe crossings and where designated by the ENGINEER, the CONTRACTOR shall furnish and place screened gravel bedding so that the existing utility or pipe is firmly supported for its entire exposed length.
- E. The bedding shall extend to the mid-diameter of the pipe crossed. Payment for screened gravel at pipe crossings will be made according to the unit price bid established in the Bid Form.

3.2 CLEANING UP DURING CONSTRUCTION

- A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris, resulting from construction operations.
- B. Provide onsite containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at an approved facility.
- D. Upon approval of the OWNER, selected waste may be disposed at the active construction and demolition disposal area on the site.

3.3 FINAL CLEANING

- A. The CONTRACTOR shall remove all construction material, excess excavation, buildings, equipment, and other debris remaining on the job as a result of construction operations and shall restore the site of the work to a neat and orderly condition.
- B. Prior to final completion, or OWNER occupancy, ENGINEER shall conduct an inspection of all work areas to verify that the entire work area is clean.

3.4 INCIDENTAL WORK

- A. Do all incidental work not otherwise specified, but obviously necessary to the proper completion of the Contract as specified and as shown on the Drawings.

3.5 TEMPORARY FACILITIES

- A. The CONTRACTOR shall furnish, install, maintain, and remove all temporary facilities required for construction or called for in the specifications.

END OF SECTION

SECTION 34410 – CONSTRUCTION TRAFFIC CONTROL

PART 1 - GENERAL

- A. The work covered by this section consists of furnishing, erecting, maintaining, relocating, and removing traffic control devices in accordance with the Contract Documents as well as the latest versions of the NCDOT “Standard Specifications for Roads and Structures,” NCDOT “Roadway Standard Drawings Manual,” MUTCD, NCDOT Supplement to the MUTCD, or as directed by the Inspector.
- B. All traffic control devices furnished by the Contractor shall remain the property of the Contractor, unless otherwise specified by the contract. Traffic control devices shall include, but are not limited to signs, drums, barricades, barriers, electronic variable message boards, cones, delineators, flashing arrow panels, temporary guardrails, temporary concrete median barriers, vehicle-mounted temporary impact attenuators, pavement markings, raised reflective pavement markers, flaggers, and pilot vehicles.

PART 2 - MATERIALS - GENERAL

- A. Unless otherwise required, materials used in the fabrication and installation of construction traffic control devices shall be in accordance with the applicable provisions of the MUTCD. When traffic control devices are no longer required for traffic handling in the initial phase of construction requiring their use, they may be reused at various locations throughout the project provided the device is not defaced, is structurally sound, clean and otherwise conforms to the above requirements.
- B. All enclosed lens (Engineer's Grade) sheeting required for use on traffic control devices shall have an identification mark on the surface. This mark signifies that the sheeting meets the requirements of Federal Specification L-S-300C for Minimum Reflectivity 1 Sheeting and Tape. The identification mark shall not interfere with the function of the device, but shall be visible both day and under illumination at night without the use of special devices. No work on the project shall start until all the traffic control devices required for the particular work activity are inspected and approved by the Engineer.
- C. Traffic control devices which do not meet the requirements of this section shall not be used. If a device ceases to meet the requirements of this section during the project, it shall be promptly removed and replaced with a conforming device at no additional compensation. The Engineer shall have the authority to determine the acceptability of the traffic control devices.

PART 3 - CONSTRUCTION METHODS - GENERAL

- A. Existing public streets or highways shall be kept open to traffic at all times by the Contractor unless permission to close these streets, or portions thereof, is granted by both the Engineer and the Director of Public Safety. In addition, the Town of Rolesville Police Department must be contacted BY THE CONTRACTOR A MINIMUM OF 24 HOURS before any streets are closed or partially closed. The Engineer may request that the Contractor make additional notifications to property owners.
- B. Traffic control devices shall be installed at the inception of construction operations, and shall be properly maintained, relocated as necessary, cleaned, and operated during the time they are in use. They shall remain in place only as long as they are needed and shall be immediately removed thereafter. Where operations are performed in stages, only those devices that apply to the conditions present shall be left in place.
- C. The location, legends, sheeting, dimension, number of supports, and horizontal and vertical placement of warning signs, barricades, and other traffic control devices shall be as required by the plans or the MUTCD or as directed by the Engineer. The Contractor may submit for the

Engineer's consideration a method for handling traffic other than as shown on the plans. The alternate traffic control plans shall not be used until they are approved in writing by the Engineer. During periods when not warranted, warning signs and other devices shall be removed from the work area, covered with specified material, or otherwise positioned so that they do not convey their message to the traveling public. If covered, the covering material shall be exterior plywood and shall cover the entire face of the sign panel. The covering material shall be installed in such a manner that the sign panel will not be defaced. Non-metal washers or other spacing devices shall be used to keep the plywood covering material from direct contact with the sign panel. Covering material shall be maintained in a neat manner during its use.

- D. Weeds, brush, trees, construction materials, equipment, etc. shall not be allowed to obscure any traffic control device in use. There will be no separate compensation for any trimming or cutting required for this purpose.
- E. Competent and properly trained flaggers, properly attired and equipped, shall be provided in accordance with MUTCD standards and when directed by the Engineer or Inspector or when the Contractor deems it necessary to safely handle traffic through the construction zone.
- F. The Contractor shall assume full responsibility for the continuous and expeditious maintenance of all construction warning signs, barricades, and other traffic control devices which in the opinion of the Engineer are damaged by traffic or other means or deteriorated beyond effectiveness. Conditions covered under maintenance shall include but not be limited to replacement due to loss of reflectivity; replacement of broken supports; plumbing of leaning signs; cleaning of dirty signs, barricades, and other devices; repair of defaced sheeting and legend; and replacement of stolen or vandalized items. All items used for traffic control shall be maintained in a satisfactory condition. Failure to maintain all traffic control devices in a satisfactory condition may be cause for suspension of construction operations until proper traffic control is re-established.
- G. The Contractor shall follow the construction procedure and maintenance of traffic as shown on the Traffic Control Plan, unless a more workable plan is agreed to by the Engineer prior to or during the execution of the work. The Contractor shall complete each construction phase in the sequence shown (Example: Phase I-A must be completed before I-B).
- H. Work on the project shall not start until all the traffic control devices required for the particular work activity have been inspected and approved by the Engineer.
- I. The Contractor shall continuously review and maintain all traffic control measures to assure that adequate provisions have been made for the safety of the public and workers.
- J. The Contractor shall furnish a material certification for all new and used reflective sheeting.

END OF SECTION

SECTION 40000 – SPECIAL PROVISIONS

The following items in Section 04000 are project specific and shall supersede any other conflicting portion of these contract documents.

PART 1 GENERAL

- A. The sum of the Itemized Quantities shown on the Unit Price table are the basis of the Low Bid award. It is the Contractor's responsibility to ensure that all items shown on the plans and described in the specifications, and as can be reasonably inferred from them, and as can be reasonably inferred to complete the project per the approved plans and contract documents are to be included in the Unit Costs.
- B. Bid shall include all work necessary to construct the project to final design.
- C. The Town maintains the right to add or delete quantities at any time unless a change in scope has been determined.
- D. The Contractor will be responsible for attending monthly meetings during the project duration at which a report will be made as to the project status including any problems encountered. Contractor's representative shall be a project manager familiar with the daily progress and field conditions of the project. Contractor and subcontractors shall limit communications to those with the Town except as otherwise provided by these documents.
- E. Contractors must be licensed with the State of North Carolina as a General Contractor, plus any specialty work performed by the Contractor and/or subcontractor shall be performed by a Contractor licensed in the respective specialty area.
- F. Where the contractor fails to respond in a timely manner to Town directives to complete certain repairs and/or work that, in the Town's opinion, cause a safety hazard or the potential for damages, the Town may have such work performed and deduct the costs plus 25% from the Contractor's pay request. This provision shall not, however, obligate the Town to undertake such work that is the responsibility of the Contractor.
- G. Contractor must meet all requirements of NCDEQ, NCDOT, and other required permits and encroachments on this project.
- H. Construction surveying shall be included in the contract bid. Surveyor shall provide a stakeout of areas where an environmental permit is required prior to performing any construction in or adjacent to these areas. Stake out limits of the permitted work areas according to the approved permit drawings. Provide clear delineation by use of pink or other highly visible flagging. Ensure construction limits do not exceed approved permitted work areas. Immediately notify the Environmental Inspector of any variation of the stakeout limits when compared to the approved permit drawings. The Inspector shall approve the limits of the staked area prior to the onset of construction in that area. Payment for "Construction Surveying" will be made under the contract lump sum based upon a percentage complete of the project and shall include all labor, equipment, and materials necessary to perform construction surveying and staking during the duration of the contract and after construction as required. Surveying required to complete the as-built plans and submittal of as-built plans (1 set mylar, 2 copies and 1 PDF file) to the Town shall be included in the price for "Construction Surveying" and shall be delivered and approved by the Town prior to Final Application for Payment. The as-built plans shall comply with the Town of Rolesville and City of Raleigh requirements for as-builts and the data shall be tied to the nearest geodetic control monument. All construction surveying shall be staked from the same monument used in the design of the plans.
- I. There shall be no unit price adjustment for materials due to market variability.
- J. The NCDOT bond fees are to be paid by the Contractor if necessary.
- K. There is not a certifying minority agency requirement for this project, however, the Town of Rolesville does have a nondiscrimination clause.

PART 2 PRIOR TO CONSTRUCTION

- A. The Contractor shall inspect all features within the construction limits including both public and private existing sidewalk, curb and gutter, landscaping, signs, pavement, pavement markings, light posts, utilities and other physical features, which according to the plans will remain in place, prior to construction. The Contractor shall document with the Engineer, in writing and recorded on video tape supplemented with appropriate photographs, prior to beginning any construction, the full project limits. The Inspector shall be present during the videotaping. Any damage resulting to existing features from the work of this contract shall be promptly repaired by the Contractor at no additional cost to the Town, in a manner approved by the Engineer.
- B. The Contractor shall notify, in writing, businesses, residents and property owners adjacent to proposed construction of impending work at least one (1) week in advance of beginning construction in the vicinity of their property. Construction limits shall be staked prior to this notice. A standard letter for this purpose shall be provided the Contractor by the Town. This will permit property owners to remove any vegetation from the construction area that they wish to preserve.
- C. Contractor shall stake the erosion control measures and install all tree protection fence per plans. Once this is completed a "walk thru" shall be scheduled with the NCDEQ Inspector by the Contractor. The Town's Inspector and Engineer shall also be notified so that during the inspection adjustments may be made prior to start of work. No clearing shall begin until approval to proceed is given by NCDEQ.

PART 3 SITE CONSTRUCTION

- A. The entire Site shall be maintained in good condition and all S&EC measures shall be present as shown on plan. At the end of project, area shall be fine graded and seeded. This cost is incidental to the project.
- B. The Contractor shall accept actual conditions at the site and perform the work specified without additional compensation for possible variation from grades and conditions shown, whether surface or subsurface, except as provided for by the contract documents. Should existing conditions be in variance with the contract drawings or contract documents, the Contractor shall notify the Engineer prior to the bid and / or proceeding with the work, and adjustments be made only as directed by the Engineer. Starting work on the site, indicates acceptance of the conditions of the site.
- C. At the end of each working day and during periods of construction inactivity, equipment shall be parked and/or stored a minimum of 30 feet from the edge of any travel lane unless defllective barriers are employed in accordance with MUTCD standards. All sight distances shall be kept clear and free of equipment and materials at all times.
- D. The Contractor shall be responsible for removing and replacing existing street signs, utility services such as c/o's and water meters, headwalls, and other related or similar existing items. All items shall be replaced in a location as shown on the plans or as directed by the Inspector. Unless noted in the project bid estimate, no direct payment shall be made for such relocations.
- E. Contractor shall be required to re-establish and re-set any existing property corner markers or local survey monuments which are disturbed by construction. Written documentation that such corners were re-established in a proper manner must be provided by a PLS.
- F. The Contractor shall construct all improvements so as to create and/or maintain positive drainage at all times.
- G. Incidental Stone is incidental to the contract.
- H. The Contractor shall comply with all requirements listed in the North Carolina Division of Environmental Management Stormwater Discharge NPDES Permit NCG010000, including the following conditions listed in the Environmental permits. Contractor shall abide by the approved Sedimentation and Erosion Control Plan for this project and keep a signed copy of the letter of approval of the plan on-site at all times.
- I. There shall be no discharge of any sanitary wastewater from this construction activity except under the provisions of another NPDES permit specifically issued therefore.

- J. There shall be no chemicals added to the discharge.
- K. All wastes composed of building and construction materials will be disposed of in accordance with N.
 - C. statutes and rules governing solid waste disposal.
- L. Maintenance activities for vehicles and heavy equipment shall be performed so as to not result in contamination of the surface or ground waters.
- M. Contractor shall take precautions to avoid damage to existing pavement during construction of proposed roadway and utilities. Whenever pavement or other physical features outside of the construction limits but in proximity to project becomes damaged, unless evidence is presented by the Contractor to the contrary, Contractor is assumed responsible for such damages. The Contractor shall be responsible for the repair of such to a state acceptable by the Engineer at no additional cost to the Owner.
- N. The Contractor shall restore any grass, landscaping, driveways, and/or other features that are located on private property and that is damaged or disturbed as a result of construction with "in-kind" material, and to the satisfaction of the Inspector.
- O. Pavement repairs shall be made in accordance with the plans and details. Temporarily backfilling is discouraged but if it becomes necessary to establish access, it shall be accomplished using ABC or select backfill material approved by the engineer. The temporary backfill shall be removed as soon as possible and the proper backfill and pavement repair performed. No additional compensation will be made for temporary backfill.
- P. Any necessary milling required for this project shall be included in bid prices - no separate payment will be made
- Q. Any utility relocation or conflicts known and/or depicted on the plans shall be the responsibility of the contractor, however the contractor shall not be responsible for any unknown utility conflicts or relocations.
- R. Sewer mini-manhole shall be required where any cleanout is in paved area.

PART 4 - UTILITY WORK

- A. Any underground encounter or unusual circumstance that occurs during construction should also be documented by the Contractor with photographs and field measurements along with prompt notification to the Engineer.
- B. If, at any time during construction, it becomes necessary to operate utility valves, the City of Raleigh Department of Public Utilities and the Inspector must be contacted prior to operation.
- C. Conflict avoidance, utility construction and/or relocation by others will take place on the project site either prior to or during the Contractor's activity. After project availability date, the Contractor shall coordinate any utility relocation by others in order to avoid any delay in construction progression. Damage to utilities and their accompanying facilities by the Contractor shall be reported immediately to the respective utility owner(s) and the Inspector and arrangements made to repair at the expense of the Contractor.
- D. The Contractor shall limit any interruption of water service to less than 2-hours. The Inspector as well as the residents affected by the interruption of water service shall be notified by the Contractor in writing at least 2 days prior to the interruption. Contractor shall provide written notice to Inspector for approval in advance of delivery. In addition, if any water or sewer services or active lines are accidentally disrupted or accidentally damaged, the Inspector must be contacted immediately. Contractor will be responsible for repair and any separations to property owners resulting from such damages.
- E. No interruption of wastewater flow in the main line or lateral service lines shall be permitted at any time. The Contractor shall take all necessary precautions and actions to prevent overflow and spillage of wastewater, including temporary bypass piping and pumping. Relocation of lateral and service lines shall be performed as needed with no interruption of wastewater flow. Fines, cleanup costs, etc. for any wastewater spills or backups will be the responsibility of the Contractor.

- F. Pits and/or trenches excavated for construction shall be backfilled if practical by the end of the day. If this is impractical, the Contractor shall cover the opening with plate steel, secure the area with minimum 6' fencing to deter access by the public, or install jersey barricades plus traffic control as necessary in accordance with the NCDOT, January 2012, "Roadway Standard Drawings". No separate payment will be made for this work.
- G. Minimum Separations between existing and proposed utilities shall be as specified in the City of Raleigh Public Utilities Handbook. If utility separation conflicts occur during construction, the Contractor shall coordinate acceptable adjustments or special treatments with the Engineer and the Town prior to proceeding with work.
- H. It is the responsibility of the contractor to determine the exact location of, and to avoid, all existing utilities and/or facilities within the project limits.
- I. If applicable, Contractor shall coordinate with Duke Energy & Wake Electric during construction for the installation of lighting for the project by Duke Energy & Wake Electric.
- J. The Contractor shall coordinate conduit installations with the local utility companies to install conduit prior to installation of asphalt base course for parking and sidewalk areas needed for access during the installation of their utilities. No additional compensation shall be paid as part of this effort however, installation of the conduits will be compensated per trench foot of conduit dug and installed (i.e. multiple conduits installed in the same trench equal one LF of trench dug).

PART 5 - INSPECTION/TESTING

- A. The Contractor shall provide access to all construction materials and allow time for the inspection/testing of areas, as needed, by a qualified testing firm and/or the Inspector.
- B. All wheel chair ramps and crosswalk locations shall be approved by Town Inspector prior to installation.

PART 6 - EROSION CONTROL

- A. Time period prior to stabilization with seeding and mulching cannot exceed 14 days on a completed graded area or 7 days for diversion ditches, swales or slopes 3:1 or greater.

PART 7 - TRAFFIC CONTROL/SITE ACCESS

- A. All existing driveways, roadways, accesses, etc. shall be maintained and shall be fully accessible at all times. Construction shall not be allowed to interfere with business and/or residential operations. Driveway access suitable for navigation by passenger vehicles must be well established at the end of each work day or whenever construction activity ceases in front of the driveway. In the event a driveway must be temporarily closed for any period of time, the Contractor shall obtain permission first from the Inspector, shall then notify the Town and the property owner/resident affected in writing a minimum of 48 hours in advance to make arrangements for their respective access to the site. Temporary driveways, if necessary, must be provided. There will be no separate payment for this work. Written notice must be approved by the Town prior to being provided to the property owner. Hours of work permitted for certain activities may be restricted in order to insure needed access to properties. Contractor will make all efforts not to hinder the access and mobility of emergency vehicles.
- B. Contractor shall be responsible for all traffic control devices and signage per MUTCD and North Carolina Supplement to the MUTCD.
- C. Contractor shall place stationary traffic control signs (Advance Warning Signs) at the beginning, end, and at all Y-lines on the project, per MUTCD. All traffic control – stationary and portable – shall be covered under the lump sum bid item "Temporary Traffic Control" and shall include all equipment, personnel, and related work to insure conformance with MUTCD and NCDOT standards

PART 8 - WORKING HOURS

- A. Working hours for this project are Monday through Friday from 7:00 am - 6:00pm for the site and according to the encroachment permit for the roadway improvements and offsite utility installation.

PART 9 - MANUFACTURERS

- A. The products shown on the detail drawings are not limited to the manufacturer listed, and equal products shall be accepted upon submittal to engineer for review. Contractor shall obtain approval from engineer on a product prior to bid submission.

END SECTION 040000

EXHIBIT #1 - UTILITY ADJUSTMENTS

SECTION 858

**ADJUSTMENT OF CATCH BASINS, MANHOLES, DROP INLETS,
METER BOXES AND VALVE BOXES**

858-1 DESCRIPTION

Raise or lower existing catch basins, manholes, drop inlets, meter boxes and valve boxes encountered within the limits of the project to match the adjacent finished work.

858-2 MATERIALS

Refer to Division 10.

Item	Section
Asphalt Plant Mix	1020
Brick	1040-1
Concrete Block	1040-2
Curing Agents	1026
Grout, Type 3	1003
Joint Fillers	1028-1
Joint Sealers	1028
Mortar	1040-9
Portland Cement Concrete, Class B	1000
Precast Risers	1077
Reinforcing Steel	1070
Steps	1074-8

858-3 CONSTRUCTION METHODS

Perform the adjustment with brick masonry, block masonry or Portland cement concrete on existing walls in accordance with Subarticle 840-3(C).

Adjust manholes, meter boxes and valve boxes as provided above by using approved fittings. When fittings are used, leave the existing walls in place and securely attach the fittings to the existing walls or install in a manner that will eliminate movement of the fitting.

Backfill excavated areas in an existing pavement with Portland cement concrete. High early strength concrete may be used. Wait at least 72 hours after the placement of the concrete before placing any surfacing or resurfacing material over the concrete. This time period will not be required where the strength of the concrete is at least 2,500 psi as evidenced by nondestructive tests made in place by a rebound hammer in accordance with ASTM C805. Thoroughly compact backfill of other excavated areas.

In areas to be opened to traffic, construct a temporary ramp of asphalt plant mix 360° around the adjusted structures within one calendar day after completing the adjustment. Construct the ramp with a tapered slope of not less than one foot per inch of height in traffic sections with a speed limit of less than 35 mph and 1.5 feet per inch of height to a maximum of 3 feet from the structure in traffic sections with a speed limit of 35 mph or higher. Construct the ramp using any type of asphalt surface course plant mix meeting the requirements of any job mix formula issued by the Department for a Department project. Compact to an approved density.

Place bituminous plant mix flush with the top of the raised structure within 7 days after raising the structure.

Make the adjustments before the final layer of surfacing material is placed in areas to be surfaced or resurfaced. Salvage and reuse existing frames, grates, manhole covers, rings, meter boxes and valve boxes in the adjustment.

Section 859

1 **858-4 MEASUREMENT AND PAYMENT**

2 *Adjustment of Catch Basins* will be measured and paid in units of each for catch basins
3 satisfactorily adjusted.

4 *Adjustment of Drop Inlets* will be measured and paid in units of each for drop inlets
5 satisfactorily adjusted.

6 *Adjustment of Manholes* will be measured and paid in units of each for manholes satisfactorily
7 adjusted.

8 *Adjustment of Meter Boxes or Valve Boxes* will be measured and paid in units of each for
9 meter boxes or valve boxes satisfactorily adjusted.

10 Where any catch basin, drop inlet, manhole, meter box or valve box is adjusted more than
11 once because of milling operations, multiple adjustments will be counted as one adjustment.

12 Where a catch basin, manhole, drop inlet, meter box or valve box is raised more than 2 feet,
13 the number of linear feet exceeding 2 feet that such structure has been raised will be measured
14 and paid per linear foot as provided in Article 840-4 for *Masonry Drainage Structure*.
15 Measurement will be made by subtracting the elevation at the highest point of the original
16 structure from the elevation at the highest point of the adjusted structure and then subtracting
17 2 feet from the results.

18 Such price includes, but is not limited to, excavation and backfilling, removal of a portion of
19 the existing structure, brick masonry, mortar, grout, concrete, reinforcing steel, fittings,
20 furnishing and hauling asphalt plant mix and any other materials and placing, maintaining,
21 removing and disposing of traffic ramps.

22 Payment will be made under:

Pay Item	Pay Unit
Adjustment of Catch Basins	Each
Adjustment of Drop Inlets	Each
Adjustment of Manholes	Each
Adjustment of Meter Boxes or Valve Boxes	Each

EXHIBIT #2 - GEOTECHNICAL REPORT



Geotechnical and Construction Materials Testing Services

December 20, 2019

Mr. Joe Turner
Withers and Ravenel, Inc.
115 MacKenan Drive
Cary, NC 27511

Reference: Report of Pavement Evaluation
Town of Rolesville Roads and Parking Lot
Rolesville, North Carolina
GeoTechnologies Project No. 1-18-0893-CA

Dear Mr. Turner:

GeoTechnologies has completed the authorized pavement evaluation for various existing roads in Rolesville, North Carolina. Hazen and Sawyer has informed us that they were considering rehabilitating the selected roads and parking lot. An investigation of the pavement conditions of the selected roads was performed. The purpose of this report is to present the findings of our investigation and to make recommendations regarding the proposed rehabilitation of the street.

PROJECT INFORMATION

Three roads and a portion of a parking lot were selected for us to investigate for the purpose of providing rehabilitation recommendations. The selected pavements included Bowling Drive, Granite Saddle Drive, Waterstone Lane, and a portion of the Rolesville Town Hall parking lot at 502 Southtown Circle. The attached Figures 1A through 1D show aerial images of the areas of interest. The limits of the selected pavement are shown by red lines on the attached Figures.

Bowling Drive is a relatively isolated residential road and therefore is the majority of its traffic was likely passenger vehicles and occasional delivery trucks. Granite Saddle Drive is in a residential area, but in a subdivision that is still under development. This road provides access to other areas of the subdivision being developed and therefore has likely been subject to passenger vehicles, occasional delivery trucks and intermittent bouts of heavily loaded trucks. Waterstone Lane is a residential road and therefore is the majority of its traffic was likely passenger vehicles and occasional delivery trucks. The portion of the Town Hall parking lot that is of interest provides access to other facilities that receive heavily loaded trucks on a regular basis. Several heavily loaded trucks drove over the pavements in the short period of time that the investigation was performed. This parking lot area has likely been subject to passenger vehicles, occasional delivery trucks and frequent heavily loaded trucks.

Based on historical aerial images Waterstone Lane and Bowling Drive are approximately 15 to 20 years old, while Granite Saddle Lane and the Town Hall parking lot are approximately 10 to 11 years old, respectively. Based on measurements taken using Google Earth the areas of interest for Bowling Drive, Granite Saddle Drive, Waterstone Lane, and the Town Hall parking lot are approximately 1900, 3000, 7000 and 800 square yards respectively.

INVESTIAGTION PROCEDURES

Borings were performed at the approximate locations indicated on the attached site plans, Figure 1A through 1D. A total of 19 borings were performed. The pavements were removed with diamond-impregnated coring bit. Thickness and quality of the asphalt and aggregate or soil-type base course was recorded at each location. The consistency and CBR value of the subsurface soils was evaluated starting at subgrade using a Kessler dynamic cone penetrometer. The test borings were then extended 2 to 3 feet where possible to identify the subgrade soils and collect

samples for laboratory testing. Asphalt, CABC, soil-type base, and subgrade soil samples were labeled and returned to our laboratory for FDR design testing. All boreholes were backfilled, packed, and patched upon completion.

SELECTION OF MIXTURE PROPORTIONS AND LABORATORY TESTING

The quantity and type of soil within the FDR matrix can have a significant impact on the amount of Portland cement required to achieve a specific strength. To increase the depth of the profile that is cement-treated and to control final asphalt grades (particularly in curb and gutter areas), the removal of asphalt prior to performing FDR treatments an option. Another option is to pulverize and mix the asphalt, CABC and soil in-place, and then to haul off a portion of this mixture prior to cement treatment to allow room for the placement of the new asphalt layer. Therefore, two designs were laboratory tested. One design included asphalt, CABC and soil, while another design included only soil and CABC. Both were mixed in relative proportion to the thickness encountered during our pavement investigation.

Samples for testing were prepared in accordance with ASTM D-558, Moisture Density Relations of Soil-Cement Mixtures. For the CABC-Subgrade design, an initial compaction curve was formed using 5.5 percent Portland cement in order to determine an optimum moisture content for the samples. The maximum dry density for the sample at 5.5% cement was 123.7 pcf at an optimum moisture content of 11.5 percent moisture. The natural moisture content of the mixture is approximately 6 percent dry of optimum moisture content. For the Asphalt-CABC-Subgrade design, an initial compaction curve was formed using 5.5 percent Portland cement in order to determine an optimum moisture content for the samples. The maximum dry density for the sample at 5.5% cement was 124.5 pcf at an optimum moisture content of 9.5 percent moisture. The natural moisture content of the mixture is approximately 5.5 percent dry of optimum moisture content.

For the design consisting of CABC and subgrade, the basic proportion of material by dry weight consisted of 61 percent fine and coarse fractions of CABC stone and 39 percent soil by dry weight. These samples were blended and mixed with Portland cement at an adjusted moisture content of approximately 12.5 to 13.5 percent by dry weight of materials. For the design consisting of asphalt, CABC and subgrade, the basic proportion of material by dry weight consisted of 23 percent asphalt, 58 percent fine and coarse fractions of CABC stone and 19 percent soil by dry weight. These samples were blended and mixed with Portland cement at an adjusted moisture content of approximately 10.5 to 11.5 percent by dry weight of materials. Samples were mixed at cement contents of 3, 5, and 8 percent by dry weight of materials for the both designs. The compacted samples were extruded after compaction, wrapped in wet paper towels and sealed in plastic bags to retain moisture for 7 days.

The samples were tested for compressive strength at an age of seven days in accordance with ASTM D-1633, Compressive Strength of Molded Soil-Cement Cylinders. The compressive strengths at each cement content were averaged, reduced by 1 standard deviation, and displayed versus their respective cement content. The compressive strengths were not corrected for L/D ratios. A summary of compressive strengths is shown below. A graph of compressive strength versus cement content is shown in the attached laboratory results.

Asphalt-CABC-Subgrade Mixture

* Cement, %	3	5	8
7 Day Strength - psi	191	363	553
	175	359	572
	228	353	577
Average Strength, psi	198	358	567
Standard Deviation	27	5	13
Average - 1S	171	353	554

*Cement by dry weight of soil-base coarse mixture.

CABC-Subgrade Mixture

* Cement, %	3	5	8
7 Day Strength - psi	205	345	454
	290	309	468
	261	418	540
Average Strength, psi	252	357	487
Standard Deviation	43	56	46
Average - 1S	209	301	441

*Cement by dry weight of soil-aggregate mixture.

PAVEMENT & SUBSURFACE CONDITIONS

The approximate locations of test borings are provided on the attached Figures 1A through 1D. A summary of conditions found at each location is provided on the attached Table 3. The attached Table 2 summarizes the asphalt and CABC thicknesses and the in-place subgrade CBR values. Photos of conditions at each of the borings are attached to this report.

The flowing descriptions will summarize the conditions encountered in each road. Please reference the attached Table 3 and the attached photos of each of the borings for a description and visualization of the pavement distresses.

Bowling Drive. Borings B-1 through B-4 were advanced in this section of street to evaluate the conditions. This section of street encountered surface asphalt which was 2.0 to 2.25 inches in thickness. CABC was not encountered beneath the asphalt. The subgrade consisted primarily of fill soils which were composed of clayey to clean sands which were generally found to be firm to very stiff based on in-place CBR values measured. A grain size analysis (ASTM D-1140) was performed on the subgrade soils for Bowling Drive and the percent passing the # 200 sieve was 22.1%.

Granite Saddle Drive. Borings G-1 through G-5 were advanced in this section of street to evaluate the conditions. This section of street encountered surface asphalt which was 1.0 to 1.5 inches in thickness. CABC was encountered beneath that asphalt and ranged from 10 to 17 inches in thickness. The subgrade consisted primarily of possible fill soils which consisted of clean to clayey sands with rocks which were found to be stiff based on in-place CBR values measured.

Waterstone Lane. Borings W-1 through W-6 were advanced in this section of street to evaluate the conditions. This section of street encountered surface asphalt which was 1 to 3 inches in thickness. CABC was encountered beneath that asphalt and ranged from 4 to 7 inches in thickness. The subgrade consisted primarily of residual soils which consisted of sandy to silty clays and clayey to sandy silts which were found to be firm to stiff based on in-place CBR values measured.

Town Hall Parking Lot. Borings T-1 through T-4 were advanced in this section of street to evaluate the conditions. This section of street encountered surface asphalt which was 1.5 to 2.5 inches in thickness. CABC was encountered beneath that asphalt and ranged from 2.5 to 5 inches in thickness. The subgrade consisted primarily of residual soils which consisted of sandy silts which were found to be firm to stiff based on in-place CBR values measured.

REPAIR OPTIONS

This section of the report will describe the options that will be available for rehabilitation of the selected pavements. After the repair options and details have been discussed in this section, the “Recommendations” section will describe which of these options is likely to be the best option for each of the areas of interest.

Pavement Reconstruction with Base Stabilization (Full-Depth Reclamation)

This option is recommended for Waterstone Lane and the portion of the Town Hall parking lot. We recommend that all pavements be removed prior to performing stabilization. This is so that the stabilization technique can reach a deeper depth within the soil profile and so that final asphalt grades can be more easily controlled.

In some cases, roads could be pulverized and mixed thoroughly without removing the asphalt, then have the appropriate depth of mixed material hauled off to help control grades. The advantage to keeping the asphalt within the pulverized mix is that it will lower the cement application rate and thus the cost of the rehabilitation. The disadvantage is that it will require a larger amount material to be hauled off, thus increasing costs. However, our two FDR designs have indicated that, at the recommended application rates, including the asphalt in the FDR design does not result in a lower recommended cement application rate. Therefore, there are no relative advantages and some disadvantages to including asphalt in the FDR. Thus, we recommend that any asphalt be removed prior to performing any FDR.

Pavement reconstruction with base stabilization will involve pulverization of the existing base, and some subgrade followed by blending with Portland cement to create a new base. This process reduces the volume of haul-off and haul-in compared to traditional reconstruction. Additionally, it limits exposing potential problem areas such as utility cuts and is less affected by inclement weather than traditional reconstruction.

The recommended depth of stabilization is 8 inches. Based on the two FDR designs performed (one containing CABC and the other one containing CABC and asphalt) recommended cement application rates for each category has been determined. For both designs, we recommend a cement content of 30 to 35 pounds per square yard per 8-inch mixing depth. Areas which fail to stabilize under the initial stabilization can be remixed with additional cement.

Equipment used for this operation should be capable of mixing to a depth of 18 inches and also be capable of adding water directly into the mixer. Stabilized areas should be proofrolled on the day following stabilization to identify areas which may require additional mixing. Heavy sheepsfoot rollers should be used for initial compaction, followed by re-grading of the surface and finishing with a smooth drum roller. The initial asphalt lift can typically be placed within 48 to 72 hours of stabilization if the base material is stable.

We also recommend micro-cracking of the stabilized material between 24 and 48 hours after treatment. Application of a bituminous material surface treatment, single or double, prior to paving should be considered. Microcracking helps to mitigate shrinkage cracking width within the stabilized base, and the single or double bituminous surface treatment helps retard reflection of any wider cracking which may occur in the stabilized base material.

Full-depth reclamation results in a rise in grades due to the addition of the Portland cement. This needs to be taken into consideration where matching grades at curbs and gutters or other pavements is critical. Additionally, enough material will need to be removed in order to account for the recommended asphalt pavement section to be placed after pulverization. Therefore, pavement section thickness and expansion from the addition of cement will need to be taken into account prior to pulverization and mixing.

Removing the asphalt on Bowling Drive and performing soil-cement stabilization of the subgrades (no CABC was present on these roads) is also an option. Soil-cement stabilization is a similar process to FDR, however it does not involve CABC and/or asphalt. If soil-cement stabilization of the subgrades is pursued all of the preceding recommendations for FDR rehabilitation apply. For soil cement stabilization of Bowling Drive, the recommended depth of stabilization is 10 inches. For soil-cement stabilization of Bowling Drive we recommend a cement content of 95 to 100 pounds per square yard per 10-inch mixing depth.

Asphalt Removal and Replacement

Granite Saddle Drive is the only street of the areas of interest that has sufficiently thick CABC and subgrades with high enough measured CBR values for asphalt removal and replacement to be a viable repair option. Removing only the asphalt, and possibly part of the base, and replacement with asphalt has the potential to be the least expensive of the options but comes with a greater risk in terms of unknown cost.

Following removal of the existing asphalt, the area should be proofrolled to identify areas which may require repair. Repairs, if necessary, will likely consist of removal and replacement with fresh CABC, possibly with geogrid, or removal and replacement with additional asphalt. If stable, some leveling with asphalt may need to be first performed. If operations to remove the asphalt significantly disturb the existing base material, the base may need to be re-graded and re-set. It should be verified that the CABC is graded so the minimum recommended asphalt thickness can be placed while still matching to the curb.

We anticipate that the proofroll will identify some isolated (but not widespread) areas of instability that will require repair, particularly around existing utilities.

Full Reconstruction of Pavement Section

This option is available for all of the pavements of interest but would likely be the most expensive and time consuming solution for all 4 areas of interest. Full reconstruction of the pavements will involve removal of all asphalt and base materials, and some subgrade soils, followed by construction of a new pavement section. This option will require a relatively large volume of haul-off and haul-in when compared to the other options.

Once design subgrade elevation is reached, the subgrade should be proofrolled with a loaded dump truck in the presence of an engineer to identify areas which may require repair. Based on the results of our investigation, a proofroll at subgrade would likely result in isolated but not widespread repairs in all of the pavement areas except Bowling Drive. Bowling Drive is likely to encounter some significantly large and deep repairs, although not in a majority of the street areas. Repairs typically include over-excavating soft soils and replacing them with either properly compacted low plasticity fill material or additional CABC stone. Any highly plastic clays encountered will also need to be removed within the top foot of subgrade.

Imported fill low plasticity clays, silts, or sands with Unified Soil Classifications of CL, ML, SM, and SC may be imported for use as structural fill. All new fill should be compacted to not less than 95% of the standard Proctor maximum dry density except in the final foot where this requirement should be increased to 98% of the standard Proctor maximum. All CABC should be compacted to 100 percent of standard Proctor maximum dry density. The subgrade and CABC should be proofrolled in the presence of an engineer prior to proceeding with the next steps in the pavement construction.

RECOMMENDATIONS

The following recommendations are made based upon a review of the attached test boring data, our understanding of the proposed construction, and past experience with similar projects and subsurface conditions. Should

pavement structure and subsurface conditions adverse to those indicated by this report be encountered during construction, those differences should be reported to us for review and comment.

Waterstone Lane and Town Hall. For Waterstone Lane and the portion of the Rolesville Town Hall parking lot, the subgrade soils were found to be relatively stiff but the thicknesses of the CABC and asphalt were found to be insufficient. Therefore, most of the damage is likely due to distress caused by insufficiently thick asphalt and/or CABC. For Waterstone Lane and the portion of the Rolesville Town Hall parking lot we are recommending FDR techniques be used for rehabilitation. Full reconstruction is also an option for these pavements, however, it is our opinion that full reconstruction will likely be more expensive and logistically difficult than FDR. In scenarios where FDR is an option, typically for pavement areas greater than 2000 square yards it is more economical to use FDR techniques than to perform full reconstruction. Waterstone Lane is much greater than 2000 square yards but the Town Hall parking lot is only approximately 800 square yards. Therefore, in order to make the repair of the Town Hall economic with FDR techniques, it would likely need to be performed under the same contract and mobilization as Waterstone Lane.

Granite Saddle Drive. Granite Saddle Drive encountered relatively stiff subgrade soils and a thick layer (10 to 17 inches) of CABC. The asphalt was insufficiently thick though (1 to 1.25 inches). Based on grades relative to the curb and gutter it appears that the final lift of asphalt was never placed in this area. Insufficiently thick asphalt and traffic from heavily loaded vehicles from nearby construction are likely the primary cause of the distress observed. We recommend removal of the asphalt and re-grading the areas so a sufficiently thick layer of asphalt can be placed. Once the asphalt is removed and the area has been re-graded, the CABC should be proofrolled under the direction of an engineer. Repairs should be performed as directed by the engineer, but will likely consist of over-excavating and replacing with additional CABC. Based on the results of our pavement investigation repairs should not be widespread. However, isolated repairs, particular around utilities should be anticipated.

It also appears that construction of the remainder of the subdivision may end in the next year or so. Consideration can be given to waiting until after the subdivision is fully developed to repair Granite Saddle Drive, so that the new pavements can be subject to less heavily loaded vehicles.

Bowling Drive. Bowling Drive encountered approximately 2 inches of asphalt overlying soil that was generally stiff and no CABC was encountered. We recommend removing the existing asphalt and performing a full reconstruction of the pavements. Alternatively, the asphalt could be removed and the in-place soils could be cement stabilized. Once the subgrades have been cement stabilized, a sufficiently thick layer of asphalt should be placed over the soil-cement base. The feasibility of cement stabilizing this area will depend on whether site grades can be raised. If site grades must remain the same some material would have to be hauled off prior to stabilization. Because much of the soil were fill soil that varied in stiffness, some isolated area on Bowling Drive are likely to require deeper remixing to stabilize. Performing cement-stabilization under the same contract and mobilization as Waterstone Lane and/or the Town Hall pavements would likely be less expensive than performing cement-stabilization of Bowling Drive under a separate contract and mobilization.

PAVEMENT SECTION RECCOMENDATIONS

Pavement Design with Removal and Replacement of Asphalt (Granite Saddle Drive) - After the remaining CABC stone has passed a proofroll, the recommended asphalt section would consist of a minimum of 3.0 inches of S9.5B surface mix asphalt placed in 2 lifts. Alternatively, 1.0 inches of S9.5B surface mix asphalt overlying 2.0 inches of S9.5C surface mix asphalt is also acceptable.

Pavement Design with Full Reconstruction (Town Hall Parking Lot, Waterstone Lane, and Bowling Drive) - We recommend a pavement section with a minimum of 8 inches of CABC. All CABC should be compacted to 100 percent of standard Proctor maximum dry density. The subgrade and CABC should be proofrolled in the presence of

an engineer prior to proceeding with the next steps in the pavement construction. After the remaining CABC stone has passed a proofroll, the recommended asphalt section would consist of a minimum of 3.0 inches of S9.5B surface mix asphalt placed in 2 lifts. Alternatively, 1.0 inches of S9.5B surface mix asphalt overlying 2.0 inches of S9.5C surface mix asphalt is also acceptable.

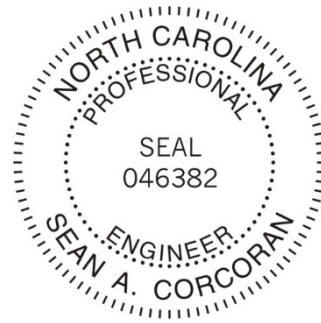
Pavement Design with Full Depth Reclamation (Town Hall Parking Lot, Waterstone Lane, and Bowling Drive) - Over the cement stabilized base, we recommend an asphalt section a minimum of 3.0 inches consisting of S9.5B surface mix asphalt placed in 2 lifts. Alternatively, 1.0 inches of S9.5B surface mix asphalt overlying 2.0 inches of S9.5C surface mix asphalt is also acceptable.

CLOSING

GeoTechnologies, Inc. appreciates the opportunity to have provided you with our services on this project. Please contact us if you should have questions regarding this report or if we may be of any further assistance.

Sincerely,
GeoTechnologies, Inc.

Sean A. Corcoran, P.E.
NC License No. 46382

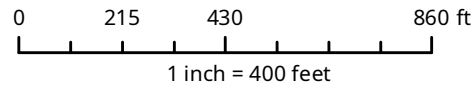


SAC/pr-ceh
Attachments



Waterstone Ln

Figure 2D



Disclaimer

iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are NOT surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.

TABLE 1

TEST BORING SUMMARY GeoTechnologies Project No. 1-19-0893EA

Boring	Depth (in.)	Description	USCS Classification	In-Place CBR (%)
B-1	0 - 2	Asphalt - Medium Severity Cracking		16 @ 0 - 6"
	2 - 18	FILL - Wet Gray and Brown Fine to Medium SAND	SP	14 @ 0 - 12"
	18 - 36	Wet Orange Clayey Fine to Medium SAND Dry At Time of Boring	SC	8 @ 0 - 24"
B-2	0 - 2.25	Asphalt - Block Cracking		28 @ 0 - 6"
	2.25 - 36	FILL - Wet Brown and Gray Clayey to Clean Fine to Medium SAND Dry At Time of Boring	SP-SC	28 @ 0 - 12" 19 @ 0 - 24"
B-3	0 - 2	Asphalt - Medium Severity Cracking		73 @ 0 - 6"
	2 - 18	Brown Clayey Fine to Medium SAND	SC	46 @ 0 - 12"
	18 - 36	Brown and Orange Fine to Medium Sandy CLAY Dry At Time of Boring	CL	31 @ 0 - 24"
B-4	0 - 2	Asphalt - Medium Severity Cracking		10 @ 0 - 6"
	2 - 36	FILL - Brown and Orange Clayey Fine to Medium SAND Dry At Time of Boring	SC	14 @ 0 - 12" 18 @ 0 - 24"
G-1	0 - 1.5	Asphalt - Medium Severity Alligator Cracking		10 @ 0 - 6"
	1.5 - 18.5	Crushed Aggregate Base Coarse (CABC)		14 @ 0 - 12"
	18.5 - 36	FILL Brown and Tan Clayey SAND With Rocks Dry At Time of Boring	SC	18 @ 0 - 24"
G-2	0 - 1.25	Asphalt - Low Severity Alligator Cracking		30 @ 0 - 6"
	1.25 - 12	Crushed Aggregate Base Coarse (CABC)		25 @ 0 - 12"
	12 - 24	Possible Fill - Brown and Tan Clayey SAND With Rocks	SC	17 @ 0 - 24"
	24	Hand Auger Refusal - Small Rocks Dry At Time of Boring		
G-3	0 - 1	Asphalt - Low Severity Alligator Cracking		15 @ 0 - 6"
	1 - 11	Crushed Aggregate Base Coarse (CABC)		16 @ 0 - 12"
	11 - 36	Possible Fill - Brown and Tan Clayey SAND With Rocks Dry At Time of Boring	SC	12 @ 0 - 24"
G-4	0 - 1	Asphalt - Medium Severity Alligator Cracking		24 @ 0 - 6"
	1 - 11	Crushed Aggregate Base Coarse (CABC)		23 @ 0 - 12"
	11 - 36	Possible Fill - Brown and Tan Clayey SAND With Rocks Dry At Time of Boring	SC	19 @ 0 - 24"
G-5	0 - 1	Asphalt - Low Severity Alligator Cracking		59 @ 0 - 6"
	1 - 11	Crushed Aggregate Base Coarse (CABC)		65 @ 0 - 12"
	11 - 14	Possible Fill - Brown and Tan Fine to Medium SAND With Rocks Dry At Time of Boring	SP	71 @ 0 - 24"

TABLE 1 cont'd

TEST BORING SUMMARY

GeoTechnologies Project No. 1-19-0893EA

T-1	0 - 2	Asphalt - High Severity Alligator Cracking		5 @ 0 - 6"
	2 - 7	Crushed Aggregate Base Coarse (CABC)		9 @ 0 - 12"
	7 - 24	Red and Brown Fine to Medium Sandy SILT	ML	24 @ 0 - 24"
	24	Hand Auger Refusal Due to Small Rocks Dry At Time of Boring		
T-2	0 - 2	Asphalt - No Distress		14 @ 0 - 6"
	2 - 7	Crushed Aggregate Base Coarse (CABC)		9 @ 0 - 12"
	7 - 36	Brown and Orange Sandy SILT	ML	8 @ 0 - 24"
		Dry At Time of Boring		
T-3	0 - 2.5	Asphalt - Medium Severity Alligator Cracking		9 @ 0 - 6"
	2.5 - 5	Crushed Aggregate Base Coarse (CABC)	SP	8 @ 0 - 12"
	5 - 36	Brown and Orange Fine to Medium Sandy SILT	ML	8 @ 0 - 24"
		Dry At Time of Boring		
T-4	0 - 1.5	Asphalt - Medium Severity Alligator Cracking		25 @ 0 - 6"
	1.5 - 5.5	Crushed Aggregate Base Coarse (CABC)		22 @ 0 - 12"
	5.5 - 36	Brown and Orange Fine to Medium Sandy SILT	ML	55 @ 0 - 24"
		Dry At Time of Boring		
W-1	0 - 1.5	Asphalt - Medium Severity Alligator Cracking		4 @ 0 - 6"
	1.5 - 8.5	Crushed Aggregate Base Coarse (CABC)		5 @ 0 - 12"
	8.5 - 18	FILL - Brown and Orange Fine Sandy CLAY	CL	10 @ 0 - 24"
	18 - 30	Tan and Orange Sandy Highly Plastic CLAY Dry At Time of Boring	CH	
W-2	0 - 1.5	Asphalt - Low Severity Alligator Cracking		7 @ 0 - 6"
	1.5 - 6	Crushed Aggregate Base Coarse (CABC)		9 @ 0 - 12"
	6 - 30	Brown, Red, and Orange Fine to Medium Sandy CLAY With Rocks Dry At Time of Boring	CL	18 @ 0 - 24"
W-3	0 - 1	Asphalt - Low Severity Alligator Cracking		8 @ 0 - 6"
	1 - 5	Crushed Aggregate Base Coarse (CABC)		10 @ 0 - 12"
	5 - 30	Orange, Red and Brown Fine to Medium Sandy SILT Dry At Time of Boring	ML	19 @ 0 - 24"
W-4	0 - 2	Asphalt - Medium Severity Alligator Cracking		6 @ 0 - 6"
	2 - 7	Crushed Aggregate Base Coarse (CABC)		5 @ 0 - 12"
	7 - 30	Tan and Orange Silty Medium to Highly Plastic CLAY Dry At Time of Boring	CL-CH	6 @ 0 - 24"
W-5	0 - 1.75	Asphalt - Medium Severity Alligator Cracking		12 @ 0 - 6"
	1.75 - 7	Crushed Aggregate Base Coarse (CABC)		13 @ 0 - 12"
	7 - 30	Orange and Brown Fine to Medium Sandy CLAY Dry At Time of Boring	CL	12 @ 0 - 24"
W-6	0 - 3	Asphalt - No Distress		6 @ 0 - 6"
	3 - 7	Crushed Aggregate Base Coarse (CABC)		7 @ 0 - 12"
	7 - 30	Orange and Red Silty Fine to Medium SAND Dry At Time of Boring	SM	8 @ 0 - 24"

TABLE 2
PAVEMENT STRUCTURE CONDITIONS
 GeoTechnologies Project No. 1-19-0893EA

Boring	Asphalt	CABC	CBR (0 - 6")	CBR (0 - 12")	CBR(0 - 24")
B-1	2.00	0.00	16	14	8
B-2	2.25	0.00	28	28	19
B-3	2.00	0.00	18	15	10
B-4	2.00	0.00	10	14	18
G-1	1.50	17.00	10	14	18
G-2	1.25	10.75	30	25	17
G-3	1.00	10.00	15	16	12
G-4	1.00	10.00	24	23	19
G-5	1.00	10.00	59	65	71
T-1	2.00	5.00	5	9	24
T-2	2.00	5.00	14	9	8
T-3	2.50	2.50	9	8	8
T-4	1.50	4.00	25	22	55
W-1	1.50	7.00	4	5	10
W-2	1.50	4.50	7	9	18
W-3	1.00	4.00	8	10	19
W-4	2.00	5.00	6	5	6
W-5	1.75	5.25	12	13	12
W-6	3.00	4.00	6	7	8

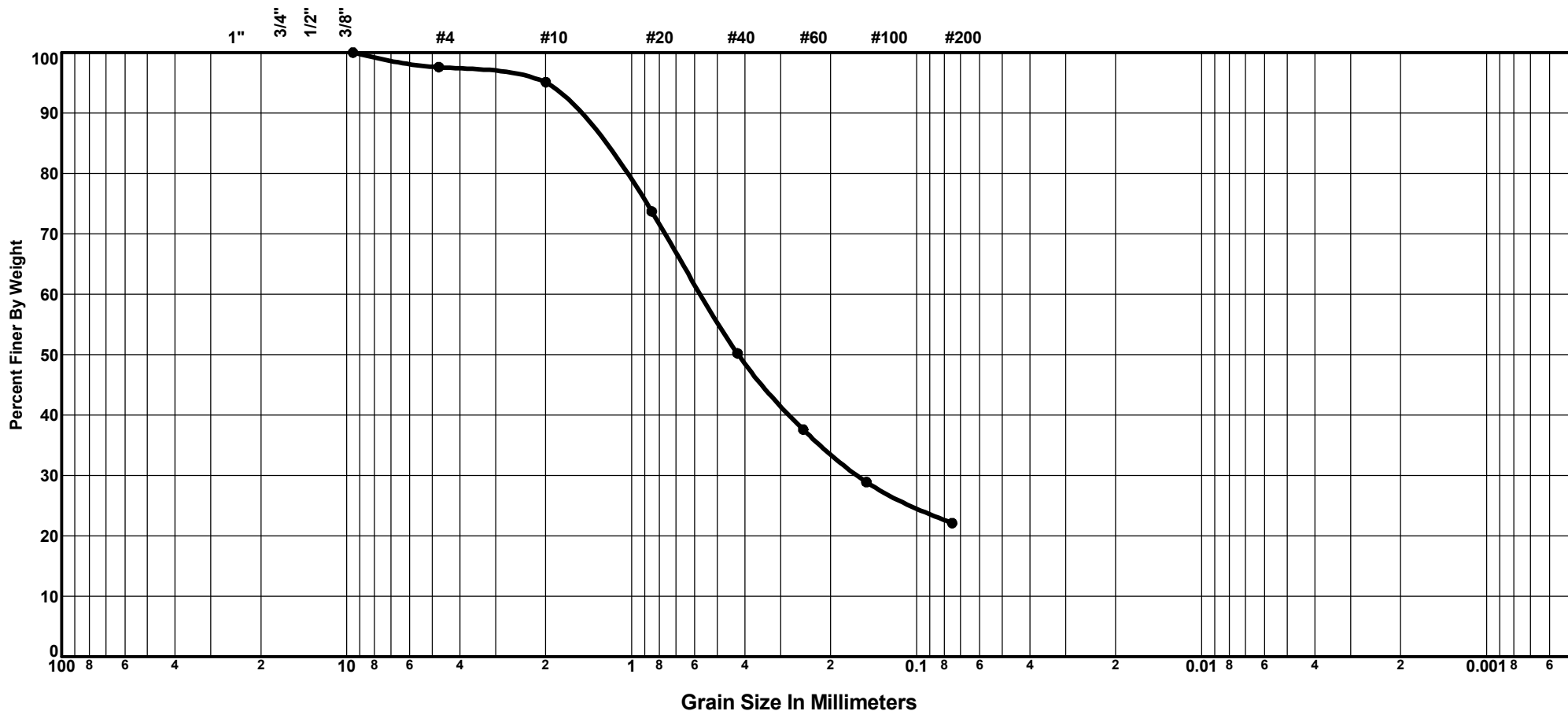
TABLE 3 - Pavement Distresses Observed

Town of Rolesville Pavements - Job # 1-19-0893EA


Boring(s)	Street	Curb and Gutter Present ?	CABC Present?	Pavement Conditions
B-1 through B-4	Bowling Drive	NO	NO	Very Distressed, Some Utility Rutting, Some Minor Rutting, Block Cracking, Transverse Cracking, Pot Holes, and High Severity Alligator Cracking
G-1 through G-5	Granite Saddle Drive	YES	YES	Some Areas are Free of Distress, Sporadic Low to Medium Alligator Cracking,
T-1 and T-4	Town Hall Parking Lot	YES	YES	Moderately Bad, B-7 is worst and has subgrade that is okay
W-1 and W-6	Waterstone Lane	YES	YES	Fairly Bad, Variable asphalt thickness, No CABC and soil base is only 4 to 7 CBR

Laboratory Data

U.S. Standard Sieve Sizes



GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

Boring No.	Elev./Depth	Nat. W.C.	L.L.	P.L.	P.I.	Soil Description or Classification	<p>GRAIN SIZE DISTRIBUTION</p>  <p>3200 Wellington Court, Ste 108 Raleigh, NC 27615</p>
						Brown Silty Fine to Medium Sand	
Bulk							
Project:						Job No.: 1-19-0893-EA	
Rolesville Streets and Parking Rolesville, NC						Date Recieved: _____	
						Date: 12/20/19	Dates Tested: _____

GeoTechnologies, Inc.

Compressive Strength of Molded Soil-Cement Cylinders

ASTM D1633

JOB NAME: Rolesville Streets

JOB NO.: 1-19-0893-EA

DATE: 19-Dec-19

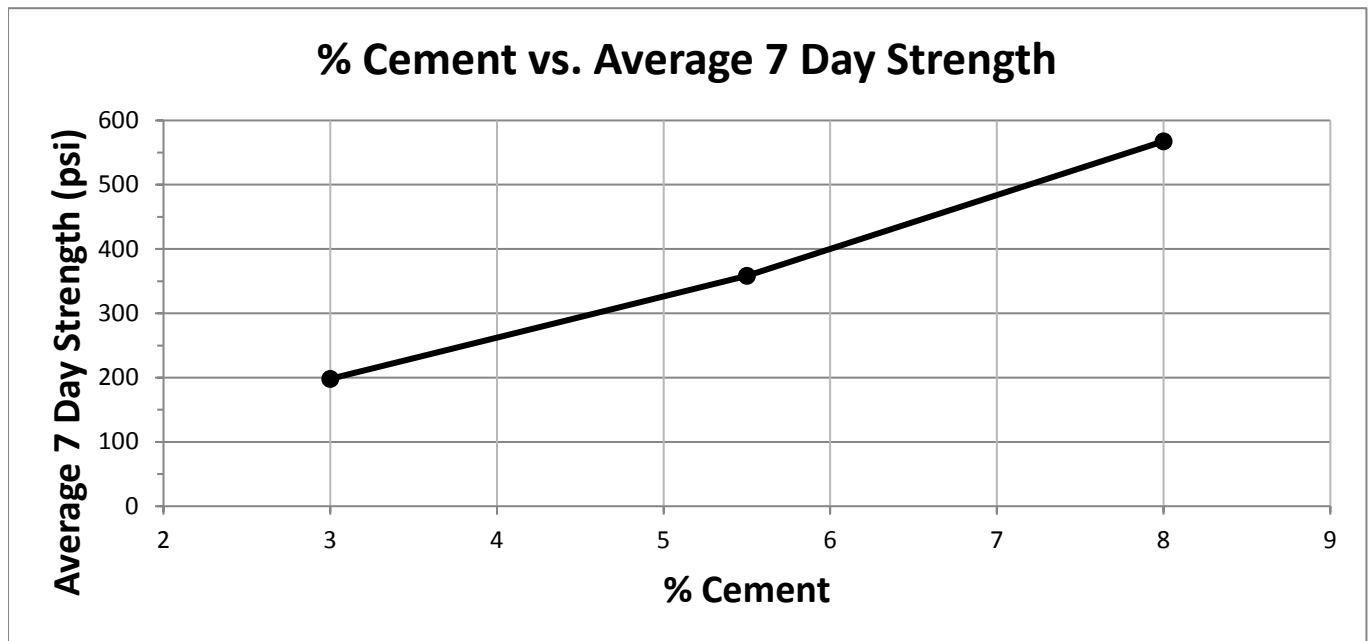
LOCATION: Rolesville, NC

PREP BY: CAS

TESTED BY: CAS

With Asphalt

Sample	Date Made	Date Tested	Age At Test (Days)	LENGT H	DIAMETER	AREA (Sq. In.)	L/D RATIO	TOTAL LOAD (lbs)	STRENGTH (psi)
3-1	12/12/19	10/19/19	7	4.68	4.02	12.69	1.16	2429	191
3-2	12/12/19	10/19/19	7	4.72	4.03	12.76	1.17	2226	175
3-3	12/12/19	10/19/19	7	4.73	4.02	12.69	1.18	2898	228
5.5-1	12/12/19	10/19/19	7	4.64	4.02	12.69	1.15	4605	363
5.5-2	12/12/19	10/19/19	7	4.67	4.03	12.76	1.16	4577	359
5.5-3	12/12/19	10/19/19	7	4.71	4.04	12.82	1.17	4531	353
8-1	12/12/19	10/19/19	7	4.63	4.05	12.88	1.14	7129	553
8-2	12/12/19	10/19/19	7	4.63	4.03	12.76	1.15	7298	572
8-3	12/12/19	10/19/19	7	4.69	4.02	12.69	1.17	7329	577



GeoTechnologies, Inc.

Compressive Strength of Molded Soil-Cement Cylinders

ASTM D1633

JOB NAME: Rolesville Streets

JOB NO.: 1-19-0893-EA

DATE: 19-Dec-19

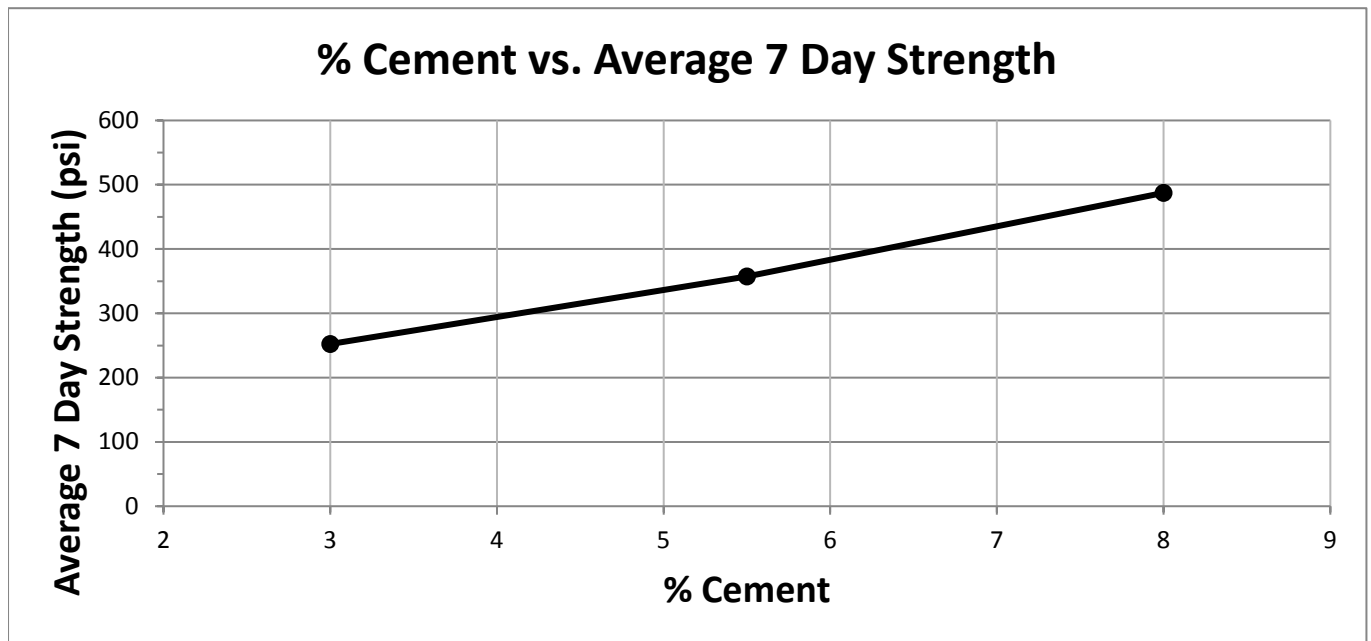
LOCATION: Rolesville, NC

PREP BY: CAS

TESTED BY: CAS

Without Asphalt

Sample	Date Made	Date Tested	Age At Test (Days)	LENGT H	DIAMETER	AREA (Sq. In.)	L/D RATIO	TOTAL LOAD (lbs)	STRENGTH (psi)
3-1	12/12/19	10/19/19	7	4.66	4.04	12.82	1.15	2629	205
3-2	12/12/19	10/19/19	7	4.72	4.04	12.82	1.17	3721	290
3-3	12/12/19	10/19/19	7	4.7	4.02	12.69	1.17	3318	261
5.5-1	12/12/19	10/19/19	7	4.69	4.02	12.69	1.17	4382	345
5.5-2	12/12/19	10/19/19	7	4.72	4.01	12.63	1.18	3900	309
5.5-3	12/12/19	10/19/19	7	4.78	4.05	12.88	1.18	5389	418
8-1	12/12/19	10/19/19	7	4.73	4.03	12.76	1.17	5789	454
8-2	12/12/19	10/19/19	7	4.77	4.01	12.63	1.19	5912	468
8-3	12/12/19	10/19/19	7	4.71	4.05	12.88	1.16	6959	540



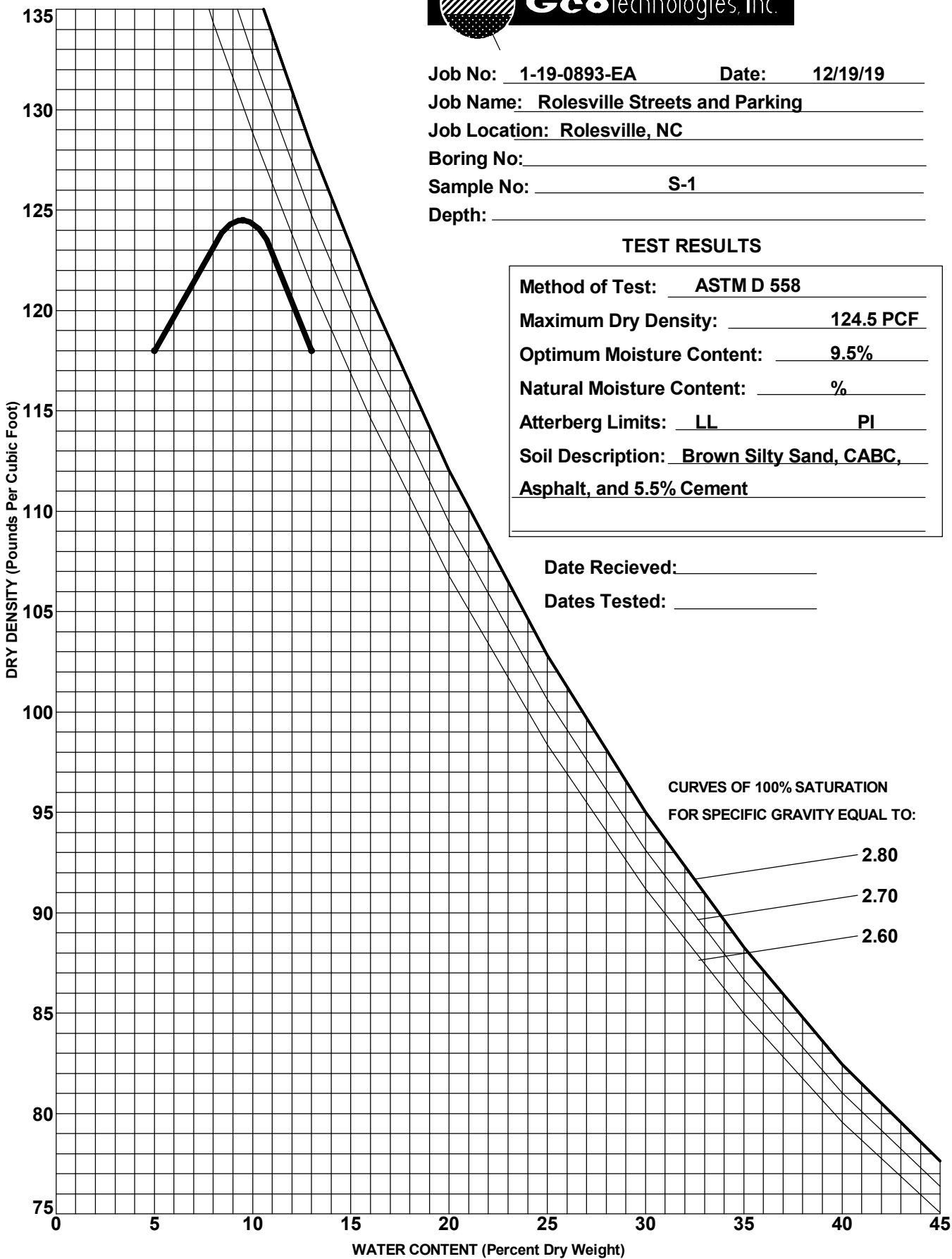


Job No: 1-19-0893-EA Date: 12/19/19
 Job Name: Rolesville Streets and Parking
 Job Location: Rolesville, NC
 Boring No: _____
 Sample No: S-1
 Depth: _____

TEST RESULTS

Method of Test:	<u>ASTM D 558</u>
Maximum Dry Density:	<u>124.5 PCF</u>
Optimum Moisture Content:	<u>9.5%</u>
Natural Moisture Content:	<u>%</u>
Atterberg Limits:	<u>LL</u> <u>PI</u>
Soil Description:	<u>Brown Silty Sand, CABC, Asphalt, and 5.5% Cement</u>

Date Recieved: _____
 Dates Tested: _____



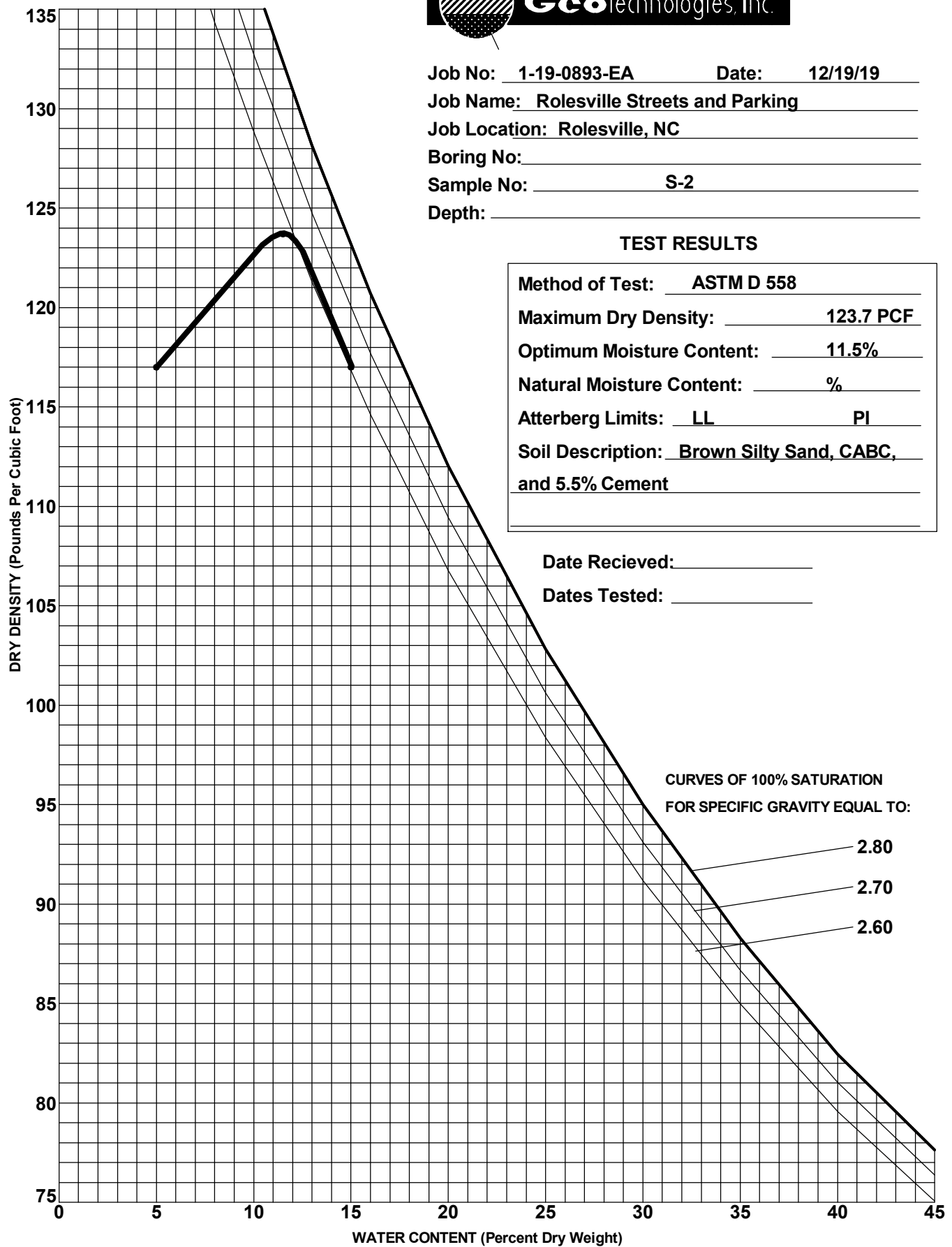


Job No: 1-19-0893-EA Date: 12/19/19
 Job Name: Rolesville Streets and Parking
 Job Location: Rolesville, NC
 Boring No: _____
 Sample No: S-2
 Depth: _____

TEST RESULTS

Method of Test:	<u>ASTM D 558</u>
Maximum Dry Density:	<u>123.7 PCF</u>
Optimum Moisture Content:	<u>11.5%</u>
Natural Moisture Content:	<u>%</u>
Atterberg Limits:	<u>LL</u> <u>PI</u>
Soil Description:	<u>Brown Silty Sand, CABC,</u> <u>and 5.5% Cement</u>

Date Recieved: _____
 Dates Tested: _____



Site Photos

W-1



W-2



W-3



W-4



W-5



W-6



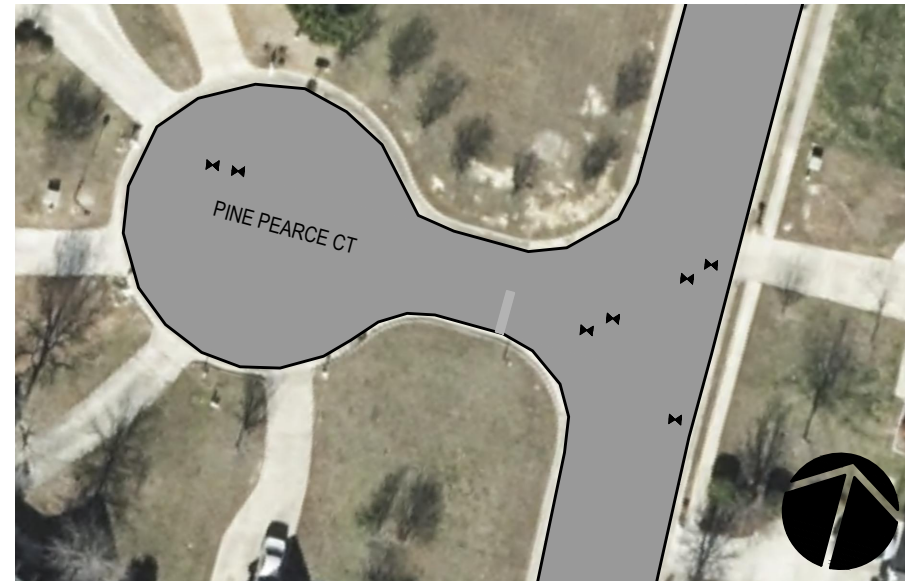
EXHIBIT #3 - STREET SHEET SETS



CRESTLEIGH STREET
SCALE: 1" = 50'



CROSSINGTON COURT
SCALE: 1" = 50'



PINE PEARCE COURT
SCALE: 1" = 50'



RONCARO COURT
SCALE: 1" = 50'

DESCRIPTION OF WORK

- CONTRACTOR SHALL NOTIFY RESIDENTS OF OLDE TOWNE SUBDIVISION PRIOR TO THE START OF WORK;
- CONTRACTOR TO INSTALL TEMPORARY TRAFFIC CONTROL IN ADVANCE OF UPCOMING WORK;
- CONTRACTOR TO MAKE NECESSARY CURB REPAIRS TO CORRECT FLOWLINE ISSUES;
- CONTRACTOR TO BEGIN BY REMOVAL OF EXISTING 1.5 - 2.5 INCHES OF ASPHALT WITHIN THE BOUNDARIES SHOWN ON THE PLANS. CAREFUL TO AVOID CONCRETE AROUND VALVES AND MANHOLES;
- DUE TO SWELLING, ADDITIONAL MATERIALS WILL NEED TO BE REMOVED AND HAUL OFF SITE TO REACH A DEPTH OF 4" TO ALLOW FOR 3" OF SURFACE COURSE TO BE PUT BACK IN PLACE OF OLD ASPHALT;
- A DETERMINATION WILL NEED TO BE MADE ON THE FINISH QUALITY OF THE EXISTING STONE AFTER ASPHALT IS REMOVED. CABG MAY NEED TO BE RE-GRADED AND RE-SET SHOULD THE ASPHALT REMOVAL SIGNIFICANTLY DISTURB THE CABG MATERIAL;
- GEOTECHNICAL ENGINEER TO ATTEND PROOF ROLL OF THE EXPOSED CABG TO IDENTIFY UNSTABLE AREAS;
- IF UNSTABLE AREAS ARE IDENTIFIED, A REMOVAL RECOMMENDATION WILL BE PROVIDED BY THE GEOTECHNICAL ENGINEER;
- CONTRACTOR TO REMOVE RECOMMENDED THICKNESS OF WASTE MATERIAL AND HAUL OFF SITE. REPLACE THE UNDERCUT AREA WITH ASPHALT BASE, B25.0B;

ALT. 1

- CONTRACTOR WILL DISPLACE 8" OF MATERIAL OVER THE ENTIRE SURFACE AREA AND MIX WITH 30-35 LBS. OF CEMENT PER SY;

ALT. 2

- CONTRACTOR TO REMOVE 8" OF MATERIAL AND HAUL OFF SITE;
- REPLACE MATERIAL WITH 8" OF AGGREGATE BASE COURSE;
- ONCE PROOF ROLL IS COMPLETE AND ALL AREAS ARE STABILIZED, CONTRACTOR TO INSTALL TWO LIFTS OF 1.5-INCHES OF ASPHALT SURFACE, S9.5B. ADJUSTMENT OF THE MANHOLES AND WATER VALVES MAY BE NEEDED AT THIS TIME;
- ONCE THE FINAL LIFT OF ASPHALT IS PLACED, CONTRACTOR TO INSTALL THERMOPLASTIC PAVEMENT MARKINGS FOR CROSSWALK (8" WHITE) AND STOP BAR (24" WHITE) AS NEEDED.

MATERIALS LIST

- ASPHALT CONCRETE SURFACE COURSE (3" OF S9.5B) - 1630 TN
- ASPHALT CONCRETE BASE COURSE (4" OF B25.0B) - 340 TN
- 2'-6" STANDARD CURB AND GUTTER - 100 LF
- GEOGRID ALLOWANCE - 990 SY
- ADJUST EXISTING MH - 1 EA
- ADJUST EXISTING METER OR VALVE BOX - 27 EA
- PAVEMENT MARKING - 24" WHITE THERMO - 77 LF
- PAVEMENT MARKING - 8" WHITE THERMO - 80 LF

ALT. 1

- CEMENT - 175 TN

ALT. 2

- ABC STONE - 4220 TN

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No.	Revision	Date	By

Designer	WR	Scale	AS NOTED
Drawn By	WR	Date	12/22/2019
Checked By	WR	Job No.	02190510.11

TOWN OF ROLESVILLE RESURFACING FY21
ROLESVILLE WAKE NC

CRESTLEIGH STREET, CROSSINGTON COURT, RONCARO COURT, AND PINE PEARCE COURT

WithersRavenel
Engineers | Planners | Surveyors
115 MacKean Drive | Cary, NC 27511
t: 919.469.3340 | license #: C-0832 | www.withersravenel.com



WATERSTONE LANE
SCALE: 1" = 60'



WATERSTONE LANE
SCALE: 1" = 60'

MATERIALS LIST

- ASPHALT CONCRETE SURFACE COURSE (3" OF S9.5B) - 1630 TN
- ASPHALT CONCRETE BASE COURSE (4" OF B25.0B) - 340 TN
- 2'-6" STANDARD CURB AND GUTTER - 100 LF
- GEOGRID ALLOWANCE - 990 SY
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- ADJUST EXISTING METER OR VB - 27 EA
- PAVEMENT MARKING - 24" WHITE THERMO - 77 LF
- PAVEMENT MARKING - 8" WHITE THERMO - 80 LF

ALT. 1

- CEMENT - 175 TN

ALT. 2

- ABC STONE - 4220 TN

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No.	Revision	Date	By

Designer	WR	Scale	AS NOTED
Drawn By	WR	Date	12/22/2019
Checked By	WR	Job No.	02190510.11

TOWN OF ROLESVILLE RESURFACING FY21
ROLESVILLE WAKE NC

WATERSTONE LANE

WithersRavenel
Engineers | Planners | Surveyors
115 MacKenan Drive | Cary, NC 27511
t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

EXHIBIT #4 - PATCHING DETAILS

Proposal: Granite Falls Blvd

Site Map (not exact)



Present Asphalt



Present Asphalt



Present Asphalt

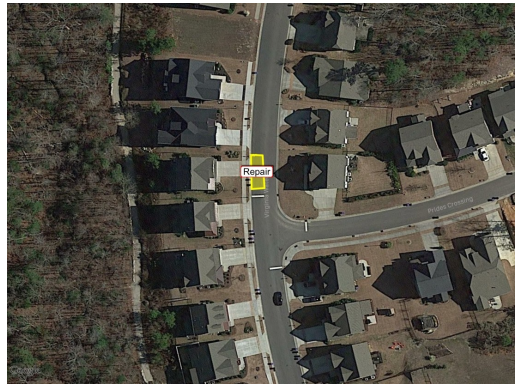


Proposal: Virginia Water Drive

Cross Street



Site Map (not exact)



Repair Area



Repair Area

