

PROJECT MANUAL

FOR

**FY20-21 SEWER
REHABILITATION PROJECT**

PROJECT NO. SW3501

MARCH 2021

**TOWN OF CARY
WAKE COUNTY, NORTH CAROLINA**

**MAYOR:
TOWN CLERK:
TOWN MANAGER:
DIRECTOR OF
UTILITIES DIRECTOR:**

**HAROLD WEINBRECHT, JR.
VIRGINIA H. JOHNSON
SEAN R. STEGALL

JAMIE REVELS, P.E.**

CERTIFICATION

I HEREBY CERTIFY THAT THE SPECIFICATIONS CONTAINED HEREIN AND THE ACCOMPANYING PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

SIGNED, SEALED, AND DATED THIS 2nd DAY OF MARCH, 2021



BY

Mark E. Lambert
Frazier Engineering

Project Name FY20-21 Sewer Rehabilitation Project
Project No. SW3501

**FY20-21 SEWER REHABILITATION PROJECT
SW3501**

TABLE OF CONTENTS

GENERAL REQUIREMENTS

Section	00100	CERTIFICATION*	00100-1
Section	00150	TABLE OF CONTENTS*	00150-1
Section	00200	INVITATION TO BID*	00200-1 - 00200-2
Section	00250	INSTRUCTIONS TO BIDDERS*	00250-1 - 00250-2
Section	00300	PROPOSAL*	00300-1 – 00300-31
Section	00350	PAY ITEM DESCRIPTIONS	00350-1 – 00350-11
Section	00500	AGREEMENT*	00500-1 – 00500-23
Section	00700	EJCDC - AMENDED GENERAL CONDITIONS	1 – 101
Section	00800	SUPPLEMENTARY CONDITIONS	00800-1 - 00800-17
Section	01010	SUMMARY OF WORK AND SPECIAL PROVISIONS	01010-1 - 01010-12

TECHNICAL SPECIFICATIONS *

Section	01000	DEFINITIONS, ABBREVIATIONS and REFERENCE STANDARDS	01000-1 – 01000-4
Section	02000	SUBMITTALS *	02000-1 – 02000-3
Section	02150	BYPASS SYSTEM	02150-1 – 02150-7
Section	02650	SEWER CLEANING AND TELEVISION INSPECTION	02650-1 – 02650-9
Section	02651	CIPP FOR MAIN SEWERS	02651-1 – 02651-17
Section	02651A	CIPP FOR MAIN SEWERS - UV LIGHT CURED CIPP	02651A-1 – 02651A-17
Section	02653	MANHOLE REHABILITATION	02653-1 – 02653-11
Section	03000	CLEARING AND GRUBBING	03000-1
Section	05000	ASPHALT CONCRETE	05000-1 – 05000-15
Section	06000	CAST IN PLACE CONCRETE	06000-1 – 06000-6
Section	07000	UTILITY TRENCHES	07000-1 – 07000-3
Section	11000	SANITARY SEWER GRAVITY MAINS	11000-1 – 11000-9
Section	13000	UTILITY WORK ALONG HIGHWAYS	13000-1 – 13000-4
Section	16000	SOIL EROSION AND SEDIMENTATION CONTROL	16000-1 – 16000-13
Section	21000	SPECIAL CONSTRUCTION	21000-1 – 21000-2
App A		APPROVED PRODUCTS LIST	
App B		EXECUTED RIGHT-OF-ENTRY FOR SELECT PROPERTIES	

INVITATION TO BID

TOWN OF CARY
Cary, North Carolina

Sealed bids must be submitted no later 2:00 p.m. EDT on April 6, 2021

HOW TO SUBMIT BID PROPOSALS:

- Physical Delivery of Bids:
 - ❖ The bids may be delivered to the Town of Cary Warehouse at 420 James Jackson Avenue Cary, NC 27513; follow the sign to “Purchasing” then follow the sign for “Deliveries,” which will lead to the Warehouse.
 - ❖ Delivery such as UPS or FedEx; Deliver to the address below:
Town of Cary – Warehouse
420 James Jackson Avenue
Cary, NC 27513

Attn: Lynn Brilz, P.E.
Bid Number #354-UT21-23
Date Bid is Due 2:00 pm on April 6, 2021

- ❖ United States Postal Service (USPS)
Town of Cary – Warehouse
PO Box 8005
Cary, NC 27512

Attn: Lynn Brilz, P.E.
Bid Number #354-UT21-23
Date Bid is Due 2:00 pm April 6, 2021

NOTE: IT IS THE RESPONSIBILITY OF THE BIDDER TO ENSURE WHICHEVER METHOD OF DELIVERY IS USED THAT THE BID IS RECEIVED ON TIME. LATE BIDS WILL NOT BE OPENED OR ACCEPTED.

The virtual physical bid opening by the Town of Cary will be held at 420 James Jackson Avenue in the purchasing conference room. Members of the public will have the capability to attend the bid openings via a live WebEx meeting. A project manager, engineer/architect (if applicable), and a representative from Purchasing will be in attendance to witness and affirm that all proposals remain sealed until the live bid opening. The project manager will prepare an attendance and bid tab sheet. Purchasing will take attendance of participants on the WebEx and record bid results. Bids will be opened and read publicly for the furnishing of materials, labor, and

equipment for construction of the FY20-21 Sewer Rehabilitation Project, Project No. SW3501. Brief project description is as follows:

±Clean/televise and install CIPP liner in 7,200 feet of 8" sewer; 200 feet of 10" sewer; 500 feet of 12" sewer; 250 feet of 15"/16" sewer; sewer; 1,450 feet of 24" sewer; 7,650 feet of 30" sewer; 50 feet of 36" sewer; 50 feet of 42" sewer; 7,500 feet of 48" sewer; and 2,825 feet of 54" sewer; install 500 VF of cementitious mortar in manholes; various manhole and sewer repairs; bypass pumping of wastewater; and other related sewer rehabilitation work.

Plans, Specifications and Contract documents may be viewed electronically at <http://townofcary.contractorsplanroom.com> upon registering online after March 3, 2021. The following agencies have been notified of the project: the Associated General Contractors – Raleigh office, McGraw-Hill Construction Dodge, the North Carolina Institute of Minority Economic Development – Durham office, and the CDC News – Cary office after March 3, 2021.

The Town of Cary is not responsible for a Bidder relying on incomplete bid documents.

Contractors offering a proposal on this project must be licensed to do the specified type of contracting in the State of North Carolina. All bids must include a non-collusive affidavit. Contractors offering a proposal on this project must comply, and must ensure that their subcontractors comply, with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, "Verification of Work Authorization," and must provide documentation or sign affidavits or any other documents requested by the Town of Cary demonstrating such compliance.

Each proposal shall be accompanied by a bid deposit in the amount of not less than five percent (5%) of the amount of the bid in the form and subject to the conditions provided in the Instruction to Bidders.

The Town of Cary reserves the right to reject any or all proposals.

Jamie Revels, P.E.
Utilities Director

INSTRUCTIONS TO BIDDERS

Each proposal shall be submitted in a sealed envelope, upon blank forms provided in the Project Manual. These proposals shall be plainly marked:

“FY 20-21 Sewer Rehabilitation Project Town of Cary Project No. SW3501”

The envelope shall also be marked with the Bidder's name, address, North Carolina contractor license number, and name and phone number of a contact person.

Each proposal shall be accompanied by a Bid Bond payable to the Town of Cary for an amount of not less than five percent (5%) of the total amount bid; or in lieu of the Bid Bond, the bidder may offer the bid deposit in the form of a cashier's check, or a certified check on a bank or trust company insured by the FDIC. The bid bond must be executed by a corporate surety licensed in North Carolina. The bid deposit may be held for a period of sixty (60) days pending award of the contract. Notification of award of contract shall be evidence of intent to contract and shall extend time for holding the contractor's bid surety for a time mutually agreed between the Town of Cary and the bidder.

During these unprecedented times Town Hall remains closed until further notice. To ensure that all Bidders are kept up to date on any Addenda, changes, or information notices, please send an e-mail to mlambert@frazier-engineering.com indicating your intention to prepare a Bid for the Project.

A virtual **NON-MANDATORY pre-bid meeting** will be held with the Engineer and Owner at **2:00 p.m., March 23, 2021** to discuss the project and answer pertinent questions. Those who wish to attend the Pre-Bid Meeting must send an email to mlambert@frazier-engineering.com no later than 12:00 PM ET, March 23, 2021 to ensure an invite with the meeting link can be provided. No guarantees shall be made for those who request to attend after the deadline specified herein. Bidders are strongly encouraged to attend and participate in the conference. The Engineer will transmit to all prospective Bidders of record such Addenda, if deemed necessary, in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

The pre-bid meeting will be held via a virtual TEAM meeting. The Project Managers and Engineers/Architects will discuss the project and answer questions via the virtual TEAM meeting. Please join the meeting 30 minutes prior to the opening to allow for the correction of any technical difficulties. All prospective bidders and subcontractors are welcome to attend the pre-bid meeting virtually.

Formal In-Person Public Bid Openings have been postponed. During these unprecedented times, the public can attend the bid opening via a live WebEx meeting. There will be witnesses to confirm that all bids remain sealed until the bid

opening. The bid opening will be **April 6, 2021 at 2:00 PM ET**. The Project Managers, Engineers/Architects (If applicable) and Purchasing Staff will open bids via the live WebEx meeting. Please join the meeting 30 minutes prior to the opening to allow for the correction of any technical difficulties. If you have problems joining or sound issues, contact WebEx and provide them the meeting number. All bidders are welcome to attend the bid opening virtually, which can be accessed via the following credentials:

FY 20-21 Sewer Rehabilitation Project Bid Opening:

<https://carync.webex.com/carync/j.php?MTID=m3f02c99cad97223275efe9ec9acf a9cb>

Access Code: 129 770 1385

Meeting Password: PsSgCTHm485

The award of the Contract, if it is awarded, will be to the lowest responsive, responsible bidder whose qualifications indicate the award will be in the best interest of the Town of Cary (Owner). The Town of Cary reserves the right to waive technicalities and/or reject any or all proposals.

A Performance Bond and a Payment Bond, each in the amount of one hundred percent (100%) of the contract price, with a corporate surety approved by the Town of Cary, will be required for the faithful performance of the contract. Bidders shall provide certification that performance and payment bond sureties are licensed in North Carolina.

All questions about the meaning or intent of the Contract documents shall be submitted in writing to Mark Lambert, P.E., Project Manager, Frazier Engineering, 6592 Bob White Trail, Stanley, NC 28164. Email questions may be sent to mlambert@frazier-engineering.com. Questions received less than five business days prior to the date for opening of Bids may not be answered. Only questions answered by written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

Addenda, when issued, will be posted to the North Carolina Interactive Purchasing System (IPS), www.ips.state.nc.us, and will also be on file at the offices of the Owner and Engineer at least twenty-four hours before bids are opened. It shall be the Bidder's responsibility to make inquiry as to the Addenda issued. All such Addenda shall become part of the Contract Documents and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

SECTION 00300
BID PROPOSAL ("Proposal")

TO: THE TOWN OF CARY, NORTH CAROLINA ("Owner")

FROM: "BIDDER" _____

ADDRESS _____

DATE OF BID _____, 20__

The Bidder hereby signifies that it is his/her/its intention and purpose to enter into a formal Contract with the Town of Cary, North Carolina, to furnish all labor, materials, tools, equipment, apparatus, supplies, and the like required, and to do all the work necessary, for and because of the construction, erection, and/or installation of the proposed "Project":

FY 20-21 Sewer Rehabilitation Project

for the Town of Cary, North Carolina in accordance with the Contract Documents, including Addenda thereto.** There is deposited, herewith, a certified check in the amount of: _____ Dollars (\$ _____), or a Bid Bond in the amount of five percent (5%) of the total aggregate amount of the Bid, made payable to the Owner, the same to be refunded to the Bidder under the conditions of and in accordance with the terms of this Proposal, which are as follows:

THAT: The Bidder has carefully examined the Plans and Specifications and all other Contract Documents and fully understands them.

THAT: The Bidder has carefully examined the site of the Project and is familiar with the conditions under which the work, or any part thereof, is to be performed and the conditions which must be fulfilled in furnishing and/or installing, erecting or constructing any or all items of the Project.

THAT: The Bidder shall provide all necessary tools, machinery, equipment, apparatus, and all other means necessary to do all the work and shall furnish all labor, materials and all else required to complete such Contract as may be entered into, in the manner prescribed in and in accordance with the terms of the Specifications and the Contract and in accordance with the true intent and meaning thereof, and in accordance with the Plans and/or Drawings and the requirements of the Consulting Engineers under them, in a first class manner.

** Fill in appropriate Addenda number(s): _____

[Terms continued on the following page.]

THAT: The rights of the Owner and the recommendations of the Engineer shall not be questioned in the Award of the Contract.

THAT: It is the intention of the Owner to let contracts on the basis of the Bids received in accordance with G.S. 143-129 and in such manner as the Owner may deem to be for the best interests of the Owner.

THAT: The Owner reserves the right to reject any or all proposals.

THAT: The work under each Section will be awarded under one Contract and that the Owner shall have the right to include such item or items as the Owner may deem to be in the best interests of the Owner.

THAT: On being awarded the Contract, the Bidder shall execute a Performance Bond and a Payment Bond, on the forms included herein, each equal to one hundred percent (100%) of the Contract Price (Contract Sum), as security for the faithful performance of the Contract.

THAT: The Bidder shall submit, in the blank spaces provided, all data, guarantees and other information called for.

THAT: This Proposal shall be signed and submitted in the manner prescribed in the Instructions to Bidders.

THAT: Should this Proposal not be accepted by the Owner, the certified check, in the amount of: _____ Dollars (\$ _____) or the five percent (5%) Bid Bond, as applicable, deposited herewith shall be returned to the Bidder.

THAT: Should this Proposal be accepted by the Owner and the Bidder fail or neglect to execute the Contract and furnish the required Bonds within ten (10) business days after receiving notifications of the acceptance of the Proposal and/or receipt of the formal Contract and Bond forms, the certified check, in the amount of: _____ Dollars (\$ _____), or the Bid Bond, deposited herewith shall be retained by the Owner as liquidated damages, it being understood that the Owner reserves the right to extend the time allowed for executing the Contract and/or furnishing the Bond in its sole discretion.

THAT: The Bidder shall complete such Contract as may be entered into within the number of consecutive calendar days specified in the Contract from the date of the Notice to Proceed.

THAT: The Bidder proposes to enter into a Contract in accordance with this Proposal, the Plans and Specifications and the Contract Documents included herein, for the prices shown on the following pages.

THAT: The successful bidder shall be required to submit a complete detailed cost breakdown of the Lump Sum Bid Price amount (if project is a lump sum bid) for payment purposes, for approval by the Engineer, prior to the Award of the Contract.

[Terms continued on the following page.]

THAT: It is the intent of these Contract Documents to obtain a Contract based on a Lump Sum Price except where Unit Prices are specifically requested. Where a discrepancy exists between words and numbers in the Bid amount, the written words shall govern. Where a discrepancy exists between unit prices and mathematical computations in the Itemized Proposal, the unit prices and quantities in the Itemized Proposal shall govern.

THAT: The successful bidder shall have all proper Bidder licenses and other applicable licenses required under North Carolina state laws governing their respective trade(s).

THAT: The successful bidder and all subcontractors shall comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, "Verification of Work Authorization," and shall provide documentation or sign affidavits or any other documents requested by the Town of Cary demonstrating such compliance.

THE FOLLOWING FORMS AND DOCUMENTATION SHALL BE COMPLETELY FILLED OUT AND SUBMITTED WITH THE BIDS:

1. Bid Bond (using forms provided on pages 00300-3 and 00300-10) or other allowable bid security;
2. Photocopy of Bidder's North Carolina Contractors License;
3. Enter Contractor's License Number where called for in proposal and on the outside of sealed envelope containing the proposal;
4. Statement of Compliance with requirement of the General Conditions that the Bidder will ensure that at least forty (40) percent of the Work is performed with the Bidder's employees (provide statement on bidder's letterhead);
5. Certified List of Major Subcontractors;
6. Bidder's Certificate as to Organization and Authority;
7. Equal Employment Opportunity Addendum;
8. Qualifications of Bidders;
9. Non-Collusive Affidavit;
10. Nondiscrimination Clause.

Note that the Bid Form will be made available in spreadsheet form. The Contractor may utilize the spreadsheet to complete the Bid Form but must print out and submit the Bid Form in hard copy format. Each page of the Bid Form shall be initialed and dated. The Owner and Engineer are not responsible for any errors, typos, omissions, etc. in the Bid Form. It is the Contractor's sole responsibility to ensure that the spreadsheet is accurate.

BID PROPOSAL
GENERAL CONSTRUCTION
FOR THE
FY 20-21 Sewer Rehabilitation Project
(the "Project")

TOWN OF CARY
 BID FORM
 FY20-21 SEWER REHABILITATION PROJECT
 PROJECT NO. SW3501

For furnishing all new materials, labor and equipment that may be incidental to and for the construction of sanitary sewer facilities as specified and outlined below:

ITEM	DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL
1	FOR CLEANING AND TELEVISIONING EXISTING SEWERS TO FURTHER EVALUATE THE SEWERS, AS SPECIFIED, ANY REQUIRED CLEANING, ANY LOCATION, ANY LENGTH OF SEWER, COMPLETE IN PLACE, FOR VARIOUS PIPE DIAMETERS.				
A.	EXISTING 8" DIAMETER MAIN SEWERS	7,200	LF		\$0.00
B.	EXISTING 10" DIAMETER MAIN SEWERS	200	LF		\$0.00
C.	EXISTING 12" DIAMETER MAIN SEWERS	500	LF		\$0.00
D.	EXISTING 15"/16" DIAMETER MAIN SEWERS	250	LF		\$0.00
E.	EXISTING 24" DIAMETER MAIN SEWERS				
1)	LIGHT CLEANING	1,300	LF		\$0.00
2)	HEAVY CLEANING	150	LF		\$0.00
F.	EXISTING 30" DIAMETER MAIN SEWERS				
1)	LIGHT CLEANING	7,000	LF		\$0.00
2)	HEAVY CLEANING	650	LF		\$0.00
G.	EXISTING 36" DIAMETER MAIN SEWERS	50	LF		\$0.00
H.	EXISTING 42" DIAMETER MAIN SEWERS	50	LF		\$0.00
I.	EXISTING 48" DIAMETER MAIN SEWERS	7,500	LF		\$0.00
J.	EXISTING 54" DIAMETER MAIN SEWERS	2,825	LF		\$0.00
2	FOR PERFORMING POINT REPAIRS TO EXISTING GRAVITY SEWERS (INCLUDING REPLACING SERVICE LATERAL CONNECTIONS AND PIPING) USING PVC PIPE, REPAIR LENGTH AS SPECIFIED BELOW, VARIOUS PIPE DIAMETERS, VARIOUS DEPTHS OF SEWER, BACKFILLING WITH GRANULAR MATERIAL OR FLOWABLE FILL UNDER PAVED SURFACES PER STANDARD DETAIL NO. 5000.01, BACKFILLING WITH EXCAVATED SOIL IN UNPAVED AREAS, INCLUDING COMPLETE RESTORATION OF GRASSED AREAS (RESTORATION OF PAVED AREAS PAID UNDER SEPARATE BID ITEMS), AS SPECIFIED AND IN ACCORDANCE WITH THE DETAILS, COMPLETE IN PLACE.				
A.	REPAIR TO EXIST 8" DIAMETER SEWERS USING PVC PIPE				
1)	0 TO 10 FEET DEEP				
(a)	0 TO 12 FEET LONG	1	EA		\$0.00
(b)	GREATER THAN 12 FEET IN LENGTH, PAYMENT FOR EACH FOOT OVER 12 FEET, ADD TO ITEM 1(a) ABOVE	10	LF		\$0.00
2)	10.1 TO 15 FEET DEEP				
(a)	0 TO 12 FEET LONG	1	EA		\$0.00
(b)	GREATER THAN 12 FEET IN LENGTH, PAYMENT FOR EACH FOOT OVER 12 FEET, ADD TO ITEM 2(a) ABOVE	10	LF		\$0.00
B.	REPAIR TO EXIST 10" DIAMETER SEWERS USING PVC PIPE				
1)	0 TO 10 FEET DEEP				
(a)	0 TO 12 FEET LONG	1	EA		\$0.00
(b)	GREATER THAN 12 FEET IN LENGTH, PAYMENT FOR EACH FOOT OVER 12 FEET, ADD TO ITEM 1(a) ABOVE	10	LF		\$0.00
2)	10.1 TO 15 FEET DEEP				
(a)	0 TO 12 FEET LONG	1	EA		\$0.00
(b)	GREATER THAN 12 FEET IN LENGTH, PAYMENT FOR EACH FOOT OVER 12 FEET, ADD TO ITEM 2(a) ABOVE	10	LF		\$0.00

_____ Initial

_____ Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
C.	REPAIR TO EXIST 12" DIAMETER SEWERS USING PVC PIPE			
1)	0 TO 10 FEET DEEP			
(a)	0 TO 12 FEET LONG	1	EA	\$0.00
(b)	GREATER THAN 12 FEET IN LENGTH, PAYMENT FOR EACH FOOT OVER 12 FEET, ADD TO ITEM 1(a) ABOVE	10	LF	\$0.00
2)	10.1 TO 15 FEET DEEP			
(a)	0 TO 12 FEET LONG	1	EA	\$0.00
(b)	GREATER THAN 12 FEET IN LENGTH, PAYMENT FOR EACH FOOT OVER 12 FEET, ADD TO ITEM 2(a) ABOVE	10	LF	\$0.00
D.	THE ADD ON COST FOR SUBSTITUTING DUCTILE IRON PIPE FOR ANY PIPE WITHIN THIS CONTRACT, AS SPECIFIED, COMPLETE IN PLACE			
1)	8" SEWER	10	LF	\$0.00
2)	10" SEWER	10	LF	\$0.00
3)	12" SEWER	10	LF	\$0.00
E.	INSTALL DIP TEE WITHIN POINT REPAIR SEGMENT AND RECONNECT LATERAL TO TEE (UP TO 6 FEET OF LATERAL)(ANY DEPTH)			
1)	8" DIP TEE			
(a)	WITH 6 FEET OF 4" OR 6" PVC LATERAL PIPE	1	EA	\$0.00
(b)	WITH 6 FEET OF 4" OR 6" DIP LATERAL PIPE	1	EA	\$0.00
2)	10" DIP TEE			
(a)	WITH 6 FEET OF 4" OR 6" PVC LATERAL PIPE	1	EA	\$0.00
(b)	WITH 6 FEET OF 4" OR 6" DIP LATERAL PIPE	1	EA	\$0.00
3)	12" DIP TEE			
(a)	WITH 6 FEET OF 4" OR 6" PVC LATERAL PIPE	1	EA	\$0.00
(b)	WITH 6 FEET OF 4" OR 6" DIP LATERAL PIPE	1	EA	\$0.00
F.	REPLACE EXISTING STORM SEWER WITH NEW LIKE-SIZE RCP STORM SEWER AS NECESSARY DURING ANY EXCAVATIONS (ANY DEPTH)			
1)	12" STORM SEWER	10	LF	\$0.00
2)	15" STORM SEWER	10	LF	\$0.00
3)	18" STORM SEWER	10	LF	\$0.00
4)	21" STORM SEWER	10	LF	\$0.00
5)	24" STORM SEWER	10	LF	\$0.00
3	STAND-ALONE CLEANOUT INSTALLATION, EITHER TO REPLACE AN EXISTING CLEANOUT OR TO INSTALL A CLEANOUT WHERE ONE DOES NOT CURRENTLY EXIST, WHERE REQUIRED BY THE ENGINEER, 0'-8' DEEP			
1)	4" PVC CLEANOUT	5	EA	\$0.00
2)	6" PVC CLEANOUT	1	EA	\$0.00
4	REMOVAL OF EXISTING CLEANOUT INCLUDING STANDPIPE, SPLICING IN REPLACEMENT PIPE WHERE STANDPIPE WAS LOCATED, WHERE REQUIRED BY THE ENGINEER, 0'-8' DEEP			
1)	4" PVC	6	EA	\$0.00
2)	6" PVC	1	EA	\$0.00
5	FOR INSTALLING NEW PRECAST CONCRETE MANHOLES WITH A CONE SECTION TOP ON EXIST OR NEW SEWERS, VARIOUS DEPTHS AND SIZES OF SEWERS, COMPLETE RESTORATION, AS SPECIFIED, COMPLETE IN PLACE.			
A.	4 FOOT DIAMETER MANHOLE UP TO 6 FEET IN DEPTH IN UNPAVED AREAS			
1)	WITH 24" COVER (TYPE 2B)	1	EA	\$0.00
2)	WITH 24" WATERTIGHT COVER (TYPE 2A)	1	EA	\$0.00
3)	ADD ON COST IF MANHOLE IS IN PAVED AREA (ADD ON TO ITEMS A(1) AND A(2) ABOVE)	1	EA	\$0.00
4)	PAYMENT FOR EACH VERTICAL FOOT OVER 6 FEET (ADD ON TO ITEMS A(1) AND A(2) ABOVE)	10	VF	\$0.00

_____ Initial

_____ Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL
5)	ADD ON COST IF MANHOLE IS A FLAT-TOP (ADD ON TO ITEMS A(1) AND A(2) ABOVE)	1	EA		\$0.00
B.	5 FOOT DIAMETER MANHOLE UP TO 6 FEET IN DEPTH IN UNPAVED AREAS				
1)	WITH 24" COVER (TYPE 2B)	1	EA		\$0.00
2)	WITH 24" WATERTIGHT COVER (TYPE 2A)	1	EA		\$0.00
3)	WITH 36" WATERTIGHT COVER (TYPE 3)	1	EA		\$0.00
4)	ADD ON COST IF MANHOLE IS IN PAVED AREA (ADD ON TO ITEMS B(1) AND B(2) ABOVE)	1	EA		\$0.00
5)	PAYMENT FOR EACH VERTICAL FOOT OVER 6 FEET (ADD ON TO ITEMS B(1) AND B(2) ABOVE)	10	VF		\$0.00
6)	ADD ON COST IF MANHOLE IS A FLAT-TOP (ADD ON TO ITEMS B(1), B(2), AND B(3) ABOVE)	1	EA		\$0.00
C.	COST FOR EACH CONNECTING SEWER INCLUDING 10 FEET OF DIP SEWER, ANY LOCATION, ANY DEPTH, ANY MANHOLE DIAMETER				
1)	4" or 6" SERVICE LATERALS	2	EA		\$0.00
2)	8" SEWER	2	EA		\$0.00
3)	10" SEWER	2	EA		\$0.00
4)	12" SEWER	2	EA		\$0.00
6	FOR INSTALLING NEW 6 INCH VENT PIPES AT EXISTING MANHOLES, ANY LOCATION, AS SPECIFIED AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND DETAILS, COMPLETE IN PLACE. PAYMENT TO BE MADE BASED ON THE VERTICAL HEIGHT INSTALLED MEASURED FROM THE BOTTOM OF THE VENT PIPE TO THE VENT PIPE OPENING.				
A.	FOR INSTALLING NEW VENT PIPES UP TO 8 VF IN EXISTING PRE-CAST CONCRETE MANHOLES	3	EA		\$0.00
B.	FOR INSTALLING NEW VENT PIPES UP TO 8 VF IN EXISTING BRICK OR BLOCK MANHOLES	1	EA		\$0.00
C.	PAYMENT FOR EACH VERTICAL FOOT OVER 8 FEET (ADD ON TO ITEMS A OR B ABOVE)	5	VF		\$0.00
7	FOR INSTALLING NEW VENT PIPES ON NEW FLAT-TOPS WITH A VENT CAST IN PLACE IN THE NEW FLAT-TOP, ANY LOCATION, AS SPECIFIED AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND DETAILS, COMPLETE IN PLACE. PAYMENT TO BE MADE BASED ON THE VERTICAL HEIGHT INSTALLED MEASURED FROM THE BOTTOM OF THE VENT PIPE (AT THE TOP OF VENT CAST IN PLACE IN THE NEW FLAT-TOP) TO THE VENT PIPE OPENING, PAYMENT FOR EACH VERTICAL FOOT				
A.	8" VENT PIPES	25	VF		\$0.00
B.	10" VENT PIPES	25	VF		\$0.00
8	FOR REMOVING EXISTING VENT PIPES AT EXISTING MANHOLES AND PLUGGING THE HOLE WITH CONCRETE, COMPLETE IN PLACE.	5	EA		\$0.00
9	FOR INSTALLING NEW INTERNAL DROP CONNECTIONS AT EXISTING MANHOLES, VARIOUS DROP PIPE DIAMETERS AND LENGTHS, AS SPECIFIED, COMPLETE IN PLACE.				
A.	NEW 4-INCH INTERNAL DROP CONNECTION AT EXISTING MANHOLES				
1)	DROP UP TO 6 FEET IN VERTICAL LENGTH, COST PER DROP CONNECTION	5	EA		\$0.00
2)	DROP GREATER THAN 6 FEET, PAYMENT FOR EACH VERTICAL FOOT OVER 6 FEET, ADD TO ITEM A1 ABOVE	10	VF		\$0.00

_____Initial

_____Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
10	MANHOLE REHABILITATION			
A.	FOR INSTALLING 1" THICK HYDROGEN-SULFIDE RESISTANT CEMENTITIOUS MORTAR ON EXISTING INTERNAL MANHOLE WALLS & BENCHES, AS SPECIFIED, ANY LOCATION, COMPLETE IN PLACE.			
1)	IN EXISTING 4-FOOT-DIAMETER MANHOLES	140	VF	\$0.00
2)	IN EXISTING 5-FOOT-DIAMETER MANHOLES	50	VF	\$0.00
3)	IN EXISTING 6-FOOT-DIAMETER MANHOLES	170	VF	\$0.00
4)	IN EXISTING 7-FOOT-DIAMETER MANHOLES	10	VF	\$0.00
5)	IN EXISTING 8-FOOT-DIAMETER MANHOLES	180	VF	\$0.00
6)	IN EXISTING 10-FOOT-DIAMETER MANHOLES	10	VF	\$0.00
B.	FOR SUCCESSFUL VACUUM TESTING OF INDIVIDUAL MANHOLES AFTER INSTALLATION OF CEMENTITIOUS MORTAR, ANY DIAMETER	20	EA	\$0.00
C.	FOR REMOVAL OF EXISTING EPOXY ON EXISTING INTERNAL MANHOLE WALLS AND BENCHES PRIOR TO INSTALLING CEMENTITIOUS MORTAR, AS SPECIFIED, ANY LOCATION, COMPLETE IN PLACE.			
1)	IN EXISTING 4-FOOT-DIAMETER MANHOLES	100	VF	\$0.00
2)	IN EXISTING 5-FOOT-DIAMETER MANHOLES	20	VF	\$0.00
3)	IN EXISTING 6-FOOT-DIAMETER MANHOLES	10	VF	\$0.00
4)	IN EXISTING 7-FOOT-DIAMETER MANHOLES	10	VF	\$0.00
5)	IN EXISTING 8-FOOT-DIAMETER MANHOLES	165	VF	\$0.00
6)	IN EXISTING 10-FOOT-DIAMETER MANHOLES	15	VF	\$0.00
11	FOR REPLACING EXISTING MANHOLE FRAMES AND COVERS WITH NEW FRAMES AND COVERS, AS SPECIFIED, INCLUDING COMPLETE RESTORATION OF PAVED OR UNPAVED AREAS AS SPECIFIED, COMPLETE IN PLACE.			
A.	MANHOLES IN PAVED AREAS			
1)	24" COVER (TYPE 1)	1	EA	\$0.00
B.	MANHOLES IN UNPAVED AREAS			
1)	24" COVER (TYPE 2B)	1	EA	\$0.00
2)	24" WATERTIGHT COVER (TYPE 2A)	40	EA	\$0.00
3)	36" WATERTIGHT COVER (TYPE 3)	1	EA	\$0.00
12	FOR REBUILDING EXISTING MANHOLE BENCHES AND INVERT CHANNELS, ANY CONFIGURATION, INCLUDING BYPASS PUMPING, AS SPECIFIED, COMPLETE IN PLACE.			
A.	IN EXIST 4-FOOT-DIAMETER MANHOLES	1	EA	\$0.00
B.	IN EXIST 5-FOOT-DIAMETER MANHOLES	1	EA	\$0.00
C.	IN EXIST 6-FOOT-DIAMETER MANHOLES	1	EA	\$0.00
13	FOR REPAIRING MANHOLE INDIVIDUAL AND PRE-CAST JOINT LEAKS, ANY LOCATION, COMPLETE IN PLACE.	5	EA	\$0.00

_____ Initial

_____ Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL
14	FOR REMOVING EXISTING FLAT-TOP AND/OR CONE AND INSTALLING NEW PRECAST CONCRETE MANHOLE RISER SECTION(S) AND/OR CONE AND/OR GRADE RING AND/OR FLAT-TOP TO THE SPECIFIED ELEVATION, VARIOUS MANHOLE DIAMETERS AS LISTED BELOW, ANY LOCATION, ANY HEIGHT OF NEW SECTIONS REQUIRED, BACKFILLING WITH GRANULAR MATERIAL OR FLOWABLE FILL UNDER PAVED SURFACES PER STANDARD DETAIL NO. 5000.01, BACKFILLING WITH EXCAVATED SOIL IN UNPAVED AREAS, REMOVAL AND DISPOSAL OF ALL EXISTING MATERIALS OFF-SITE, INCLUDING COMPLETE RESTORATION OF GRASSED AREAS (RESTORATION OF PAVED AREAS PAID UNDER SEPARATE BID ITEMS), AS SPECIFIED AND IN ACCORDANCE WITH THE DETAILS, COMPLETE IN PLACE.				
A.	EXISTING 4-FOOT-DIAMETER MANHOLES				
1)	REMOVE EXISTING FLAT-TOP AND/OR CONE AND INSTALL NEW 4-FOOT-DIAMETER RISER SECTIONS TO THE SPECIFIED OR REQUIRED ELEVATION, PAYMENT FOR EACH VERTICAL FOOT OF NEW PRECAST RISER INSTALLED	5	VF		\$0.00
2)	INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A) WHEN INSTALLING A RISER SECTION IN 14.A.1	1	EA		\$0.00
3)	REMOVE EXISTING FLAT-TOP ONLY (NO RISER SECTIONS) AND INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A)	1	EA		\$0.00
4)	REMOVE EXISTING FLAT-TOP AND INSTALL 4-FOOT-LONG CONE SECTION WITH A 24" WATERTIGHT COVER (TYPE 2A)	1	EA		\$0.00
B.	EXISTING 5-FOOT-DIAMETER MANHOLES				
1)	REMOVE EXISTING FLAT-TOP AND/OR CONE AND INSTALL NEW 5-FOOT-DIAMETER RISER SECTIONS TO THE SPECIFIED OR REQUIRED ELEVATION, PAYMENT FOR EACH VERTICAL FOOT OF NEW PRECAST RISER INSTALLED	15	VF		\$0.00
2)	INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A) WHEN INSTALLING A RISER SECTION IN 14.B.1	3	EA		\$0.00
3)	REMOVE EXISTING FLAT-TOP ONLY (NO RISER SECTIONS) AND INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A)	1	EA		\$0.00
4)	REMOVE EXISTING FLAT-TOP AND INSTALL 4-FOOT-LONG CONE SECTION WITH A 24" WATERTIGHT COVER (TYPE 2A)	1	EA		\$0.00
C.	EXISTING 6-FOOT-DIAMETER MANHOLES				
1)	REMOVE EXISTING FLAT-TOP AND/OR CONE AND INSTALL NEW 6-FOOT-DIAMETER RISER SECTIONS TO THE SPECIFIED OR REQUIRED ELEVATION, PAYMENT FOR EACH VERTICAL FOOT OF NEW PRECAST RISER INSTALLED	50	VF		\$0.00
2)	INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A) WHEN INSTALLING A RISER SECTION IN 14.C.1	12	EA		\$0.00
3)	INSTALL FLAT-TOP WITH A 36" WATERTIGHT COVER (TYPE 3) WHEN INSTALLING A RISER SECTION IN 14.C.1	1	EA		\$0.00
4)	REMOVE EXISTING FLAT-TOP ONLY (NO RISER SECTIONS) AND INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A)	15	EA		\$0.00

_____ Initial

_____ Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
D.	EXISTING 7-FOOT-DIAMETER MANHOLES			
1)	REMOVE EXISTING FLAT-TOP AND/OR CONE AND INSTALL NEW 7-FOOT-DIAMETER RISER SECTIONS TO THE SPECIFIED OR REQUIRED ELEVATION, PAYMENT FOR EACH VERTICAL FOOT OF NEW PRECAST RISER INSTALLED	5	VF	\$0.00
2)	INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A) WHEN INSTALLING A RISER SECTION IN 14.D.1	1	EA	\$0.00
3)	REMOVE EXISTING FLAT-TOP ONLY (NO RISER SECTIONS) AND INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A)	1	EA	\$0.00
E.	EXISTING 8-FOOT-DIAMETER MANHOLES			
1)	REMOVE EXISTING FLAT-TOP AND/OR CONE AND INSTALL NEW 8-FOOT-DIAMETER RISER SECTIONS TO THE SPECIFIED OR REQUIRED ELEVATION, PAYMENT FOR EACH VERTICAL FOOT OF NEW PRECAST RISER INSTALLED	5	VF	\$0.00
2)	INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A) WHEN INSTALLING A RISER SECTION IN 14.E.1	1	EA	\$0.00
3)	REMOVE EXISTING FLAT-TOP ONLY (NO RISER SECTIONS) AND INSTALL FLAT-TOP WITH A 24" WATERTIGHT COVER (TYPE 2A)	1	EA	\$0.00
F.	INSTALL 24" INSIDE DIAMETER CONCRETE GRADE RINGS			
1)	4 INCHES IN HEIGHT	2	EA	\$0.00
2)	6 INCHES IN HEIGHT	2	EA	\$0.00
15	FOR REMOVING PROTRUDING SERVICE CONNECTIONS VIA AN INTERNAL ROBOTIC CUTTER PRIOR TO INSTALLING CURED-IN-PLACE PIPE LINING OR AS NECESSARY TO COMPLETE CCTV, ANY SERVICE LATERAL MATERIAL, ANY SIZE LATERAL, AS SPECIFIED, COMPLETE IN PLACE.	10	EA	\$0.00
16	FOR INSTALLING CURED-IN-PLACE PIPE LINING, AS SPECIFIED, REQUIRED INSTALLED LINER THICKNESS FOR STEAM (LESS THAN 18" ONLY) OR WATER CURED FOR STANDARD FELT LINER OR REQUIRED INSTALLED LINER THICKNESS FOR SEWER DEPTH RANGES FOR UV CURED GRP LINER AS SPECIFIED BELOW, LINER THICKNESS FOR UV CURED GRP LINER TO BE SUBMITTED BY CONTRACTOR, ANY LOCATION, COMPLETE IN PLACE.			
A.	8" DIAMETER SEWER (PRICE FOR WATER, STEAM, OR UV CURED)			
1)	6.0 mm CIPP FOR WATER/STEAM; 0' TO 20' DEPTH FOR UV	6,900	LF	\$0.00
2)	7.5 mm CIPP FOR WATER/STEAM; 20' TO 28' DEPTH FOR UV	300	LF	\$0.00
B.	10" DIAMETER SEWER (PRICE FOR WATER, STEAM, OR UV CURED)			
1)	6.0 mm CIPP FOR WATER/STEAM; 0' TO 14' DEPTH FOR UV	100	LF	\$0.00
2)	7.5 mm CIPP FOR WATER/STEAM; 14' TO 25' DEPTH FOR UV	100	LF	\$0.00
C.	12" DIAMETER SEWER (PRICE FOR WATER, STEAM, OR UV CURED)			
1)	7.5 mm CIPP FOR WATER/STEAM; 0' TO 16' DEPTH FOR UV	400	LF	\$0.00
2)	9.0 mm CIPP FOR WATER/STEAM; 16' TO 24' DEPTH FOR UV	100	LF	\$0.00

_____Initial

_____Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL
D.	14" DIAMETER SEWER (PRICE FOR WATER, STEAM, OR UV CURED)				
1)	7.5 mm CIPP FOR WATER/STEAM; 0' TO 13' DEPTH FOR UV	100	LF		\$0.00
2)	9.0 mm CIPP FOR WATER/STEAM; 13' TO 20' DEPTH FOR UV	100	LF		\$0.00
3)	10.5 mm CIPP FOR WATER/STEAM; 20' TO 28' DEPTH FOR UV	50	LF		\$0.00
E.	15"/16" DIAMETER SEWER (PRICE FOR WATER, STEAM, OR UV CURED)				
1)	7.5 mm CIPP FOR WATER/STEAM; 0' TO 10' DEPTH FOR UV	100	LF		\$0.00
2)	9.0 mm CIPP FOR WATER/STEAM; 10' TO 16' DEPTH FOR UV	100	LF		\$0.00
3)	10.5 mm CIPP FOR WATER/STEAM; 16' TO 24' DEPTH FOR UV	50	LF		\$0.00
F.	24" DIAMETER SEWER (PRICE FOR WATER OR UV CURED)				
1)	9.0 mm CIPP FOR WATER; 0' TO 10' DEPTH FOR UV - SPECIFIC INSTALLATION - SEE SHEET C-6 OF PLANS	500	LF		\$0.00
2)	12.0 mm CIPP FOR WATER; 0' TO 10' DEPTH FOR UV	625	LF		\$0.00
3)	13.5 mm CIPP FOR WATER; 10' TO 13' DEPTH FOR UV	325	LF		\$0.00
G.	30" DIAMETER SEWER (PRICE FOR WATER OR UV CURED)				
1)	15.0 mm CIPP FOR WATER; 0' TO 10' DEPTH FOR UV	5,750	LF		\$0.00
2)	16.5 mm CIPP FOR WATER; 10' TO 12' DEPTH FOR UV	1,400	LF		\$0.00
3)	18.0 mm CIPP FOR WATER; 12' TO 14' DEPTH FOR UV	100	LF		\$0.00
4)	19.5 mm CIPP FOR WATER; 14' TO 17' DEPTH FOR UV	400	LF		\$0.00
17	FOR INSTALLING FIBERGLASS REINFORCED FELT LINER OR UV GRP CURED-IN-PLACE PIPE LINING, AS SPECIFIED, REQUIRED INSTALLED LINER THICKNESS FOR FIBERGLASS REINFORCED FELT LINER OR EQUIVALENT INSTALLED LINER THICKNESS FOR UV CURED GRP AS SPECIFIED BELOW, LINER THICKNESS FOR UV CURED GRP TO BE SUBMITTED BY CONTRACTOR, ANY LOCATION, COMPLETE IN PLACE.				
A.	48" DIAMETER SEWER (PRICE FOR FIBERGLASS REINFORCED FELT LINER OR UV CURED GRP LINER)				
1)	16.5 mm FIBERGLASS REINFORCED LINER OR UV CURED GRP EQUIVALENT	3,100	LF		\$0.00
2)	18.0 mm FIBERGLASS REINFORCED LINER OR UV CURED GRP EQUIVALENT	2,800	LF		\$0.00
3)	19.5 mm FIBERGLASS REINFORCED LINER OR UV CURED GRP EQUIVALENT	900	LF		\$0.00
4)	21.0 mm FIBERGLASS REINFORCED LINER OR UV CURED GRP EQUIVALENT	200	LF		\$0.00
5)	23.5 mm FIBERGLASS REINFORCED LINER OR UV CURED GRP EQUIVALENT	500	LF		\$0.00
18	FOR INSTALLING UV CURED GRP CURED-IN-PLACE PIPE LINING, AS SPECIFIED, MINIMUM INSTALLED LINER THICKNESS AS SPECIFIED BELOW, LINER THICKNESS FOR UV CURED GRP TO BE SUBMITTED BY CONTRACTOR, ANY LOCATION, COMPLETE IN PLACE.				
A.	36" DIAMETER SEWER (PRICE FOR UV CURED GRP LINER)				
1)	11.0 mm CIPP	50	LF		\$0.00
B.	42" DIAMETER SEWER (PRICE FOR UV CURED GRP LINER)				
1)	11.0 mm CIPP	50	LF		\$0.00

_____ Initial

_____ Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL
C.	54" DIAMETER SEWER (PRICE FOR UV CURED GRP LINER)				
1)	14.0 mm CIPP	825	LF		\$0.00
2)	15.0 mm CIPP	1,950	LF		\$0.00
19	CIPP PRODUCT TESTS	35	EA		\$0.00
20	FOR RECONNECTING EXISTING ACTIVE SERVICE LATERALS TO NEW CURED-IN-PLACE PIPE LINING VIA AN INTERNAL REMOTE CUTTER, AS SPECIFIED, COMPLETE IN PLACE.	50	EA		\$0.00
21	FOR PERFORMING BYPASS PUMPING AT BLACK CREEK 24"/30", CRABTREE CREEK, AND BLACK CREEK 54", LUMP SUM PAYMENT WILL BE MADE ONCE FOR EACH AREA, PAYMENT WILL BE MADE AFTER THE FIRST BY-PASS IS SET UP AND COMPLETELY FUNCTIONAL IN EACH AREA, ALL OTHER BYPASS PUMPING TO BE CONSIDERED INCIDENTAL TO THE WORK WITH COSTS INCLUDED IN OTHER BID ITEMS				
A.	BLACK CREEK 24"/30"	1	LS		\$0.00
B.	CRABTREE CREEK	1	LS		\$0.00
C.	BLACK CREEK 54"	1	LS		\$0.00
22	FOR TREE REMOVAL AND CLEARING OF EASEMENTS AS APPROVED BY THE ENGINEER.				
A.	TREE REMOVAL (INDIVIDUAL TREES)				
1)	6" TO 18" DIAMETER TREE	10	EA		\$0.00
2)	OVER 18" DIAMETER TREE	5	EA		\$0.00
B.	EASEMENT CLEARING				
1)	MOBILIZATION TO SITE	3	EA		\$0.00
2)	EASEMENT CLEARING PER SQUARE YARD	5,000	SY		\$0.00
23	FOR PERFORMING MISCELLANEOUS RESTORATION WORK AS DEFINED BELOW, AS SPECIFIED, COMPLETE IN PLACE, EXCEPT RESTORATION OF GRASSED AREAS VIA SEEDING AND MULCHING WHICH IS CONSIDERED INCIDENTAL TO THE WORK WITH COSTS INCLUDED IN THE OTHER BID ITEMS AND EXCEPT FOR PAVEMENT RESTORATION WHERE SUCH RESTORATION IS SPECIFICALLY INCLUDED IN OTHER BID ITEMS				
A.	SAWCUT, REMOVE AND REPLACE ASPHALT PAVEMENT (ANY THICKNESS), ASPHALT AS SPECIFIED IN THE STANDARD SPECIFICATIONS AND DETAILS	50	SY		\$0.00
B.	SAWCUT, REMOVE AND REPLACE CONCRETE WALKS AND DRIVES (CONCRETE AS SPECIFIED)				
1)	4-INCH FIBER REINFORCED CONCRETE	10	SY		\$0.00
2)	5-INCH FIBER REINFORCED CONCRETE	10	SY		\$0.00
3)	6-INCH FIBER REINFORCED CONCRETE	10	SY		\$0.00
C.	SAWCUT, REMOVE AND REPLACE CONCRETE CURBS AND GUTTERS, (FIBER REINFORCED CONCRETE), PER LINEAR FOOT OF REPLACEMENT	50	LF		\$0.00
D.	REMOVE UNSUITABLE EXCAVATED SOIL AND DISPOSE OF OFFSITE, AND BACKFILL WITH IMPORTED SELECT FILL, ADD TO VARIOUS BID ITEMS WHERE THIS IS REQUIRED AS APPROVED BY THE ENGINEER, COST PER CUBIC YARD OF COMPACTED SELECT FILL INSTALLED	50	CY		\$0.00
E.	REMOVE EXCAVATED SOIL AND DISPOSE OF OFFSITE, AND BACKFILL WITH IMPORTED GRANULAR MATERIAL UNDER PAVED ROADS, ADD TO VARIOUS BID ITEMS WHERE THIS REQUIREMENT APPLIES, COST PER CUBIC YARD OF GRANULAR MATERIAL INSTALLED	100	CY		\$0.00
F.	INSTALL SOD FOR GRASS RESTORATION, COST PER SQUARE YARD OF INSTALLED SOD	10	SY		\$0.00

_____ Initial

_____ Date

SW3501

FY20-21 Sewer Rehabilitation Project

ITEM	DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL
G.	INSTALL STONE FOR RESTORING GRAVEL AREAS, COST PER CUBIC YARD OF PLACED STONE	10	CY		\$0.00
H.	INSTALL CLASS B RIP-RAP TO STABILIZE STREAM BANKS, COST PER SQUARE YARD OF RIP-RAP PLACED BASED ON THE SPECIFIED 1.5-FOOT-THICK RIP-RAP	50	SY		\$0.00
24	FOR INSTALLATION AND REMOVAL OF STANDARD TEMPORARY STREAM CROSSINGS AS APPROVED BY THE ENGINEER, AS SPECIFIED, COMPLETE IN PLACE.				
A.	PER DETAIL 04000.11 (1 OF 3)				
1)	INCLUDING FOUR CULVERTS 48" IN DIAMETER (SEE SHEET C-1)	1	LS		\$0.00
2)	INCLUDING THREE CULVERTS 60" IN DIAMETER (SEE SHEET C-1)	1	LS		\$0.00
3)	INCLUDING TWO CULVERTS 36" IN DIAMETER (SEE SHEET C-4)	1	LS		\$0.00
25	FOR THE WORK DESCRIBED IN STEPS 1 THROUGH 6 ON SHEET C-6, WORK DESCRIBED IN STEP 7 ON SHEET C-6 PAID UNDER OTHER BID ITEMS, AS SPECIFIED, COMPLETE IN PLACE.				
A.	FOR THE WORK ON STEP 1 ON SHEET C-6, INSTALLATION OF DOGHOUSE MANHOLE, AS SPECIFIED, COMPLETE IN PLACE.	1	LS		\$0.00
B.	FOR THE WORK AT MH-SP76518076 DESCRIBED ON STEPS 2 THROUGH 6 ON SHEET C-6, AS SPECIFIED, COMPLETE IN PLACE.	1	LS		\$0.00
26	FOR THE WORK AT MH-SP75511023 DESCRIBED IN NOTES 1 THROUGH 3 ON DETAIL D ON SHEET D-4, WORK DESCRIBED IN NOTES 4 AND 5 ON DETAIL D ON SHEET D-4 PAID UNDER OTHER BID ITEMS, AS SPECIFIED, COMPLETE IN PLACE.	1	LS		\$0.00
27	FOR REPLACING APPROXIMATELY 35 FEET OF EXISTING DUCTILE IRON PIPE AERIAL CROSSING WITH NEW STEEL PIPE BETWEEN MH-SP76514015 AND MH-SP76514005 AS SHOWN ON DETAIL 07000.18 ON SHEET D-3, AS SPECIFIED, COMPLETE IN PLACE.	1	LS		\$0.00
	SUBTOTAL (ITEMS 1-27)				\$0.00
28	FOR MOBILIZATION TO THE PROJECT SITE, AS SPECIFIED (2% OF SUBTOTAL)	1	LS		\$0.00
	TOTAL (ITEMS 1-28)				\$0.00

TOTAL (IN WORDS) _____

 Initial

 Date

SW3501

FY20-21 Sewer Rehabilitation Project

Bidder _____ (Print)

NOTE: PROPOSAL SIGNATURE REQUIRED ON PAGE 00300-16. ALL PROPOSALS MUST BE PROPERLY EXECUTED TO BE CONSIDERED A VALID BID.

CERTIFIED LIST OF MAJOR SUBCONTRACTORS

I

The Bidder, as part of the procedure for the submission of Bids on the Project, submits the following list of Major Subcontractors to be used in the performance of work to be done on said Project. Changes to this list after the Bid opening shall only be as approved by the Owner upon request by the Bidder or as required by the Owner based upon review of Bidder's submittals:

<u>SUBCONTRACTOR</u> (List Type of Work)	<u>SUBCONTRACTOR'S NAME AND ADDRESS</u>
<u>Manhole Rehabilitation:</u>	_____
<u>By-Pass Pumping:</u>	_____
<u>Excavation/Point Repairs:</u>	_____
<u>CIPP:</u>	_____
_____	_____
_____	_____
_____	_____

It is understood and agreed that, if awarded a Contract, the Bidder shall not make any additions, deletions or substitutions to this certified list without the consent of the Owner.

CERTIFICATION AFFIDAVIT

THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER UNDERSTAND AND AGREE THAT, IF AWARDED A CONTRACT, THIS CERTIFICATION SHALL BE ATTACHED THERETO AND BECOME A PART THEREOF.

[If Bidder is not an individual, enter entity name here]

By: _____
(Signature)

NAME OF SIGNER: _____
(Please Print or Type)

TITLE OF SIGNER: _____
(Please Print or Type)

DATE: _____

BID SECURITY:

Accompanying this Proposal is a (1) _____ in the amount of (2) _____ Dollars (\$ _____).

NOTE: (1) Insert the words "bank draft," "certified check," "bid bond", or "cashiers check", as the case may be.

(2) Amount must be equal to at least five percent (5%) of the total Bid.

BIDDER'S LICENSE:

The Bidder certifies that (he/she/it) is licensed as a Bidder under the specific North Carolina state law regulating his/her/its particular trade and that the number of the license under which he/she/it now operates is _____.

BIDDER'S CERTIFICATION AS TO ORGANIZATION AND AUTHORITY:

The Bidder certifies that the Affidavit of Organization and Authority, like the other documents attached hereto, form an integral part of the Proposal, and the Bidder acknowledges that the Owner will rely on the information provided therein in reviewing the Proposal and awarding a Contract.

LIQUIDATED DAMAGES:

The Bidder agrees, further, that the Owner may retain those amounts indicated in the Contract from the amount of compensation due the Bidder, under the terms of the Contract, for each and every day that the work remains incomplete and/or unsatisfactory beyond the completion date(s) specified in the Notice to Proceed. This amount is agreed upon as the proper measure of liquidated damages the Owner will sustain, per day, by the failure of the Bidder to complete the work within the stipulated time, and it is not to be construed in any sense as a penalty.

The Bidder shall not have or bring a claim against the Owner, or raise as a defense against the imposition of liquidated damages, other construction purportedly impeding Bidder's progress or timely project completion.

(SIGNATURE PAGE)

Dated _____, 20__.

Bidder—Legal Entity (SEAL)

By: _____ (SEAL)
(SIGN HERE)

SEAL-if corporation

Printed Name

Address

() _____
Telephone No.

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

Notary Public

My Commission Expires:

BID BOND

This is a Bid Bond that is subject to the provisions of Article 3 of Chapter 44A of the North Carolina General statutes.

This Bid Bond is executed on _____, 20__.

The name of the PRINCIPAL is _____ (1)

_____ (2)

The name of the SURETY is _____

The TOWN OF CARY, NORTH CAROLINA is the OWNER.

The amount of the Bond is _____

_____ (Dollars) (\$_____)

KNOW BY ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named OWNER hereinafter called the OWNER in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the OWNER a certain Bid Proposal, attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

NOW, THEREFORE

- (a) If said Bid Proposal shall be rejected; or in the alternate,
- (b) If said Bid Proposal shall be accepted and the Principal shall execute and deliver a Contract in the form of Contract attached hereto (properly completed in accordance with said Bid Proposal) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid Proposal, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bid Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid Proposal; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

ATTEST:

(Principal) Secretary
(SEAL)

Principal

BY: _____ (3)

(Address)

Witness as to Principal

(Address)

ATTEST:

N. C. Resident Agent
(SEAL)

Surety

By: _____

(Name) (4)

(Address)

(Phone Number)

Witness as to Surety

(Address)

- (1) Insert the correct name of Principal.
- (2) Insert whether the Principal is a corporation, a partnership, a limited liability company or an individual.
- (3) If Principal is a partnership, all partners should execute the Bid Bond. If Bidder is a limited liability company, all managers (or all members, if the company is member-managed) should execute the Bond.
- (4) Provide contact name, address and phone number for bid bond surety.

**POWER OF ATTORNEY
(Attach)**

BIDDER'S CERTIFICATES
AFFIDAVIT OF ORGANIZATION AND AUTHORITY
SWORN STATEMENT

STATE OF _____)

COUNTY OF _____)

_____ being first duly sworn on oath deposes and says that the Bidder on the attached Bid Proposal is organized as indicated below and that all statements herein made are made on behalf of such Bidder and that this deponent is authorized to make them.

(Fill Out Applicable Paragraph)

CORPORATION:

The Bidder is a corporation organized and existing under the laws of the State of _____, it operates under the legal name of _____, and the full names of its officers are as follows:

President _____
Secretary _____
Treasurer _____

and it does _____ have a corporate seal. The _____ is/are authorized to sign construction proposals and contracts for the company by action of its Board of Directors taken _____, a certified copy of which is hereto attached. (Strike out this last phrase if not applicable.)

PARTNERSHIP:

The Bidder is a [limited/general] partnership consisting of individual/corporate partners as follows:

<u>General Partners</u>	<u>Limited Partners</u>
_____	_____
_____	_____
_____	_____

The partnership does business under the name of : _____

LIMITED LIABILITY COMPANY:

The bidder is a [member-managed/manager-managed] limited liability company consisting of the following individual/corporate members/managers:

<u>Managers</u>	<u>Members</u>
_____	_____
_____	_____
_____	_____

INDIVIDUAL:

The Bidder is an individual whose full name is:

_____ and if operating under a trade name, said trade name is as follows:

The business address of the Bidder is:

Its phone number is: _____

The contact person for this Proposal is:

Bidder

By: _____

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

Notary Public

County

My Commission Expires:

EQUAL EMPLOYMENT OPPORTUNITY ADDENDUM (“ADDENDUM”)

During the performance of the Contract the Bidder agrees as follows:

- a. The Bidder shall not discriminate against any employee or applicant because of race, color, religion, sex, or national origin. The Bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.
- b. The Bidder shall, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- c. The Bidder shall send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract understanding, a notice, to be provided, advising the labor union or worker’s representative of the Bidder’s commitments under the Equal Employment Opportunity Section of the Contract, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. In the event of the Bidder’s noncompliance with the nondiscrimination clauses of the Contract or with any of such rules, regulations, or orders, the Contract may be canceled, terminated, or suspended in whole or in part and the Bidder may be declared ineligible for further OWNER contracts.
- e. The Bidder will include the provisions of this Addendum in every subcontract or purchase order unless exempted by rules, regulations, or orders of the OWNER so that such provisions will be binding upon each Subcontractor or vendor.

(Use the following form for execution by a CORPORATION):

ATTEST: _____
 (Assistant) Secretary

_____ Corporate Name

BY: _____
 (Vice) President

(CORPORATE SEAL)

(Use the following form for execution by a PARTNERSHIP):

_____ (SEAL)
 Partnership Name

BY: _____ (SEAL)
 General Partner

(Use the following form for execution by a LIMITED LIABILITY COMPANY):

_____ (SEAL)
 Company Name

BY: _____ (SEAL)
 Manager/Member

(Use the following form for execution by an INDIVIDUAL):

BY: _____ (SEAL)

WITNESS:

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

 Notary Public

 County

My Commission Expires:

QUALIFICATIONS OF BIDDERS

In order to assist the Owner in determining whether the Bidder is qualified to perform the Work, as set forth in the Contract Documents, the Bidder shall furnish the following information.

1. List of references who are qualified to judge as to his financial responsibility and his experience in work of similar nature to that bid upon:

2. List of previous contracting experience, including dollar values of contracts:

3. List of facilities or equipment that is available for use:

4. Name, residence, and title of the individual who will give personal attention to the work:

5. Financial Statement:

ASSETS

CURRENT ASSETS:

Cash	\$ _____
Notes and Accounts Receivable	_____
Inventories	_____

PLANT ASSETS:

Real Estate	\$ _____
Machinery	_____
Good Will, Patents, etc.	_____
	\$ _____
	Total Assets

LIABILITIES:

Notes Payable	\$ _____	
Accounts Payable	_____	
Accrued Wages	_____	
Other Liabilities	_____	\$ _____
		Total Liabilities
	EXCESS OF ASSETS OR NET WORTH	\$ _____

6. List all Claims, prior and pending, against the Bidder by the Town of Cary, including the resolution of such Claims, if any:

<u>Claim</u>	<u>Date of Claim</u>	<u>Resolution, if any</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The existence of unresolved claims against Bidder may disqualify the Bidder from making a Bid Proposal and entering into a Contract with the Town of Cary.

Notes:

- A. The above is a suggested form for the Financial Statement, but the Bidder is not required to follow the form explicitly. The Financial Statement submitted must clearly show to the satisfaction of the Owner the Bidder's current financial condition. The Owner reserves the privilege of requiring additional information as to financial responsibility of the Bidder prior to awarding Contract.
- B. Bidder shall attach additional pages, if necessary, in order to complete the required information.
- C. The Bidder shall submit detailed information required for above Items 1 through 4 with his Bid Proposal package. The information required under Items 5 and 6 may be furnished after Bid Proposals are received if required by the Owner and Engineer to evaluate the qualifications of a prospective Bidder.

NON-COLLUSIVE AFFIDAVIT

State of _____)
County of _____) ss.

_____ being first duly sworn,
deposes and says that:

- (1) He/she is the _____
(Owner, Partner, Officer, Representative or Agent)
of _____, the BIDDER that has submitted the attached BID PROPOSAL;
- (2) He is fully informed respecting the preparation and contents of the attached BID PROPOSAL and of all pertinent circumstances respecting such BID PROPOSAL;
- (3) Such BID PROPOSAL is genuine and is not a collusive or sham BID PROPOSAL;
- (4) Neither the said BIDDER nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other BIDDER, firm, or person to submit a collusive or sham BID PROPOSAL in connection with the Contract for which the attached BID PROPOSAL has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any BIDDER, firm, or person to fix the price or prices in the attached BID PROPOSAL or of any other BIDDER, or to fix any overhead, profit, or cost elements of the BID PROPOSAL price or the BID PROPOSAL price of any other BIDDER, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against The Town of Cary, or any person interested in the proposed Contract;
- (5) The price or prices quoted in the attached BID are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

BIDDER
BY _____
ITS _____
(Title)

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

Notary Public County

My commission expires _____

END OF AFFIDAVIT

NONDISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Bid Proposal, and the resulting execution of a Contract, that the parties hereto, their agents, officials, employees or servants shall not discriminate in any manner on the basis of age, handicap, race, color, creed, or national origin with reference to the subject matter of the Contract, no matter how remote.

This provision, being incorporated for the benefit of the Town of Cary and its residents, may be enforced as set out in the ordinances of the Town of Cary, enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as by law provided.

This provision shall be binding on the successors and assigns of the parties hereto with reference to the subject matter of the Contract.

(Use the following form for signatures by a CORPORATION):

ATTEST: _____ (Assistant) Secretary _____ (Printed Name)	_____ Corporate Name BY: _____ (Vice) President _____ (Printed Name)
--	---

(Corporate Seal)

(Use the following form for signatures by a PARTNERSHIP):

_____ WITNESS _____ (Printed Name)	_____ Partnership Name (SEAL) BY: _____ (SEAL) General Partner
---	---

(Use the following form for signatures by a LIMITED LIABILITY COMPANY):

_____	_____ (SEAL)
WITNESS	Company Name
_____	BY: _____ (SEAL)
(Printed Name)	Manager/Member

(Use the following form for signatures by an INDIVIDUAL):

_____	_____ (SEAL)
_____	(Printed Name)
WITNESS	

(Printed Name)	

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

_____	_____
Notary Public	County

My Commission Expires:

NOTICE OF AWARD

TO: CONTRACTOR/BIDDER: _____

ADDRESS: _____

FROM: _____

OWNER: Town of Cary
Cary, North Carolina

PROJECT: _____

You are hereby notified that the Owner has considered the Bid Proposal submitted by you for the above-described project in response to its Notice to Bidders dated _____.

It appears that it is to the best interest of said Owner to accept your Bid Proposal in the amount of: _____ Dollars (\$_____). You are therefore hereby notified that your Bid Proposal has been accepted.

The Bidder is required by as a condition of its Award of the Contract to execute and deliver the formal Contract with the Owner and to furnish the required Bidder's Performance and Payment Bonds within ten(10) business days from the date of the delivery of this Notice to you.

If you fail to execute said Contract and to furnish said Bonds within ten (10) business days from the date of delivery of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid Proposal as abandoned and to award the work covered by your Bid Proposal to another bidder, or to readvertise the work or otherwise dispose thereof as the Owner may see fit.

Dated this _____ day of _____, 20_____.

Town of Cary, North Carolina

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged this _____ day of _____, 20_____.

Bidder

By: _____

Title: _____

- END OF SECTION -

Section 00350 - PAY ITEM DESCRIPTIONS

PAY ITEM DESCRIPTION: Pay items have been set up in the Bid for all work that is permanent and measurable. The bid for each pay item shall include the cost of all new material, labor, equipment, and all else required to complete that pay item as specified. Payment for work will only be made after the work is complete and has been inspected by the Engineer.

If there is any conflict or inconsistency between the provisions of these PAY ITEM DESCRIPTIONS and any other Specification Section, the provisions of these PAY ITEM DESCRIPTIONS shall prevail.

The Bid includes the following abbreviations:

- LF = linear foot
- VF = vertical foot
- EA = each
- CY = cubic yard
- SY = square yard
- HR = hour
- ACRE = acre
- LS = lump sum

Item 1 - Sewer Cleaning and Television Inspection: This item includes all work and equipment required to completely clean (remove debris, roots, grease, pipe tuberculation and other material) and televise existing 8" through 54" sewers to further evaluate the condition of the sewers as specified. The cleaning and CCTV inspections will be used to identify defects in need of repair and as pre-CIPP installation work. Costs shall include any and all debris encountered in the work regardless of severity and disposing of all debris except as noted below. Costs shall also include submittals of the digital inspections to the Engineer as specified. Further, costs shall include any and all costs associated with accessing the sewers and manholes to perform the work as specified including clearing sewer easements, building access roads, negotiating with property owners, traffic control, complete restoration of areas disturbed by the work, etc. This item includes working in any location. Bid Items are included for cleaning and televising existing 8", 10", 12", 15"/16", 24", 30", 36", 42", 48", and 54" sewers.

The 24" and 30" Black Creek Interceptor was cleaned and televised in 2019/2020 and it is anticipated that there is currently minimal debris. For this area only, there are separate bid items for light and heavy cleaning. Light cleaning is defined as two or less passes with the cleaning jet. Heavy cleaning is defined as three or more passes with the cleaning jet and/or use of mechanical devices such as buckets, root cutters, or power rodders. Payment will not be made for any heavy cleaning unless approved by the Engineer prior to performing the work.

Sewer cleaning and television inspection will be measured and paid for on a linear foot basis to the nearest one-tenth of a foot. Measurement will be along the horizontal centerline of the pipe with no deductions for manholes and will be from center of manhole to center of manhole.

Payment will be made on the basis of the unit price bid in the Bid.

This item does not include televising sewers for final acceptance. Those costs shall be included in the various unit prices for that work – no separate payment will be made.

Item 2 - Point Repairs to Existing Sewers: This item includes all materials, equipment, and work required to perform point repairs to existing sewers. Bid Items are included for existing 8", 10", and 12" sewers at various depths. Bid Items are included for a lump sum payment for performing point repairs up to 12 feet in length and payment per linear foot for each foot over 12 feet. When a point repair exceeds 12 feet in length, the Contractor shall be paid for the first 12 feet of the point repair under the lump sum Bid Item and then on a linear foot basis for each foot over 12 feet. The work shall be performed as specified and in accordance with the specifications and details.

The base bid includes using PVC pipe for the repair. If ductile iron pipe is required, the add on cost will be paid using Bid Item 2D. In addition, Bid Item 2D shall be used for substituting ductile iron pipe for any pipe within this contract.

The base bid items include backfilling with the excavated soil. If the excavated soil is not suitable for backfilling or granular material or flowable fill is required for backfilling the trench, payment for removing and disposing of the excavated material offsite and importing the specified material will be paid under a separate bid item.

The base bid items include all required restoration of grassed areas disturbed by the work. Restoration of asphalt pavement, concrete, curbs and gutters, sod and graveled areas shall be paid separately under other bid items.

Bid Item 2E is included for installing ductile iron tees within point repair segments for various pipe diameters at any depth and installing 6 feet of PVC or DIP lateral.

Bid Item 2F is included for replacing existing storm sewer as necessary with new RCP storm sewer that may be encountered/damaged during point repairs or other excavations. Payment will not be made for any storm sewer replacement unless approved by the Engineer prior to performing the repair.

These items further include payment for saw-cutting existing asphalt or concrete (any thickness) and disposing of material, excavation, removal and off-site disposal of existing soil and sewer pipe, installation of new sewer, connections to existing manholes and sewers, bedding, backfilling, compaction, compaction testing by a licensed geotechnical engineer where required, bypass sewage pumping during construction, accessing sewers and manholes as specified, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, and all else incidental thereto for which separate payment is not provided under other Bid Items. This item also includes television inspection after the point repairs are completed to confirm proper installation.

Payment will be made for each point repair at the installed depth. Payment will be made on the basis of the unit price bid.

Payment will not be made for any length outside of the required point repair length as defined by the Engineer unless approved by the Engineer prior to performing the point repair. In addition, no payment will be made for additional repairs located outside of the defined length that are required as a result of the Contractor's work on the defined point repair.

Item 3 - Cleanout Installation: This item includes all materials, equipment, and work required to install cleanouts on existing 4" and 6" PVC service laterals up to 8 feet in depth. The cleanout shall be in accordance with the Standard Specifications and Details. This item includes installing a new cleanout as a stand-alone repair/installation to either replace an existing cleanout or to install a new cleanout where one does not currently exist. The cleanout shall be considered to begin at the wye fitting on the service lateral pipe and shall include the wye, all of the piping/fittings, and cleanout cap required to make up the cleanout and shall include connecting to the existing lateral pipe behind the cleanout with the specified coupling. The cleanout price for a stand-alone cleanout installation shall also include any new service lateral piping as necessary upstream and downstream of the wye fitting to connect the new cleanout to the existing service lateral, including installing the specified couplings on both ends as necessary – use a push on fitting if at all possible on existing PVC laterals.

Item 4 - Cleanout Removal: This item includes all materials, equipment, and work required to remove existing cleanouts on existing 4" and 6" PVC service laterals up to 8 feet in depth. Removal shall include the wye, standpipe, cleanout cap, and all else incidental. New PVC pipe shall be spliced in where the wye/standpipe was previously located on the service lateral and shall include any new service lateral piping necessary upstream and downstream of the wye fitting to connect to the existing service lateral, including installing the specified couplings on both ends as necessary – use a push on fitting if at all possible on existing PVC laterals.

Item 5 - Installation of New Precast Concrete Manholes: This item includes all materials, equipment, and work required to install new 4-foot and 5-foot-diameter precast concrete manholes with various covers as specified. The Bid includes a bid item for installation of manholes up to 6 feet deep as a lump sum payment and an add-on bid item

for each vertical foot of manhole over 6 feet installed. When a manhole exceeds 6 feet in vertical length, the Contractor shall be paid for the first 6 feet of the manhole under the lump sum Bid Item and then on a vertical foot basis for each foot over 6 feet. A bid item is also included for a lump sum payment to install a flat-top instead of a cone section.

This item includes payment for sawcutting existing asphalt or concrete (any thickness) and disposing of material, excavation, removal and off-site disposal of existing soil, sewer pipe and manhole (when replacing existing manholes or junction boxes), complete installation of new manhole including solid or watertight frame and cover, bedding, backfilling with excavated soil and compaction, compaction testing by a licensed geotechnical engineer where required, installing concrete benching and forming invert channel, surveying services as required, bypass sewage pumping during construction, accessing sewers and manholes as specified, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, complete restoration of disturbed areas including pavement (paid under the add-on bid item), and all else incidental thereto for which separate payment is not provided under other bid items.

A Bid Item is included for connecting existing sewers and laterals to new manholes with a minimum of 10 feet of new ductile iron pipe for each connecting sewer and connecting the new ductile iron pipe to the existing sewer with a rubber sleeve coupling with stainless steel compression bands and shear rings (Mission ARC, Fernco Strongback, or approved equal). If more than 10 feet of new ductile iron pipe is required, the additional footage over 12 feet in a point repair from Bid Item 2 and the add on cost for ductile iron pipe in Bid Item 2D shall be used.

The bid items for new manholes include backfilling with the excavated soil. If the excavated soil is not suitable for backfilling or granular material or flowable fill is required for backfilling the trench, payment for removing and disposing of the excavated material offsite and importing the specified material will be paid under a separate bid item.

Payment will be made for each manhole installed based on the unit price bid.

Item 6 - Installing New Vent Pipes at Manholes: This item includes all materials, equipment, and work required to install new 6" vent pipes at existing manholes as specified. The required vent elevation will be provided by the Engineer.

This item includes payment for furnishing and installing vent pipes in accordance with the standards and details to the height specified by the Engineer, installing new vent pipes on existing manholes by core-drilling the manhole (if precast) or removing manhole material (if brick or block) and installing the vent pipe per the specifications and details, accessing manholes as specified, coordination with and location of existing utilities, and for all else incidental thereto for which separate payment is not provided under other bid items.

Payment will be made for each new vent pipe installed up to 8 vertical feet and then per vertical foot greater than 8 vertical feet installed measured from the bottom of the vent pipe to the vent pipe opening at the unit price bid.

Item 7 - Installing New Vent Pipes at New Flat-top Manholes: This item includes all materials, equipment, and work required to install new 8" or 10" vent pipes at new flat-top sections as specified. The required vent elevation will be provided by the Engineer.

This item includes payment for furnishing and installing vent pipes in accordance with the standards and details to the elevation specified by the Engineer, installing new vent pipes on new vent pipe flanges cast in new flat-tops per the specifications and details, accessing manholes as specified, coordination with and location of existing utilities, and for all else incidental thereto for which separate payment is not provided under other bid items.

Payment will be made per vertical foot installed measured from the bottom of the vent pipe (at the top of the vent cast in place in the new flat-top) to the vent pipe opening at the unit price bid.

Item 8 - Removing Existing Vent Pipes at Existing Manholes: This item includes all materials, equipment, and work required to remove existing vent pipes at existing manholes. This item includes payment for any diameter/height vent pipe, any configuration, excavation, removal, and off-site disposal of existing materials,

plugging the vent pipe openings with concrete at the manhole, backfilling and compaction, accessing manholes as specified, complete restoration of the disturbed areas, and for all else incidental thereto for which separate payment is not provided under other bid items.

Payment will be made for each vent pipe removed based on the unit price bid.

Item 9 – Installation of New Internal Drop Connections at Existing Manholes: This item includes all materials, equipment, and work required to install new internal drop connections at existing manholes in accordance with the standard specifications and details. Bid Items are included for new 4” service internal drop connections at vertical lengths up to 6 feet (lump sum payment) and for vertical lengths over 6 feet (cost to be added to the lump sum cost). When an internal drop pipe exceeds 6 feet in vertical length, the Contractor shall be paid for the first 6 feet of the drop under the lump sum Bid Item and then on a vertical foot basis for each foot over 6 feet.

This item includes payment for complete installation of the new internal drop connections including all fittings, connecting the new drop to the existing manholes, installing concrete benching and forming invert channel to accept the new drop pipe as necessary, surveying services as required, bypass sewage pumping during construction, accessing sewers and manholes as specified, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, and all else incidental thereto for which separate payment is not provided under other bid items. This item shall also include complete restoration of grassed areas disturbed by the work. Other restoration shall be paid under other bid items.

Payment will be made for each new internal drop connection installed based on the unit price bid.

Item 10 - Manhole Rehabilitation: This item includes all materials, equipment, and work required to install 1-inch-thick cementitious mortar on existing internal manhole walls and benches. Bid items are included for coating existing 4-foot-diameter, 5-foot-diameter, 6-foot-diameter, 7-foot-diameter, 8-foot-diameter, and 10-foot-diameter manholes (inside diameters) with a hydrogen-sulfide resistant material. This item includes working in any location (unpaved areas or paved areas).

This item includes payment for pre-construction inspection of manholes, manhole cleaning, root removal and grease removal, other work required to prepare the manhole for lining including, but not limited to, stopping active leaks and filling voids in the manhole wall or between brick layers, furnishing and installing cementitious mortar lining on the manhole walls to the limits shown on the Details and on the benching to the top of the invert channel, sealing around the manhole wall/pipe interfaces, performing specified product tests, accessing manholes as specified, traffic control, compliance with required working hours, complete restoration of all areas disturbed by the work, and all else incidental thereto for which separate payment is not provided under other bid items.

Installation of cementitious mortar lining in manholes will be measured in place on a vertical foot (VF) basis to the nearest one-tenth of a foot. Internal measurement will be from the point of intersection between the manhole benching and the manhole invert channel to the point of termination of the lining at the manhole frame as specified by the Engineer and in the details. The diameter of the manhole shall be measured at the widest part of the manhole. Manholes that are 4.5 feet or less in diameter at the widest point shall be considered 4-foot-diameter manholes, manholes that are between 4.5 feet and 5.5 feet in diameter at the widest point shall be considered 5-foot-diameter manholes, manholes that are between 5.5 feet and 6.5 feet in diameter at the widest point shall be considered 6-foot-diameter manholes, manholes that are between 6.5 feet and 7.5 feet in diameter at the widest point shall be considered 7-foot-diameter manholes, and manholes that are between 7.5 feet and 8.5 feet in diameter at the widest point shall be considered 8-foot-diameter manholes.

A bid item is also included for successful vacuum testing of manholes. It is anticipated that vacuum testing will not be performed on manholes where by-pass pumping with larger pumps would be required or other extenuating circumstances at the Engineer’s discretion. Vacuum testing will generally be required for manholes on smaller diameter sewers where by-pass pumping with smaller pumps is sufficient and/or on manholes where by-pass pumping is already in place. Vacuum tests that fail will not be considered for payment.

A bid item is also included for the complete removal of existing epoxy on existing internal manhole walls and benches prior to installing cementitious mortar. This will be done to properly and completely prepare the manhole

walls for cementitious mortar installation and proper bonding of the mortar to the manhole walls. The Contractor is first required to clean the manhole using a high power jet wash at a minimum of 3500 psi water pressure with the tip of the nozzle a maximum of 4 inches from the manhole wall to remove any epoxy that may be removed using just this method. Any epoxy that is removed using the high power jet wash will not be considered for payment under this bid item and will be considered as part of the preparatory work for installing cementitious mortar. This item includes payment for any and all work required to completely remove the epoxy including grinding, cutting, chiseling, etc. or any other reasonable physical method and also includes disposal of all removed materials.

Payment will be made on the basis of the unit prices bid.

Item 11 - Replacing Existing Frame and Cover with New Frame and Cover: This item includes all materials, equipment, and work required to replace existing frames and covers with new frames and covers in unpaved areas and paved areas as specified and in accordance with the details. There are covers for in the pavement (Type 1) or in unpaved areas (Type 2A, 2B, or 3). Frames and covers shall be Town of Cary standard frames and covers as shown in the details.

This item includes payment for sawcutting existing asphalt or concrete (any thickness) and disposing of material (in paved areas only), excavation, manhole wall and frame preparation, new frame and cover, removal and off-site disposal of existing materials, backfilling (with imported granular material or flowable fill in paved areas) and compaction, compaction testing by a licensed geotechnical engineer where required, accessing manholes as specified, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, complete restoration of disturbed areas including pavement, and for all else incidental thereto for which separate payment is not provided under other bid items.

Payment will be made on the basis of the unit price bid.

Item 12 - Rebuilding Existing Manhole Benching and Invert Channels: This item includes all materials, equipment, and work required to rebuild existing manhole benching and invert channels as specified and in accordance with the details. Re-built benches shall conform to the standard specifications and details.

This item includes payment for removal and off-site disposal of existing materials, new concrete, accessing manholes as specified, bypass pumping using pumps smaller than 6 inches (if larger pumps are required, coordinate with the Engineer), traffic control, and for all else incidental thereto for which separate payment is not provided under other bid items.

Bid Items are included for rebuilding benches and inverts in existing 4-foot, 5-foot, and 6-foot-diameter manholes. Payment will be made on the basis of the unit price bid.

Item 13 – Repairing Individual and Precast Manhole Joint Leaks: This Item includes all materials, equipment, and work required to repair individual leaks within a manhole and precast manhole joint leaks. This item includes working in any location (unpaved areas or paved areas).

This item includes payment for completely stopping an identified leak within a manhole by injecting the leak location with an injectable grout. For a leak at a precast manhole joint, this includes stopping the leak anywhere within the same joint. This item includes payment for pre-construction inspection of manholes, manhole cleaning as necessary, root removal and grease removal as necessary, accessing manholes as specified, traffic control, compliance with required working hours, complete restoration of all areas disturbed by the work, and all else incidental thereto for which separate payment is not provided under other bid items.

Payment will be made on a lump sum basis at the unit price bid.

Item 14 – Removal of Existing Manhole Flat-Top and/or Cone Sections, Installation of New Pre-Cast Concrete Manhole Riser Sections and/or Cone Section and/or Grade Ring and/or Flat-Top: This item includes all materials, equipment, and work required to remove existing manhole flat-top and/or cone sections and to install new precast concrete riser sections and/or cone section and/or grade ring and/or flat-top to the specified height or required elevation. Bid Items are provided for 4-foot, 5-foot, 6-foot, 7-foot, and 8-foot-diameter manholes. Refer to

the details in the plans. The existing manhole flat-top and/or cone sections may be reused at no additional cost to the Owner or replaced with new components. All new flat-tops shall have a vent pipe cast in per Detail E.

The unit prices bid shall include any required height of new sections and shall include all costs associated with accessing the manholes, sawcutting existing asphalt or concrete (any thickness) and disposing of material, excavation, removal and off-site disposal of existing manhole materials (as appropriate), complete installation of new manhole sections including connecting to the existing manhole walls, bedding, backfilling with excavated soil and compaction, compaction testing by a licensed geotechnical engineer where required, surveying services as required, bypass sewage pumping during construction as required, traffic control, coordination with and location of existing utilities, erosion control, complete restoration of disturbed grassed areas, and all else incidental thereto for which separate payment is not provided under other bid items.

Grade rings shall be M4IN MHG R (4 inch height adjustment) or M6IN MHG R (6 inch height adjustment) as manufactured by Masonry Supply or approved equal.

Payment will be made for the vertical height of new riser section installed or per unit of new flat-top, cone, or grade ring section installed at the unit price bid.

Item 15 – Cutting Protruding Service Connections Prior to Installing Liner Pipe: This item includes all materials, equipment, and work required to cut protruding service connections flush with the existing pipe wall via an internal robotic remote cutter prior to installing cured-in-place pipe lining or as required to complete CCTV inspections as specified. This item includes payment for accessing the sewers and manholes as specified, locating existing service connections, remote cutting of the connections (any lateral pipe material), retrieval and removal of cut pieces of lateral pipe, and all else incidental thereto for which separate payment is not provided under other bid items. This item includes all sizes of main sewer and service laterals.

Payment will be made on the basis of the unit price bid in the Bid.

Item 16 – Cured-in-Place Pipe Lining (8” to 30” Sewers): This item includes all materials, equipment, and work required to install cured-in-place pipe lining (CIPP) with standard felt liner or UV cured GRP CIPP in existing 8” through 30” sewers in any location (unpaved or paved areas). Bid Items are included for various CIPP thicknesses (water or steam cured) or sewer depth ranges (UV cured) and diameters. Work shall be as specified and in accordance with the Specifications.

The CIPP installation Bid Items include payment for preparing the existing sewer and performing pre-construction inspections including additional pre-cleaning and television inspection of the sewer as required prior to CIPP installation, supplying and installing the pipe lining, coating the invert channel with grout to raise the channel to the liner pipe elevation, bypass pumping of existing wastewater flow during construction, providing a watertight seal at the manhole-pipe interface, accessing sewers and manholes for lining installation as specified, performing post-rehabilitation television inspections, distributing project notices, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items. Payment will not be made until the final post-rehabilitation television inspections are submitted and reviewed by the Engineer.

Installation of CIPP will be measured in place on a linear foot basis to the nearest one-tenth of a foot. Measurement will be along the horizontal centerline of the pipe with no deductions for manholes and will be from center of manhole to center of manhole. Payment will be made on the basis of the unit prices bid in the Bid.

Item 17 – Cured-in-Place Pipe Lining (48” Composite or UV Cured GRP Liner): This item includes all materials, equipment, and work required to install cured-in-place pipe lining (CIPP) with fiberglass reinforced felt liner (composite liner) or UV cured GRP CIPP in existing 48” sewers in any location (unpaved or paved areas). Bid Items are included for various CIPP thicknesses or UV cured GRP equivalent thicknesses. Work shall be as specified and in accordance with the Specifications.

The CIPP installation Bid Items include payment for preparing the existing sewer and performing pre-construction inspections including additional pre-cleaning and television inspection of the sewer as required prior to CIPP installation, supplying and installing the pipe lining, coating the invert channel with grout to raise the channel to the liner pipe elevation, bypass pumping of existing wastewater flow during construction, providing a watertight seal at the manhole-pipe interface, accessing sewers and manholes for lining installation as specified, performing post-rehabilitation television inspections, distributing project notices, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items. Payment will not be made until the final post-rehabilitation television inspections are submitted and reviewed by the Engineer.

Installation of CIPP will be measured in place on a linear foot basis to the nearest one-tenth of a foot. Measurement will be along the horizontal centerline of the pipe with no deductions for manholes and will be from center of manhole to center of manhole. Payment will be made on the basis of the unit prices bid in the Bid.

Item 18 – Cured-in-Place Pipe Lining (36”, 42”, and 54” UV cured GRP Liner): This item includes all materials, equipment, and work required to install UV cured GRP cured-in-place pipe lining (CIPP) in existing 36”, 42”, and 54” sewers in any location (unpaved or paved areas). Bid Items are included for various UV cured GRP thicknesses. Work shall be as specified and in accordance with the Specifications.

The CIPP installation Bid Items include payment for preparing the existing sewer and performing pre-construction inspections including additional pre-cleaning and television inspection of the sewer as required prior to CIPP installation, supplying and installing the pipe lining, coating the invert channel with grout to raise the channel to the liner pipe elevation, bypass pumping of existing wastewater flow during construction, providing a watertight seal at the manhole-pipe interface, accessing sewers and manholes for lining installation as specified, performing post-rehabilitation television inspections, distributing project notices, traffic control, compliance with required working hours, coordination with and location of existing utilities, erosion control, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items. Payment will not be made until the final post-rehabilitation television inspections are submitted and reviewed by the Engineer.

Installation of CIPP will be measured in place on a linear foot basis to the nearest one-tenth of a foot. Measurement will be along the horizontal centerline of the pipe with no deductions for manholes and will be from center of manhole to center of manhole. Payment will be made on the basis of the unit prices bid in the Bid.

Item 19 – CIPP Product Tests: This item includes all materials, equipment, and work required to perform CIPP product tests. The CIPP product test includes payment for capturing the CIPP sample, preparing the sample for testing, submitting the samples to a testing laboratory, paying the laboratory, and all else incidental thereto for which separate payment is not provided under other bid items.

The CIPP testing shall include determining flexural strength, flexural modulus, tensile strength and thickness of each sample. These four separate individual tests make up one completed CIPP test. Payment will be made for each completed CIPP test at the unit price bid after the test results are submitted to the Engineer.

Item 20 - Reconnecting Existing Active Service Connections to New Lined Sewers: This item includes all materials, equipment, and work required to reconnect existing active service connections to the main sewer after it is lined via an internal remote cutter as specified. This item includes payment for accessing the sewers and manholes as specified, locating existing service connections, remote cutting through new lining, retrieval and removal of cut-out sections of lining, buffing openings with a wire brush to provide a smooth opening, and all else incidental thereto for which separate payment is not provided under other bid items. This item includes all sizes of main sewer and service laterals.

Payment will be made on the basis of the unit price bid in the Bid.

Item 21 – Bypass Pumping: This item includes the cost to provide, operate and maintain a by-pass pumping system at Black Creek 24”/30” Interceptor, Crabtree Creek Interceptor, and Black Creek 54” Interceptor. A lump

sum payment will be made once for each area (Black Creek 24"/30", Crabtree Creek, and Black Creek 54") after the first by-pass is set up and fully functional. This item includes payment for all necessary piping configurations, simultaneous pumping from separate areas when necessary, and all else incidental thereto for which separate payment is not provided under other bid items. All other by-pass pumping to be considered incidental to the work with costs included in other bid items.

The discharge configuration at the North Cary Water Reclamation Facility pump station near Old Reedy Creek Road for bypass of flow from the Black Creek 54" Interceptor is shown on Sheet C-5. There are two locations for the discharge of bypass pumping depending on which sections of sewer in which work is being performed. The cost for all materials, equipment, and work required to install, operate, and maintain the necessary configuration shall be included in the cost bid and no additional payment shall be due.

Item 22 – Tree Removal and Easement Clearing: These items are for the costs for completely removing trees including stumps in order to perform the specified work. The Contractor shall identify trees that need to be removed/cleared, and shall meet with the Engineer on site to review the trees prior to removing. The Engineer must approve the removal of any tree and the extents of any clearing prior to performing the work.

Bid items are included for specific tree removal and for easement clearing. All tree removal and clearing must be approved by and agreed to by the Engineer prior to any work being performed. The Engineer must agree to the limits of all tree removal/clearing and must agree to payment under the specific bid item. In general, the tree removal bid item will be used when only a few individual trees must be removed to perform the work, and the easement clearing bid item will be used when clearing forested/wooded areas for the full width of the sewer easement. The clearing item only pertains to clearing trees/wooded areas and not mowing easements or clearing brush, small trees (generally less than 6" in diameter), saplings and overgrown vegetation – clearing of brush/vegetation/small trees/saplings shall be considered incidental to the work and all costs associated with that clearing shall be included in the various bid items. The Engineer will determine if the tree removal bid item or easement clearing bid item will be used on a case by case basis.

For specific tree removal, payment shall be made for each tree removed including the stump by trunk size range as indicated in the Bid Form. Work shall include felling, cutting, removal and offsite disposal. Contractor has the option in right of ways in wooded areas or other areas (if agreed to by the Engineer and Owner) of grinding up trees and spreading the mulch within the right of way. Measurement of the trunk diameter shall be made approximately 3' above ground. The Contractor must provide a minimum of 60 days notice to the Engineer for specific tree removal.

For easement clearing, payment will be made for mobilizing any and all required equipment for a specific area. Payment will then be further made based on the actual number of square yards that are cleared based on field measurements and as agreed to with the Engineer. The clearing item shall include any and all equipment necessary to completely clear the easement and shall include removing all stumps and removing and disposing of the cleared trees/debris offsite. The Contractor has the option (if agreed to by the Engineer and Owner) of grinding up trees and spreading the mulch within the easement. The Contractor must provide a minimum of 60 days notice to the Engineer for easement clearing.

Payment will be made on the basis of the prices bid.

Item 23A - Asphalt Pavement Restoration: This item includes furnishing all new materials, equipment and labor for saw-cutting (any thickness), removing and disposing of materials offsite, and replacing all pavement (bituminous concrete, penetration and other surface treatments) including roadways and driveways as specified and as directed by the Engineer and in accordance with the Owner's standard specifications and details. Pavement shall be replaced to match existing pavement (any thickness). This pay item includes the asphalt and stone base.

Payment shall be limited to a width equal to the pipe diameter plus 5 feet and to a length equal to the length of the required work plus 6 feet. The Contractor shall not be paid for any restoration outside of these limits. Damage to existing asphalt outside the specified area shall be repaired as directed by the Owner and/or the Engineer, but shall not be considered for payment.

Payment will be on a square yard basis as measured on a horizontal plane in accordance with the unit price bid.

Item 23B – Restoration of Concrete Driveways and Walkways: This item includes furnishing all new materials, equipment and labor for saw-cutting, removing and disposing of materials offsite, and replacing concrete driveways and walkways as specified and as directed by the Engineer. Concrete shall be replaced to match existing driveway or walkway thickness. Bid Items are provided for 4-inch-thick, 5-inch-thick and 6-inch-thick fiber-reinforced concrete. This pay item includes the concrete and stone base as required.

The Engineer shall define the limits for concrete restoration prior to starting the required work. Damage to existing concrete outside the area specified by the Engineer shall be repaired as directed by the controlling agency or as directed by the Engineer, but shall not be considered for payment.

Payment will be on a square yard basis as measured on a horizontal plane in accordance with the unit price bid.

Item 23C – Restoration of Concrete Curb and Gutter: This item includes furnishing all new materials, equipment and labor for sawcutting, removing and replacing concrete curb and gutters to match existing, as specified and as directed by the Engineer, complete in place. Also included in this item is all excavating, forming, stone base material, vibrating, curing, expansion joint material, and all else required to construct the necessary fiber-reinforced concrete curb and gutters.

The Engineer shall define the limits for curb and gutter restoration prior to starting the required work. Damage to parallel curb and gutter outside the area specified by the Engineer shall be repaired as specified, or directed by the controlling agency, but will not be considered for payment.

Payment will be made for each linear foot of new curb and gutter installed at the unit price bid.

Item 23D – Select Imported Soil Backfill: This item includes furnishing all equipment, materials and labor required to provide select imported soil to backfill trenches as directed by the Engineer when the existing soil is not suitable for backfill. Use of select imported soil backfill must be approved by the Engineer and Owner prior to performing the work. The unit price bid for this item shall include removing the existing soil and disposing of it offsite and importing select imported soil material.

Measurement shall be based on volume of material compacted in place. The Engineer shall define limits prior to starting the required work.

Payment will be on a cubic yard basis as measured on a horizontal plane in accordance with the unit price bid.

Item 23E – Stone Backfill: This item includes furnishing all equipment, materials and labor required to provide granular material to backfill trenches under roads and/or as directed by the Engineer when the existing soil is not suitable for backfill or when granular material backfill is required by the controlling agency. Use of granular material backfill must be approved by the Engineer and Owner prior to performing the work. The unit price bid for this item shall include removing the existing soil and disposing of it offsite and importing granular material.

Measurement shall be based on volume of material compacted in place. The Engineer shall define the limits prior to starting the required work.

Payment will be on a cubic yard basis as measured on a horizontal plane in accordance with the unit price bid.

Item 23F - Sod Restoration: This item includes furnishing all equipment, new materials and labor required to remove and replace sod for the entire width disturbed, of same type as existing, or to install new sod, complete in place, as specified and as directed by the Engineer.

The Engineer shall define the limits for sod restoration prior to starting the required work. Damage to existing sodded or grassed areas outside the area specified by the Engineer shall be repaired as directed by the Engineer, but shall not be considered for payment.

Payment will be on a square yard basis as measured on a horizontal plane in accordance with the unit price bid.

Item 23G – Restoration of Gravel Areas: This item includes furnishing all new materials, equipment and labor for providing, installing, leveling and grading stone to restore gravel areas disturbed by the work to equal or exceed preconstruction conditions as specified and as directed by the Engineer. Gravel shall match existing gravel.

The Engineer shall define the limits for gravel restoration prior to starting the required work. Damage to existing gravel outside the area specified by the Engineer shall be repaired as directed by the Engineer, but shall not be considered for payment.

Payment will be made for each cubic yard of stone installed and graded at the unit price bid.

Item 23H – Rip-Rap Stabilization: This item includes furnishing all new materials, equipment and labor for providing and installing rip-rap to stabilize creek banks and other eroded drainage areas as directed by the Engineer. All rip-rap shall be placed 1.5 feet thick as specified and per the Details. This item includes all costs associated with accessing the areas to be stabilized, erosion control, meeting all permit requirements for the restoration work, accommodating/handling the stream/creek flow, preparing the banks for the rip-rap, installing the rip-rap, and completely restoring the areas disturbed by the work.

Payment will be made for each square yard of rip-rap installed (1.5 feet thick) at the unit price bid.

Item 24 – Installation and Removal of Standard Temporary Stream Crossings: This item includes the installation, use, and removal of temporary stream crossings per Details 04000.11 - Sheet 1 of 3. This item includes furnishing all materials, equipment and labor for providing, installing, and removing the temporary stream crossings. The temporary stream crossings must be capable of supporting all equipment that needs access to specific areas approved by the Engineer. Temporary stream crossings that do not properly support the necessary equipment will not be considered for payment. This item includes all costs associated with accessing the areas, installation per the details, erosion control, removal, completely restoring the areas disturbed by the work, accommodating/handling the stream/creek flow during installation, meeting all permit requirements for stream crossings, and all else incidental thereto for which separate payment is not provided under other bid items.

Bid Items are provided for specific creek crossings per Detail 04000.11 - Sheet 1 of 3. This item will be bid on a lump sum basis.

Item 25 – Work on Sheet C-6: This item includes all materials, equipment, and work required to perform work as outlined on Sheet C-6 - Steps 1 through 6. Step 7 on Sheet C-6 will be paid under other bid items.

Bid Item 25A is for Step 1 on Sheet C-6 and includes the installation of a doghouse manhole at the location specified and per the standard details. This item includes excavation, removal and off-site disposal of existing soil, all materials, complete installation of new doghouse manhole including watertight frame and cover (Type 2A), bedding, backfilling with excavated soil and compaction, compaction testing by a licensed geotechnical engineer where required, installing concrete benching and forming invert channel, surveying services as required, bypass sewage pumping during construction, accessing sewers and manholes as specified, compliance with required working hours, coordination with and location of existing utilities, erosion control, complete restoration of disturbed areas, and all else incidental thereto for which separate payment is not provided under other bid items. Payment will be made based on the lump sum price bid.

Bid Item 25B is for Steps 2 through 6 on Sheet C-6 and includes a lump sum payment for by-passing flow from Black Creek around the work area, removing MH-SP76518076, preparing the incoming and outgoing pipes as detailed, installing 24" ductile iron pipe, installing transition couplings, excavation, removal and off-site disposal of existing sewer pipe and manhole, surveying services to install the new sewers, bedding, backfilling/compaction, bypass sewage pumping during construction where required, accessing sewers and manholes as specified, erosion control, accommodating/handling the stream/creek flow during installation, meeting all permit requirements for stream crossings, traffic control, compliance with required working hours, coordination with and location of existing utilities, and for all else incidental thereto for which separate payment is not provided under other bid items. This

item shall also include complete restoration of grassed areas disturbed by the work. Payment will be made on the basis of the lump sum price bid.

Item 26 – Work at MH-SP75511023: This item includes all materials, equipment, and work required to perform work as outlined on Detail D - Notes 1 through 3 (Sheet D-4). Notes 4 and 5 on Detail D (Sheet D-4) will be paid under other bid items. This Bid Item includes a lump sum payment for removing the existing concrete from around the existing 48” sewer to the extent indicated, cutting the 48” sewer and existing CIPP and removing the top half of the pipe and CIPP, rebuilding the bench and invert as indicated, removal and off-site disposal of removed materials as necessary, accessing sewers and manholes as specified, traffic control, compliance with required working hours, coordination with and location of existing utilities, and for all else incidental thereto for which separate payment is not provided under other bid items. This item shall also include complete restoration of grassed areas disturbed by the work.

Payment will be made on the basis of the price bid.

Item 27 – Installation of Aerial Steel Pipe Creek Crossing: This item includes all materials, equipment, and work required to replace the existing aerial pipe creek crossing between MH-SP76514015 and MH-SP76514005 as specified and in accordance with the standard specifications and Detail 07000.18 (Sheet D-3). This Bid Items includes a lump sum payment for the new steel pipe (approximately 35”), transition collars, watertight connection to the existing sewer with a mechanical joint, excavation, removal and off-site disposal of existing sewer pipe, surveying services to install the new sewers, bedding, backfilling with excavated soil and compaction, acceptance testing including televising the new aerial crossing, bypass sewage pumping during construction where required, accessing sewers and manholes as specified, erosion control, accommodating/handling the stream/creek flow during installation, meeting all permit requirements for stream crossings, traffic control, compliance with required working hours, coordination with and location of existing utilities, and for all else incidental thereto for which separate payment is not provided under other bid items. This item shall also include complete restoration of grassed areas disturbed by the work.

Installation of CIPP after the aerial crossing is replaced will be paid under a separate bid item.

Payment will be made on the basis of the price bid.

Item 28 - Mobilization: This item is for the costs incurred prior to beginning work on this contract, including permits, licenses, fees, insurance, bonds, equipment mobilization, signage, etc.

Payment will be limited to 2% of the subtotal bid prior to contingency. One half of the amount bid will be paid with the first pay application and the remainder paid with the second pay application. If an amount greater than 2% of the subtotal is entered for mobilization, the difference in the percentage entered and 2% will be paid on the final payment.

Payment will be made according to the lump sum bid.

SECTION 00500
AGREEMENT (CONTRACT)

**INSTRUCTIONS TO CONTRACTORS AND
REQUIREMENTS AS TO FORM FOR TOWN OF CARY, NC AGREEMENTS**

DO NOT REMOVE FROM AGREEMENT

Contractor has been provided two (2) duplicates of the Agreement (or shall create two copies of the electronic version if Contractor has received that from the Town). Each of the two copies shall be signed and returned to the Engineer or Architect for signature by the Owner. One counterpart will be returned to the Contractor after Owner has executed the Agreement and all initial submittals due with the Agreement have been made to Owner. The other counterpart of the Agreement will be retained for the Owner and Engineer or Architect. If the Contractor requires additional copies, he shall notify the Owner, Engineer or Architect upon his Acknowledgement of the Notice of Award.

Please observe the following in executing the attached Agreement:

1. The Owner may contract with four types of legal entities.
 - (a) If the Agreement is with an individual, that individual should sign the Agreement exactly as his/her name is set out. If the Agreement is with an individually-owned business, the Agreement should be with the individual owner, and not the named business.
 - (b) Execution on behalf of a corporation should be by the president or a vice president. An official other than president or vice president should attach documentation of his/her authority to execute and bind the corporation.
 - (c) If the Agreement is with a partnership, all general partners of the partnership should execute the Agreement unless an authorized partner is designated to execute, in which case documentation of such authorization should be attached.
 - (d) If the Agreement is with a limited liability company, all managers of the limited liability company should execute the Agreement. If the limited liability company is member-managed, all members should sign the Agreement. If only certain manager(s) or member(s) of the limited liability company are authorized to execute the Agreement, documentation of such authorization should be attached.
2. After signing the Agreement, the appropriate notary's acknowledgement, in the individual, corporate or partnership form should be completed.
3. The Agreement will already be dated as of a certain date when Contractor receives it, which date will aid the Contractor in obtaining the Performance and Payment Bonds. The date of the Bonds must not be prior to the date of the Agreement. The Performance Bond and Payment Bond shall correctly reference the Agreement, including the date assigned to it. The Bonds shall be signed by the Contractor, and its signature shall 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.

4. The Bid Form and all other documents submitted with the Bid shall be included with the Agreement. Complete the Acceptance of Notice of Award section on the last page of the Bid Proposal.
5. Page 00500-3: Fill in the Contractor name and address.
6. Pages 00500-6 through 00500-9: Choose the appropriate signature page and complete it in its entirety.
7. Pages 00500-10 through 00500-16: Complete in their entirety.
8. Page 00500-17: Attach the Certificate of Insurance. All parties required to be named as additional insured parties by the Contract Documents in connection with the attached Agreement shall be named on the Certificate of Insurance for each policy.
9. Page 00500-18: The Town shall execute the page evidencing compliance with the Fiscal Control Act prior to sending a counterpart of the Agreement to the Contractor.
10. Pages 00500-19 through 00500-21: Schedule 1 – Identification of Parties and Their Authorized Representatives. The names of all parties intended to act on behalf of the parties in the roles specified in Schedule 1 should be clearly specified in such Schedule by the Contractor and the Town.
11. Once the Town has received and approved the Agreement, the Payment and Performance Bonds and all other required documents, it will send a counterpart of the fully-executed Agreement to the Contractor. Failure to fully complete both required sets of the Agreement and timely provide all the Payment and Performance Bonds will cause delays in the approval by the Owner and therefore delay the issuance of the Notice to Proceed.

AGREEMENT

This Agreement (the "Agreement ") is made as of the ___ day of _____, in the year 20 ___, by and between the Town of Cary, North Carolina, (the "Owner") and _____ of _____, (the "Contractor").

WITNESSETH

THAT, WHEREAS, an Award of Contract (the "Award") for:

FY20-21 Sewer Rehabilitation Project – Project No. SW3501
Contract No. N/A

as prepared by Frazier Engineering, P.A., has recently been awarded to the Contractor by the Owner.

AND WHEREAS, the work to be performed by the Contractor or its subcontractors, and the labor, materials, equipment, apparatus, and supplies to be provided in connection therewith (collectively, the "Work") is more particularly described in the Proposal (the "Proposal") attached hereto.

AND WHEREAS, the aggregate cost of the Work (referred to as either the "Contract Price" or the "Contract Sum") and the individual prices and rates of the various components of the Work that together comprise the Contract Price, are more particularly described in the Proposal.

AND WHEREAS, it was one of the conditions of said Award that a formal contract should be executed by and between the Owner and the Contractor, evidencing the terms of said Award.

NOW THEREFORE, THIS AGREEMENT FURTHER WITNESSETH THAT the Owner and the Contractor represent, warrant, covenant and agree as follows:

It is agreed and understood that the terms and conditions of the following documentation are a part of and parcel to this Agreement to the same extent as if incorporated herein in full [check the applicable documentation]:

X Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2007 edition), as supplemented with forms for use under this Agreement by the Supplementary Conditions (as so supplemented, the "General Conditions").

_____ General Conditions of the Contract for Construction (AIA Document A201-2007), as supplemented with forms for use under this Agreement by the Supplementary Conditions (as so supplemented, the "General Conditions").

The Contractor hereby covenants and agrees with the Owner that it will, for a sum equal to the Contract Price, well and faithfully perform, provide and execute the Work in accordance with each and every one of the conditions, covenants, stipulations, terms and provisions contained in the Notice to Bidders/Invitation to Bid, the Instructions to Bidders, the Proposal, the Plans, the Specifications, the General Conditions and the Contract Documents (as that term is defined in the General Conditions), all of which are a part of and parcel to this Agreement to the same extent as if incorporated herein in full.

And the Owner does hereby covenant and agree with the Contractor that it will pay to the Contractor, when due and payable under the terms of the Contract Documents and the Award, the Contract Price, and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Contract Documents and the terms of said Award.

The Contractor shall commence the Work on the commencement date specified in a written order of the Owner (the "Notice to Proceed"). The Work shall be **finally and fully completed**, so that it is ready for final payment, as evidenced by the Engineer's or the Architect's written recommendation, within 630 CONSECUTIVE CALENDAR DAYS of the commencement date specified in the Notice to Proceed (such deadlines being referred to herein and in the Contract Documents as the "Contract Time" or the "Contract Times"). In the event that the Work is not completed to the standards and degrees required by the Contract Times, or either of them, liquidated damages shall be assessed against the Contractor for each day of delay as described herein below.

The Work as denoted on Sheets C-3 and C-4 of the plans (Crabtree Creek area) shall be **finally and fully completed**, as evidenced by the Engineer's or the Architect's written recommendation, within 240 CONSECUTIVE CALENDAR DAYS of the commencement date specified in the Notice to Proceed. In the event that the Work is not completed to the standards and degrees required by the Contract Times, or either of them, liquidated damages shall be assessed against the Contractor for each day of delay as described herein below.

The Work as denoted on Sheet C-1 of the plans (Black Creek 24" and 30" area) shall be **finally and fully completed**, as evidenced by the Engineer's or the Architect's written recommendation, within 420 CONSECUTIVE CALENDAR DAYS of the commencement date specified in the Notice to Proceed. In the event that the Work is not completed to the standards and degrees required by the Contract Times, or either of them, liquidated damages shall be assessed against the Contractor for each day of delay as described herein below.

LIQUIDATED DAMAGES

The parties recognize and acknowledge that Owner will suffer financial losses if the Work is not completed as required within the Contract Times. They also recognize and acknowledge the delays, expense, and difficulty to both parties that would be involved in proving or contesting the amounts of those losses. Instead of requiring proof of those amounts, it is agreed that if the Contractor shall fail to complete the Work to the standard and degree required within the Contract Times, or either of them, and within any extension of time granted by the Owner in accordance with the General Conditions, then the Contractor shall pay to the Owner **\$1,000/day** for each calendar day after the Contract Times, or after a relevant extended time if applicable, that the Work remains incomplete to the standard or degree required by the Contract Documents.

If the Contractor shall fail to complete the Work as denoted on Sheets C-3 and C-4 of the plans (Crabtree Creek area) to the standard and degree required, or either of them, within 240 CONSECUTIVE CALENDAR DAYS of the commencement date specified in the Notice to Proceed, and within any extension of time granted by the Owner in accordance with the General Conditions, then the Contractor shall pay to the Owner **\$1,000/day** for each calendar day after 240 CONSECUTIVE CALENDAR DAYS, or after a relevant extended time if applicable, that the Work remains incomplete to the standard or degree required by the Contract Documents.

If the Contractor shall fail to complete the Work as denoted on Sheet C-1 of the plans (Black Creek 24" and 30" area) to the standard and degree required, or either of them, within 420 CONSECUTIVE CALENDAR DAYS of the commencement date specified in the Notice to Proceed, and within any

extension of time granted by the Owner in accordance with the General Conditions, then the Contractor shall pay to the Owner **\$1,000/day** for each calendar day after 420 CONSECUTIVE CALENDAR DAYS, or after a relevant extended time if applicable, that the Work remains incomplete to the standard or degree required by the Contract Documents.

Payment of the charges described herein shall not excuse or relieve the Contractor for any other liability under the Contract Documents for delay in the progress schedule of the Work, and all other penalties imposed on the Contractor and remedies available to the Owner under the Contract Documents shall remain in full force and effect.

IDENTIFICATION OF PARTIES AND AUTHORIZED REPRESENTATIVES

Various parties to the Contract, and parties who will be acting on another party's behalf from time to time, are identified in Schedule 1 attached hereto. Although certain parties may act on another party's behalf from time to time under the Contract Documents in certain respects (issuing directives, for instance), with respect to most documentation issued under the Contract Documents, the set of people that may bind each party is limited. The proper identification of those specific individuals (through name or title identification) that are entitled and authorized to bind the parties to the various Contract Documents that exist or may be created in connection with this Agreement is critical to the proper administration of this Agreement, and those individuals are specified in Schedule 1 attached hereto.

The parties agree that the persons (specified by names or titles/roles) of signatories to the Contract Documents that are specified on Schedule 1 attached hereto are the only appropriate parties to execute such documentation and bind the parties listed for each such Contract Document to all obligations incurred or acknowledged, and all representations and warranties made, in such documents. To that end, for example, although the Owner is the Town of Cary, as described in Schedule 1, the proper specific individuals (indicated by name or by title) to execute various documents on behalf of the Owner are specified on Schedule 1 attached hereto.

VERIFICATION OF WORK AUTHORIZATION

Contractor represents and warrants that now and continuing for the term of Agreement, Contractor, and all subcontractors, will comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, "Verification of Work Authorization," and will provide documentation or sign affidavits or any other documents requested by Town demonstrating such compliance.

ELECTRONIC VERSION OF CONTRACT DOCUMENTS

Owner may convert a signed original of the Contract Documents to an electronic record pursuant to a North Carolina Department of Cultural Resources approved procedure and process for converting paper records to electronic records for record retention purposes. Such electronic record of the Contract shall be deemed for all purposes to be an original signed Contract.

IN WITNESS WHEREOF, said Contractor and Owner, being duly authorized, have caused these presents to be signed in their names as of the day and year first above written.

OWNER:

TOWN OF CARY,
a North Carolina municipality

By: _____
Name: per Standard Procedure 146
Title: per Standard Procedure 146

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public in the County and State aforesaid, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

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

Notary Public

[OFFICIAL SEAL]

Printed name of Notary Public

My Commission Expires: _____

[Contractor's Signature, if individual(s)]

CONTRACTOR:

_____ (SEAL)

_____ (SEAL)

_____ (SEAL)

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

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

Notary Public

My Commission expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If Contractor is an individual, his/her signature shall be placed above. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

[OR: Contractor's Signature, if a corporation]

CONTRACTOR:

a North Carolina corporation (SEAL)

Signature: _____

Printed Name: _____

Title: President/Vice President (circle one)

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of the County and State aforesaid, do hereby certify that _____ personally appeared before me this day and acknowledged that he/she 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 him/her as its _____.

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

[OFFICIAL SEAL]

Notary Public

Printed name of Notary Public

My Commission Expires: _____

IMPORTANT

NOTE: If the Contractor is a Corporation, the legal name of the Corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the Corporation. If the signature is by an agent other than an authorized officer of the Corporation, a Resolution must be attached hereto. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

[OR: Contractor's Signature, if a partnership]

CONTRACTOR:

_____,
a [general/limited] partnership (SEAL)

By: _____ (SEAL)

Name: _____

Title: General Partner

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____, General Partner of _____, a _____ [general/limited] partnership, personally appeared before me this day and acknowledged the due execution of the foregoing instrument as his/her act and deed and as the act and deed of the partnership.

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

Notary Public

My Commission Expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If Contractor is a partnership, the true name of the firm shall be set forth above, together with the signatures of all the general partners (add more "by/name/title" signature lines beneath the partnership name if there is more than one general partner). If the signature is by an agent other than all general partners, a Resolution must be attached hereto. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

[OR: Contractor's Signature, if a limited liability company]

CONTRACTOR:

_____,
a limited liability company (SEAL)

By: _____ (SEAL)

Name: _____

Title: Member/Manager

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____ a [Member/Manager] of _____, a _____ limited liability company, personally appeared before me this day and acknowledged the due execution of the foregoing instrument as his/her act and deed and as the act and deed of the company.

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

Notary Public

My Commission Expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If Contractor is a limited liability company, the true name of the firm shall be set forth above, together with the signatures of all the managers (add more "by/name/title" signature lines beneath the company name as necessary). If the signature is by an agent other than all of the managers of the limited liability company (or all of the members, if the company is member-managed), a Resolution must be attached hereto. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

PERFORMANCE BOND

This Bond is executed on _____, 20__.

The name of the PRINCIPAL is _____ (1)

a _____ (2)

The name of the SURETY is _____

The TOWN OF CARY, NORTH CAROLINA is the CONTRACTING BODY.

The amount of the Bond is _____
_____ Dollars (\$ _____)

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held and firmly bound unto the above named CONTRACTING BODY, hereinafter called the "Contracting Body", in the penal sum of the amount stated above in lawful money of the United States, 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 Agreement with the Contracting Body, dated as of the ____ day of _____, 20__ for work described by Plans and Specifications prepared by _____, herein called and referred to as the "Engineers", a copy of said Agreement is hereto attached and made a part hereof for the construction of:

-Project No. _____

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Agreement during the original term of said Agreement and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Agreement, 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 Agreement that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation is to be void; otherwise it shall remain in full force and virtue.

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

ATTEST:

(Principal) Secretary
(SEAL)

Principal

By: _____(3)

(Address)

Witness as to Principal

(Address)

Surety

By: _____(4)

(Name)

ATTEST:

(Address)

By: _____
[N.C. Resident Agent]
(SEAL)

(Phone Number)

Witness as to Surety

(Address)

NOTE: Date of Bond must not be prior to date of Agreement.

- (1) Insert the correct name of Contractor.
- (2) Insert whether the Contractor is a corporation, a partnership, a limited liability company or an individual.
- (3) If Contractor is a partnership, all general partners should execute the Bond. If Contractor is a limited liability company, all managers (or all members, if the company is member-managed) should execute the Bond .
- (4) Provide contact name, address and phone number for performance bond surety.

PAYMENT BOND

This Bond is executed on _____, 20__.

The name of the PRINCIPAL is _____ (1)

a _____ (2)

The name of the SURETY is _____

The TOWN OF CARY, NORTH CAROLINA is the CONTRACTING BODY.

The amount of the Bond is _____ Dollars (\$ _____)

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held and firmly bound unto the above named CONTRACTING BODY, hereinafter called the "Contracting Body", in the penal sum of the amount stated above in lawful money of the United States, 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 Agreement with the Contracting Body, dated as of the ____ day of _____, 20__ for work described by Plans and Specifications prepared by _____ herein called and referred to as the "Engineers", a copy of said Agreement is hereto attached and made a part hereof for the construction of:

_____ - Project No. _____

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

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

ATTEST:

(Principal) Secretary
(SEAL)

Principal

By: _____(3)

(Address)

Witness as to Principal

(Address)

Surety

By: _____(4)

(Name)

(Address)

(Phone Number)

ATTEST:

By: _____
[N.C. Resident Agent]
(SEAL)

Witness as to Surety

(Address)

NOTE: Date of Bond must not be prior to date of Agreement.

- (1) Insert the correct name of the Contractor.
- (2) Insert whether the Contractor is a corporation, a partnership, a limited liability company or an individual.
- (3) If Contractor is a partnership, all general partners should execute the Bond. If Contractor is a limited liability company, all managers (or all members, if the company is member-managed) should execute the Bond.
- (4) Provide contact name, address and phone number for payment bond surety.

AFFIDAVIT

(To be attached to all Agreements)

STATE OF)
) SS
COUNTY OF)

_____ being first duly sworn on oath deposes and says that
s/he is _____ (attorney-in-fact or agent) of
_____ (bonding company) surety on the attached Agreement on
_____ executed by
_____ (Contractor).

Affiant further deposes and says that no officer, official or employee of the Owner has any interest directly or indirectly, or is receiving any premium, commission fee or other thing of value on account of the same or furnishing of the Bond, undertaking or Contract of Indemnity, Guaranty, Suretyship in connection with the above mentioned Agreement.

Signed _____

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

(Notary Public, _____ County, _____)

My Commission Expires _____

RESOLUTION OF CONTRACTOR'S PARTNERS, MANAGERS OR MEMBERS
(Fill in and attach if necessary)

[CORPORATION/PARTNERSHIP/LIMITED LIABILITY COMPANY NAME]

CERTIFICATE OF AUTHORITY

KNOW ALL MEN BY THESE PRESENTS:

That at a meeting of the [board of directors/partners/all members/managers] of [Contractor] a [business corporation/partnership/limited liability company] duly organized under the laws of the State of _____, held on _____, 20__ the following Resolution was adopted, which Resolution is still in effect:

RESOLVED, that [any of] the following:

[insert individual name and title]

be, and they hereby are, authorized to execute any and all documents, including contracts, on behalf of [Contractor] and further that Certificates of Authority setting out this Resolution be prepared and certified by [the Secretary of [Contractor]/all partners/all members/managers] to be used to evidence such authority.

[For a corporation, use the following certification of the Secretary:]

That I am the duly elected and qualified Secretary of [Contractor] and the keeper of records of said company; that the foregoing is a true and correct copy of a Resolution duly adopted at the meeting described above and held in accordance with its charter and bylaws, and that the same is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto affixed by name as Secretary by order of the ___ this ___ day of ___, ____.

, Secretary

STATE OF _____
COUNTY OF _____

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

[SEAL]

Notary Public

[For partnership or limited liability company, use the following certification of all partners/members/managers, whose signatures should all appear below or otherwise attached:]

That the following consist of all [partners/members/managers] of [Contractor]; that the foregoing is a true and correct copy of a Resolution duly adopted at a meeting described above and held in accordance with its charter and bylaws, and that the same is now in full force and effect.

Partner/Member/Manager's name

Partner/Member/Manager's signature

Partner/Member/Manager's name

Partner/Member/Manager's signature

[List all partners/members/managers and include signatures for each. Use additional pages as attachments if necessary.]

STATE OF _____
COUNTY OF _____

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

[SEAL]

Notary Public

CERTIFICATE OF INSURANCE/INSURANCE ENDORSEMENTS

(Attach)

[See the General Conditions for specific requirements.]

CERTIFICATE OF PAYMENTS

I hereby certify that I am the legal and duly appointed Financial Officer for the Owner of this project and that provision for the payment of the moneys to fall due under this Agreement has been made by appropriation duly made or by bonds or notes duly authorized, as required by the Local Government and Fiscal Control Act.

BY: _____

TITLE: _____

DATE: _____

SCHEDULE 1

IDENTIFICATION OF PARTIES AND THEIR AUTHORIZED REPRESENTATIVES

USE THIS FORM WHEN REVIEWING CONTRACT DOCUMENTATION TO ENSURE THAT PROPER AUTHORIZATION HAS BEEN GRANTED BY EACH PARTY TO SUCH DOCUMENTATION.

The “Owner” is the **Town of Cary**, a municipal corporation in North Carolina, and its successors and assigns, and is the party for whom the Work is to be performed. Except as otherwise specifically stated in the Contract Documents, neither the Architect nor the Engineer has authority to bind the Owner. Except as otherwise specified below for various contract documentation, the Owner is represented by and may be bound by the Project Manager or the Project Engineer with respect to day-to-day issues and correspondence.

The “Resident Project Representative” is: Lynn Brilz, Town of Cary, Senior Project Manager.

The “Architect” is the Architect or the Architect’s authorized representative as identified in Contract Documents. The Architect is N.A. and/or any other party identified by the Owner as the Architect for the Work from time to time. In its sole discretion, the Owner may act in the stead of the Architect, exercising any of the rights or responsibilities of the Architect provided under the Contract Documents, so long as the Owner provides notice to the Contractor of its intent to do so. In its sole discretion, the Owner may delegate any of the rights or responsibilities of the Architect to a third party, who, for the purposes of the rights and responsibilities so delegated, shall be governed by the Contract Documents, so long as the Owner provides notice to the Contractor of its intent to do so.

The “Engineer” is Frazier Engineering, P.A. and/or any other party identified by the Owner as the Engineer for the Work from time to time. In its sole discretion, the Owner may act in the stead of the Engineer, exercising any of the rights or responsibilities of the Engineer provided under the Contract Documents, so long as the Owner provides notice to the Contractor of its intent to do so. In its sole discretion, the Owner may delegate any of the rights or responsibilities of the Engineer to a third party, who, for the purposes of the rights and responsibilities so delegated, shall be governed by the Contract Documents, so long as the Owner provides notice to the Contractor of its intent to do so.

The Engineer’s Consultant is N.A. and any other party to a subcontract with Engineer in connection with the Work.

The parties hereby agree that, notwithstanding any provision in the Contract Documents that appears to or in fact grants one party the right to act on behalf of another party, with respect to the documentation below, those individuals named below, personally or by role or title (or any person at a position “higher” than the individual or role named below) (in either event, an “Authorized Party”) shall be the only people entitled to execute the documentation for which that individual or role is named. A position is “higher” than another position in a company if the position is an office authorized by law to bind the entity or the latter position reports (directly or through other parties) to the position in question. When an Authorized Party executes a Contract Document for which it is specified as an Authorized Party, such Authorized Party shall be deemed to be acting on behalf of the party for whom it is executing such document, binding such party as to obligations acknowledged and representations and warranties made in such documentation, and no other proof of agency, authority or delegation of power is necessary to so bind such party by the execution of the document by the Authorized Party.

<u>Document</u>	<u>Party to Execute</u>	<u>Person/Role Having Capacity to Sign</u>
Agreement	Owner	Town Manager _____
	Contractor	_____ [President or Vice-President]
Application for Payment	Contractor	_____
	Resident Pjt. Representative	Lynn Brilz
	Engineer/Architect	Frazier Engineering, P.A.
	Owner	Utilities Director, Utility Engineering Manager, or Utility Engineering Supervisor
Field Order	Engineer/Architect	Frazier Engineering, P.A.
	Owner	Utilities Director
	Contractor	_____
Work Change Directive	Engineer/Architect	Frazier Engineering, P.A.
	Owner	Utilities Director
	Contractor	_____

<u>Document</u>	<u>Party to Execute</u>	<u>Person/Role Having Capacity to Sign</u>
Change Order (Recommendation and Contract Amendment)	Engineer/Architect (Recommend)	Frazier Engineering, P.A.
	Owner (Review [not approve])	Utilities Director
	Contractor (Accept recommendation)	_____
	Contractor (Amend Contract Sum or Price and/or Contract Time or Times)	_____
	Owner (Amend Contract Sum or Price and/or Contract Time or Times)	<u>*in accordance with Town of Cary Standard Procedure #146</u>
[Any other documentation]	Engineer/Architect	Frazier Engineering, P.A.
	Owner	Utilities Director
	Contractor	_____

This Schedule 1 may be revised, amended and/or replaced by a new Schedule 1 identifying other individuals or roles entitled to execute the documentation described herein if the replacement Schedule 1 is signed by each of the parties below. The revised Schedule 1 shall be dated and attached to the Contract Documents, and a copy shall be given to all affected parties. To the extent possible, prior versions of Schedule 1 shall be removed from the Contract Documents when a replacement Schedule 1 is approved.

Town of Cary:

Contractor:

By: _____
Town Manager

By: _____
[President or Vice-President or Owner]

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

EJCDC C-700 Standard General Conditions of the Construction Contract
Copyright © 2007 National Society of Professional Engineers for EJCDC. All rights reserved.

This document was altered from the original form published by the parties above. Changes are highlighted as deleted or added text throughout the document.

EJCDC C-700 Standard General Conditions of the Construction Contract
Copyright © 2007 National Society of Professional Engineers for EJCDC. All rights reserved.

This document was altered from the original form published by the parties above. Changes are highlighted as deleted or added text throughout the document.

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

Copyright © 2007 National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

The copyright for this EJCDC document is owned jointly by the four EJCDC sponsoring organizations and held in trust for their benefit by NSPE.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1 – DEFINITIONS AND TERMINOLOGY.....	1
1.01 Defined Terms.....	1
1.02 Terminology.....	6
Article 2 – PRELIMINARY MATTERS.....	8
2.01 Delivery of Bonds and Evidence of Insurance.....	8
2.02 Copies of Documents.....	8
2.03 Commencement of Contract Times; Notice to Proceed.....	8
2.04 Starting the Work.....	8
2.05 Before Starting Construction.....	9
2.06 Preconstruction Conference; Designation of Authorized Representatives.....	9
2.07 Initial Acceptance of Schedules.....	10
<u>2.08 Construction Conferences</u>	11
Article 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE.....	12
3.01 Intent.....	12
3.02 Reference Standards.....	12
3.03 Reporting and Resolving Discrepancies.....	12
3.04 Amending and Supplementing Contract Documents.....	14
3.05 Reuse of Documents.....	14
3.06 Electronic Data.....	15
<u>3.07 Organization of the Documents</u>	15
Article 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS.....	15
4.01 Availability of Lands.....	15
4.02 Subsurface and Physical Conditions.....	16
4.03 Differing Subsurface or Physical Conditions.....	16
4.04 Underground Facilities.....	18
4.05 Reference Points.....	19
4.06 Hazardous Environmental Condition at Site.....	20
<u>4.07 Miscellaneous Site Conditions</u>	21
<u>4.08 Existing Utilities</u>	23
Article 5 – BONDS AND INSURANCE.....	23
<u>5.00 Evidence of Bonds and Insurance Required Prior to the Work</u>	23
5.01 Performance, Payment, and Other Bonds.....	24
5.02 Licensed Sureties and Insurers.....	24
5.03 Certificates of Insurance.....	25
5.04 Contractor’s <u>Liability and Property</u> Insurance.....	26

5.05	Owner’s Liability Insurance.....	30
5.06	<u>Additional Property Insurance</u>	30
5.07	Waiver of Rights	32
5.08	<u>[Intentionally Omitted] Receipt and Application of Insurance Proceeds</u>	32
5.09	Acceptance of Bonds and Insurance; Option to Replace.....	33
5.10	Partial Utilization, Acknowledgment of Property Insurer	33
 Article 6 – CONTRACTOR’S RESPONSIBILITIES.....		34
6.01	Supervision and Superintendence	34
6.02	Labor; Working Hours	35
6.03	Services, Materials, and Equipment.....	37
6.04	Progress Schedule	38
6.05	Substitutes and “Or-Equals”	39
6.06	Concerning Subcontractors, Suppliers, and Others.....	41
6.07	Patent Fees and Royalties	43
6.08	Permits	44
6.09	Laws and Regulations	45
6.10	Taxes	46
6.11	Use of Site and Other Areas.....	47
6.12	Record Documents.....	50
6.13	Safety and Protection	50
6.14	Safety Representative.....	52
6.15	Hazard Communication Programs	52
6.16	Emergencies	53
6.17	Shop Drawings and Samples.....	53
6.18	Continuing the Work.....	55
6.19	Contractor’s General Warranty and Guarantee.....	55
6.20	Indemnification	57
6.21	Delegation of Professional Design Services	58
6.22	<u>Contractor License Requirements</u>	59
 Article 7 – OTHER WORK AT THE SITE		59
7.01	Related Work at Site	59
7.02	Coordination.....	60
7.03	Legal Relationships.....	61
7.04	<u>Certain Specific Related Remedies</u>	61
 Article 8 – OWNER’S RESPONSIBILITIES		62
8.01	Communications to Contractor	62
8.02	Replacement of Engineer	62
8.03	Furnish Data.....	62
8.04	Pay When Due.....	63
8.05	Lands and Easements; Reports and Tests	63
8.06	Insurance	63
8.07	Change Orders.....	63
8.08	Inspections, Tests, and Approvals.....	63
8.09	Limitations on Owner’s Responsibilities	63
8.10	Undisclosed Hazardous Environmental Condition	63

8.11 Evidence of Financial Arrangements	63
8.12 Compliance with Safety Program	64
Article 9 – ENGINEER’S STATUS DURING CONSTRUCTION	64
9.01 Owner’s Representative	64
9.02 Visits to Site	64
9.03 Project Representative.....	65
9.04 Authorized Variations in Work.....	66
9.05 Rejecting Defective Work.....	66
9.06 Shop Drawings, Change Orders and Payments.....	66
9.07 Determinations for Unit Price Work	67
9.08 Decisions on Requirements of Contract Documents and Acceptability of Work.....	67
9.09 Limitations on Engineer’s Authority and Responsibilities	67
9.10 Compliance with Safety Program	68
<u>9.11 Clarifications and Interpretations</u>	68
Article 10 – CHANGES IN THE WORK; CLAIMS	69
10.01 Authorized Changes in the Work.....	69
10.02 Unauthorized Changes in the Work	70
10.03 Execution of Change Orders	70
10.04 Notification to Surety.....	70
10.05 Claims	71
<u>10.06 Requests for Changes in the Work</u>	72
<u>10.07 Effect of the Change Order</u>	72
Article 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK	73
11.01 Cost of the Work	73
11.02 Allowances	76
11.03 Unit Price Work	76
<u>11.04 Costs Included in Contract Price</u>	77
Article 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES	77
12.01 Change of Contract Price	77
12.02 Change of Contract Times	78
12.03 Delays.....	78
<u>12.04 Float Times and Contract Times and Contract Price</u>	79
Article 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK.....	80
13.01 Notice of Defects.....	80
13.02 Access to Work	80
13.03 Tests and Inspections	80
13.04 Uncovering Work.....	82
13.05 Owner May Stop the Work	82
13.06 Correction or Removal of Defective Work	83
13.07 Correction Period	83
13.08 Acceptance of Defective Work	84
13.09 Owner May Correct Defective Work.....	85

Article 14 – PAYMENTS TO CONTRACTOR AND COMPLETION	86
14.01 Schedule of Values.....	86
14.02 Progress Payments	86
14.03 Contractor’s Warranty of Title.....	91
14.04 Substantial Completion	92
14.05 Partial Utilization	93
14.06 Final Inspection.....	94
14.07 Final Payment	94
14.08 Final Completion Delayed	95
14.09 Waiver of Claims	95
Article 15 – SUSPENSION OF WORK AND TERMINATION.....	95
15.01 Owner May Suspend Work.....	95
15.02 Owner May Terminate <u>the Contract or Suspend the Work</u> for Cause	96
15.03 Owner May Terminate For Convenience.....	97
15.04 Contractor May Stop Work or Terminate	98
Article 16 – DISPUTE RESOLUTION	98
16.01 Methods and Procedures	98
Article 17 – MISCELLANEOUS	99
17.01 Giving Notice	99
17.02 Computation of Times	99
17.03 Cumulative Remedies	99
17.04 Survival of Obligations	100
17.05 Controlling Law	100
17.06 Headings.....	100
<u>17.07 Amendments</u>	100
<u>17.08 Assignment</u>	100
<u>17.09 Addresses</u>	100
<u>17.10 Forms</u>	101
<u>17.11 Dissemination of Information</u>	101

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work (**Section 00500**).
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer ~~if which is~~ signed by Contractor and Owner ~~that and~~ authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement. **A Change Order may deal with the nonengineering or nontechnical, rather than strictly construction related, aspects of the Contract Documents.**
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral. The Contract Documents form the Contract.
12. *Contract Documents*—Those items so designated in the Agreement, including the Agreement, the Invitation to Bid, the Instructions to Bidders, Addenda (which pertain to the Contract Documents), Contractor’s Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the bonds, Conditions of the Contract (including these General Conditions, the Supplementary Conditions, and any other Conditions to these Standard General Condition of the Construction Contract), the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Change Orders, Work Change Directives, Field Orders and Engineer’s written interpretations and clarifications issued on or after the Effective Date of the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer’s written recommendation of final payment.
15. *Contractor*—~~The party or parties identified as such in~~ individual or entity with whom Owner has entered into the Agreement. The term is used in the singular throughout the Contract, even if it refers to more than one party. In a multi-prime project, the term refers to all Contractors collectively except where the Contract Documents clearly indicate or intend that only certain Contractors are intended to be bound thereby.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The ~~individual or~~ entity named as such in Schedule 1 to the Agreement between the Town of Cary and the Contractor (Section 00500).

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*— The individual or entity with whom Contractor has entered into the Agreement for whom the Work is to be performed, **as specified in Schedule 1 to the Agreement between the Town of Cary and the Contractor (Section 00500).**
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 *et seq.*) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof, as and if specified in Schedule 1 to the Agreement.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written **technical descriptions of and** requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative **details,** requirements and procedural matters applicable thereto. **Specifications include all Sections included under the Technical Specifications of the Project Manual.**
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer **and with the approval of the Owner,** the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. **The Owner’s receipt of all certificates of occupancy applicable to the Project is a condition precedent to the Project being deemed “Substantially Complete.”** The terms “substantially complete” and

“substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions. The Supplementary Conditions include standard forms for submittals, notices, Change Orders and other documents permitted or required to be used under the Contract Documents.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary or appropriate to produce such construction, and furnishing, installing, and incorporating all necessary or appropriate materials and equipment into such construction, all as ~~required by~~ more specifically described in the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.
- 52. Project Manual--The Advertisement for Bids, Instructions to Bidders, Bid Forms, Agreements, Bonds, General Conditions, Supplementary Conditions, Specifications, and Appendices.**
- 53. General Contractor--The Contractor responsible for all Work other than Electrical, Instrumentation, HVAC, and Plumbing Work, as defined in the Contract Documents.**

- 54. HVAC Contractor--The Contractor responsible for all HVAC Work as defined in the Contract Documents.**
- 55. Plumbing Contractor--The Contractor responsible for all Plumbing Work as defined in the Contract Documents.**
- 56. Electrical Contractor--The Contractor responsible for all Electrical and Instrumentation Work as defined in the Contract Documents.**
- 57. Single Prime Contractor--If this project is awarded as a Single Prime Contract, then the terms General Contractor, HVAC Contractor, Plumbing Contractor, and Electrical Contractor shall be understood to refer to the Single Prime Contractor.**
- 58. Preoperational Testing--All field inspections, installation checks, water test, performance tests, and necessary corrections required of Contractor to demonstrate that individual components of the Work have been properly constructed and do operate in accordance with the Contract Documents for their intended purposes.**
- 59. Startup Testing--A predefined trial period required for achieving substantial completion during which Contractor is to operate the entire Work (or any part thereof agreed to by the Owner) under actual and simulated operating conditions for the purpose of (i) making such minor adjustments and changes to the Work as may be necessary for the Work to comply with the Contract Documents and (ii) complying with the final test requirements in the Contract Documents.**
- 60. The “Standard Specifications and Details” shall be the “Town of Cary Standard Specifications and Details”, that have been adopted as of the date of the Invitation to Bid.**
- 61. The “NCDOT Standard Specifications” shall be the “Standard Specifications for Roads and Structures” and the “Roadway Standard Drawings”, current edition as of the date of the Invitation to Bid.**

1.02 Terminology

- A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use

of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. ~~*Evidence of Insurance:*~~ Before any Work at the Site is started, Contractor ~~and Owner~~ shall each deliver to the ~~other~~ **Owner**, with copies to **Engineer and** each additional insured identified in **Article 5, as supplemented and amended by** the Supplementary Conditions, certificates of ~~and endorsements to insurance policies~~ (and other evidence of insurance which either of them or any additional insured may reasonably request) ~~which Contractor and Owner respectively are~~ **requested by Owner) that Contractor is** required to purchase and maintain in accordance with **the requirements of** Article 5.

2.02 *Copies of Documents*

- A. **The Contract Documents shall be executed by the Owner and the Contractor in two (2) counterparts, one (1) of which shall be returned to the Contractor.** Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction **and handling.**
- B. **The Engineer shall provide the Contractor with two (2) copies of any revised plans, Drawings, and Specifications as may be required for the execution of authorized changes or extra Work.**

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. **Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. The Contract Times will commence at the time specified in such Notice to Proceed, or if no Notice to Proceed is given, thirty days following the Effective Date of the Agreement, provided that the Notice to Proceed may not specify a time of commencement later than 60 days after the Effective Date of the Agreement.** ~~The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.~~

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done, **including materials supplied,** at the Site prior to the date on which the Contract Times commence to run **without the express written consent of the Owner.**

2.05 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the ~~General Requirements~~Contract Documents), Contractor shall submit to Engineer for timely review:
1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 2. a preliminary Schedule of Submittals; and
 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.
- B. Execution of the Contract by the Contractor is a representation by the Contractor that it has visited the Site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with the requirements of the Contract.**

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started or any materials or equipment are delivered to the Site, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records. The Engineer shall notify the Contractor of the place, date and time of the conference. The Contractor, its project manager, its superintendent, and any of the Contractor's other Project coordinators, representatives or other parties whose work on the Project would benefit from the conference shall attend.

The Owner and Engineer will attend this conference. The Contractor, major Subcontractors, and Contractor's safety representative shall attend this conference. The resumes of both the Contractor's project manager and superintendent shall be submitted to the Owner for review and approval prior to the conference. The project manager and superintendent shall have at least 2 years of experience managing and supervising the type of construction work specified in the Contract Documents. No Work shall be allowed until the Project Superintendent is on-site and working on this project. The conference agenda will include, as a minimum: tentative construction schedule; critical work sequencing; designation of responsible personnel; processing of field decisions, proposal requests and change orders; adequacy of distribution of contract documents; submittal of shop drawings and samples; procedures for maintaining record documents; use of site and Owner's requirements; material deliveries and storage areas; major equipment and material deliveries and priorities;

safety; security; housekeeping procedures; partial payment processing; general regard for community relations.

- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule **may be a critical path type or any other system likely to provide equivalent results. The Progress Schedule shall account for all Work to be performed under subcontracts. The Progress Schedule shall provide for the proper sequence of construction, considering various crafts, purchasing times, shop drawing approval, material delivery, equipment fabrication and similar time-consuming factors. The Progress Schedule shall show as a minimum, earliest starting, earliest completion, latest starting, latest completion, and the total float times for each task or item. The Progress Schedule** will be acceptable to Engineer if it provides **all the foregoing and** an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

- B. The construction schedule shall be evaluated by the Contractor not less than monthly. An updated and corrected Progress Schedule shall be submitted to the Engineer in duplicate and shall show any rescheduling necessary to reflect the true job conditions. This updated Progress Schedule shall be submitted monthly to the Engineer with the Contractor's pay request. When the shortening of various time intervals is necessary to correct for behind-schedule conditions, the Contractor shall indicate the steps necessary to accomplish the Work in the shortest schedule possible. Information regarding the new time intervals and the reasons for them shall be submitted to the Engineer in writing with the revised schedule. Notwithstanding anything apparently to the contrary in Article 14, the Engineer may withhold progress payments until such time as the Progress Schedule or revised Progress Schedule, if applicable, is received.**

2.08 Construction Conferences

A. Regular construction conferences shall be held with the Engineer or the Owner to ensure that the Work progresses appropriately and that the Owner and the Engineer are kept apprised of the status of the Work throughout the duration of the Project.

1. Monthly Progress Meetings. Each prime contractor is required to attend monthly progress conferences called or scheduled by the Engineer at the Project Site. Each prime contractor shall be represented at these meetings by both its home office and Project personnel. These representatives shall have the authority to act on behalf of the Contractor. The meetings shall be open to the Subcontractors, materials suppliers, utility company representatives and any others whose presence and participation would contribute toward maintaining required job progress. It shall be the principal purpose of these meetings to effect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the Project on schedule and to complete the Project within the specified Contract Times. Each prime contractor shall be prepared to assess the progress of the Work as required in its particular contract and to recommend remedial measures for correction of the progress as may be appropriate. The Engineer, or the representative thereof, shall be the coordinator of the conferences and shall preside as chairman. The Engineer will record minutes of the proceedings and decisions, and will distribute copies of minutes to attendees. The Owner and Engineer will attend this meeting. The Contractor shall attend this meeting. The agenda will include, as a minimum: review and approve minutes of previous meeting; review progress of work since last meeting; review proposed 30-60 day construction schedule; field observations, problems and conflicts; problems that impede planned progress; corrective measures and/or procedures to regain projected schedule; revise construction schedule as indicated and plan progress during the next work period; submittal status; pending changes; maintenance of quality and work standards; status of community relations and complaint resolution; complete other current business; schedule next progress meeting.
2. Weekly Coordination Meetings. The Contractor shall meet with the Engineer at least once per week to ensure efficient coordination of the various aspects of the Work being performed.
3. Other Required Meetings. As the Engineer or the Owner believes it is appropriate and would be helpful to maintaining the efficiency and quality of the Work, the Engineer or the Owner may schedule a meeting with the Contractor and any other parties. The Contractor shall ensure proper representation at such meetings to effect their purpose, including sending any specific personnel requested by the Engineer or the Owner. Notwithstanding the foregoing, if the Contractor reasonably believes that the progress or quality of the Work will or might be impeded by attendance at the meeting, then the party calling such meeting shall work with the Contractor to reschedule it for a mutually convenient time.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete **and operable** project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result ~~will~~**shall** be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.
- D. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though included herein. If through mistake or otherwise, any such provision is not inserted correctly, then upon the application of either party, the Contract Documents shall forthwith be physically amended to correct such insertion. If such physical amendment does not occur, however, the correct provision shall be deemed to have been inserted.**

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 - 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids **or, if Laws or Regulations are different at the time of the Work, then those Laws or Regulations in effect at the time of the Work** (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. ~~No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.~~ **[Intentionally Omitted]**

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* The data provided in the Specifications and shown on the plans and Drawings is believed by the Engineer or the Owner to be accurate, but the accuracy is not guaranteed by the Engineer or the Owner. The Contractor must take all levels, locations, and measurements, and verify all dimensions of the Site prior to construction, and adapt its Work to the exact construction. Scale measurements taken from prints shall not be considered except as references; the larger scale Drawings take precedence over the smaller scale, and Shop Drawings take precedence over all others. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as otherwise directed by the Engineer. Elevations of existing ground, structures and appurtenances shown on Drawings and Specifications are presented only as an approximation. Any error or apparent discrepancy in the data shown, or omissions of data, shall be referred immediately to the Engineer for interpretation or correction. Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
 2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
 3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge or reasonably should have had knowledge thereof.
- B. *Resolving Discrepancies:*Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and the provisions of any standard, specification, manual, code, or instruction of any technical society, organization or association if the standard, specification, manual, code or instruction imposes a weaker or less stringent standard or obligation upon the Contractor or any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work than the Contract Documents appear to impose; otherwise, the standard, specification, manual, code or instruction of any technical society, organization or association shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and the provisions of such standard, specification, manual, code or instruction.

- ~~1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - ~~a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or~~
 - ~~b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).~~~~

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
 3. Engineer's written interpretation or clarification.

C. The Drawings may be supplemented from time to time with additional Drawings by the Engineer as required to illustrate the Work or, as the Work progresses, with additional Drawings by the Contractor, subject to the approval of the Engineer. Supplementary Drawings, when issued by the Engineer or by the Contractor, after approval by the Engineer, shall be deemed a part of the Drawings and shall be furnished in sufficient quantity to all those who, in the opinion of the Engineer, are affected by such Drawings.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless ~~otherwise stated in the Supplementary Conditions~~, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, **is furnished only in electronic media and is designated as official Project documentation, the only data** that may be relied upon are limited to the printed copies (also known as hard copies). Files ~~also~~ in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from ~~the submission of~~ such electronic files will be at the ~~user's~~ **submitter's** sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator. **The transferring party shall specify in its transmittal of documents in electronic media format what software program should be used to read the documents, if not inherently obvious by the transmittal.**

3.07 Organization of the Documents

- A. 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 the Work to be performed by any trade or party.**

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

D. If all lands, easements and rights-of-way are not obtained as herein contemplated before construction begins, Contractor shall begin the Work upon and within such lands, easements and rights-of-way as Owner has at that time acquired.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* These General Conditions and any Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is **provided in the Specifications and Drawings and may be further** identified in ~~the Supplementary~~ **these General** Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

C. No Reliance by Contractor on Reports of Subsurface Investigations. In the preparation of Drawings and Specifications, the Engineer has relied upon reports of subsurface investigations as may be attached to the Contract Documents. Such reports are not part of the Contract Documents.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:* **Subsurface information, if provided by the Owner to the Contractor, is provided for the sole purpose of placing the Contractor in receipt of all information available to the Owner and the Engineer, and such information is not to be considered as part of the Contract Documents. Contractor acknowledges that it has interpreted the subsurface information according to its own judgment in bidding the Work and that it did not rely on the subsurface information provided to it in making its bid. The Contractor acknowledges that it assumes all risks contingent upon the nature of the subsurface conditions actually to be encountered by it in performing the Work required by the Contract, even though such actual conditions may result in the Contractor performing more or less Work than originally anticipated. Unless the Owner specifically agrees in writing, neither the Contract Times nor the Contract Price shall be adjusted on the basis of the actual subsurface conditions being different than as revealed in the subsurface information provided to the Contractor by the Owner.**

1. ~~The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:~~
 - a. ~~such condition must meet any one or more of the categories described in Paragraph 4.03.A; and~~
 - b. ~~with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.~~

- ~~2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:~~
- ~~a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or~~
 - ~~b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or~~
 - ~~c. Contractor failed to give the written notice as required by Paragraph 4.03.A.~~
- ~~3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.~~

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the ~~Supplementary~~these General Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, **and the Owner agrees**, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point, **survey markers, property corners, right of way monuments** or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by ~~professionally qualified personnel~~ **a North Carolina Professional Land Surveyor (PLS)**.
- B. **Engineer may check lines, elevations, reference marks, batter boards, and the like, set by Contractor. Contractor shall correct any errors disclosed by such check as directed by the Engineer. No such check shall be deemed an approval of Contractor's Work, nor shall it relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.**

4.06 Hazardous Environmental Condition at Site

- A. *Reports and Drawings:* These General and any Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in these General and any Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions or information.
- C. Except as otherwise described in the Contract Documents, Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site ~~which~~that was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters an unexpected Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract

Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, ~~and~~ (ii) was not created by Contractor or by anyone for whom Contractor is responsible, and (iii) were known by the Owner to exist. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.
- J. If there are any reports or drawings related to Hazardous Environmental Conditions at the Project Site that were utilized by the Engineer in the preparation of the Contract Documents, they are identified as follows: "None".**

4.07 Miscellaneous Site Conditions

- A. Construction Staking and Surveying. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as directed by the Engineer. Elevations of existing ground, structures and appurtenances are believed to be absolute and therefore are presented only as an**

approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake-out survey shall be referred immediately to the Engineer for interpretation or correction.

- B. The Contractor shall provide and maintain substantial survey markings delineating easement and property boundaries during construction. These markings shall be in place and approved by the Engineer prior to beginning construction activities.
- C. Water for Construction. Water needed for construction of the Work may be obtained from the Town of Cary. The Contractor shall be responsible for transporting water. The Contractor shall contact the Cary Fire Department to have a hose and meter installed so as to obtain water and set up an account with the Town of Cary for payment. The Contractor shall not operate any main valve or fire hydrant on the Town water system except in accordance with Town of Cary Policy Statement No. 49. The cost of water shall be incidental to the contract and no separate payment will be made by the Owner.
- D. The Contractor is required to perform video inspections and take photographs of the proposed construction areas before disturbing the Site in order to establish an accurate record of the pre-construction conditions for comparison to the final restoration work. The Contractor shall provide the Owner with copies of all video and photographic records. The cost of video and photographic work shall be incidental to the contract and no separate payment will be made by the Owner.
- E. Any apparent unexpected changes in groundwater or soil conditions at the Project Site during the course of the Work shall be reported to the Owner and then referred to the Owner's geotechnical engineering resource for the Project. If such resource has not already been identified at the time of discovery of the change in groundwater or soil conditions, the Contractor shall notify the Owner of such change and inquire as to what geotechnical engineering resource the matter should be referred (and then make such reference).
- F. The Contractor shall continually notify members of the public that own or occupy private property that may be affected by the scheduled Work of portions of the Work that affect or are likely to affect their property. (Property affected by the proposed Work includes properties that are adjacent to the Site, or in close enough proximity to be materially impacted by utility service interruptions, noise or dust or other normal by-products of the Work, or near which vehicles and/or materials are to be stored or parked during the course of the Work.) The Owner will distribute a letter to all property owners that will be affected by the proposed Work describing the Project. When construction begins, the Contractor shall notify residents at least 72 hours in advance of when their property will be directly affected by the Work, with continual updates as required by the progress of the Work. In the event of planned utility service disruptions, the Town's Public Works and Utilities Department, or other affected utility provider, shall also be notified. At a minimum, the Contractor shall distribute door hangers to all residents in the affected area before mobilizing on the Site and then distribute follow-up notices at least 3-days before residents are directly affected by the planned Work. The door hangers shall include the contact names and local phone

numbers for the Contractor's project manager, superintendent and the logo of the Contractor and major subcontractors. Costs of such notification shall be considered incidental to the Contract and no separate payment will be made for these costs." The Contractor shall notify affected property owners within 24 hours of any planned disruption to utility service.

4.08 Existing Utilities

- A. The Contractor shall be responsible for the location and verification of all utilities prior to construction, both public and private, within the Site. Prior to commencing construction, the Contractor shall walk the Site verifying the location of all utilities in order to determine which utilities the Contractor may deem to be in conflict with the Work. At the completion of the walk-through, the Contractor shall notify the Engineer in writing of any such conflicts. The Contractor shall also attend monthly progress meetings with the Owner or Engineer, and utility company representatives if appropriate, to discuss potential and/or existing conflicts on all roadway and utility portions of the Work, unless such meeting is waived for a particular month or for the duration of the Project by the Engineer. At the option of the Owner, such meetings may occur in connection with any monthly progress meetings established pursuant to the Contract Documents.
- B. Where existing utilities and structures are indicated on the Drawings, it shall be understood that all of the existing utilities and structures affecting the Work may not be shown and that the locations of those shown are approximate only. It shall be the responsibility of the Contractor to ascertain the actual extent and exact location of the existing utilities and structures. In every instance, the Contractor shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any Work in the vicinity of existing utilities.
- C. The Work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to ensure that no interruption of existing services occurs. Any damage resulting from the Work shall be promptly repaired by the Contractor at its own expense in a manner approved by the Engineer and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that such jurisdiction perform its own repairs or have them done by others, the Contractor shall be responsible for the costs thereof.

ARTICLE 5 – BONDS AND INSURANCE

5.00 Evidence of Bonds and Insurance Required Prior to the Work

- A. All evidence of bonds and insurance required in this Article shall be provided prior to the Contractor or its Subcontractors commencing the Work or making or accepting delivery of materials or equipment to the Site. Evidence of the insurance provided to Owner shall include at a minimum a copy of the insurance policy with an endorsement naming the Owner as an additional insured. Failure of the Contractor to timely obtain and deliver evidence of bonds and insurance as described herein shall not excuse Contractor from adhering to the progress scheduling for the Work, and any such

resulting failure of the Contractor to adhere to the Progress Schedule or the Contract Times shall entitle the Owner to such sanctions and remedies as are provided elsewhere in the Contract Documents for insufficient progress on the Work.

5.01 *Performance, Payment, and Other Bonds*

- A. **Within fifteen (15) days of receiving delivery of the Notice of Award,** Contractor shall furnish **and maintain, at the Contractor's cost and expense,** performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due **pursuant to Paragraph 14.07.C** or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within ~~20~~ **five (5) business** days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also **be approved by the Owner and** meet such additional requirements and qualifications as ~~may be~~ **are** provided in the ~~Supplementary~~ **these General** Conditions.
- B. The minimum insurance ratings for any company insuring the Contractor shall be Best's A-. Should the ratings of any insurance carrier insuring the Contractor fall below the minimum rating, the Owner may, at its option, require the Contractor to purchase insurance from a company whose rating meets the minimum standard.**

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in ~~the Supplementary~~**these General** Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in ~~the Supplementary~~**these General** Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor. **In the event that the insurance coverage required herein is not generally commercially available, then Contractor shall be responsible for paying for the difference between the total amount of liability and/or damages and the total amount that is covered by its insurance proceeds.**
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.
- F. The Contractor shall provide to the Owner, upon request, insurance certificates and endorsements or other evidence that all Subcontractors are carrying the required insurance. In lieu of each Subcontractor being required to carry the necessary insurance, the Contractor may insure the activities of its Subcontractors under its policy(ies). In such case, evidence of such coverage shall be provided on the Contractor's insurance certificates. Subcontractors shall in all cases, however, provide workers' compensation and employer's liability insurance and motor vehicle liability insurance.**
- G. An authorized representative of the insurance company(ies) providing coverage required herein shall certify that all of the required insurance coverages and amounts specified in the Contract Documents are provided by the submitted policies. The certification shall be signed by the authorized representatives of the insurance company(ies) and notarized. The authorized representative of the insurance company(ies) shall specifically indicate with the submittal which of the policies submitted fulfill which specific coverage and amounts specified under Sections 5.04 and 5.05 of the Contract. The certification, including the correlation, shall be furnished and included with the insurance certificates and insurance endorsements so effecting such coverage. One (1) copy of each such insurance policy and endorsements and the certificates indicating each type of coverage mentioned, and the correlation between the insurance furnished and that required, shall be provided to each insured party.**

H. The insurance required to be provided by the Contractor (except Worker's Compensation and Employer's Liability insurance) shall name the following as additional insureds [check applicable parties]:

The Town of Cary

Engineer

Engineer's Consultant

Other: _____.

5.04 Contractor's Liability and Property Insurance

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle **in the prosecution of the Work.**

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in ~~the Supplementary~~ **these General** Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of

- all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in ~~the Supplementary~~**these General** Conditions or required by Laws or Regulations, whichever is greater;
 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in ~~the Supplementary~~**these General** Conditions to whom a certificate of or endorsement to insurance has been issued (and the certificates of or endorsement to insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; ~~and~~
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in ~~the Supplementary~~**these General** Conditions, to whom a certificate of or endorsement to insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter. ~~;~~
 - 7. include builder's risk/fire and extended coverage insurance, including coverage for vandalism and malicious mischief for the life of the Contract upon all Work in place and all materials at the Site;**
 - 8. include special hazards insurance covering bodily injury and property damage resulting from blasting and explosions, collapse of or structural injury to any structure, and damage to underground structures, pipes or conduits due to the Contractor's or its Subcontractor's operations;**

and

- 9. contain provisions or endorsements that:**
 - a. the Owner shall be notified in writing within thirty (30) days after the filing of each claim under the policy;**
 - b. full coverage shall be reinstated after payment of each claim;**
 - c. the insurer shall have no right of recovery or subrogation against the Owner, its agents or agencies, or the Engineer, it being the intention of the parties that the**

insurance policies shall protect both the Owner and the Engineer and be primary coverage for any and all losses covered by the policies;

- d. the clause “other insurance provisions” in a policy in which the Owner, its agents or agencies, or the Engineer is named as an insured, shall not apply to such insured parties;
- e. the insurance companies issuing the policy or policies shall have no recourse against the Owner, its agents or agencies, or the Engineer for the payment of any premiums or for assessments under any form of policy;
- f. any and all deductibles under the insurance policies shall be assumed by and be at the sole risk and expense of the Contractor; and
- g. the insurer expressly agrees that the Contract Price includes price modifications included in any and all Change Orders entered into during the term of the Project.

C. Specific Insurance Requirements

- 1. The Contractor shall provide insurance coverage for not less than the following amounts, and greater coverage where required by law .:**

	<u>Insurance</u>	<u>Minimum Coverage</u>
<u>Comprehensive General Liability</u> including Premises/Operations; Explosion, Collapse and Underground Property Damages; Products/Completed Operations; Broad Form Contractual; Independent Contractors; Broad Form Property Damage; and Personal Liability:		
<u>√</u>	<u>Limits in General</u>	<u>\$2,000,000 Each Occurrence</u> <u>\$2,000,000 General Aggregate</u>
<u>√</u>	<u>Personal Injury, with employment exclusion deleted</u>	<u>\$2,000,000 Each Occurrence</u>
<u>√</u>	<u>Completed Operations Hazard Insurance</u>	<u>\$2,000,000 Each Occurrence</u>
<u>Commercial Automobile Liability</u> , including all owned (private and others), hired and non-owned vehicles used in the Work:		
<u>√</u>	<u>Combined Single Limit (CSL)</u>	<u>\$2,000,000 Each Accident</u>
<u>Excess Liability / Umbrella Coverage:</u>		
<u>√</u>	<u>Umbrella Liability</u>	<u>\$5,000,000 per occurrence and policy aggregate limit</u>
<u>Workers Compensation and Employers Liability:</u>		
<u>√</u>	<u>Worker’s Compensation</u>	<u>[Statutory Minimum]</u>
<u>√</u>	<u>Employer’s Liability</u>	<u>\$1,000,000</u>
<u>Other Lines of Coverage:</u>		

<u>√</u>	<u>Builder's Risk/Fire and Extended Coverage, including vandalism and malicious mischief</u>	<u>Provide Installation Floater Coverage equivalent to Contract Price</u>
<u>√</u>	<u>Explosion, Collapse and Underground Coverage (XCU) including coverage for "boiler and machinery", "blasting and explosion", "collapse of structure" or "injury to any structure due to contractor's operations" and "damage to underground structures, pipes or conduits"</u>	<u>Contract Price</u>

- 2. The comprehensive general liability insurance shall include Owner, its agents and agencies, Engineer and Engineer's Consultant and all municipalities where Work is being performed as additional insureds. The insurance policies required hereunder shall not contain any third party benefit exclusion.**
- 3. Contractor may purchase and maintain excess liability insurance in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance with this Paragraph. Evidence of such excess liability shall be delivered to Owner in the form of a certificate indicating the policy numbers and limits of liability of all underlying insurance. The umbrella liability insurance shall have a combined single limit of not less than \$5,000,000.**
- 4. If any of the property and casualty insurance requirements described herein are not complied with at the renewal dates of the insurance policy(ies), then payments to the Contractor shall be withheld until all requirements have been met, or, at the option of the Owner, if the renewal premiums have not been paid, then the Owner may pay the renewal premiums and withhold the cost thereof from any monies due to the Contractor.**
- 5. In the event that claims in excess of the coverage amounts provided herein are filed by reason of any operations under the Contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due to the Contractor until such time as the Contractor shall furnish such additional security covering such claims as may be determined by the Owner.**
- 6. The Contractor shall submit to the Owner documentation as to the cost of insurance coverage required hereunder prior to obtaining the policy(ies). The Owner may, if it deems it to be in its best interest, obtain a portion or all of the coverage on its own and receive a credit from the Contractor against the Contract [Sum or Price] for the cost of the insurance so provided by the Owner.**

5.05 *Owner's Liability Insurance*

A. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. The Contractor shall provide the Owner with a copy of the insurance policy prior to the effective date of the Contract. The policy shall state that it cannot be canceled or terminated while the Work under this Contract, and any renewals thereof, is still in progress without 30 days' prior notice to the Owner, who shall have the option of reinstating the policy. The Contractor shall provide renewal endorsements no later than 30 days prior to the expiration date of the policy. The policy of insurance shall provide coverage for not less than the following amounts:

- | | | |
|---------------------------|--------------------|-------------------------|
| <u>1. Bodily Injury</u> | <u>\$2,000,000</u> | <u>Each Occurrence</u> |
| <u>2. Property Damage</u> | <u>\$2,000,000</u> | <u>Each Occurrence</u> |
| | <u>\$2,000,000</u> | <u>Annual Aggregate</u> |

~~In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.~~

5.06 *Additional Property Insurance*

A. Owner, Contractor and Engineer, each at their own option and expense, may purchase and maintain any additional insurance it deems necessary or prudent to protect its interests in connection with the Work. Expenses of such insurance and any deductibles shall not constitute a portion of the Contract Price but are to be borne entirely by the party obtaining such insurance.~~Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:~~

- ~~1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;~~
- ~~2. be written on a Builder's Risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and~~

~~Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.~~

- ~~3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);~~
- ~~4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;~~
- ~~5. allow for partial utilization of the Work by Owner;~~
- ~~6. include testing and startup; and~~
- ~~7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.~~

~~B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.~~

~~C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.~~

~~D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.~~

~~E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.~~

5.07 *Waiver of Rights*

- A. ~~**[Intentionally Omitted]** Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.~~
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 **[Intentionally Omitted]** *Receipt and Application of Insurance Proceeds*

- A. ~~Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute~~

~~it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.~~

~~B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.~~

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

~~A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with this Article 5 on the basis of its not complying with the Contract Documents, Owner shall notify Contractor in writing thereof within ten (10) days of the date of delivery of such certificates to Owner in accordance with Subparagraph 2.01.B. Contractor shall provide such additional information in respect of insurance provided by Contractor as Owner may reasonably request.~~

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents, **unless the Contractor knew or should have known of the flaw in the design or specification at the time of the making of the Agreement and failed to notify the Owner and the Engineer thereof. Contractor shall be responsible to see that the completed Work complies with the Contract Documents.**
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. **The superintendent will be Contractor’s representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.**
- C. **Project Manager and Superintendent** The Contractor’s project manager and the Contractor’s superintendent shall be full-time employees of the Contractor. **The project manager and the superintendent shall each have a minimum of five years’ experience constructing projects similar to the Project. The project manager’s and the superintendent’s previous work performances must, respectively, be acceptable to the Owner as to quality of workmanship and time of performance. The Contractor shall submit resumes of the project manager and the superintendent to the Owner at the time the Contract is signed. If either person is or becomes unacceptable to the Owner, the Contractor, upon written demand by the Owner, shall promptly remove the unacceptable person and shall appoint a replacement satisfactory to the Owner.**
- D. **Multi-prime Contract Projects:**
- 1. The General Contractor, or any other contractor specifically named by Owner, shall act as the Project Expediter, responsible for preparing the Project Schedule, including coordinating the progress schedules of the other Prime Contractors and their Subcontractors, ensuring that each Prime Contractor and Subcontractor adheres to its schedule, and communicating regularly with the Engineer or the Owner regarding any concerns that arise during the course of the Project, including, without limitation, the scheduling, adherence to the Drawings, the Specifications and/or the Project Manual.**
 - 2. All Prime Contractors shall be required to cooperate and consult with other contractors and with the Project Expediter during the construction of the Project. Each Prime Contractor shall schedule and execute its portion of the Work so as to cause the least delay to other contractors. Each Prime Contractor shall be**

financially responsible to the other Prime Contractors for undue delay caused by it to other Prime Contractors and Subcontractors on the Project.

6.02 *Labor; Working Hours*

- A. Contractor shall ~~provide~~ is responsible for expediting the Work efficiently and effectively and with due care to the quality of the Work. Contractor shall ensure that at least half of the Work is performed with Contractor's employees. Contractor shall employ only competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents ~~persons to perform the Work.~~ Contractor shall at all times maintain good discipline and order at the Site. Contractor shall comply with all applicable laws regarding employment. Whenever Owner notifies Contractor in writing that any person on the Project appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the prior written consent of Owner. No adjustment shall be made in the Contract Price or the Contract Times on the basis of the removal of such person from the Project.
- B. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. Neither the Contractor nor any Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.
- C. Contractor and all Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents, with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.
- D. ~~B.~~ Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during Regular Working Hours. "Regular Working Hours" exclude holidays and are defined as Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. Regular Working Hours may also take place on Saturday between the hours of 9:00 a.m. and 6:00 p.m. for work not requiring engineering and/or inspection. Saturday work that requires engineering and/or inspections shall be subject to the provisions of Paragraph 6.02.E. Requests to work other than Regular Working Hours shall be submitted to Engineer not less than 48 hours prior to any proposed additional daily working hours (including second and third shifts), additional weekend work or scheduled extended work weeks. All requests to work other than Regular Working Hours must comply with all applicable regulations and ordinances. Engineer shall review requests, and Engineer shall either (1) deny the request or (2) provide Contractor with terms for additional engineering and/or inspection costs to be paid for by Contractor as a result of overtime work in excess of the Regular Working Hours. Contractor shall agree to Engineer's terms prior to

Engineer approving Contractor's request to work other than Regular Working Hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

- E. The cost of such overtime Work or the performance of Work on a Saturday, Sunday, or any legal holiday shall be borne by the Contractor. Contractor shall reimburse the Owner for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the Regular Working Hours stipulated in Paragraph 6.02.B. At Owner's option, overtime costs may either be deducted from the Contractor's monthly payment request or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Engineer or the Owner.
- F. Temporary lighting and all other facilities necessary for performing and inspecting the Work outside of Regular Working Hours should be furnished and maintained by the Contractor at the Contractor's expense.
- G. Work shall not be performed when the weather is inclement, stormy, freezing or otherwise unsuitable. Only such Work as will not suffer injury to workmanship, materials or equipment is permitted. The Contractor shall carefully protect all Work against damage or injury from the weather, and when Work is permitted during freezing weather, shall provide and maintain approved facilities for heating the materials and equipment and for protecting the finished Work. The Contractor shall take all necessary precautions (in the event of impending storms) to protect all Work, materials, and equipment from damage or deterioration due to floods, driving rain, wind or snowstorms. The Owner reserves the right, upon the advice of the Engineer, to order that additional protective measures over and beyond those proposed by the Contractor be taken to safeguard all components of the Project. The Contractor shall have no right to nor make any claim for compensation for such precautionary measures so ordered, nor have a right to or make any claim for compensation from the Owner for damage to the Work from weather elements.
- H. The mixing and placing of concrete or pavement courses, the laying of masonry, and installation of sewers and water mains shall be stopped during rainstorms, if ordered by the Engineer; all freshly placed Work shall be protected by canvas or other suitable covering in such manner as to prevent running water from coming in contact with it. Sufficient coverings shall be provided and kept ready at hand for this purpose. Contractor shall not be entitled to an increase in Contract Times due to Work stoppage and other time not spent working pursuant to this Paragraph.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work. **The Contractor shall provide temporary toilet facilities for the use of all workmen. Temporary toilet facilities shall comply with local and state sanitation laws and regulations.**
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents. **All construction shall conform (in increasing order of priority in the event of any conflict) to the requirements and dimensions in the Town of Cary “Standard Specifications and Details”, the Code of the Town of Cary, this Contract, the construction plans, and the Specifications. All materials and workmanship, except as otherwise provided herein, shall be in accordance with the latest edition of the North Carolina Department of Transportation “Standard Specifications for Roads and Structures”, and all addenda thereto, and the Town of Cary “Standard Specifications and Details”.**
- D. *Delivery of Equipment and Materials:* All materials and equipment delivered to the Site shall be accompanied by certificates, signed by an authorized officer of the Supplier, and notarized, guaranteeing that the materials and equipment conform to Specifications requirements. Such certificates shall be immediately turned over to the Engineer. Materials and equipment delivered to the Site without such certificates shall be subject to rejection by the Engineer. The Contractor shall ensure that equipment and materials to be incorporated in the Work shall be delivered to the Site sufficiently in advance of their installation and use in order to prevent delay in the execution of the Work, and that they shall be delivered to the Site, as nearly as is feasible, in the other required for executing the Work. The Contractor shall provide for continuity of supply to avoid changes of supplies or manufacturers or changes in brands of materials during the Work. The Contractor shall deliver packaged materials to the Site in the manufacturer’s original, unopened, labeled containers and shall not open such containers until the approximate time for the use of the contents.**
- E. *Storage and Protection of Equipment and Materials:* The Contractor shall protect all equipment and materials from deterioration and damage, whether title to same has passed to the Owner or not. Any equipment or materials of whatever kind that may have become damaged or deteriorated from any cause shall be removed and replaced by new and satisfactory items, at the Contractor’s expense, including expenses of labor**

and materials for such removal and replacement. The Contractor shall store all equipment and materials at the Site in accordance with the manufacturer's recommendations, as directed by the Engineer, and in conformity with applicable statutes, ordinances, regulations and rulings of any public authority having jurisdiction. The Contractor shall store the cementitious and wood materials in dry, weather-tight, ventilated spaces. The Contractor shall store ferrous materials so as to prevent contact with the ground and to prevent rusting and damage from weather. The Contractor shall store masonry materials so as to prevent them from coming in contact with earth or staining materials and shall cover and protect such materials against weather, moisture, neglect and damage. The Contractor shall protect materials and equipment from equipment damage, weather, moisture, neglect, and construction operations. The Contractor shall not store unnecessary materials or equipment on the Site and shall take care to prevent any structure from being loaded with a weight that may endanger its security or the safety of persons and property. If the Site is such that equipment and materials cannot be safely stored at the Site, then the Contractor shall be responsible for locating and providing storage areas for equipment and materials. Such storage shall comply with all applicable statutes, ordinances, regulations and rulings of public authorities having jurisdiction. The Contractor shall timely pay all storage fees for equipment and materials stored off-site.

F. Hazardous Material: The operations of neither the Contractor nor any Subcontractor shall expose any Town of Cary employees to any hazardous chemicals or other occupational safety or health hazards. The Contractor shall inform the Engineer about any hazardous substances that the Contractor or the Subcontractors might be using and to which the Town of Cary's employees might become exposed. The Contractor shall also advise the Engineer of the appropriate control measures to be used by the Town of Cary's employees to prevent exposure to such substances and to minimize the risks of such exposure. The Owner shall not be responsible for any improper use of materials or substances referenced in the Contract Documents nor for any materials or substances brought to the Site by Contractor.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

B. If the Contractor does not take the necessary action to accomplish the Work according to the Progress Schedule established in accordance with Paragraph 2.07, the Contractor may be ordered by the Engineer in writing to take necessary and timely action to improve its Work progress, and Contractor shall take such action. The Engineer's

order may include increasing Work forces, providing extra equipment, working extra shifts, or taking other action as required. Should the Contractor refuse or neglect to take such action or fail to accomplish improvements in meeting the Progress Schedule, the Engineer may take any action authorized under this Contract, including but not limited to withholding of payment of the Contract Price and termination of the Contract.

6.05 *Substitutes and “Or-Equals”*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. **It is the intent of the parties that the Contractor shall provide materials of the highest standard known to the trade and to provide materials free from defects in workmanship and product.** Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or-equal” item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *“Or-Equal” Items:* If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

- 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
~~and~~
- 3) it has a proven record of performance and availability of responsive service;
~~;~~

and

b. Contractor certifies that, if approved and incorporated into the Work:

- 1) there will be no increase in cost to the Owner or increase in Contract Times;
- 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use, **at least 14 days before such substitute item of material or equipment is to be brought to the Site. The application shall include sufficient documentation and samples to allow the Engineer to determine the acceptability of the proposed substitute item of material or equipment.** The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall **make a good faith effort to utilize minority business enterprises (MBEs) per North Carolina General Statutes Section 143-128, et seq., as Subcontractor for the Work. Contractor shall submit for approval to the Owner and the Engineer, within ten (10) days after the issuance of the Notice of Award, a list of the names of Subcontractors and Suppliers of principal items of material and equipment. Contractor shall also submit for approval to the Owner and the Engineer a list of the names of any additional or replacement Subcontractors and Suppliers the Contractor wishes to use in connection with the Project prior to utilizing their services. The Engineer or Owner shall notify the Contractor within ten (10) days after receipt of the list of any reasonable objections to any Subcontractor or Supplier. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity person or organization, (including those acceptable to Owner as indicated in Paragraph 6.06.B who are to furnish the principal items of materials or equipment)**, whether initially or as a

~~replacement~~substitute, against whom Owner may have reasonable objection. ~~Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection~~
Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work or remove such person from the Project pursuant to Paragraph 6.02.A.

- B. ~~If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.~~**Contractor shall not be required to employ any Subcontractor, Supplier or other person or organization against which Contractor has reasonable objection.**
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
Notwithstanding the foregoing, however, Owner or Engineer may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.

- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in ~~the Supplementary~~**these General** Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. ~~**[Intentionally Omitted]**To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.~~
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights

incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents. In the event of any claim or action by law on account of such patents or fees, it is agreed that the Owner may retain out of the monies that are due or that may become due to the Contractor under this Contract, a sum of money sufficient to protect the Owner against loss, and to set aside the same until said claims are paid or are satisfactorily adjusted.

6.08 Permits

A. Unless otherwise provided in the ~~Supplementary~~ **these General** Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, ~~or, if there are no Bids, on the Effective Date of the Agreement.~~ Owner and the Contractor shall pay all charges of utility owners for connections ~~for providing permanent service to the Work.~~

B. Prior to the beginning of construction, the following permits (where applicable to the Project) shall be obtained (this list being for informational purposes and not limiting any other permits that may be required):

1. Emergency Work Permit: The creation of excessive noise associated with the erection, alteration, repair or demolition of any building, earthmoving activities, land clearing activities, street paving, or utility construction in a residential or business district, other than between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday, or between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays, shall require an Emergency Work Permit. This permit shall be issued by the Utilities Director for the Town of Cary only in cases where such work is of an emergency nature.

2. Burning Permit: A Burning Permit shall be obtained a minimum of 24 hours prior to any burning. This permit shall be obtained from the Town of Cary Fire Department or other governmental agency having jurisdiction to issue such permits.

3. Blasting Permit: A Blasting Permit is required any time there is to be transportation, use or storage of explosive materials. This permit is required a minimum of 24 hours in advance of the use or transporting of blasting materials and shall be obtained from the Town of Cary Fire Department or other governmental agency having jurisdiction to issue such permits.

4. For Work other than Site Work and utility installations, additional permits may be required by the Central Permit Office or Building Inspections Division of the Town of Cary or by other governmental agencies having jurisdiction to issue such permits.

Fees for permits issued by Owner will be waived by the Owner when the Owner is the controlling jurisdiction for such permits, fees, inspections and the like.

C. Contractor shall obtain and maintain all permits and licenses in its own name during the performance of the Work. Upon termination of the Contract, Contractor shall assign such permits and licenses required to be maintained thereafter to the Owner.

D. Contractor shall comply with all applicable laws, statues ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to the performance of the Work, including, without limitation, giving notices, filing annual reports and/or updates and otherwise communicating with governmental agencies as required in connection with Contractor's role as holder of permits and licenses. If Contractor fails to give such notices or make such reports or other communication, it shall be liable for and shall indemnify and hold harmless the Owner and the Engineer, and their respective employees, officers and agents, against any resulting fines, penalties, judgments or damages, including reasonable attorneys fees imposed on or incurred by the parties indemnified hereunder.

6.09 *Laws and Regulations*

- A. ~~The Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work,~~ **at all times, observe and comply with and shall cause all of its agents and employees and all of its Subcontractors to observe and comply with all such existing Laws or Regulations. The Contractor shall protect and indemnify the Owner and the Engineer and the municipalities and counties in which Work is being performed, and their officers and agents, against any claim, fee, civil penalty, fine or liability arising from or based on the violation of any such Law or Regulation, whether by the Contractor or its employees or any of its Subcontractors.** Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor **observes that the Specifications or Drawings are at variance with any Laws or Regulations, it shall give Engineer prompt written notice thereof. If Contractor** performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work, **including all fines, fees, charges, civil penalties and the like assessed against the Contractor and/or the Owner by any governmental unit or agency (including, without limitation, the Owner in its capacity as a municipal corporation).** However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

D. Fines for Noncompliance with Sedimentation and Erosion Control Regulations: The Contractor should be aware that State laws and Town ordinances provide for the imposition of fines and other civil penalties for the failure to properly plan, implement and maintain appropriate sedimentation and erosion control practices. The Contractor shall familiarize itself with all applicable sedimentation and erosion control regulations and shall follow and abide by them closely. Applicable regulations include (by way of illustration and not limitation) North Carolina General Statutes Section 113A-50 et seq. and Town of Cary Land Development Ordinance Chapter 7.4. Violations of such regulations include (by way of illustration and not limitation) grading without prior receipt of a valid grading permit or in a manner inconsistent with such permit, failure to take reasonable measures to protect public or private property from damage caused by failure to retain sediment on site, failure to install adequate erosion and sedimentation control devices, failure to maintain temporary and/or permanent erosion control measures, failure to protect exposed slopes, failure to provide adequate ground cover, failure to revise the erosion and sedimentation control plan after notification of the need to do so, failure to keep dirt and mud off of public streets, and failure to maintain slopes. Sedimentation and erosion control laws and ordinances shall be considered among the Laws and Regulations described in Paragraph 6.09.B hereof, and Contractor shall perform all Work so as to be in compliance with same and pay all fees, fines and civil penalties in connection with the violation(s) of same that do occur. This provision is intended to call Contractor's attention to State and Town sedimentation and erosion control plans, and nothing herein is intended to impliedly limit the types of regulations deemed to be Laws and Regulations herein, nor is anything herein intended to limit the applicability of Paragraph 6.09.A or 6.09.B as to sedimentation and erosion control laws.

6.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. **Use tax is due on construction equipment brought into North Carolina for use in the performance of the Work (N.C. Revenue Laws G.S. 105-164.4 and 105-164.6). Contractor is also liable for payment of applicable privilege licenses (N.C. Revenue Laws G.S. 105-54) and for payment of applicable franchise, corporate income and withholding taxes (N.C. Revenue Laws, G.S. 105-122, 105-123, 105-134, and 105-163.2). The absence of mention of any specific tax herein in no way relieves the Contractor of its obligation to pay the same.**
- B. Refunds of all North Carolina sales and use taxes paid in the purchase of building materials, supplies, fixtures and equipment that become a part of or annex to buildings or structures being erected, altered or repaired under contracts with the Owner are to be made to the Owner in accordance with state law. Thus, the following procedures shall be followed in order that the Owner may recover the full amount of the North Carolina sales use and taxes permitted to be refunded to it under the law.**
- 1. It shall be the Contractor's responsibility to furnish the Owner documentary evidence showing the material used and sales tax paid by the Contractor and each of its Subcontractors and Suppliers.**

2. With each partial payment request submitted at the end of a calendar month, fiscal year or final payment, the Contractor must furnish (i) a certified and notarized statement setting forth the cost of the property purchased from each vendor and the amount of sales and/or use tax paid thereon, and (ii) documentary evidence supporting the statement, including copies of invoices for which the statement is being submitted, with invoice numbers indexed to the statement.
3. The statement shall show all taxes and assessments paid to the State of North Carolina, the County of Wake, and the Town of Cary, including the North Carolina Sales Tax and the Town of Cary Tax, and the statement shall list any payments made directly to the North Carolina Department of Revenue.
4. In the event the Contractor makes several purchases from the same vendor, the statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, and the sales and use taxes paid thereon.
5. Such statement must include the cost of any tangible personal property withdrawn from the Contractor's warehouse stock and the amount of sales or use tax paid thereon by the Contractor.
6. Similar certified statements by its Subcontractors must be obtained by the prime Contractor and furnished to the Owner.
7. If no tax has been paid during the pay request period, 'NONE' shall be entered on the tax form.

C. Materials used in the Project from the Contractor's or Subcontractor's warehouse stock shall be billed to the Owner at warehouse stock prices.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Storage of equipment or materials, or erection and use of sheds outside of the Site, if such areas are the property of the Owner, shall be used only with the Owner's approval. Such storage or temporary structures, even within the Site, shall be confined to the Owner's property. Contractor shall not utilize property other than the Site, including property designated as easement area or right of way area, unless specifically permitted elsewhere in the Contract Documents, without the express permission of the owner thereof. Such permission of owners of other properties shall not be sought by the Contractor without the express permission of the Owner to so approach such owners. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work. Prior to commencement of Work in the vicinity of property adjacent to the Site, Contractor, at its own expense, shall take such surveys

as may be necessary or expedient to establish the existing conditions of the property. Any damage or injury occurring to any property as a result of any act, omission or neglect on the part of the Contractor shall be repaired so that the property is restored in a proper and satisfactory manner, or replaced, by and at the expense of the Contractor, to an equal or superior condition than previously existed.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. **Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Before final payment under the Contract shall be made to the Contractor, the Contractor shall furnish satisfactory evidence to the Owner that all claims for damage have been legally settled, that sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.**
 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations, **and shall include, without limitation, appropriate sedimentation control measures, as applicable. During construction, the Contractor shall regularly remove from the Site all accumulated debris and surplus materials of any kind that result from its operations. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the Project. When the Work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights of way, easements, or private property, the Contractor shall (as the Work progresses) promptly backfill, compact, grade, and otherwise restore the disturbed area to a basic condition that will permit resumption of pedestrian or vehicular traffic and any other essential activity or function consistent with the original use of the land. Unsightly mounds of earth, large stones, boulders, and debris shall be removed as promptly as possible so that the Site maintains a neat appearance.**
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site **to a neat and orderly condition meeting or exceeding its appearance prior to construction** and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not

designated for alteration by the Contract Documents. Failure to clean and prepare the Site in accordance with this Paragraph shall forestall Contractor's right to receive its final payment of the Contract Price. At the Contract Time for full performance of the Work, if the cleaning and preparation is not complete, Owner may make arrangements for same with a third party. The Contractor shall reimburse the Owner for all costs associated with such work in a deduction in the Contract Price or by direct payment from the Contractor to the Owner, or a combination of both, at the option of the Owner.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

E. *Traffic to and from the Site:* The Contractor shall maintain traffic to, from and around the Site in accordance with the Town of Cary "Standard Specifications and Details", Section 150 of the NCDOT "Standard Specifications for Roads and Structures" and the following provisions: At the end of each workday, the Contractor shall backfill, up to the edge and elevation of existing pavement, any area adjacent to the travelway that has a drop off of more than three (3) inches. The Contractor shall perform this work at no additional cost to the Owner. Access to the Site and properties adjacent to the Site shall be maintained at all times throughout the Project. Where driveways, mailboxes and/or other improvements are disturbed, temporary drives, mailboxes and/or other improvements if appropriate shall be installed immediately and maintained until such time as permanent repair to the driveways, mailboxes and/or other improvements is made. An ABC stone base shall be used to maintain temporary driveways. No additional payment shall be made by the Owner or other parties to the Contract for such temporary driveway construction and maintenance because such Work shall be considered incidental to the Contract and included in the Contract Price.

F. *Work in Streets, Highways and Other Rights of Way:* Excavation, grading, fill, storm drainage, paving and any other construction or installations in rights of way of streets, highways, public carrier lines, utility lines (either aerial, surface or subsurface), and the like, shall be done in accordance with the applicable portions of the Specifications and the requirements of authorities having jurisdiction. The Owner shall make all arrangements with the proper authorities for such Work, including the obtaining of permits, and shall pay costs associated with such, with the exception of electrical permits, blasting permits and inspections. The Contractor shall keep a copy of all required permits on the Site at all times. The Contractor shall be responsible for all bonds required by the North Carolina Department of Transportation.

G. *Final Clean-up and Site Rehabilitation:* Before leaving the Site upon completion of the Work, the Contractor shall remove from the Site all accumulated debris and surplus materials of any kind that result from the Project, including construction equipment, tools, sheds, sanitary enclosures, and the like. The completed Project shall be turned over to the Owner in a neat and orderly condition. The Site shall be rehabilitated or developed in accordance with other sections of the Specifications and the Drawings. In the absence of any portion of these requirements, the Contractor shall completely rehabilitate the Site to a condition and appearance equal or superior to that which

existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or so ordered by the Owner.

- H. Survey Markers; Monumentation:** Contractor shall replace survey markers, such as property corners, right-of-way monuments and the like that are disturbed as a result of the Work, whether or not specifically identified in the Contract Documents, where property corners and/or right of way remain in the same location after the Work has been performed. If property corners and/or right-of-way line locations have been altered or established in connection with the Work, Contractor shall place survey markers, such as property corners, right-of-way monuments and the like, whether such Work is specifically identified in the Contract Documents. Such replacements and/or placements shall be performed by a North Carolina Professional Land Surveyor (PLS).
- I. Mail Service:** Mail service shall not be interrupted by construction activities. In the event that mailboxes are relocated or temporarily removed, the Contractor must provide alternate methods as approved by the US Postal Service and the Owner for property owners to receive uninterrupted mail service. There will be no separate payments issued for alternate measures required to maintain mail service.
- J. Failure to Use Site as Directed:** Failure to use the Project site in accordance with the terms of this and other Paragraphs of the Contract Documents shall forestall Contractor's right to receive interim payments and the final payment of the Contract Price. At Contract Times for performance of the Work, if the use of the site is not in compliance with these provisions, Owner may make arrangements to remedy the situation with third parties (arranging for clean-up of the site, for instance). The Contractor shall reimburse the Owner for all costs associated with such work in a deduction in the Contract Price or by direct payment from the Contractor to the Owner, or a combination of both, at the option of the Owner.

6.12 Record Documents

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner. **Failure to furnish the Engineer with accurate and detailed record documents shall be grounds for withholding final payment until such record documents have been properly furnished.**
- B. Contractor shall maintain "as-built" record drawings, current with the progress of the Work on the Project Site, available for inspection on site, and shall provide them to the Engineer and the Owner prior to Substantial Completion.**

6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, **and shall be solely and completely**

responsible for conditions of the Site, including the safety of all persons and property at the Site, preparatory to and during performance of the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;
 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations, **including such safety regulations as may be prescribed from time to time by the Engineer, the Owner or local authorities having jurisdiction,** relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; ~~and~~ shall erect and maintain all necessary safeguards for such safety and protection; **and shall, when so directed by the Engineer or the Owner, properly correct any unsafe conditions created by, or unsafe practices being committed on the part of its employees, Subcontractors, Suppliers or any individual or entity directly or indirectly employed by any of them. The Contractor shall fully comply with any and all applicable portions of the latest revision of the North Carolina Division of Highway “Policies and Procedures for Accommodating Utilities on Highway Right of Way”. In the event of the Contractor’s failure to comply with any of the safety precautions referenced herein or in the Contract Documents, the Engineer or Owner may take the necessary measures to correct the conditions or practices complained of; and all costs thereof will be deducted from the Contract Price due the Contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices shall not relieve the Contractor of its responsibility hereunder.** Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

Contractor shall comply with the applicable requirements of Owner’s safety programs, if any. ~~The Supplementary~~ **These General** Conditions identify any Owner’s safety programs that are applicable to the Work. **The following are the Owner’s safety programs applicable to the Work: “None”.**

- C. Contractor shall inform Owner and Engineer of the specific requirements of Contractor’s safety program with which Owner’s and Engineer’s employees and representatives must comply while at the Site.
- D. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by

Contractor (except and to the extent that such damage or loss is attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor's duties and responsibilities for safety and for protection of the Work and those people and that property that come into contact with the Work shall continue even during non-working hours, until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

F. In the event of any claims for damage or alleged damage to persons or property as a result of Work under this Contract, the Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Before final payment to the Contractor is made under the Contract, the Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or that sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

G. The Construction Documents and the joint and several phases of construction contemplated by the Construction Documents are to be governed at all times by applicable provisions of local and State laws, ordinances and regulations and Federal laws, including but not limited to the latest amendments of the Department of Labor, Bureau of Labor Standards, Safety and Health Regulations for Construction; and Williams and Steiger Occupational Safety and Health Act of 1970, including rules and regulations issued pursuant thereto (OSHA), applicable to the Work and performance of the Contract. Where applicable to the Work, in addition to the requirements of the General Conditions, as supplemented by the Supplementary Conditions, if any, the Contractor shall fully comply with any and all applicable portions of the Division of Highway "Policies and Procedures for Accommodating Utilities on Highway Right of Way" or latest revision. The duty of the Engineer to conduct a construction review of the Contractor's performance is not intended to include a review of the adequacy of the Contractor's safety measures in, on, or near the Site.

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

B. Contractor shall notify the Owner immediately, and no event more than twenty-four hours later, after an emergency has occurred if an emergency compromising the safety of persons or property at the Site has occurred.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. ~~Data shown~~**Contractor shall provide** on the Shop Drawings ~~will be complete~~ **data** with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment ~~that Contractor proposes~~**agrees** to provide, and **the Shop Drawings shall be sufficient** to enable Engineer to review the information for the ~~limited~~ purposes required by Paragraph **delineated in Paragraph** 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
- a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.
 - 4. All submittals required by the Contract Documents shall be submitted in two (2) copies plus the number to be returned to the Contractor. Samples and Operation and Maintenance Manuals required by the Contract Documents shall be submitted in two (2) copies, none of which will be returned.**
 - 5. All submittals shall be checked by Contractor for accuracy and conformance to the Contract Documents before submittal to Engineer. Shop Drawings shall show the location of all structural members, walls, and slabs with relation to the Work on the layout drawings. Any potential interference with structural members, pipes, ducts, or other equipment or work must be brought to the Engineer's attention by the Contractor in writing.**

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The

review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage normally caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. use or occupancy of the Work or any part thereof by Owner;
5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

D. By entering into the Contract with the Owner, the Contractor represents and warrants:

- 1. That Contractor is experienced in and competent to perform the type of Work required and to furnish the plants, materials, supplies or equipment to be so performed or furnished by it.**
- 2. That Contractor is financially solvent, able to pay its debts as they mature, and possessed of sufficient working capital to initiate and complete the Work required under the Contract.**
- 3. That Contractor is familiar with all federal, state, county, municipal and department laws, ordinances, permits, regulations and resolutions which may in any way affect the Work or those employed therein, including but not limited to any special laws or regulations relating to the Work or any part thereof.**
- 4. That such temporary and permanent Work required by the Contract Documents that is to be done by Contractor will be satisfactorily constructed and fit for use for its intended purpose and that such construction will not injure any person, or damage any property.**
- 5. That Contractor has carefully examined the Contract Documents and the Site of the Work and that from its own investigations, it has satisfied itself and made itself familiar with: (1) the nature and locations of the Work; (2) the character, quality and quantity of surface and subsurface materials likely to be encountered, including, but not limited to all structures and obstructions on or at the Project Site, whether natural or man-made; (3) the character of equipment and other facilities needed for the performance of the Work; (4) the general and local conditions including, without limitation, the climatic conditions, the availability and cost of labor and the availability and cost of materials, tools and equipment; (5) the quality and quantity of all materials, supplies, tools, equipment, labor and professional services necessary to complete the Work in the manner required by the Contract Documents; and (6) all other matters or things which could in any manner affect the performance of the Work.**
- 6. That Contractor will fully comply with all requirements of the Contract Documents.**

7. That Contractor will perform the Work consistently with good workmanship, sound business practice, and in the most expeditious manner, consistent with the best interests of the Owner.
8. That Contractor will furnish efficient business administration and experienced superintendents and an adequate supply of workmen, equipment, tools and materials at all times.
9. That Contractor has carefully reviewed the Work required and that the Work can be planned and executed in a normal and orderly sequence of Work and reasonably scheduled so as to ensure completion of the Project in accordance with the Contract Documents, allowing for normal and reasonable foreseeable weather, labor and other delays, interruptions and disruptions of the Work.
10. That Contractor will complete the Work within the Contract Times and all portions thereof within any required Contract deadlines.
11. That the Contract Price is based upon the labor, materials, systems and equipment required by the Contract Documents, without exception.
12. That Contractor will make a good faith effort to utilize minority business enterprises (MBEs) per N.C. General Statutes Section 143-128, et seq., as Subcontractors for the Work.
13. That Contractor is not at the time of the making of the Contract, nor has been in the last five (5) years, in dispute with the Town of Cary in connection with any project for which it has performed work.

6.20 *Indemnification*

- A. Contractor agrees to indemnify and hold the Owner harmless from and against any and all claims, losses, liabilities, costs, expenses, charges, civil penalties, fines and damages arising from, or relating to, the Contract, including but not limited to attorney's, architect's engineer's and other professional's fees, with respect to any cause arising out of resulting from or in connection with (a) any breach by Contractor of any clause, condition or provision of the Contract, (b) any breach or violation by Contractor of any applicable criminal or civil law, or (c) any other cause resulting from any act or failure to act by Contractor in connection with the Contract. Contractor shall be responsible for all expense incurred by Owner in its defense of any claim, suit or action within the scope of this indemnification and shall promptly reimburse Owner for such expense upon being notified thereof. If through the acts of neglect on the part of Contractor performing the Work, any other contractor or any subcontractor shall suffer or claim to have suffered loss or damage, Contractor shall reasonably attempt to settle such claims with such other contractor or subcontractor by agreement or arbitration. If such other contractor or subcontractor shall assert any claim against Owner on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify and save harmless Owner against any such claims. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants

~~and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.~~

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.
- D. Nothing in the Contract Documents shall create or give to third parties any claim or right of action against the Contractor, the Owner or the Engineer beyond such claims or rights as legally exist irrespective of the Contract, except as specifically described herein (Contractor's liability under permits, for example).**
- E. Except where a party's remedy is explicitly limited under the Contract Documents, nothing in the Contract Documents shall be interpreted so as to deprive the Owner, the Engineer or the Contractor of any action, right or remedy otherwise available to them or to any of them pursuant to the law of North Carolina, whether such action, right or remedy arises contractually, at law or in equity.**
- F. The purchase of insurance by the Contractor with respect to the obligations required herein shall in no event be construed as fulfillment or discharge of such obligations.**

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such

services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents, **but shall immediately notify Engineer and Owner if Contractor believes the design criteria are inadequate.**

6.22 Contractor License Requirements

- A. Contractor shall be licensed in North Carolina in an amount equal to one and one-half (1-1/2) times the total Contract Price for all of the Work. Contractor shall have and maintain a valid Town of Cary Privilege License to perform the Work. If the Work involves any roadway construction, Contractor shall have and maintain a current unlimited General Contractor's license with the "Highway Contractor" classification.**

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work;
and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner’s employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger **others** **or** any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of **Owner**, such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor’s Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor’s Work. Contractor’s failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor’s Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends **at the time of the making of the Agreement** to contract with others for the performance of other work on the Project at the Site, **those others and their responsibilities are identified as follows:**

Contractor	Work Covered	Contact Person
<i>To be determined.</i>	<i>Replace the storm drainage culvert and associated improvements on Two Creeks Road between Planetre Lane and Selwyn Lane.</i>	<i>Daniel Clinton, P.E, CFM Senior Project Manager Town of Cary</i>
To be determined	Water main replacement, street and storm water improvements, and sewer system improvements on S. Walker Street between E. Chatham Street and Waldo Street and extending east from S. Walker Street	Tony Pobee-Mensah Project Manager Town of Cary

	approximately 200 feet.	

If a party other than the Owner is to have authority and responsibility for coordinating the Work and the foregoing other work, that party is: "None", the following will be set forth in the Supplementary Conditions:

- ~~1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;~~
 - ~~2. the specific matters to be covered by such authority and responsibility will be itemized; and~~
 - ~~3. the extent of such authority and responsibilities will be provided.~~
- B. ~~Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.~~

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. **In the event of unreasonable delay by any contractor under direct contract with Owner to provide work on this Project, Contractor shall pursue payment directly from such other contractor for any reasonable direct delay and disruption costs incurred by the Contractor as a result of such other contractor's wrongful actions or inactions. Claims by the Contractor against such other contractors shall first be submitted to Engineer for its review and approval. The Engineer shall forward its recommendations regarding such claims to the Owner. The Owner shall not bear any responsibility to the Contractor for such costs unless it has specifically instructed the other contractor to act in the manner causing such costs.**

~~Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.~~

- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

7.04 Certain Specific Related Remedies

- A. Should Contractor cause damage to the work or property of any separate contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any separate contractor against Contractor, Owner, Engineer, Engineer's Consultants, the Construction Coordinator or any other person, then**

Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, Engineer's Consultants and the Construction Coordinator harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals, and court and arbitration or mediation costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, Engineer's Consultants or the Construction Coordinator to the extent based on a claim arising out of Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, Engineer's Consultants or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter that seeks to impose liability on or to recover damages from Owner, Engineer, Engineer's Consultants or the Construction Coordinator on account of any such damage or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, Engineer's Consultants and Construction Coordinator for any delay, disruption, interference or hindrance caused by any separate contractor. This Paragraph does not alter the liability of Owner, Engineer, Engineer's Consultant and Construction Coordinator for activities that are their respective responsibilities.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions or any Supplementary Conditions, and unless Owner is also acting as the Engineer or the inspector for the Project, Owner shall issue all communications to Contractor through Engineer or shall copy Engineer on its direct correspondence with Contractor.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. ~~**[Intentionally Omitted]** Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.~~

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Unless and until the Owner provides otherwise in writing to the Contractor, all instructions of the Engineer on behalf of the Owner during construction shall be executed promptly and efficiently by the Contractor and its Subcontractors. The authority of the Engineer is only to issue orders on behalf of the Owner hereunder, and Engineer has no authority to bind Owner with respect to any documentation to be executed by Owner. Furthermore, Engineer's recommendations and approvals under the Contract Documents do not bind the Owner and may be overruled by the Owner. ~~Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.~~

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.
- C. After hours or weekend Work shall include only such tasks that do not require observation by the Engineer unless the Owner specifically authorizes otherwise in writing.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in ~~the Supplementary~~these General Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09 and any Supplementary Conditions. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in ~~the Supplementary~~these General Conditions.

B. If a Resident Project Representative has been specified in Schedule 1 to the Agreement between the Owner and the Contractor (Section 00500), then the following provisions apply. The Resident Project Representative shall serve as the Engineer's liaison with the Contractor, working principally through the Contractor's superintendent to assist it in understanding the intent of the Contract Documents. The Resident Project Representative shall conduct on-site observations of the Work in progress to confirm that the Work is proceeding in accordance with the Contract Documents. The Resident Project Representative shall verify that tests, equipment and systems start-ups and operating and maintenance instructions are conducted as required by the Contract Documents. The Resident Project Representative shall have the authority to disapprove or reject defective work in accordance with the Engineer's authority.

Other specific responsibilities, authority, and limitations of the Resident Project Representative are "None".

Except upon written instructions of the Engineer, the Resident Project Representative shall not and is not entitled to:

- 1. authorize any deviation from the Contract Documents or approve any substitute materials or equipment;**
- 2. exceed the limitations of the Engineer's authority as set forth in the Contract Documents;**
- 3. act on behalf of Owner except as may be specifically authorized by Schedule 1 to the Agreement between the Owner and the Contractor (Section 00500);**
- 4. act on behalf of Engineer with respect to documentation listed in Schedule 1 to the Agreement between the Owner and the Contractor (Section 00500) for which another party has been specified as the party who may bind the Engineer;**
- 5. undertake any of the responsibilities of the Contractor, Subcontractors or the Contractor's superintendent, or expedite the Work;**
- 6. 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; or**

7. advise on or issue directions as to safety precautions and programs in connection with the Work.

Any other representative or agent authorized to represent Owner at the Site: “None”.

Specific responsibilities, authority, and limitations of the representative or agent: “None”.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. **If the Contractor decides that the Field Order should result in an increase of the Contract Price or a change in the Contract Times, then the Contractor shall submit a written request regarding such an adjustment to the Engineer prior to commencing the Work. If the Contractor proceeds with the Work prior to the execution of the Change Order, such Work shall be performed with the understanding that the increase in the Contract Price or a change in the Contract Times requested is subject to the approval of the Owner. The decision rendered by the Owner concerning the request for an increase in the Contract Price or a change in the Contract Times resulting from a Field Order shall be final.** If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer’s authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer’s authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer’s authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. ~~**Intentionally Omitted** Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.~~
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. ~~**Except as, but only to the extent, specified in any separate agreement between the Owner and the Engineer, neither**~~ Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. ~~**Except as, but only to the extent, specified in any separate agreement between the Owner and the Engineer,**~~ Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. ~~**Except as, but only to the extent, specified in any separate agreement between the**~~

Owner and the Engineer, Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

- C. Except as, but only to the extent, specified in any separate agreement between the Owner and the Engineer, Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine ~~generally~~ that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The presence of the Engineer at the Site shall in no way lessen the Contractor's responsibility for conformity with the Drawings and Specifications. Failure of the Engineer to reject materials or Work that does not conform with the Drawings and Specifications, whether from lack of discovery or for any other reason, shall in no way prevent later rejection of or corrections to the unsatisfactory materials or Work when discovered. The Contractor shall have no claim for losses suffered due to any necessary removals or repairs resulting from unsatisfactory Work.
- F. ~~E.~~The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

9.11 *Clarifications and Interpretations*

- A. Engineer will issue with reasonable promptness such written clarifications and interpretations of the requirements of the Contract documents as Engineer may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on Owner and Contractor. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a claim may be made therefore as provided in Paragraph 10.05.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.
- C. If Contractor claims (1) that any work he/she has been ordered to do is not part of the Work required by the Contract Documents (hereinafter referred to as “Extra Work”) and that he/she has performed or is going to perform Extra Work, or (2) that any action or omission of Owner or Engineer is contrary to the terms and provisions of the Contract Documents, Contractor shall:**
- (i) Promptly comply with such order;**
 - (ii) File with Engineer, within fourteen working days after being ordered to perform the work claimed by him/her to be Extra Work or within fourteen working days after commencing performance of the Extra Work, whichever date shall be the earlier, or within fourteen working days after the action or omission of the Owner or the Engineer occurred or was due, a written notice stating the basis of his/her claim and a request for a determination thereof;**
 - (iii) File with Engineer thirty (30) calendar days after said alleged Extra Work was required to be performed or said alleged Extra Work was commenced, whichever date shall be earlier, or said alleged action or omission by Owner or Engineer occurred or was due, a verified detailed statement, with documentary evidence of the items and basis of his/her claim;**
 - (iv) Produce for Owner’s examination, upon notice from Owner, all his/her books of account, bills, invoices, payrolls, subcontracts, time books, progress records, daily reports, bank deposit books, bank statements, checkbooks and canceled checks showing all of his/her actions and transactions in connection with or relating to or arising by reason of his/her claim, and submit himself/herself and persons in his/her employment and in his/her Subcontractor’s employment for examination under oath by any person designated by Owner to investigate any claims made against Owner under the Contract, such examination to be made at the offices of Owner or Owner’s agent;**
 - (v) Proceed diligently, pending and subsequent to determination of Owner with respect to any such disputed matter, with the performance of the Contract and in accordance with all instructions of Owner and Engineer.**

D. Contractor's failure to comply with any or all of the provisions of Paragraph 10.01.C shall be deemed to be: (1) a conclusive and binding determination that said order, work action or omission is not additional or extra Work for Contractor and is not contrary to the terms and provisions of the Agreement; and (2) a waiver by Contractor of all claims for additional compensation or damages or extension of Contract Times as a result of said order, work action or omission.

E. Only Owner may waive or modify any of the provisions of Paragraphs 10.01.C or 10.01.D, which waiver must be done in writing and signed by Owner. In any action against Owner to recover any sum in excess of the sum certified by Owner to be due under or by reason of the Contract, Contractor must allege in his/her complaint and prove at trial compliance with the provisions of Paragraph 10.01.C. Nothing in paragraphs 10.01.C, 10.01.D, or this paragraph shall in any way affect Owner's right to obtain an examination of Contractor before trial or discovery and inspection in any action that might be instituted by or against Owner or Contractor.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be

Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 Claims

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied, **in which case an appeal from the denial of the claim may be made in accordance with Paragraph 10.05.E.**
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 **or in any Supplementary Conditions** within 30 days of such action or denial. **However, if no such dispute resolution procedures have been set forth in Article 16 or in the Supplementary Conditions, if any, the Engineer's written action or denial will not be final and binding on Owner and Contractor if a written notice of intention to appeal such action or denial**

is delivered by Owner or Contractor to the other and to Engineer within 30 days after the date such decision is delivered to Owner and Contractor, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of delivery of such decision, if the appealing party is the Contractor, and within 90 days after the date of delivery of such decision, if the appealing party is the Owner, or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by Owner and Contractor), to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute, or other matter in accordance with applicable Laws and Regulations.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

G. Contractor shall diligently continue all Work and adhere to the Progress Schedule to the extent possible during the resolution of any dispute, including a Claim, even if the dispute or Claim pertains to Contract Times, Contract Price, or any other integral feature of the Agreement, unless the Owner and the Contractor agree otherwise in writing.

10.06 Requests for Changes in the Work

A. At any time Engineer may request a quotation from Contractor for a proposed change in the Work. Within 21 calendar days after receipt of a request for a quotation for a proposed change, the Contractor shall proceed to submit a written and detailed proposal for an increase or decrease in the Contract Price or alterations of the Contract Times for the proposed change. Engineer shall have 21 calendar days after receipt of the detailed proposal to respond in writing. The proposal shall include an itemized estimate of all cost and time for performance that will result directly or indirectly from the proposed change. Unless otherwise directed, itemized estimates shall be in accordance with Articles 11 and 12, and in sufficient detail to reasonably permit an analysis by Engineer of all material, labor, equipment, subcontracts, overhead costs and fees, and shall cover all Work involved in the change, whether such Work was deleted, added, changed, or impacted. Any amount claimed for subcontracts shall be similarly supported. Itemized schedule adjustments shall be in sufficient detail to permit an analysis of impact as required by the Contract Documents. Notwithstanding the request for quotation, Contractor shall carry on the Work and maintain the Progress Schedule.

10.07 Effect of the Change Order

A. The adjustment in the Contract Price and/or Contract Times stated in a Change Order shall comprise the total price and/or time adjustment due or owed the Contractor for the work or changes defined in the Change Order. By executing the Change Order, the Contractor acknowledges and agrees that the stipulated price and/or time adjustments include the costs and delays for all Work contained in the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected Work under this Contract. Signing of the Change Order constitutes full and mutual accord and satisfaction for the adjustment in contract price or time as a result of increases or decreases in costs and time of performance caused directly and indirectly from the

change, subject to the current scope of the entire Work as set forth in the Contract Documents. Acceptance of this waiver constitutes an agreement between Owner and Contractor that the Change Order represents an equitable adjustment to the Contract, and that Contractor will waive all rights to file a claim on this Change Order after it is properly executed.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. **Rental rates shall include all fuel, lubricants, insurance and the like necessary in connection with the use of the equipment. Equipment rental charges shall not exceed the prorated monthly rental rates listed in the current edition of the "Compilation of Rental Rates for Construction Equipment" as published by the Associated Equipment Distributors. Hourly charges shall be determined by dividing the monthly rates by 176.** The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (~~except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D~~), provided **and to the extent that** such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.

- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items, **all of which must be** in connection with **and in furtherance of** the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
 - 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
 - 6. Any costs due to the Contractor, or the Subcontractors or Suppliers, not properly performing or supplying the Work, including, without limitation, not adhering to the Progress Schedule.**
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C. **The Contractor's fee shall not be applied to payroll taxes, social security contributions, or unemployment taxes.**
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:*
1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance:*
1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.
- E. **Notwithstanding anything else apparently to the contrary in the Contract Documents or documentation referenced by the Contract Documents, there shall be no price indexing allowed. Unit prices are those specified in the Contract Documents or otherwise in effect at the time of the Invitation to Bid.**

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

11.04 Costs Included in Contract Price

- A. Contractor acknowledges that the Contract Price includes Contractor's costs of bonds, insurance, transportation of materials, labor and equipment, general administration, and the like. Gravel construction entrances to the Site also are included in the Contract Price.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
1. Intentionally Omitted ~~a mutually acceptable fixed fee; or~~
 2. ~~if a fixed fee is not agreed upon, then~~ a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent based on the Subcontractor's Cost of Work;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under

Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.
- C. Pending any adjustment of the Contract Times pursuant to the terms of this Paragraph 12.02, the Contractor shall diligently continue all Work and adhere to the Progress Schedule and the Contract Times to the extent possible.**

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. **Extensions granted to the Contract Times shall reflect the actual delay likely to be caused to the date of Substantial Completion. For example, a 3-day delay in the exterior landscaping may or may not result in a full 3-day delay in the remainder of the Work such that Substantial Completion is also delayed a full three days. Only the resulting delay to Substantial Completion shall be credited to the Contract Times.** Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God. **“Abnormal weather” is defined as weather that is more severe than the average weather for the particular time(s) and date(s) in question as compared to the last 5-year average. The “average” shall be based on the “Local Climatological Data” published by the National Oceanic and Atmospheric Administration for the Project area. It shall be the responsibility of the Contractor to furnish all data**

necessary to support its request. The Contractor shall not be entitled to additional compensation as a result of time extensions not due to acts or neglect by the Owner.

- B. The Contractor agrees to make no claim against Owner, Engineer, their agents, representatives, or employees for damages or a change in the Contract Price for delay in the performance of this Contract that are not solely occasioned by any act or omission to act of the Owner or any of its representatives or other contractors under direct contract with Owner to provide work on this Project, and agrees that any such potential claim shall be fully compensated for by an extension of time to complete performance of the deemed Work as provided in Paragraph 12.03.A. Any claim against Owner, Engineer, their agents representatives, or employees for damages or a change in the Contract Price for delay in the performance of this Contract that is solely occasioned by an act or omission to act of the Owner or any of its representatives or other contractors under direct contract with Owner to provide work on this Project shall be only for costs actually incurred by the delay.~~If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.~~
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

12.04 Float Times and Contract Times and Contract Price

- A. The Owner controls the float time in the Progress Schedule, and therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the Progress Schedule, the Owner may initiate changes to the Work that absorb float time only. Owner-initiated changes that affect the critical path on a critical path methods schedule shall be the sole grounds for extending (or contracting) said completion dates. Contractor-initiated changes that encroach on the float time identified in the current Progress Schedule may be accomplished with the Owner's

concurrency. Such changes, however, shall give way to Owner-initiated changes competing for the same float time.

B. Portions of the Work that are listed in the Progress Schedule with a float time may, at the option of the Owner, be performed using any or no amount of the float time, but in no event shall performance of the Work during the float times entitle the Contractor to an increase in the Contract Price as to such portions of the Work or as to other portions of the Work.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval. **Testing to be performed under the Contract Documents shall be performed in accordance with the North**

Carolina Department of Transportation “Materials Specifications Guidelines” and the Town of Cary “Standard Specifications and Details”. If and to the extent that the Town of Cary testing standards conflict with and are more stringent than those of the North Carolina Department of Transportation, testing shall be performed in accordance with the Town of Cary standards.

- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner’s and Engineer’s acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor’s purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work **and make available for inspection at the Contractor’s expense** for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor’s expense unless Contractor has given Engineer timely notice of Contractor’s intention to cover the same, **and given Engineer time to inspect same**, and Engineer has not acted with reasonable promptness in response to such notice.
- G. The Contractor shall allow the Engineer ample time and opportunity for testing materials and equipment to be used in the Work. The Contractor shall advise the Engineer promptly upon placing orders for materials and equipment so that arrangements may be made, if desired by the Engineer, for inspection before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and all Owner representatives appropriate facilities for performing inspections and tests, including any labor necessary, and shall allow proper time for inspecting and testing materials, equipment, and workmanship. In setting Contract Times and a Progress Schedule for the Work, the Contractor should anticipate that delays may be caused in the execution of Work due to the necessity of materials and equipment being inspected and accepted for use. The Contractor shall furnish, at its own expense, samples of all materials required by the Engineer for testing, and shall make its own arrangements for providing water, electric power, and/or fuel for the various inspections and tests of structures and equipment.**
- H. The Contractor shall furnish the services of representatives of the manufacturers of certain equipment if so prescribed in the Specifications. The Contractor shall also place its orders for such equipment requiring that, after the equipment has been tested prior to final acceptance of the Work, the manufacturer shall furnish the Owner with certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the Contractor, unless specified otherwise in the Contract Documents.**
- I. The Owner reserves the right to independently perform, at its own expense, laboratory tests on random samples of material or performance tests on equipment delivered to the Site. These tests if made shall be conducted in accordance with the Specification**

requirements or other appropriate standards. The entire shipment represented by any given sample or piece of equipment may be rejected on the basis of the failure of a sample or piece of equipment to meet specified test requirements. All rejected materials and equipment shall be removed from the Site, whether stored or installed in the Work, and the required replacement shall be made, all at no additional cost to the Owner in accordance with terms of Paragraphs 13.06 through 13.09.

J. Whenever nonconformance is discovered by the Engineer as a result of tests, inspections, or investigations, the Contractor shall bear responsibility for the full cost of such tests, whether otherwise required to pay for such tests, inspections or investigations under the Contract Documents, and shall directly pay for such services or shall reimburse the Owner for such costs. Once nonconformance has been discovered, the cost of any additional tests and investigations that are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents shall be borne by the Contractor, whether or not the original tests, inspections, or investigations of such nonconforming Work were originally required by the Contract Documents to be borne by another party.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will **or is likely to** conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated;

however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

B. If Owner stops Work under Paragraph 13.05.A, Contractor shall be entitled to no extension of Contract Times or increase in Contract Price.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, **even if such Work has previously been overlooked by Engineer and estimated as a basis for payment,** whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. **At any time during the progress of the Work and up to the date of final acceptance, the Engineer shall have the right to reject any Work that does not conform to the requirements of the Contract Documents, even if such Work has been previously inspected and paid for. Any omissions or failure on the part of the Engineer to disapprove or reject any Work or materials at the time of inspection shall not be construed as an acceptance of any defective Work or materials.** Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others **or other portions of the Work affected by such correction, removal, or replacement**).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work, **unless Contractor first receives permission from Owner.**
- C. The Engineer may order tests of imperfect or damaged Work, equipment, or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the Contractor; and the nature, tester, extent and supervision of the tests shall be as determined by the Engineer. If the results of the tests indicate that the required functional capability of the Work, equipment, or material was not impaired, then the Work, equipment, or materials may be deemed acceptable. If the results of such tests reveal that the required functional capability of the questionable Work, equipment or materials have been impaired, then such Work, equipment, or materials shall be deemed imperfect and shall be replaced at the Contractor's expense. The Contractor may elect to replace the imperfect Work, equipment, or material immediately upon their identification as such in lieu of performing the tests for functional capability.**

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for

Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor **immediately upon the submission of an invoice for such expenses to the Contractor by the Engineer or the Owner.**
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed, **or, if such correction or removal and replacement took longer than one year, then for such period of time as the correction or removal and replacement took. All warranties for the Work so affected shall be extended for the same amount of time.**
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not

otherwise paid by Contractor pursuant to this sentence **and a proportionate amount of the Contractor's fee**. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price, **including a proportionate decrease in the amount of the Contractor's fee**. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.
- B. Where an itemized proposal is not required, the Contractor shall submit for the Engineer's approval a complete breakdown of all lump sum items in the Proposal. This breakdown, modified as directed by the Engineer, shall be used as a basis for preparing estimates and establishing progress payments. For either lump sum or itemized proposals, a lump sum payment equal to two percent (2%) of the total Contract Sum or Price (to include the actual cost of all bonds and insurance, move-on expenses, and the like) will be allowed for "mobilization" as a progress payment line item. Payment of up to one-fourth of "mobilization" shall be considered in the initial payment request, provided that cost documentation suitable to the Engineer is furnished by the Contractor. The subsequent outstanding balance of "mobilization" may thereafter be payable in approximately equal amounts in subsequent payment requests. Full payment of the mobilization line item shall not be considered until after the Work is fifty percent (50%) complete as indicated by the approved progress payments (less cost of mobilization and stored equipment).**

14.02 *Progress Payments*

A. *Applications for Payments:*

- 1. Once a month after the Work has commenced**~~At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month);~~ Contractor shall submit to Engineer for review an Application for Payment filled out and signed by the Contractor covering the Work completed as of the date of the Application **for Payment** and accompanied by such supporting documentation as is required by the Contract Documents. **The due date for submitting an Application for Payment shall be the 25th day of the month for which the application is being made. Request for payment shall be submitted on the standard forms included in the Contract Documents unless approved otherwise by the Engineer. All submittals shall include four (4) copies of Application for Payment forms, all bearing original signatures. Two (2) copies of the Certificate of Sales Tax Paid, all notarized and bearing original signatures shall also be submitted as described under Section 6.10.** If payment is requested on the basis of materials and equipment not incorporated ~~into~~ **into** the Work but delivered and suitably stored at the Site or at another location agreed to in writing **by the Owner**, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received **such supporting data, satisfactory to the Owner, which shall establish the Owner's title to the materials and equipment free and clear of all Liens and evidence that liens, and protection of the Owner's interest in** the materials and equipment ~~are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner,~~ **including without limitation the**

maintenance of insurance on materials stored off the site and the payment of all related storage fees.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor **and all Subcontractors who have performed Work or are otherwise receiving payment under the Application for Payment** stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. ~~The amount of retainage with respect to progress payments will be as stipulated in the Agreement.~~ **Retainage shall be five percent (5%) of any periodic payment due Contractor except as otherwise described below:**
 - a. **When the Contractor's gross project invoices (less the value of materials stored off-site and the value of materials stored on-site that exceed 20% of the gross project invoices) equal or exceed 50% of the value of the Contract (i.e. the Work is fifty percent (50%) complete), then, with the consent of the surety and if the manner of completion of the Work and its progress are and remain satisfactory and all corrected work to that point has been accepted, Owner will not retain any further retainage from periodic payments unless Owner thereafter determines (i) performance or progress is not satisfactory, (ii) defective construction is not remedied, (iii) there is disputed work or (iv) third-party claims have been or are reasonably expected to be filed against the Owner. If (i), (ii) (iii) or (iv) above occur, Owner shall withhold additional retainage from periodic payments, not to exceed 5% of such payment, in order to allow Owner to retain 2.5% total retainage through the completion of the project**
 - b. **Within sixty days after submission of a pay request and the occurrence of one of the following: (i) receipt by owner of a certificate of substantial completion and Owner can occupy or use the project, or (ii) actual beneficial occupancy or use of the project, then Owner, with written consent of the surety, shall release to the Contractor all retainage held on work completed to date.**
 - c. **However, the Owner may retain sufficient funds to secure completion of the project or corrections on any work. This amount retained shall not exceed two and one-half (2.5) times the estimated value of the work to be completed or corrected.**
 - d. **If retainage is reduced and the Contractor does not maintain satisfactory progress or quality of the Work, or for other specific cause, retainage of up to five percent (5%) of the amount of any subsequent periodic payment may be withheld as determined by the Engineer.**

Retainage for stored materials shall be included in retainage withholding described above, except that 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.

The Contractor is hereby advised that it should not assume that any retainage reduction herein described will be automatic, but that instead, a reduction will be made at the sole discretion of the Owner, consistent with North Carolina law. Any reduction in the amount of retainage on payments shall be with the written consent of the Contractor's surety. The Contractor is responsible for obtaining such consent and submitting the same with its payment request.

Interest on payments required by N.C.G.S. 143-134.1 shall be zero percent (0%), unless otherwise required by law.

4. Beginning with the second Application for Payment, each Application shall include evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective Supplier(s) within sixty days of payment by Owner. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

5. Each Application for Payment shall include the current list of Subcontractors and Suppliers providing labor or materials to the Site. Failure to provide an accurate list, or the existence of Subcontractors or materials at the Site that have not been approved by the Owner and the Engineer, may result in the withdrawal of previous approval(s) and/or removal of the cost of labor and/or materials provided by unapproved Subcontractors and/or Suppliers from the current and future Applications for Payment.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation);
and

- c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work; and
 - d. any fines owed by Contractor (to third parties or the Owner), setoffs, or other reductions in the amount due to Contractor have been subtracted from the current or previous Applications for Payment.
3. Except as, but only to the extent, specified in any separate agreement between the Owner and the Engineer, by recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 4. Except as, but only to the extent, specified in any separate agreement between the Owner and the Engineer, neither Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; ~~or~~
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A;
- e. Engineer has knowledge of any setoff, fine, or other reduction in the amount due to Contractor in connection with the Application for Payment and such amount has not been properly accounted for in the Application for Payment;**
- f. the Application for Payment is in any way incomplete; or**
- g. unapproved Subcontractors or Suppliers are performing Work at or supplying materials to the Site.**

C. *Payment Becomes Due:*

1. ~~Thirty~~ Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.
- 2. Should Contractor neglect to pay any undisputed claims made in writing to Owner within thirty days after completion of the Work or any portion thereof, and continuing unsatisfied for a period of ninety days, Owner may pay such claim and deduct the amount thereof from the balance due Contractor. Owner may also, with the written consent of contractor, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for such Work, even if claims have not been filed, if there is reasonable evidence that such a claim will be filed.**
- 3. Payment under the Payment Bond and the withholding of retainage by the Owner for claims shall not be mutually exclusive protections for Owner. Owner may exercise both.**
- 4. Any and all liens for work and materials may be paid off by Owner within a reasonable time after filing for record of a notice of such liens in accordance with State and local laws, except where the claim on which the lien is filed is being actively litigated by Contractor; in such case Owner may pay the amount of any final judgment or decree or any such claim within a reasonable time after such final judgment or decree shall be rendered.**
- 5. All monies paid by Owner in settlement of liens as aforesaid, with all costs and expenses incurred by Owner in connection therewith, shall be charged to Contractor, shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank, and shall be deducted from the next payment(s) due Contractor under the terms of this Contract or shall be reimbursed by Contractor immediately upon receipt by the Contractor of an**

invoice therefor by the Owner if insufficient payments are outstanding to the Contractor to cover such costs and expenses.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; ~~or~~
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A₂;
 - e. Insufficient funds have been deducted from the Application for Payment to cover all fines owed by Contractor (to third parties or the Owner) and other setoffs and reductions in the amount due to the Contractor in connection with the Application for Payment.**
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens, **and upon payment by Owner after submission by Contractor of an Application for Payment, all Work covered thereby shall be deemed to belong to the Owner without need for further documentation evidencing such conveyance of title.**
- B. No materials or supplies for the Work shall be purchased by Contractor or any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that**

Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.

C. Contractor shall indemnify and save Owner harmless from all claims growing out of the lawful demands of Subcontractors, Suppliers, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If contractor fails to do so, then Owner may, after having provided ten (10) days' written notice on Contractor, withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims. Owner may hold such withheld money until satisfactory evidence is furnished that all liabilities have been fully discharged, or use the money to pay the unpaid obligations. Once the obligations have been satisfied, payment to Contractor shall be resumed in accordance with the terms of this Contract. In no event shall the provisions of this paragraph be construed to impose any obligations upon Owner to either Contractor or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor, and any payment so made by Owner shall be deducted from the Contract Price due to Contractor. Owner shall not be liable to Contractor for any such payment made in good faith.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer **or Owner** does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list **unless the Owner has stopped or suspended Work or terminated the Contract pursuant to the terms hereof.**

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.
 - 5. Payment in full for portions of the Project that are completed and used by Owner shall not be made until the entire Project has been completed. Partial payments and retainage shall continue to be handled pursuant to N.C.G.S. 143-134.1.**

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of

the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, 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 to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer

which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate the Contract or Suspend the Work for Cause*

- A. The occurrence of any one or more of the following events will justify ~~termination for cause~~suspension of the Work and/or termination of the Contract (which termination may or may not be preceded by a suspension of the Work):
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents;
 - 5. Contractor's abandonment of the Work, or sublet or assignment of its rights and/or responsibilities under this Contract, or any part thereof, without the previous written consent of Owner, or the Contractor's assignment of any claim under the Contract without the previous written consent of the Owner or otherwise than as herein specifically permitted; or**
 - 6. Delays within the control of the Contractor, pursuant to Paragraph 12.04.A, have caused or will shortly cause the Work to interfere with the intended use of the Site, or a portion thereof, for other purposes, which interference would not have occurred if Contract Times had been met.**
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.

- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed, **and may pay more than the prevailing rate if necessary to have the Work completed in accordance, or as close thereto as feasible, with the original Progress Schedule and Contract Times.**
- D. ~~**Intentionally Omitted**~~ Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall ~~supersede~~ **conform to** the provisions of Paragraphs 15.02.B and 15.02.C, **as applicable by law. If the termination procedures of the bond do not conform to the provisions of Paragraphs 15.02.B and 15.02.C, then Contractor shall be required to replace the bond with one that does comply, unless Owner specifically agrees otherwise in writing.**
- G. If the Owner suspends Work due to repeated unsafe Work conducted by the Contractor, confirmed by subsequent inspection by OSHA NC, then the Contractor shall not be allowed any adjustment in the Contract Price or extension of Contract Times for delays caused by such suspension, and Contractor shall bear all responsibilities under this Contract for such delays.**

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such **completed and acceptable** Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in

- connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.
- C. Upon receiving the Owner's notification of termination of the Contract, the Contractor shall immediately and expeditiously terminate any ongoing Work and inform its Subcontractors and Suppliers of termination, all so as to minimize the costs, expenses and other damage sustained prior to the effective date of the termination.**

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due **and not disputed by either party**, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due **and not disputed by either party**, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. **Dispute resolution methods and procedures, if any, shall be as set forth in these General Conditions or in any Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of Paragraphs 9.08 and 10.05, Owner and Contractor may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws and Regulations in respect of any dispute. Contractor shall continue to diligently pursue completion of the Work and maintain the**

Progress Schedule during any dispute resolution process, unless otherwise agreed by Contractor and Owner in writing. ~~Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.~~

- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in **these General Conditions or in any** the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are

otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

17.07 Amendments

- A. This Contract may only be amended in writing by an instrument executed by the party or parties granting additional rights against it to others or upon whom additional obligations are being imposed.**

17.08 Assignment

- A. Contractor shall not assign, transfer, convey or otherwise dispose of the Contract, or of its legal right, title, or interest in or to the same or obligations or warranties made thereunder, in whole or in part, without the prior written consent of the Owner. Contractor shall not assign by power of attorney or otherwise any monies due it and payable under this Contract without the prior written consent of the Owner. Such consent, if given, shall in no way relieve the Contractor from any of the obligations of this Contract. Owner shall not be bound to abide by or observe the requirements of any such assignment.**

17.09 Addresses

- A. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at either of the above named places, or depositing in a postpaid wrapper directed to the address in the Bid Form, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing.**

The Contractor's notice address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

B. The notice address for the Owner shall be:

Public Utilities Department,
Town of Cary
400 James Jackson Avenue
Cary, North Carolina 27513
Attention: Lynn Brilz, P.E.

The notice address for the Engineer shall be:

Frazier Engineering, P.A
6592 Bob White Trail
Stanley, NC 28164
Attention: Mark Lambert, P.E.

If different from the address specified in the Bid Form, the notice address for the Contractor shall be:

Attention: _____

17.10 Forms

A. The form of all submittals, notices, change orders, and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by Engineer. Standard forms that Engineer expects to use are contained in the pages of the Supplementary Conditions.

17.11 Dissemination of Information

A. It is expressly agreed and understood that the Contractor shall not at any time publicly disseminate any information concerning the Project without prior approval from the Owner. Such approval will not be unreasonably withheld but may be given with certain stipulations, such as Owner participation in the creation of the public product or Owner review and the option to refuse ultimate release of the final product should it fail to meet the Owner's standards and goals. Public dissemination includes but is not limited to electronic, video, audio, photographic or hard copy materials serving as, in whole or part, professional papers or presentations, news releases, articles, or other media products, and/or Contractor's business collateral pieces.

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions supplement either:

- _____ the “General Conditions of the Contract for Construction”, AIA Document A201-2007 (the “AIA”), or
- X the “Standard General Conditions of the Construction Contract”, EJCDC Document No. C-700, 2007 edition (the “EJCDC”),

whichever is applicable (the “General Conditions”), in connection with the Agreement between the Town of Cary as Owner and _____ as Contractor, as such General Conditions may have already been amended, revised and supplemented by other Contract Documents (as defined in the General Conditions). The attached forms supplement the General Conditions and the Contract Documents by providing forms of documentation to use in connection with the provisions in the General Conditions and Contract Documents regarding written communication among project team members and regarding memorializing Contract Document changes and changes to the Project or the Work. All capitalized terms used but not defined herein shall have the meanings ascribed to them in the General Conditions.

This page left intentionally blank

APPLICATIONS FOR PROGRESS PAYMENT

Each Application for progress payment must include, as a minimum, the following information:

1. Progress payment cover letter as included on page 00800-4.
2. Town of Cary Cover Sheet as included on page 00800-5.
3. Itemized quantity sheet(s) as included on page 00800-6.
4. A Certificate of Sales Tax Paid as included on page 00800-7.
If no sales tax has been paid in the period, then a certificate should be included stating that no sales tax was paid.

ONLY THOSE PARTIES AUTHORIZED by Section 00500, Schedule 1, of the Contract Documents to execute these forms on behalf of the parties listed in each form may execute the attached forms.

***** PUT ON CONTRACTOR'S LETTERHEAD *****

DATE: _____

TO: Town of Cary

RE: _____

We hereby certify that the labor and materials listed on this request for payment have been used in the construction of this Work, or that all materials included in this request for payment and not yet incorporated into the construction are now on the site or stored at an approved location with proper insurance to protect these stored materials; and that all lawful charges for labor, materials and the like, covered by previous Certificates of Payment have been paid and that all other lawful charges on which this request for payment is based have been paid for in full or will be paid for in full from the funds received in payment of this request within ten (10) calendar days from receipt of this partial payment from the OWNER; and that all setoffs, fines owed by Contractor (to third parties or to Owner), Liquidated Damages and other reductions in the amount due to Contractor have been properly accounted for in the attached Application for Payment.

CONTRACTOR: _____

BY: _____

TITLE: _____

State of _____
County of _____

Sworn to and subscribed before me this _____ day of _____, 20__.

Notary Public (Seal)

My Commission Expires

APPLICATION FOR PAYMENT

Town of Cary, North Carolina

Project _____

Contractor _____

Project No. _____

Period _____

Payment No. _____

The undersigned Contractor certifies that to the best of its knowledge and belief, all items, units, quantities and prices of all work and material indicated on sheet(s) _____ of this periodic estimate are correct; that all Work has been performed and Materials supplied in full accordance with the terms and conditions of the construction Contract Documents between the undersigned as Contractor and the Town of Cary as Owner, dated _____, _____, and all authorized changes thereto; that the following is a true and correct statement of the Contract amount up to and including the last day of the period covered by this estimate; and that no part of the "Amount Due This Estimate" has been received.

Total Contract Amount, Including Change Orders _____

Total Amount Earned, To Date _____ % Earned

Total Setoffs, Fines, Liquidated Damages, To Date _____

Total Owed To Date Minus Setoffs, Etc. (Net Earned) _____

(Proceed if positive; else Payment Application is to account for reduction in setoffs, fines Liquidated Damages and the like: _____)

Retainage _____

Total Net Earned Less Retainage _____

Total Previously Approved _____

Amount Due This Estimate _____

(Equal to Amount Unpaid From Previous Estimate _____ minus Current Amount Due _____)

Balance to Finish, Including Retainage _____

The Contractor further certifies that all claims outstanding as of this date against the undersigned as Contractor for labor, materials, and expendable equipment employed in the performance of said Contract up to the date of this estimate have been paid in full accordance with the requirements of this Contract.

CONTRACTOR _____ BY _____ TITLE _____ DATE _____

APPROVAL FOR PAYMENT: *[Check Section 00500, Schedule 1, for parties authorized to execute below.]*

Resident Project Representative

Engineer/Architect

Town of Cary – Department Director's
Title

[SW3501]

00800-5 FY20-21 Sewer Rehabilitation Project

APPLICATION FOR PAYMENT

Town of Cary, North Carolina

PAYMENT NO. _____
 PROJECT _____
 PERIOD _____
 CONTRACTOR _____

ITEM NO	DESCRIPTION OF ITEMS	UNIT	UNIT PRICE	BID QUANTITIES	CURRENT QUANTITY	QUANTITY TO DATE	CURRENT AMOUNT	CONTRACT AMOUNT	% COMP	AMOUNT EARNED TO DATE

TOTAL EARNED TO DATE	_____
Minus TOTAL PAID TO DATE	_____
Minus RETAINAGE	_____
Minus OTHER REDUCTIONS	_____
Equals AMOUNT DUE THIS ESTIMATE	_____

CERTIFICATE OF SALES TAX PAID

PAYMENT NO. _____

PROJECT _____

OWNER - TOWN OF CARY, WAKE COUNTY, NORTH CAROLINA

CONTRACTOR _____

FOR PERIOD _____

TO _____

Note: Only items that become part of the building/project that the Town of Cary owns or leases are eligible to be listed. The contractor may not include in the statement items they purchased and used to fulfill the contract but did not become part of the actual constructed project. Items such as scaffolding, concrete forms, fuel for the operation of machinery and equipment, tools, equipment repair parts, equipment rentals and blueprints are not to be included in this statement.

As of January 1, 2017, Repair, Maintenance and Installation (RM) projects are subject to tax for labor and materials.

VENDOR	MATERIAL PURCHASED	VENDOR'S ADDRESS	INVOICE # (MUST BE ATTACHED)	DATE	INVOICE AMOUNT (Pre-tax)	TAXES PAID					TOTAL TAX BILL	COUNTY NAME
						NC STATE TAX (4.75 %)	Other State Tax Paid	County Tax (2.00%)	County Tax (2.25%)	TRANSIT TAX (0.50%)		
											-	
											-	
											-	
											-	
											-	
											-	
											-	
											-	
											-	
TOTAL TAX						-	-	-	-	-	-	

I hereby certify that the above listed vendors were paid sales tax upon purchases of **building materials** during the period covered by this construction estimate and the property upon which such taxes were paid was or will be used in the performance of this contract. **No tax on purchases as listed above in yellow highlighted area is included in this certificate. All of the materials listed above became a part of or are annexed in the above referenced construction project.**

By _____
Signature

Title

_____, being duly sworn, certifies that the foregoing statement of sales taxes paid in connection with the referenced Contract is true to the best of his or her knowledge and belief.
 Sworn to before me this _____ day of _____, 20_____
 My Commission expires _____, 20_____

Notary Public

Vendor is to fill out the name of the State and County/ Counties being reported. There may be instances where vendor is from another state and taking materials from inventory. ALL building materials should be reported even if it is another state/county. Currently North Carolina counties with Transit Tax – Durham, Mecklenburg, Orange and Wake.

Blanks are in place for the various rate of tax that may be paid if paying another State and County Tax Rate. North Carolina State Rate = 4.75% Counties in NC vary from 2.00% to 2.25%

Resource for Tax Rates can be found <http://www.dorn.com/downloads/gen562bycity.pdf>

EXAMPLE - CERTIFICATE OF SALES TAX PAID

In this example, product was shipped to Wake County, NC. Therefore, State of Fla 6% - County 0 Tax - Trans 0 Tax

PAYMENT NO. 4

PROJECT Make an example OWNER - TOWN OF CARY, WAKE COUNTY, NORTH CAROLINA

CONTRACTOR Genesis FOR PERIOD October 1, 2018 TO December 31, 2018

Note: Only items that become part of the building/project that the Town of Cary owns or leases are eligible to be listed. The contractor may not include in the statement items they purchased and used to fulfill the contract but did not become part of the actual constructed project. Items such as scaffolding, concrete forms, fuel for the operation of machinery and equipment, tools, equipment repair parts, equipment rentals and blueprints are not to be included in this statement.

As of January 1, 2017, Repair, Maintenance and Installation (RM) projects are subject to tax for labor and materials.

VENDOR	MATERIAL PURCHASED	VENDOR'S ADDRESS	INVOICE # (MUST BE ATTACHED)	DATE	INVOICE AMOUNT (Pre-tax)	TAXES PAID					TOTAL TAX BILL	COUNTY NAME
						NC STATE TAX (4.75 %)	Other State Tax Paid	County Tax (2.00%)	County Tax (2.25%)	TRANSIT TAX (0.50%)		
Yunedit	Duct work	1 Way St, Yourtown, PA	9876	12/13/2018	100.00	4.75	-	2.00	-	0.50	7.25	Wake
Yordered	steel	2 Way St, Mytown	6789	12/1/2018	10,000.00	-	600.00	-	-	-	600.00	Lancaster Co, Fla
More Store	Hardwood Flooring	1 Broad Rd., Durham, NC	4321	11/20/2018	1,200.00	57.00	-	-	27.00	6.00	90.00	Durham
Store IT	Thermostat	25 Moriah Rd, Durham, NC	3452	11/1/2018	50.00	2.38	-	-	1.13	0.25	3.75	Orange Co
Buzz Feed	Electrical Box	1 Pig Ln, Coates, NC	2436	12/5/2018	90.00	4.28	-	-	2.03	-	6.30	Harnett Co
TOTAL TAX						68.40	600.00	2.00	30.15	6.75	707.30	

I hereby certify that the above listed vendors were paid sales tax upon purchases of building materials during the period covered by this construction estimate and the property upon which such taxes were paid was or will be used in the performance of this contract. **No tax on purchases as listed above in yellow highlighted area is included in this certificate. All of the materials listed above became a part of or are annexed in the above referenced construction project.**

By _____ Signature _____ Title _____

_____, being duly sworn, certifies that the foregoing statement of sales taxes paid in connection with the referenced Contract is true to the best of his or her knowledge and belief.

Sworn to before me this _____ day of _____, 20 _____

My Commission expires _____, 20 _____

Notary Public

FIELD ORDER

FIELD ORDER NO.: _____

DATE: _____

PROJECT: _____

RE: _____

TO CONTRACTOR: This Field Order is issued to interpret/clarify the Contract Documents, order minor changes in the work, and/or memorialize trade-off agreements. Both parties hereby agree that the work described by this Field Order is to be accomplished without change in Contract Sum or Price, Contract Time or Times, and/or claims with other costs.

DESCRIPTION: _____

ATTACHMENTS: _____

REFERENCES: _____

RECOMMENDED:

APPROVED:

ACCEPTED:

By: _____

Frazier Engineering
(Authorized Signature*)

By: _____

Owner
(Authorized Signature*)

By: _____

Contractor
(Authorized Signature*)

Date: _____

Date: _____

Date: _____

[Authorized Signature*: Check Section 00500, Schedule 1, for parties authorized to execute above.]

Distribution:

WORK CHANGE DIRECTIVE

WORK CHANGE DIRECTIVE NO.: _____

DATE: _____

Project: _____

Contractor _____

Engineer/Architect _____

You are directed to proceed promptly with the following change(s):

Description: _____

Purpose of Work Change Directive: _____

Attachments (List documents supporting change): _____

If a claim is made that the above change(s) have affected the Contract Sum or Price or the Contract Time or Times, any claim for a Change Order based thereon will involve one or more of the following methods of determining the effect of the change(s).

Method of determining change in Contract Sum or Price:

- Unit Prices ()
- Lump Sum
- Other _____

Method of determining change in Contract Time or Times:

- Contractor's records
- Engineer's records
- Other _____

Estimated (increase/decrease) in Contract Price:

\$ _____

Estimated (increase/decrease) in Contract Times:

Substantial Completion: _____ days;
Ready for final payment: _____ days;

If the change involves an increase, the estimated price and times are not to be exceeded without further authorization.

RECOMMENDED:

APPROVED:

ACCEPTED:

By: _____
Frazier Engineering
(Authorized Signature*)

By: _____
Owner
(Authorized Signature*)

By: _____
Contractor
(Authorized Signature*)

Date: _____

Date: _____

Date: _____

[Authorized Signature*: Check Section 00500, Schedule 1, for parties authorized to execute above.]

WORK CHANGE DIRECTIVE INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Sum or Price or the Contract Time or Times. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

For supplemental instructions and minor changes not involving a possible change in the Contract Sum or Price or the Contract Time or Times a Field Order may be used.

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

Engineer or Architect initiates the form, including a description of the items involved and attachments.

Based on conversations between Engineer or Architect and Contractor, Engineer or Architect completes the following:

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT SUM OR PRICE: Mark the method to be used in determining the final cost of Work involved and the estimated net effect on the Contract Sum or Price. If the change involves an increase in the Contract Sum or Price and the estimated amount is approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the estimated price or Contractor may stop the changed Work when the estimated price is reached. If the Work Change Directive is not likely to change the Contract Sum or Price, the space for estimated increase (decrease) should be marked "Not Applicable."

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIME OR TIMES: Mark the method to be used in determining the change in Contract Time or Times and the estimated increase or decrease in Contract Time or Times. If the changes involves an increase in the Contract Time or Times and the estimated times are approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the times or Contractor may stop the changed Work when the estimated times are reached. If the Work Change Directive is not likely to change the Contract Time or Times, the space for estimated increase (decrease) should be marked "Not Applicable."

Once Engineer or Architect has completed and signed the form, all copies should be sent to Owner for authorization because neither Engineer nor Architect alone has the authority to authorize changes in the Contract Sum or Price or the Contract Time or Times. Once authorized by Owner, a copy should be sent by Engineer or Architect to Contractor. The Contract Sum or Price and the Contract Time or Times may only be changed by Change Order signed by Owner and Contractor with Engineer's or Architects' recommendations. *Furthermore, only those parties specified by Section 00500, Schedule 1, of the Contract Documents as being authorized to sign the Work Change Directive Form on behalf of each party may execute a valid Work Change Directive Form.*

Once the Work covered by this directive is completed or final cost and times are determined, Contractor should submit documentation for inclusion in a Change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT SUM OR PRICE OR THE CONTRACT TIME OR TIMES. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

CHANGE ORDER

CHANGE ORDER NO.: _____ DATE: _____

Project: _____

Contractor: _____

Engineer/Architect: _____

CONTRACTOR is directed to make the following changes in the Contract Documents.

Description: _____

Attachments: _____

CHANGE IN CONTRACT SUM OR PRICE:	CHANGE IN CONTRACT TIME OR TIMES:
Original Contract Price \$ _____	Original Contract Times Final Completion: _____ days or dates
Net change from previous Change Orders No. ____ to No. ____: \$ _____	Net change from previous Change Orders No. ____ to No. ____: _____ days
Contract Sum or Price prior to this Change Order \$ _____	Contract Times prior to this Change Order Final Completion: _____ days or dates
Net Increase (decrease) of this Change Order \$ _____	Net Increase (decrease) of this Change Order _____ days
Contract Sum or Price with all approved Change Orders \$ _____	Contract Times with all approved Change Orders Final Completion: _____ days or dates

RECOMMENDED:

REVIEWED:

ACCEPTED:

By: _____
Frazier Engineering
(Authorized Signature*)

By: _____
Town of Cary Department
Director Title
(Authorized Signature*)

By: _____
Contractor
(Authorized Signature*)

Date: _____

Date: _____

Date: _____

[Authorized Signature*: Check Section 00500, Schedule 1, for parties authorized to execute above.]

CHANGE ORDER NO.: _____

Page ___ of ___

The adjustment in Contract Sum or Price and/or Contract Time or Times stated in this Change Order shall comprise the total price and/or time adjustment due or owed the CONTRACTOR for the work or changes defined in this Change Order. By executing the Change Order, the CONTRACTOR acknowledges and agrees that the stipulated price and/or time adjustments include the costs and delays for all work contained in the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected work under this Contract. Signing of the Change Order constitutes full and mutual accord and satisfaction for the adjustment in Contract Sum or Price or Contract Time or Times as a result of increases or decreases in costs and time of performance caused directly and indirectly from the change, subject to the current scope of the entire work as set forth in the Contract Documents. Acceptance of the waiver constitutes an agreement between OWNER and CONTRACTOR that the Change Order represents an equitable adjustment to the Contract, and that CONTRACTOR waives all rights to file a claim on this Change Order after it is properly executed.

IN WITNESS WHEREOF, the undersigned have caused the execution hereof:

CONTRACTOR (shall be authorized to execute contractin accordance with Section 00500, Schedule 1):

ATTEST:

Secretary

[Corporate Seal]

By: _____
Name: _____
Title: _____
Address: _____
Date: _____

OWNER:

TOWN OF CARY

By: _____
Name: authorized signature per SP-34
Title: title
Date: _____

CHANGE ORDER INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling Contract changes that affect the Contract Sum or Price or the Contract Time or Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect the Contract Sum or Price or the Contract Time or Times.

Changes that affect the Contract Sum or Price or the Contract Time or Times should be promptly covered by a Change Order. The practice of a cumulating change order items to reduce the administrative burden may lead to unnecessary disputes.

If milestones have been listed, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Sum or Price or the Contract Time or Times, a Field Order may be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer or Architect initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer or Architect has completed and signed the form, all copies should be sent to Contractor for approval. If the Contractor is a Corporation, an officer (President or Vice-President) of the corporation must sign the change order. If an agent other than an authorized officer of the Corporation signs, a Resolution giving authorization from the Board of Directors must be attached. *In any event, only those parties specified by the 00500 Agreement, Schedule 1, as being authorized to sign the Change Order Form on behalf of each party may execute a valid Change Order Form.* After approval by Contractor, all copies should be sent to Owner for approval. Engineer or Architect should distribute executed copies after approval by Owner.

If a change only applies to the Contract Sum or Price or to the Contract Time or Times, cross out the part of the tabulation that does not apply.

CONTRACTOR'S RELEASE OF OWNER PRIOR TO FINAL PAYMENT

The Contractor, known as _____,

for the construction of Project: _____,

hereby and forever releases the Town of Cary (Owner), its officers, agents, and [Engineers/Architects]:
_____, from all past, present, and future claims and liability to the Contractor for anything done or furnished for, relating to, or for any act of neglect of the Owner, its engineers, or any persons relating to or affecting the work.

Contractor's Certification:

Contractor: _____

Authorized Representative: _____

Date: _____

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

PROJECT: _____

OWNER: _____

CONTRACTOR: _____

CONTRACT DATE: _____

TO: _____

In accordance with the provisions of the Contract between the Town of Cary (Owner), and the Contractor, known as _____, the Surety Company, known as _____, on bond of Contractor, hereby approves of the final payment to Contractor, and agrees that final payment to Contractor shall not relieve the Surety Company of any of its obligations to the Owner as set forth in said Surety Company's bond.

In witness whereof, the Surety Company has hereunto set its hand this ____ day of _____ in the year _____.

Surety Company

Signature of Authorized Representative

[Seal]

Typed Name and Title of Authorized Representative

FINAL RECEIPT

Contract: _____

Received this _____ day of _____, 20__ as full and final payment of the cost of all improvements provided for in the foregoing Contract the sum of _____ Dollars and _____ Cents, (\$ _____), in cash (directly or as setoff against fines, Liquidated Damages, or other amounts owed to the Owner), being the full amount accruing to the undersigned by virtue of said Contract, said cash covering and including full payment for all extra work and material furnished by the undersigned in the construction of said improvements, and all incidentals thereto, and the undersigned hereby releases the said _____ from all claims whatsoever growing out of the said Contract.

These presents are to certify that all persons doing work upon or furnishing materials or supplies for said improvements under the foregoing Contract have been paid in full.

The undersigned further certifies that all taxes imposed by Chapter 212, North Carolina Statues (Sales and Use Tax Act), as amended, have been paid and discharged.

CONTRACTOR

By: _____ (Seal)

(Typewritten Name)

STATE OF _____
COUNTY OF _____

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

[SEAL]

Notary Public

SECTION 01010

SUMMARY OF WORK AND SPECIAL PROVISIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Project will be used to rehabilitate sewers throughout the Owner's service area as shown on the Drawings. Refer to the Drawings for additional information, requirements, scope of work and sequence of construction.

The work included in this Project may include any of the following work items.

- Cleaning and televising existing sewers to evaluate the sewers, identify defects that need repaired, and determine the final rehabilitation to be performed under this Contract
- Performing point repairs to existing sewers (via excavation) to repair specific sewer defects; point repairs may be stand-alone repairs with no other rehabilitation to that sewer or repairs to facilitate lining the sewer with CIPP
- Replacing sewers from manhole to manhole and installing new manholes (via excavation)
- Lining existing sewers with cured-in-place pipe lining (CIPP)
- Pipe bursting existing sewers
- Rehabilitating service laterals via replacement (excavation)
- Installing new manholes
- Performing various manhole rehabilitation including coating manholes with a specialty cementitious mortar, locating and raising manholes, replacing and adjusting frames and covers, rebuilding benches and inverts, etc.
- Performing miscellaneous work and restoration

The Owner may have emergency situations (such as sewer overflows or backups) that arise during this Contract which may require immediate sewer rehabilitation and may be added to this Contract. The Contractor will be expected to provide services to repair these emergency situations. The emergency situations may be in areas included in this Contract or in sewers not shown on the Drawings. The emergency work may be located anywhere in the Owner's service area.

The Engineer will notify the Contractor of the emergency situations. The Contractor shall immediately terminate work on the current work and proceed to the emergency work. The Contractor shall not be due any

additional money for mobilizing to perform the emergency work but may be granted additional Contract time if so requested by the Contractor in writing and approved by the Engineer. The Contractor shall be paid for the emergency work at the unit prices bid. The Contractor shall begin work on the emergency situation within 2 working days from receiving the work, and rehabilitation shall begin within 4 working days from receiving the work.

- B. The Contractor will be paid for the actual work completed. All quantities stipulated in the Bid Form are approximate and are to be used only (1) as a basis for estimating the probable cost of the Work, and (2) for the purpose of comparing the bids submitted for the Work. The actual amounts of work done under unit price items may differ from the estimated quantities. The basis of payment for work shall be the actual amount of work done. The Contractor agrees that he will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and the estimated amounts shown on the Bid Form – this specification shall take precedence over any other specification(s) related to bid quantities located elsewhere in these Specifications.

The total value of work shall not exceed the Contract amount unless approved by the Owner in writing (by a change order or written authorization). The Engineer will continuously review the actual quantities and value of work completed with the Contract amount. The Engineer may need to eliminate some of the work so as not to exceed the Contract amount.

- C. Conflict or Inconsistency: If there is any conflict or inconsistency between these SPECIAL PROVISIONS and other Specification Sections, the provisions of these SPECIAL PROVISIONS shall prevail. If there is any conflict or inconsistency between the SPECIAL PROVISIONS and the GENERAL CONDITIONS, the SPECIAL PROVISIONS shall prevail.

1.02 PUBLIC NOTIFICATION

- A. The Contractor shall continuously notify the public of the work being performed. See Paragraph 4.07.E of the Standard General Conditions.

1.03 WEEKLY WORK SCHEDULES AND WORK COMPLETE FORMS

- A. The Contractor shall submit a weekly construction schedule for the upcoming week by noon every Friday. The schedule shall define all construction activities for the week including specific work between specific manholes. If changes occur to the schedule, the schedule shall be immediately updated and resubmitted to the Engineer. The Engineer may request that the construction schedules be

submitted to other agencies such as HOAs, golf courses, etc. Work not scheduled shall not be performed or approved for payment.

- B. In addition, the Contractor shall submit to the Engineer work complete forms every Friday. The work complete forms shall document all work completed during the week, including quantities for each bid item, and shall list all equipment used during the week and all personnel on the job each day.

1.04 ACCESS TO THE PROJECT SITES

The work under this Contract will be in easement areas including along creeks, easement areas in yards, in residential roads including HOA-owned private roads, in parking lots, in secondary roads, and/or in major thoroughfares. The Contractor shall be solely responsible for accessing the sewers and manholes to perform the work, including determining access requirements and developing alternate access points as required, removing and replacing to equal conditions moveable obstacles (such as fences), clearing and mowing right-of-ways as required, negotiating with property owners, and restoring all areas disturbed by the work to equal or exceed preconstruction conditions (including repairing ruts, seeding and mulching, replacing moveable objects, etc.). The Contractor is advised that conditions within the easement areas will change throughout the year, and the condition of the easements may be different when the work commences compared to the conditions at the time of bidding. Easement areas will become wet during rainy periods and may become overgrown with brush and vegetation during typical growing periods.

Access shall be along the existing sewer easements or within the existing road rights-of-way and work shall be maintained within the easements and rights-of-way unless otherwise approved by the individual property owners and/or the Owner. The Contractor shall be responsible for negotiating with property owners for such alternate access and shall pay any and all costs associated with such alternate access as specified above. All such negotiations with property owners shall be in writing, and copies of the agreements shall be submitted to the Engineer prior to using the access. The Contractor shall perform preconstruction videoing and photographing prior to any work, including accessing the sewers, as specified further herein.

The Contractor shall submit a proposed plan for accessing the sewers and manholes to the Owner for review and approval. The proposed plan shall be detailed and shall define each access point. The Contractor shall modify the plan as required by the Owner.

The costs for accessing the sewer shall be included in the various unit prices bid. No separate payment will be made for accessing the sewers and manholes.

1.05 TRAFFIC CONTROL

The Contractor shall submit to the Owner a detailed traffic control plan for performing all phases of the work at least two weeks prior to performing the work in residential/secondary roads and three weeks prior to working in major thoroughfares. The traffic control plan shall be specific to each road and each sewer and manhole and shall adhere to the requirements of NCDOT's "Manual on Uniform Traffic Control Devices" (MUTCD). The traffic control plans must be approved and the encroachment permit issued by the Owner and/or NCDOT prior to performing any work on the roads. The traffic control plan shall be modified as necessary in the field, at no additional cost, to accommodate unforeseen traffic control issues and problems and safety concerns as identified by the Contractor, Owner, and/or NCDOT.

The Contractor shall perform and provide all necessary traffic control measures to complete the work. No roads shall be closed for construction activities unless specifically approved in writing by the Engineer. At least one lane of traffic shall be safely maintained at all times while work is in progress. Access to businesses and residences along the roads shall be maintained at all times. All lanes shall be open when work is suspended for one hour or longer. Signs and barricades must be removed from the site when work is no longer being performed, even during short breaks in the work (such as lunch breaks).

The Contractor shall provide all appropriate signage and barricades and shall provide flag persons at all times and places necessary. Traffic control will be strictly enforced in order to provide fire and police protection to the area and access to drives while construction is in progress. Occupants must be notified a minimum of two (2) hours in advance of private drive closings. Closure time will be limited to a maximum of 2 hours. Where businesses have only one means of access, the Contractor shall provide an alternative means of access or perform work during hours when the business is closed.

Traffic control is a mandatory subsidiary obligation under the Contract, and all costs of traffic control shall be included in the various unit prices bid – no separate payment will be made.

1.06 DISPOSAL OF DEBRIS

The Contractor shall be responsible for disposal of all unused or unsuitable trench material excavated or encountered in the work that is not used for completion of the work.

1.07 SHOP DRAWINGS

Shop drawings are required for all materials proposed for installation under this Contract. See Paragraph 6.17 of the Standard General Conditions.

1.08 PRE-CONSTRUCTION VIDEO INSPECTIONS AND PHOTOGRAPHY

The Contractor shall video and photograph all project/work areas (street and off-road areas) prior to performing any work, including accessing the manholes/sewers, to document pre-work conditions in case future complaints arise. See Paragraph 4.07.D of the Standard General Conditions.

1.09 COORDINATION OF CONTRACTORS

The Owner may have additional contractors in the project areas during this contract. These other contracts may pre-date or post-date this contract. The work being performed under these other contracts may include other sewer rehabilitation work or other Owner work (sidewalks, roads, parks, etc.). The contractor shall coordinate his work with any other Owner contractor working in the area. No additional payment will be made for this required coordination.

1.10 SURVEYING REQUIREMENTS

The Contractor is responsible for performing all surveying required for completion of this Project and the various work items included in the Bid. The costs for all surveying shall be included in the various unit prices bid – no separate payment shall be made.

For sewer replacements from manhole to manhole, the Contractor shall survey the sewers at each manhole (sewer in and out at each manhole) for the extent of the replacement work to identify the existing sewer slopes and any elevation changes through the existing manholes. The Contractor shall also survey the next upstream and downstream manholes so that a comprehensive decision can be made on the extent of the required replacement work. The survey information shall be submitted to the Engineer for review and determination of the slope for the new sewer(s). The survey shall be completed and submitted at least two weeks in advance of the replacement work to provide adequate review time for the Engineer.

1.11 SOIL AND EROSION CONTROL

The Contractor shall protect against soil erosion into nearby streams and storm drains at all times. Minimum erosion control requirements shall be as shown on the Drawings (where applicable). The Contractor shall install silt fence along the downstream side of all construction activities and provide inlet protection around all catch basins/storm inlets whether shown on the Drawings or not. Any water removed from excavations during dewatering shall be filtered to remove sediments before being discharged to the creek or the sanitary sewer system (when approved by the Engineer). The Contractor shall add additional erosion control devices throughout construction as deemed necessary and as required by the Owner, Engineer or regulatory agencies.

The erosion control devices shall be installed prior to performing any work including clearing and shall be maintained throughout construction. Construction entrances shall be provided at all off-road work sites. All erosion control devices shall be checked continuously and immediately after rain events. Repairs to erosion control devices shall be made immediately when identified. Silt fences shall remain functional until all restoration has been performed and the restoration is accepted by the Engineer/Owner. An adequate stand of grass will be required prior to removing silt fences. The Contractor shall remove all erosion control devices upon completion of the work and completely restore disturbed areas. Contractor shall obtain the Engineer's approval prior to removing erosion control devices.

As part of the soil and erosion control measures, where practicable, trenches should be filled, covered and temporary seeding applied at the end of each day. Stabilization measures shall be initiated as soon as practicable, but in no case more than 14 days after work has ceased in that area.

1.12 COORDINATION WITH EXISTING UTILITIES

The Contractor shall contact the local utilities locating company to locate existing utilities in the area prior to performing any excavation. The Contractor shall locate existing utilities and facilities not located by the locating company. The Contractor shall closely coordinate with all utility companies.

The Contractor shall be responsible for protecting all existing utilities during the work and shall repair any damage to the satisfaction of the utility owner. If the utility company fixes the damage, the Contractor shall pay for the repair if required.

Some existing utilities may be shown on the Drawings. The locations shown shall be considered approximate only. Most (or all) of the existing utilities may not be shown. The Contractor shall determine actual locations of all utilities within the construction area. The Contractor is advised that the project areas may be congested with existing utilities, and existing utilities will cross sewer trenches and run parallel with sewer trenches. The Contractor shall accommodate and protect all existing utilities regardless of location and shall be responsible for repairing all damage to the utilities – no separate or additional payment shall be made for accommodating and protecting existing utilities.

1.13 UTILITY POLES

The Contractor shall note that the work may be located near existing utility pole and guy wires. The Contractor shall make all necessary arrangements with the various utilities to protect the poles and guy wires and make any necessary relocations of same if field conditions require, as determined by the Engineer and the utility owners, and at no additional cost to the Owner.

1.14 RESTORATION

The Contractor shall be responsible for restoring all areas affected by the work to equal or exceed pre-construction conditions. All restoration work shall be performed in accordance with the standards and specifications.

Restoration work shall be performed daily to restore areas disturbed during that day including pavement. If requested by the Contractor, the Engineer may allow the Contractor to perform the restoration work one day per week (at the end of the work week). However, if complaints are received from the Owner, City, County, State, or residents, the Engineer will require that daily restoration be performed.

1.15 RESTORATION OF GRASSED AREAS

The Contractor shall be responsible for restoring all grassed areas affected by the work to equal or exceed pre-construction conditions. Restoration of grassed areas shall be performed at the end of each day unless otherwise approved by the Engineer. The costs for restoring grassed areas via seeding and mulching including all requirements specified below shall be included in the various bid items - no separate payment will be made. A bid item is included for sod installation. Payment will not be made for the various work items until the restoration is complete and satisfactory to the Engineer unless otherwise approved by the Engineer. The Engineer will consider in such a decision whether the Contractor is using the subject areas for accessing the upstream work in which case the area cannot be restored. Final payment will not be made until all areas are completely restored to the satisfaction of the Engineer and property owner. Refer to the Drawings for additional requirements.

The Contractor shall initially be considered acceptable to perform the restoration work. However, if the Contractor's work is not satisfactory to the Engineer, Owner or property owner(s), the Contractor shall hire a local, professional landscaping company to perform the work at no additional cost to the Owner. The Contractor should consider retaining a local landscaping company during the 1-year warranty period to handle all complaints and warranty issues.

All grassed areas disturbed by the work under this Contract may be either seeded and mulched or sodded. The Engineer/Owner must agree with the choice of restoration recommended by the Contractor prior to any grassing being done (some areas on the Drawings may be designated to have specific type or method of grassing at that location).

1.16 FENCE REPLACEMENT

Existing fences that are disturbed during construction shall be repaired or replaced to a condition equal to or better than the original unless a release is obtained from the property owner and submitted to the Engineer. All fences shall be replaced immediately after construction has cleared the fence line. The costs to remove and replace the existing fences shall be considered incidental to the work and shall be included in the various unit prices bid. If the existing fence is not salvageable and a new section required, as agreed to by the Engineer prior to any work in the area and prior to removing the existing fence, a price shall be negotiated and payment made from the contingency item, as approved and directed by the Engineer. If the Contractor does not obtain the Engineer's approval for new fence material prior to removing the existing fence, the Contractor will be responsible for installing the new fence at no cost to the Owner.

1.17 MAILBOX/STREET SIGN REPLACEMENT

The Contractor, along with the Owner's and/or Engineer's representative(s), will measure all mailboxes and street signs horizontally from edge of pavement and vertically from finish ground prior to removal. The Contractor and the Owner's and/or Engineer's representative(s) will log these measurements at each location to ensure proper replacement. Street signs shall be replaced immediately after construction at that location. Mailboxes shall be replaced by the end of the business day or no more than 2 hours after removal. The cost of this work shall be included in the various bid items – no separate payment will be made.

1.18 EQUIPMENT IDENTIFICATION SIGNS

All motorized construction equipment, trucks, vehicles, and storage trailers, etc. used (owned, leased, rented or borrowed) by the Contractor on this project shall be equipped with a pair of signs to identify the Contractor. The signs shall be permanently or magnetically attached to each side of the equipment at all times.

1.19 TREE PROTECTION

All trees located in the road right-of-way and along the sewer easements shall be protected from damage by this construction. Barriers shall be installed around each tree to remain. The barrier shall be a suitable temporary fence and shall be installed around the drip line of the tree (around the outside of the overhanging tree limbs) unless otherwise approved by the Engineer. No equipment, construction materials, topsoil, fill dirt or any other material shall be placed within the barrier. Nothing shall be nailed or attached to the tree.

Any trees that are damaged shall be repaired as approved by the Engineer. An Arborist, paid for by the Contractor, may be required to recommend repair of severely damaged trees. Recommendations by the Arborist shall be strictly

followed. Severely damaged trees may require replacement with a like-kind tree. Any tree that dies (including during the warranty period) as a result of the work shall be replaced with a like-kind tree including size to the extent possible. Tree replacement shall be approved by and acceptable to the property owner and Engineer.

1.20 CLEANUP WORK

The Contractor shall completely clean up the work site at the end of each day. The cleanup work shall include washing streets with high pressure water, removing debris, and removing stockpiled materials and equipment from the site as necessary. If requested by the Contractor, the Engineer may allow the Contractor to perform the cleaning operations one day per week (at the end of the work week). However, if complaints are received from the Owner, State, or residents, the Engineer will require that daily cleanup be implemented.

1.21 FINAL INSPECTION

- A. When all work is completed in a basin or work area, the Engineer will perform an inspection of the work and generate a punchlist of defects, deficiencies and issues for the Contractor to address. The Contractor shall address all deficiencies within 21 days or work will not be allowed to continue on other work areas until the deficiencies are completely addressed.
- B. After all work is completed (including all restoration and testing), the Engineer will perform a final inspection of all work in all work areas. The Contractor shall notify the Engineer in writing when the work is complete and ready for final inspection. The final inspection will not be performed if any portion of the work is obviously not complete. A punchlist will be developed by the Engineer to identify defects, deficiencies and issues found during the final inspection that must be repaired by the Contractor prior to final payment. After the Contractor addresses the punchlist to the satisfaction of the Engineer, the final pay estimate for the project can be submitted by the Contractor for payment.
- C. The Engineer will also perform periodic inspections of the completed work throughout this Contract. Any deficiencies found shall be corrected by the Contractor promptly. Failure to correct deficiencies promptly may result in payment being withheld.

1.22 ADJACENT STRUCTURES AND LANDSCAPING

The Contractor shall be entirely responsible and liable for all damage or injury as a result of his operations to all public and private property, structures of any kind, and appurtenances thereto during the progress of the work. The cost of protection, replacement in the original location and condition, and payment of

damages for injuries shall be included in the various bid items, and no separate payments will be made.

The Contractor is advised that the protection of buildings, structures, tunnels, tanks, pipelines, etc. and related work adjacent to and in the vicinity of his operations, is solely his responsibility. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the work shall be performed by and shall be the responsibility of the Contractor.

The Contractor shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by his operations. Repairs to or replacement of all damage reasonably attributed to or caused by the construction shall be made to the satisfaction of the affected property owner, the Owner and the Engineer. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be given to the Engineer.

Prior to the beginning of any excavations or other work, the Contractor shall advise the Engineer of all buildings or structures the project work will affect and any pre-existing conditions that need to be brought to the attention of the Engineer.

Lawn areas shall be left in as good or better condition as before the starting of the work. Where sod is to be removed, it shall be carefully removed, maintained, and later replaced, or the area where sod has been removed shall be restored with new sod in the manner described in these Specifications. All restoration shall be as specified in these Specifications. The final grade shall match the pre-existing grade as closely as possible unless noted otherwise.

Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good or better condition as before the starting of the work. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the property owner and the Engineer. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate bid item.

1.23 NOISE CONTROL

The Contractor shall minimize noise at all times and shall make reasonable efforts to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices, and operated

in a manner to cause the least noise consistent with efficient performance of the Work.

During construction activities on or adjacent to occupied buildings, and when appropriate, the Contractor shall erect screens or barriers effective in reducing noise in the building and shall conduct his operations to avoid unnecessary noise which might interfere with the activities of building occupants. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

Except in the event of an emergency or where approved or specified by the Engineer, no work which produces noise shall be done between the hours of 6:00 P.M. and 7:00 A.M., or on Sundays. Dewatering equipment and bypass pumping equipment operating during these times shall be quiet or silent pumps or electric motor driven pumps. If the proper and efficient prosecution of specific and limited work requires operations during the night, the written permission of the Engineer shall be obtained before starting such items of the work.

1.24 DUST CONTROL

The Contractor shall take sufficient precautions throughout construction to minimize the amount of dust created. The Contractor shall prevent dust nuisance from his operations or from traffic by keeping roads and/or construction areas clean and sprinkled with water. Construction entrances shall be provided as specified in the standard details.

Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels, or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.25 SMOKE PREVENTION

The Contractor shall not use equipment which routinely produces substantial visible emissions. Strict compliance with ordinances regulating the production and emission of smoke will be required. No open fires will be permitted unless approved by the local authorities and the Engineer.

1.26 STAGING AREAS

The Contractor shall be responsible for locating, negotiating and paying for staging areas and equipment and material storage areas.

1.27 PARKING

The Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in

connection with the project and as required to avoid any need for parking personal vehicles where they may interfere with public traffic, the Owner's operations, or construction activities.

1.28 PROTECTION OF WORK

The Contractor shall at all times, until final acceptance of the work, provide protection of the work, either new or previously existing, from all hazards involved in his operations.

1.29 SECURITY

The Contractor shall be responsible for protection of the site, and all Work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons. No claim shall be made against the Owner by reason of any act of any employee or trespasser, and the Contractor shall make good all damage to the Owner's property resulting from his failure to provide security measures as specified. The Contractor shall provide insurance to cover the cost of all labor, materials and equipment to be supplied under this Contract until the work is completed, acceptance testing has been performed, and the Owner has accepted the project and it is ready to be placed in service.

1.30 PUBLICITY

All prime contractors and their subcontractors shall submit to the Owner for approval all publicity items, including photographs, relating to the work of this project. The Owner shall approve any and all material prior to release for publication.

1.31 SPECIAL PRECAUTIONS

At all times during the construction of the project and its component parts, the Contractor shall provide, install and maintain proper temporary supports, shoring and bracing to prevent any damage to the work due to all causes.

1.32 WARRANTY PERIOD

The Contractor shall warrant all work and materials installed in this Contract for one (1) year from the date of final acceptance. The date of final acceptance shall be the date that final payment is made to the Contractor. Prior to final acceptance, the Contractor shall submit a written plan on how warranty issues will be addressed, including CIPP issues, manhole issues, and restoration issues.

END OF SECTION

SECTION 01000
DEFINITIONS, ABBREVIATIONS and REFERENCE STANDARDS
(Revised 01-04-02)

PART 1 - DEFINITIONS

- A. EASEMENT – An interest in land owned by another that entitles its holder to a specific use.
- B. INVERT - The lowest point in the internal cross section of a pipe or other culvert.
- C. RIGHT OF WAY - The area that encompasses public streets, sidewalks and utility strips.
- D. SUBGRADE - That portion of the roadbed prepared as a foundation for the pavement structure.

PART 2 - ABBREVIATIONS

- A. Following is a partial list of abbreviations that may appear in the specifications, and their definitions.
- B. A.B.S. Acrylonitrile Butadiene Styrene
- C. A.F.F. Above Finished Floor
- D. AWG American Wire Gauge
- E. BHP Brake Horsepower
- F. °C Degrees Centigrade
- G. cy or cu. yd. Cubic Yard
- H. DIP Ductile Iron Pipe
- I. °F Degrees Fahrenheit
- J. ft. foot
- K. gpd gallons per day
- L. gpm gallons per minute

M. HP	Horsepower
N. ID	internal diameter
O. in.	Inches
P. lbs.	Pounds
Q. MSL	mean sea level
R. O.C.	on center
S. OD	outside diameter
T. OSHA	Occupational Safety and Health Act
U. oz.	Ounce
V. P.C.	point of curvature
W. P.E.	Professional Engineer, registered in North Carolina
X. P.L.S.	Professional Land Surveyor, registered in North Carolina
Y. ppm	parts per million
Z. psi	pounds per square inch
AA. P.T.	point of tangency
BB. PVC	polyvinyl chloride
CC. P.V.C.	point of curvature on vertical curve
DD. P.V.T.	point of tangency on vertical curve
EE. Qmax	maximum discharge
FF. Qmin	minimum discharge
GG. RH	relative humidity
HH. sec.	Second
II. sq. ft.	square feet

JJ. sq. yd.	square yard
KK. TDH	Total Dynamic Head
LL.VAC	volts (alternating current)
MM. VDC	volts (direct current)

PART 3 – REFERENCE STANDARDS

- A. All materials, products and procedures incorporated into the work shall be in strict accordance with the following codes, standards and specifications. Wherever reference is made to any published standard, code or standard specification, it shall mean the latest edition in effect at the invitation for bids.
- B. American Association of State Highway and Transportation Officials (AASHTO)
- C. American National Standards Institute (ANSI)
- D. American Society of Testing and Materials (ASTM)
- E. American Water Works Association (AWWA)
- F. Ductile Iron Pipe Research Association (DIPRA)
- G. Manual on Uniform Traffic Control Devices for Streets and Highways, as prepared by the National Advisory Committee on Uniform Traffic Control Devices (MUTCD)
- H. North Carolina Department of Transportation (NCDOT) Standard Specifications - may be obtained from NCDOT Design Services Unit – Manual Distribution, P.O. Box 25201, Raleigh, NC 27611, phone 919-250-4128.
- I. North Carolina Department of Environment and Natural Resources (NCDENR)
- J. National Electrical Code (NEC)
- K. National Electrical Manufacturers Association (NEMA)
- L. Natural Resources Conservation Service (NRCS)

- M. Occupational Safety and Health Act (OSHA)
- N. Town of Cary (TOC) Standard Specifications and Details - may be obtained from the office of the Engineering Director, Town of Cary Engineering Department, P.O. Box 8005, 316 N. Academy Street, Cary N.C., 27513. Where TOC standard specifications exceed NCDOT standards, the TOC standard specification shall apply.
- O. Underwriters Laboratories, Inc. (UL)

END OF SECTION 01000

SECTION 02000
SUBMITTALS
(Revised 1-8-02)

PART 1 – SUBMITTALS

A. General Submittal Requirements

- i. Submittals shall meet the requirements of the General Conditions and Supplementary Conditions.
- ii. The Contractor shall transmit submittals in sufficient time to allow thorough review by the Engineer.
- iii. Submittals shall be accompanied by a letter of transmittal containing the date, project name, Contractor's name, supplier, manufacturer, number and title of submittal, notification of exceptions and/or deviations from the Contract requirements, and any other pertinent data to facilitate review.
- iv. The Contractor shall thoroughly check all submittals for accuracy and conformance to the intent of the Contract Documents, and make any necessary changes, prior to submitting them to the Engineer. All submittals shall bear the Contractor's certification stating that they have been so checked. **This certification shall include the following statement: "By this Submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all contract requirements." SUBMITTALS WITHOUT THE CONTRACTOR'S CERTIFICATION WILL BE RETURNED TO THE CONTRACTOR WITHOUT REVIEW.**
- v. No material shall be ordered, fabricated or shipped or any work performed until the Engineer returns the required submittal to the Contractor with satisfactory review indicated.
- vi. The Engineer's review of the Contractor's submittals shall in no way relieve the Contractor of any responsibility under the Contract. An acceptance of a submittal shall be interpreted to mean that the Engineer has no specific objections to the submitted material, subject to conformance with the Contract Documents.

B. Shop Drawings

- i. The Contractor shall submit to the Engineer for review shop drawings for all fabricated work and for all manufactured items for which shop drawings are required elsewhere in the project manual.
- ii. Where manufacturer's publications in the form of catalogs, brochures, illustrations or other data sheets are submitted, items for which approval is requested shall be specifically indicated. Submittals showing only general information shall not be acceptable.
- iii. Within ten (10) days after notice to proceed, the contractor shall submit three (3) copies of his preliminary schedule of shop drawing submittals to the Engineer for approval.

C. Layout and Installation Drawings

- i. The Contractor shall submit to the Engineer for review layout and installation drawings for all pipes, valves, fittings, sewers, manholes, electrical, conduits, etc. to be provided under this contract.
- ii. Within ten (10) days after notice to proceed, the contractor shall submit three (3) copies of his preliminary schedule of layout and installation drawing submittals to the Engineer for approval.

PART 2 – OTHER REQUIREMENTS

A. Progress Schedule

- i. The Contractor shall submit three (3) copies of its proposed progress schedule to the Engineer for review and approval, in accordance with the General Conditions.
- ii. Progress schedule shall be updated monthly, with three (3) copies submitted to the Engineer with the application for payment. The Engineer may withhold progress payments until such time as the schedule or revised schedule is received.
- iii. Progress schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of work. Schedule shall be time scaled showing start and completion dates for each stage of the work. The

schedule shall account for all subcontractors. The schedule shall provide for proper sequence of construction considering various crafts, purchasing time, submittal review, material delivery, equipment fabrication and similar time-consuming factors. The schedule shall show as a minimum, earliest starting, earliest completion, latest starting, latest completion, and total float for each task or item.

B. List of Subcontractors

- i. The Contractor shall submit to the Engineer for review, prior to the preconstruction conference, a listing of all subcontractors. This submittal shall include a description of the work to be performed by each subcontractor, the estimated value of such work, and the subcontractor's experience performing similar work.

END OF SECTION 02000

SECTION 02150

BYPASS SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope: The Contractor shall furnish, construct, maintain and operate bulkheads, containment system, plugs, hoses, piping, and pumps to bypass sewage flow around the project area as necessary. The bypass system shall, at all times, prevent backup or overflow onto streets, yards and unpaved areas or into buildings, adjacent ditches, storm sewers, and waterways. The Contractor shall design and provide the bypass system with sufficient firm pumping capacity to pump the existing sewer being bypassed flowing full. Firm capacity is defined as the capacity of the pumping system when the largest pump is out of service. The capacity of the sewer shall be calculated based on the minimum slope of the smallest diameter of the section of sewer that is being bypassed. The Contractor is advised that during rain events the flow in the existing sewers will increase rapidly and will fill the pipe and in many cases surcharge the pipe. Bypass pumping systems will be paid as specified in the Bid.
- B. Spills of any type, including but not limited to all spills and/or leaks caused by the operation of bypass pumps or other operations of the Contractor are strictly prohibited at all times; notwithstanding such prohibition any such occurrence shall be reported to the Owner immediately after discovery and all costs, associated with the overflow and overflow clean up, including any fines and legal costs incurred by the Owner and costs associated with property damage as a result of the overflow, shall be paid for solely by the Contractor. Costs of damage to real or personal property as a result of an overflow, and any other direct, indirect, incidental or consequential damages resulting therefrom or related thereto, shall be the sole responsibility of the Contractor, for which the Contractor will defend, indemnify and hold the Owner harmless. In addition to these responsibilities of the Contractor in the event of a substantial spill that reaches a natural stream caused by the negligent operations of the Contractor, may be deemed to be a substantial violation of the Contract Documents and a basis for termination under Paragraph 15.02 of the General Conditions.
- C. The Contractor is forewarned of the potential for sewer surges which cause rapid increases in sewer discharges, in particular during rain events. The Contractor's bypass equipment and set up shall be adequate to prevent overflows under these surge conditions. The Contractor shall provide ample free board and wet well volume as required to contain the sewage. If risers to assist with sewage containment are proposed by the Contractor, the risers shall be coordinated with the upstream system to prevent any backups, overflows, or any other problems.

1.02 QUALITY ASSURANCE

- A. Any violations resulting from sewage spills shall be the sole responsibility of the Contractor.

1.03 SUBMITTALS

- A. General: Provide all submittals, including the following.
- B. The Contractor shall coordinate with the Engineer to determine the Bypass System (as defined in PART 3 EXECUTION; 3.01 BYPASS SYSTEM) and the type and number of pumps to be used. For bypass pumping systems, Contractor shall submit, prior to installation, a detailed plan and description outlining all details and provisions of the temporary bypass pumping system. The plan shall be specific and complete, including such items as schedules, locations, elevations, type of plugs, temporary piping, capacities of equipment, instrumentation and controls, alarm systems, communication systems, soundproof enclosures, materials and all other incidental items necessary and/or required to ensure proper operation of the bypass pumping system, including protection of the access and bypass pumping locations from damage due to the discharge flows, ability to pump dry weather and wet weather flows, and compliance with the requirements and permit conditions specified in these Contract Documents. No bypass pumping shall begin until all provisions and requirements have been reviewed and approved.
- C. The bypass designs should be sealed by a licensed North Carolina professional engineer. The bypass pumping plan shall include but not be limited to the following:
 - 1. Staging areas for pumps
 - 2. Drawings showing the alignment of the bypass pipes.
 - 3. Flow stoppage system, including pipe and channel plugging method, types of plugs and size of plugs;
 - 4. Number, size, material, location and method of installation of pump suction piping;
 - 5. Number, size, materials, method of installation and location of discharge piping;
 - 6. Bypass pump sizes, capacity, number of each size to be on site, basis of selection (calculations), and power requirements;
 - 7. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted) for each set up;
 - 8. Size and location of standby power generators and diesel storage and access plan if engine driven equipment is to be provided, or plan for suitable connection to existing electrical gear, if electrical power is to be provided;
 - 9. Restraining lengths for piping;
 - 10. Any temporary pipe supports and anchoring required;

11. Sections showing suction and discharge piping depth, embedment, select fill and special backfill;
12. Schedule for installation of and maintenance of bypass pumping lines;
13. Design for access to bypass pumping locations;
14. Details of suction and discharge piping and fittings (including quick disconnects) and connection to other piping;
15. Show force main pipe material and thickness can withstand all normal operating and surge pressures with a safety factor of 2.0.
16. Protection against main breaks;
17. Method of noise control for each pump and/or generator including primary sound enclosures and sound blankets;
18. Fuel tank location, size, and containment systems;
19. Continuous on-site monitoring plan;
20. Emergency Spillage Plan;
21. Instrumentation and control system to determine flow levels and to eliminate the risk of spills due to improper installation and operations. The instrumentation and control system submitted by the Contractor for approval by the Owner shall include all equipment proposed (including redundant instrumentation and control equipment) and sequences of instrumentation activation as well as all alarms and fail-safe provisions.
22. Sequence of construction for bypass pumping system.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Design piping, joints, and accessories to withstand at least 1.5 times the maximum system pressure. The Contractor shall be responsible for all design calculations and shall be responsible for securing and protecting all force main piping in any manner required by the Owner, Engineer, or other controlling agency.
- B. Pumps shall be dry self-priming type, in good working order, with a working pressure gauge on the discharge. Pumps may either be engine driven equipment, or electrically driven equipment. Contractor shall be responsible for all power costs associated with provision and operation of engine driven equipment including but not limited to purchase and delivery of fuel. Contractor shall be responsible for providing all equipment and connections required to provide electrically driven equipment and for protecting the power feed if electrically driven,

The pumps shall be designed to provide a firm capacity adequate to handle the existing sewer flowing full. Firm capacity shall be defined as the pumping capacity available when the largest pump in the system is out of service. The system shall contain at least two identical duty (primary) pumps and at least one identical backup pump. For short duration bypass activities during dry-weather periods as determined and agreed to by the Engineer, the bypass system may contain one duty (primary) pump and one identical backup pump. Contractor and pump supplier shall determine system pressure requirements based on proposed bypass piping size and layout and shall submit the proposed system curve for the pumping system.

- C. Pumps shall meet the requirements of the Town of Cary Noise Ordinance and shall be Critical Silenced pumps. Bypass pumps shall be provided with a pre-engineered sound attenuation enclosure. Sound blankets shall not be acceptable for primary noise attenuation. Sound blankets are required around the entire bypass pumping system. Sound blankets shall be free standing and 12-ft high minimum. Sound blanket shall have Class 1 flammability per ASTM E-84. Sound blanket shall reduce sound by at least 10 dB at 125 Hz.
- D. Contractor shall provide pump in sufficient number and capacity that a firm capacity in accordance with 1.01.A above is achieved with one pump out of service. A single pipeline to convey bypass will be deemed acceptable provided the header connects to all pumps including standby pump(s), is designed and installed in full accordance with these specifications, and has capacity to transport pumped flow rates specified.
- E. Provide level control device to allow pumps to ramp up and down in response to incoming sewage flow. Provide standby level control device to alarm high liquid level and to start pumps.
- F. Provide autodialers to report pumping system emergency conditions. Coordinate autodialer contact information with Owner. Battery backup to autodialer shall allow operation of autodialers for a minimum period of 24 hours in the event of power failure. The autodialer shall be tested at least weekly by tipping the floats and ensuring that the appropriate notifications are reported.
- G. Alarm systems shall be local (flashing light) and shall also activate the autodialer. As a minimum, the following alarms shall be reported:
 - 1. High liquid level in the bypass pumping suction manhole with level control device
 - 2. Engine failure
 - 3. Power failure

The Owner shall be notified immediately if the bypass pumping system is unable to keep up with the incoming flow, regardless of the reason.

- H. Design local alarm to operate for a minimum of 24 hours on battery backup in the event of power failure.
- I. Design level control devices to operate for a minimum of 24 hours on battery backup in the event of power failure.
- J. If diesel powered pumps are provided, Contractor shall store sufficient fuel on site to allow for 72 hours of continuous operation without fuel delivery. 72 hours of continuous operation shall be based on 24 hours of operation at the system's firm capacity.
- K. Contractor shall provide a temporary cast iron or steel cover over the bypass pumping suction manhole to prevent inflow and minimize odors.

PART 3 - EXECUTION

3.01 BYPASS SYSTEM

- A. Bypass system shall be comprised of a bypass pumping system combined with temporary piping to convey flow in the existing sewers.
- B. The Bypass System shall be leak free and shall (as a minimum) maintain the required firm pumping capacity. The Bypass system shall provide reliable and trouble free pumping of the existing wastewater flow. All local alarms shall be readily visible to and accessible by the Owner.

3.02 FIELD QUALITY CONTROL AND MAINTENANCE

- A. The Contractor shall provide an operator to man the bypass pumping system continuously while the pumps are in use to monitor the system and check for alarms and leaks. At no time during the bypass pumping operations shall the system be unmanned. Contractor's operator shall inspect the pump operation to ensure trouble-free and leak free operation a minimum of once per day. A monitoring log shall be maintained by the Contractor and available for observation by the Engineer/Owner upon request. All systems, piping, pumps, air vents, monitoring equipment, valves, plugs, security measures, level indicating devices and all related appurtenances associated with the bypass system shall be continuously and regularly monitored for proper and leak free operation.
- B. Any time the bypass pumping system is operating, the Contractor shall provide a specialist/mechanic, able to respond onsite within fifteen (15) minutes, to adjust pump speed, valves, etc., make minor repairs to the system (including pumps, piping, and plugs) and report problems. Contractor's specialist/mechanic shall have all tools and equipment on-site to perform this work. The specialist/mechanic shall be connected to the autodialer system.

- C. In the event of accidental spill or overflow, take all necessary actions immediately to stop the spill or overflow and take action to clean up, disinfect the spill and immediately notify the Owner. Disinfection shall include, but is not limited to, removal of all debris, pumping of any excess overflow back into the system, neutralization by raking and liming. The Owner will provide the Contractor with a call-down emergency list for contacts in the event of a spill or overflow. All bypass system abnormalities, operational changes, maintenance, and repairs shall be reported immediately to the Engineer and Owner. All alarms shall be responded to in person by qualified Contractor's personnel immediately.
- D. Spare parts for each type of pump and piping shall be kept on site.

3.03 INSTALLATION AND REMOVAL

- A. Contractor shall locate the bypass pipelines to minimize any disturbance to existing utilities and site areas (such as trees) and shall obtain approval of the pipeline locations from the Engineer.
- B. During all bypass pumping operation, the Contractor shall protect existing structures and equipment from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the existing structures and equipment caused by human or mechanical failure.
- C. When working inside existing structures, the Contractor shall exercise caution and comply with all federal, state, and local occupational safety and health standards when working in the presence of gases, combustible or oxygen-deficient atmospheres, and confined spaces.
- D. When bypass pumping operations are complete, piping shall be drained and flushed into the sewer system prior to disassembly.
- E. The Contractor shall notify the Engineer at least 48 hours prior to initial start up and/or to any significant changes to the bypass system. This includes moving pumps and/or piping, installing or removing plugs, starting a new bypass location, ceasing an existing bypass location, reestablishing gravity flow, etc. A Town of Cary representative from Public Works/Utilities must inspect and approve the existing layout and all pumping equipment at each significant change to the bypass system. A bypass pumping checklist addressing all relevant features of the bypass system shall be generated by the Contractor and approved by the Owner and Engineer. The bypass pumping checklist shall be completed by both the Contractor and a Town of Cary representative prior to the start up of any bypass pumping operations and/or to any significant changes to the bypass system.
- F. In the event of an anticipated extreme weather condition (e.g. hurricane or other large precipitation generating event), the Owner may require that the bypass pumping system is temporarily disabled and normal flow reestablished. In that event, any

manholes that are used by the Contractor as suction or discharge locations shall be reinstated to their original condition or better to prevent stormwater intrusion.

END OF SECTION

SECTION 02650

SEWER CLEANING AND TELEVISION INSPECTION

PART 1 GENERAL

1.1 SCOPE

- A. Work in this section shall consist of furnishing all labor and equipment required to completely clean sewers from manhole to manhole and to inspect and document the interior condition of gravity sanitary sewer mains utilizing closed circuit television (CCTV) equipment.
- B. Related Work.

Section 02651 Cured-In-Place Pipe Lining (CIPP) for Main Sewers
Section 02651A Cured-In-Place Pipe Lining (CIPP) for Main Sewers -
Ultraviolet Light Cured CIPP

1.2 SUBMITTALS

- A. The Contractor shall provide one copy of the CCTV inspections to the Engineer. The inspections and submittals shall be in digital format as specified herein. The inspection logs shall also be submitted in hard copy format (one copy of the logs printed in color) and in a pdf file, and the videos shall be submitted on portable hard drives. Each submittal to the Engineer shall include a transmittal that lists the file names and all sewer segments and video files included with the submittal. The Engineer will return any submitted hard drive to the Contractor after the inspections have been reviewed.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEANING AND TELEVISION INSPECTION OF SEWERS

- A. The Contractor shall continuously notify the public of the work being performed. Refer to Section 01010 for requirements.
- B. The Contractor shall perform and provide all necessary traffic control measures to complete the work. Refer to Section 01010 for requirements.
- C. Prior to starting the clean and TV work, the Contractor shall walk the sewers to be cleaned and televised to locate manholes and identify additional manholes not shown on the drawings. The Contractor shall note any added manholes and notify

the Owner/Engineer so manhole numbers can be assigned prior to starting the TV inspections. In general, additional manholes that are found during the inspections shall be numbered as the downstream manhole number followed by an "A". The Contractor shall also update the drawings to show any changes based on the actual sewer layout. These "red-line" markups shall be submitted to the Engineer along with the TV inspections.

- D. The Contractor shall thoroughly clean and televise the sewers and submit one copy of the final television inspection video and printed log to the Engineer for review as specified herein. The Contractor's cleaning operations shall fully clean the sewers and remove all roots, grease and debris. The sewers shall be completely cleaned to facilitate CIPP lining installation if so specified. The cleaning shall be performed and completed from manhole to manhole prior to the television inspection. The Contractor shall also clean the next downstream sewer (if included in the project area) prior to performing the TV to make sure there is no debris in the downstream sewer that may back-up flow and impact the TV inspections. No cleaning equipment shall be in the sewers while the television inspections are being performed.

The cleaning shall be performed prior to the pre-rehabilitation television inspection. Acceptance of the cleaning portion of the work shall be dependent upon the results of the pre-rehabilitation television inspection. Lines not acceptably clean as to permit television inspection or the subsequent rehabilitation work shall be re-cleaned, re-inspected and re-submitted to the Engineer for review at no additional cost to the Owner.

- E. The equipment used for the cleaning operations shall be specifically designed for cleaning sewers. The Contractor shall use the appropriate equipment to clean all debris, roots and grease from each sewer segment thoroughly. The required equipment may be high velocity water jet cleaning equipment with various attachments or mechanical cleaning equipment such as power buckets or power rodders. The Contractor shall select the cleaning equipment and procedures based on the conditions of the sewers at the time the work commences. All solids shall be removed at the downstream manhole of the section being cleaned - passing material from one sewer segment to another will not be permitted. Cleaning operations shall begin at the most upstream sewers and proceed downstream. The solids shall be removed from the site and properly disposed of at approved locations provided by the Contractor.
- F. In lieu of immediately disposing of the solids off-site and at the Contractor's expense, the Contractor will be permitted to install a temporary transfer station. The Contractor will be permitted to discharge solids and minimal associated liquids removed during cleaning operations into the transfer station. Liquids shall be decanted from the transfer station and discharged into the Owner's collection system at an approved location. Solids shall be disposed of at an approved facility at regular intervals. The Contractor is responsible for odor control at the

temporary transfer station. If any complaints are received or if the odor becomes noticeable, the Contractor will be required to immediately dispose of the contents of the transfer station. The Contractor is also responsible for ensuring that all solids and liquids are contained within the temporary transfer station. Any solids or liquids within the containment enclosure surrounding the temporary transfer station shall be immediately remediated. See Detail F on Sheet D-4 for additional information.

- G. Prior to inserting any mechanical cutter into the sewer (such as a root cutter), the Contractor shall first quickly televise the sewer to make sure there are no other utilities passing through the sewer pipe (such as gas lines, cable lines, power lines, water lines, etc.). This requirement is intended to prevent any damage to other existing utilities and to protect workers. The television inspection does not need to be recorded or submitted to the Engineer unless there are existing utilities in the sewer, in which case a snapshot video and an accurate location will be required. This quick television inspection shall be considered incidental to the cost and no additional payment will be made. The cost of these inspections shall be included in the unit costs for cleaning and TV inspection.
- H. Water for use on this project will be available from selected hydrants owned and operated by the Owner. The Owner will provide water for use by the Contractor free of charge. The Contractor shall coordinate with the Owner to have bulk water meters provided at hydrants. Water from the Owner's hydrants may only be obtained by the connection of a Town-provided meter assembly.

The Contractor may use water from nearby streams, lakes, and ponds as needed. The water shall be filtered before use. All water pulled from nearby streams, lakes, and ponds must be discharged to the wastewater collection system.

- I. The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the line being cleaned. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall document all backups and submit documentation to the Engineer including the reason for the backup, the time and date of the backup, the property owner's name, address and phone number, the resolution to problem, the time and date the problem was resolved, and any special cleanup work that had to be performed. This required documentation shall be submitted for all backups regardless of when they occur. All cleanup shall be completed within 4 hours of the backup.
- J. The Contractor shall take care in cleaning older sewers and shall protect existing sewers from damage caused by improper use of cleaning equipment. The Contractor is advised that the sewers to be rehabilitated under this Contract are in poor structural condition.

K. After the sewers are completely cleaned, the sewers shall be inspected via closed circuit television (CCTV). As specified previously, no cleaning equipment shall be in the sewers while the television inspections are being performed. The purposes of the CCTV inspections are to verify that the sewers have been thoroughly cleaned, to document the condition of the existing sewers and the locations of service connections, to locate sewer defects that need repaired, and to confirm that the lining (if specified) can be properly installed and cured.

All CCTV work performed by the Contractor shall be completed in NASSCO PACP format by PACP Certified professionals. A current PACP certification number shall be included for each person creating/gathering inspection reports.

L. The camera equipment used for the CCTV inspections shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be a color, pan-and-tilt camera.

M. The picture quality and definition shall be to the satisfaction of the Engineer. The Contractor shall submit a sample television inspection after the inspection of the first section(s) of sewer(s) is performed so that the Contractor and Engineer can agree on performance and quality of the inspections which must be met throughout the Contract. Sewers not inspected to the Engineer's satisfaction shall be re-inspected by the Contractor at no additional cost to the Owner.

N. All cameras shall move through the sewers via self-powered tractor assemblies – no skid assemblies shall be permitted. The tractor assemblies used for the inspections shall be the appropriate size assembly for the pipe being televised according to the manufacturer of the television equipment. For example, an 8-inch tractor assembly shall be used to televise 8-inch-diameter sewers.

O. All inspections shall begin above ground with a video look down into the start manhole to completely show the manhole and flow in the invert channel below. The inspections shall then begin from the center of the upstream manhole and end in the center of the downstream manhole. Prior to starting the camera down the line, a tape measure shall be placed at the pipe opening at the upstream manhole to clearly show/verify, on-screen, the pipe diameter of the section of pipe to be televised during the subsequent inspection. The camera shall be moved through the line from upstream to downstream at a uniform rate. The camera shall be stopped at major defects and service connections and shall be panned, tilted and rotated to fully view the defects and connections. All such inspections shall be documented on digital recordings as specified. Particular attention should be paid to service connections and whether the services are active or plugged.

P. Flow levels shall be controlled to a maximum depth of 20% of the pipe diameter. Options for controlling the flow (if it exceeds 20% depth) that will be considered for approval include use of flow-through plugs (with continuous monitoring of

upstream flow levels) and bypass pumping. The Contractor may also consider performing the work on off-peak hours when flow is lower (pending approval by the Owner); any such alternate work times must not impact residents (noise, lights, general disruption, etc.). If this controlled flow level is too high to allow the sewer pipe to be clearly visible (flow blocking or inhibiting the TV camera and video), then further flow control (further plugging or bypass pumping) shall be immediately implemented at no additional cost.

Every attempt shall be made to avoid any circumstance where the camera goes under water during the video inspection, specifically when televising through pipe sags. For sag areas, if the camera goes under water or will go under water, the Contractor shall use jet equipment to pull the water out of the sag prior to videoing through the sag (the jet equipment shall be removed from the line before starting the video inspection). This flow control shall be considered incidental to the Contract as this is standard practice prior to televising through any area where the camera goes under water and proceeds “blindly”; no additional payment will be made for performing this work. Some flow needs to remain in the sags if possible so that the extent of the sag (start and end point) is clearly visible. If the camera lens becomes fouled by going under water, the camera shall be removed, cleaned and the inspection shall start over at the start manhole.

- Q. The inspections shall be complete from manhole to manhole without the need for reverse setups unless approved otherwise by the Engineer. If, during the work, the CCTV inspection is blocked by debris, a protruding lateral or sewer system defect, the Contractor shall remove the blockage or repair the defect as authorized by the Engineer and then continue the inspection. No additional payment will be made for the initial CCTV inspections that were blocked.
- R. Reverse setups will only be allowed and accepted for payment if the blockage or defect preventing the CCTV inspection in the initial direction does not need to be repaired as determined by the Engineer. The Contractor shall notify the Engineer in writing of such situations for the Engineer’s review and approval. If approved, payment will be made for the length of sewer inspected.
- S. The accuracy of the measurements cannot be stressed too strongly. Daily calibration of measuring devices shall be performed. Sewer lengths shown and reported on the CCTV inspection video and logs shall be within 3 feet (plus or minus) of the actual sewer length as measured above ground from center of one manhole to the center of the next manhole. CCTV inspections that do not meet these criteria shall be re-performed and re-submitted to the Engineer at no additional cost to the Owner.
- T. The Contractor is advised that the sewers included in this Contract are old and in poor structural condition. The Contractor shall use extreme caution during all cleaning and television inspection work.

- U. If the Contractor's cleaning or television equipment become lodged in the sewers during the work, the Contractor shall be responsible for removing the equipment, including excavation of the sewer, and paying all costs associated with the removal unless otherwise agreed to by the Engineer (for example, if the equipment is hung in pipe with major structural damage that definitely needs repaired, the Engineer may agree to pay for removing the equipment).
- V. Upon completion of the cleaning and television inspection work, the Contractor shall submit one copy of the final digital television inspections to the Engineer as specified. The inspections must be in order and complete or the Engineer will immediately return the inspections to the Contractor for corrections. The entire work order/work area/basin must be complete prior to submitting – no partial work orders or work areas will be accepted or reviewed by the Engineer unless specifically approved otherwise. The final inspection shall mean that the sewer has been completely cleaned (no roots, debris, grease, tuberculation, etc.), the inspection is complete from manhole to manhole without the need for a reverse setup unless otherwise approved, and all protruding service connections have been cut flush with the existing pipe wall. If point repairs, service lateral replacements or manhole replacements are performed after the inspections are submitted, it shall be the Contractor's responsibility to confirm that the work was performed properly, including proper alignment, grade and connection to the existing sewer (no offset joints) and that no debris has entered the sewer as specified herein.
- W. The Contractor will be paid for all cleaning and television inspections at the unit price bid. The unit price shall include complete cleaning regardless of the severity of debris and roots. The Contractor should expect heavy debris and roots.
- X. Payment will be made for the initial cleaning and TV inspection that provides a complete inspection from manhole-to-manhole. Payment will not be made for additional cleaning and TV inspections that are necessary prior to performing any further work on the sewer, such as cleaning/TVing right before installing CIPP pipe lining - the cost of any such additional cleaning and TV inspections shall be included in the other various unit prices bid.

3.2 REMOVAL OF PROTRUDING SERVICE CONNECTIONS

- A. Service connections that are protruding into the main sewer shall be cut flush with the pipe wall prior to installing CIPP (refer to Section 02651 Cured-In-Place Pipe Lining (CIPP) for further details and requirements). In addition, any protruding laterals blocking the CCTV inspection shall be cut. The cutting shall be accomplished using an internal robotic cutter specifically designed for such work. The internal remote cutter shall be capable of cutting any pipe material including PVC, vitrified clay, cast iron, ductile iron and orangeburg pipe. All cut pieces of the service connection shall be removed from the main sewer pipe. The costs for

removing protruding connections shall be paid at the unit price bid. The Engineer will not approve payment for excavating protruding services in lieu of cutting them internally unless there is a specific reason or circumstance in which the lateral cannot be cut.

3.3 DIGITAL VIDEO INSPECTIONS AND CCTV DATABASE

- A. All televised sewer inspections performed under this Contract (including pre-rehabilitation and post-rehabilitation inspections) shall be submitted to the Engineer in electronic (digital) format.
- B. Each submittal to the Engineer shall include the database file along with the video files. Video files shall be MPEG4, wmv or other approved format (Engineer to approve). The Contractor shall make all adjustments necessary to adhere to the required format specified herein at no additional cost to the Owner. After the first submittal, the Engineer will notify the Contractor of any required changes in the data and file format, and the Contractor shall make such modifications at no additional cost.
- C. The digital recording shall include video information that accurately reproduces the original picture of the video inspection. The video portion of the digital recording shall be free of electrical interference and shall produce a clear and stable image.
- D. Video shall include overlay/text display. Each inspection start shall include overlay display of section details including at a minimum:
 - 1 Owner name
 - 2 Project name
 - 3 Contractor name
 - 4 Street name (if applicable)
 - 5 Date/time of inspection
 - 6 MH Start #/MH End #
 - 7 Pipe material
 - 8 Pipe size
 - 9 Direction of Video
 - 10 Weather or Flow Level
 - 11 A constant display of the street name, MH start #/MH End #, date and distance shall appear on screen.
- E. CCTV inspector shall move or remove overlay display accordingly so it does not interfere with the inspection review of particular observations/defects as the inspection is occurring. As an observation/defect is noted by the inspector, a text display shall appear with the text describing the observation/defect. Text shall display for a minimum of 4 seconds. Distance shall appear continuously in the lower right corner of the video image as the camera is traveling down the line. It

is imperative that distance is accurate. The CCTV inspector shall calibrate/test footage at the beginning of each day as incorrect footage will result in return of inspections.

- F. Completed work shall consist of video files captured live off the inspection camera as specified herein. The video file resolution shall be 640 x 480. All video files created shall be consistent with the Owner's existing codec (as applicable).
- G. Each pipe inspection's observations shall be related to a time point within the video.
- H. During the inspection, the video file recording shall pause as the operator selects the observation/defect notation, eliminating "on hold" video. In situations of reverse inspection, the reverse inspection shall be in a separate video file.
- I. The video files shall be named as follows (unless directed otherwise by the Engineer):

STARTMH_ENDMH_PIPEID_DATE.mp4 (or wmv or approved format)
- J. The database file and the corresponding video files shall be submitted to the Engineer on portable external hard drives. The hard drive shall be delivered to the Engineer for reviewing the television inspections. The Engineer will return the hard drive to the Contractor after the inspections have been reviewed. Multiple hard drives will likely be required as the data will be transferred to the Engineer numerous times throughout the Contract.
- K. Each hard drive submitted to the Engineer shall include a transmittal listing the file names and all sewer segments and video files included on the hard drive. The Contractor shall maintain a "master" hard drive throughout the Contract that contains all databases and all video files performed during this project. The databases shall be merged to reduce the number of individual database files as required by the Engineer. The Engineer will specify which files to merge.
- L. At the end of the Contract, the master hard drive shall be submitted to the Engineer. The master hard drive shall be complete with all files and all changes required by the Engineer. A single master hard drive shall be submitted unless otherwise approved by the Engineer. The master hard drive shall become the property of the Owner. Costs associated with providing the master hard drive shall be included in the various bid items.
- M. Recorded Observations for each inspection shall include: observation distance, observation defect/description, video counter time where observation occurs within digital video, and severity rating for each observation/defect.

- N. All work submitted by the Contractor shall be completed by PACP Certified professionals. A current PACP certification number shall be included for each person creating/gathering inspection reports.
- O. The digital database file of the television inspections shall be submitted in a PACP export file format so that the Owner can import the data into their CCTV software system.
- P. All costs associated with providing the digital television inspections as specified, including performing the inspections, shall be included in the various bid items – no separate or additional payment shall be made.

END OF SECTION

SECTION 02651

CURED-IN-PLACE PIPE LINING (CIPP) FOR MAIN SEWERS

PART 1 GENERAL

1.1 SCOPE

A. Work under this section consists of furnishing all materials, labor, and equipment required for the installation of cured-in-place pipe (CIPP) in main sewers.

1.2 DESIGN AND PERFORMANCE REQUIREMENTS

A. The CIPP shall be designed for a life of 50 years or greater in accordance with ASTM F1216, Appendix X.1, for “fully deteriorated gravity pipe conditions.” The minimum installed, cured liner thickness shall be as listed below when using a standard felt liner. When a fiberglass reinforced felt liner is required, the Contractor shall submit CIPP thickness calculations. The Bid Form and/or Drawings may require the thicknesses for installation based on the Engineer’s decision for specific installations and may list specific thicknesses for larger diameter sewers.

8” sewer:	6.0 mm	(0’ to 20’ deep)
	7.5 mm	(20’ to 28’ deep)
10” sewer:	6.0 mm	(0’ to 14’ deep)
	7.5 mm	(14’ to 25’ deep)
12” sewer:	7.5 mm	(0’ to 16’ deep)
	9.0 mm	(16’ to 24’ deep)
15” sewer:	7.5 mm	(0’ to 10’ deep)
	9.0 mm	(10’ to 16’ deep)
	10.5 mm	(16’ to 24’ deep)
16” sewer:	7.5 mm	(0’ to 8’ deep)
	9.0 mm	(8’ to 13’ deep)
	10.5 mm	(13’ to 18’ deep)
	12.0 mm	(18’ to 24’ deep)
18” sewer:	9.0 mm	(0’ to 10’ deep)
	10.5 mm	(10’ to 14’ deep)
	12.0 mm	(14’ to 19’ deep)
	13.5 mm	(19’ to 24’ deep)
21” sewer:	10.5 mm	(0’ to 10’ deep)

	12.0 mm	(10' to 13' deep)
	13.5 mm	(13' to 17' deep)
24" sewer:	12.0 mm	(0' to 10' deep)
	13.5 mm	(10' to 13' deep)
	15.0 mm	(13' to 16' deep)
27" sewer:	13.5 mm	(0' to 10' deep)
	15.0 mm	(10' to 12' deep)
	16.5 mm	(12' to 15' deep)
	18.0 mm	(15' to 18' deep)
30" sewer:	15.0 mm	(0' to 10' deep)
	16.5 mm	(10' to 12' deep)
	18.0 mm	(12' to 14' deep)
	19.5 mm	(14' to 17' deep)

C. The cured liner shall have the following minimum structural properties:

Flexural Strength of 4,500 psi in accordance with ASTM D 790
 Flexural Modulus of 250,000 psi in accordance with ASTM D 790
 Tensile Strength of 3,000 psi in accordance with ASTM D 638

D. The required structural CIPP wall thickness shall be based on the following design parameters:

Design Safety Factor	2.0
Short-Term Flexural Modulus	250,000 psi
Long-Term Flexural Modulus	125,000 psi
Flexural Strength	4,500 psi.
Creep Retention Factor	50%
Ovality	2%
Soil Modulus	1,000 psi
Soil Density	120 pounds per cubic foot
Soil Coefficient of Friction	0.130 r
Groundwater Depth	Ground Surface Elevation
Live Load	H20 Highway
Poisson's Ratio	0.3
Enhancement Factor, K	7
Service Temperature Range	40 to 140 degrees F
Maximum Long-Term Deflection	5 percent

1.3 SUBMITTALS

A. Submit a contractor statement of qualifications which identifies key personnel and their specific CIPP experience, and recent projects listing the total length

installed by host pipe diameter. Work and personnel experience listed must reference projects that used process method and materials to be used on this project. Include project names, references/contacts and phone numbers.

- B. Submit product data for the fabric tube, resin, catalysts, and waterstops demonstrating conformance to the specifications.
- C. Submit manufacturer material certifications for the fabric tube and resin that state conformance to the specifications. The felt tube manufacturer shall provide in their certification a statement identifying how many years they have produced the felt tube. Material certifications shall be current and must reference the project.
- D. Submit manufacturers' shipping, storage and handling recommendations for all components of the CIPP system.
- E. Submit CIPP wet-out information. Wet-out information shall include the identification of the wet-out facility and process description and a sample wet-out form. The wet-out forms shall document, at a minimum, the date and time of wet-out, the wet-out supervisor, the wet-out facility address, the location where the CIPP will be installed (by manhole numbers), the CIPP diameter, the length of wet-tube and dry-tube, the thickness of the CIPP, the roller gap setting for establishing the liner thickness, the felt manufacturer, the resin used (by product name and batch/shipment number) and quantity, the catalyst(s) used (by product name) and quantity, any quality control samples taken, and all else pertinent to the wet-out process.
- F. Installation procedures and curing schedules shall be submitted. Installation procedures shall include acceptable inversion heads and pressures, heating ("cooking") and cool-down procedures and temperatures for varying sewer diameters/lengths/depths, times for each stage of the process, and cure logs for the resin/resin system used. The Contractor shall provide this information without delay or claim to any confidentiality. Testing procedures and quality control procedures shall also be submitted.
- G. Submit a sample CIPP installation report. The report shall include items such as manhole numbers, location, project number, date, time, temperature, curing temperature, curing time, cool down temperature and time, and liner thickness.
- H. With each shipment of CIPP delivered to the jobsite, submit certifications that the CIPP lining was manufactured in accordance with these specifications and the appropriate ASTM standards. The certifications shall include a signed statement by the wet-out manager/supervisor that no fillers were added to the resin system during manufacture of the CIPP. In addition, wet-out forms documenting the wet-out shall be delivered with each section of CIPP

manufactured and delivered to the jobsite.

- I. With each shipment of resin to the wet-out facility, submit certification that the resin was manufactured under ISO 9002 certified procedures and meets these specifications.
- J. Submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the Engineer and shall be acknowledged as acceptable before any work is started.
- K. Submit CIPP thickness calculations sealed by a licensed North Carolina professional engineer for fiberglass reinforced felt liner. Any deviations from the design parameters should be clearly noted.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing, premature curing, or ultra-violet (UV) degradation. The CIPP shall be maintained at a proper temperature in refrigerated facilities prior to installation to prevent premature curing. All damaged materials shall be promptly removed from the project site at the Contractor's expense.

1.5 QUALIFICATIONS

- A. The Contractor performing the CIPP installation shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be certified and/or licensed as an installer by the CIPP manufacturer. The Contractor must have successfully installed at least 1,000,000 feet of CIPP for a minimum of 10 years in wastewater collection systems utilizing the products and installation methods specified herein.

In addition, if steam cure is being proposed for the CIPP installation as specified herein, the Contractor must have successfully installed at least 500,000 feet of CIPP via steam cure for at least 5 years in wastewater collection systems utilizing the products specified herein. If the Contractor does not meet this experience requirement, then water cure shall be used for all installations.

The Contractor shall submit detailed references (project names, dates, owner contact names and numbers, project descriptions with lengths installed, etc.) to the Engineer as requested to demonstrate compliance with the above experience requirements. The Engineer's decision on whether the Contractor meets the experience requirements shall be final, and the Contractor shall not be due any additional money if the experience requirements are not met and water cure is

required.

- B. The Contractor's personnel shall have the following experience with the products and installation method to be used on this project.

Project Manager – Shall have a minimum of 5 years managing CIPP projects for wastewater collection systems.

Superintendent - Shall have a minimum of 5 years of on-site supervision of CIPP projects for wastewater collection systems. The superintendent shall have supervised a minimum of 300,000 feet of installed CIPP in wastewater collection systems of the pipe diameters included in the project. In addition, the superintendent shall have been the direct, on-site superintendent for three separate projects that included a minimum of 5,000 feet of 24-inch diameter CIPP or larger each.

- C. The manufacturer of the felt tube shall have manufactured the product to be used on this project for at least 5 years. The felt material manufacturer and facility shall not change throughout the duration of the contract unless approved by the Engineer in writing.
- D. Approved CIPP products are listed in these specifications. Even though the Contractor's product may be listed as approved, the Contractor shall still meet the experience requirements specified above, or the Contractor will not be approved for this work.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. The use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant.

1.7 PROJECT ACCESS

- A. The Contractor shall utilize existing road rights-of-way and sanitary sewer easements to perform the work unless notified otherwise. The Contractor shall coordinate with and meet the requirements of North Carolina Department of Transportation, the Owner, or any other agency or municipality that may be impacted by the work.

1.8 WARRANTY

- A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the liner to be free from defects in raw materials for one (1) year from the date of final acceptance by the Owner.

1.9 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. The Contractor shall ensure that the products and work comply with the current version of the following American Society for Testing and Materials (ASTM) standards:

1. ASTM D638 - Standard Test Method for Tensile Properties of Plastics
2. ASTM D790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
3. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
4. ASTM D5813 - Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe
5. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
6. ASTM F1743 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

PART 2 PRODUCTS

2.1 CURED-IN-PLACE-PIPE LINING

A. Cured-In-Place-Pipe (CIPP) lining shall be one of the following products or approved equal. The products below shall adhere to all requirements specified herein and shall be modified as necessary to meet these requirements.

- CIPP Corporation Liners
- Invert-A-Pipe by IPR Southeast LLC
- National Liner by National EnviroTech Group, LLC
- Inliner by Inliner Technologies, Inc.
- Insituform by Insituform Technologies, Inc.
- Diamond Lining Systems by Daystar Composites LLC
- Premier-Pipe USA by J.W.M. Environmental, Inc.
- Pipenology CIPP for SAK Construction

B. Depending on location, CIPP can be installed and cured using water, steam, or ultraviolet. See Section 02651A for ultraviolet cured requirements.

The curing method for sewers less than 18 inches may be water or steam. The curing method for sewers 18 inches and larger shall be water unless otherwise approved. The

choice of curing method shall be appropriate for the pipe being lined and must be approved by the Engineer. For example, sewers with heavy active leaks shall be lined using water cure unless the Contractor can prove to the Engineer that the steam can overcome the heat sink and active water stream.

The Engineer will note any concerns with steam curing. Those concerns will be in writing, and the Contractor shall fully address the concerns. If the Engineer's concerns are not fully addressed, the Contractor shall install those specific sewers using water cure.

- C. The liner shall be composed of tubing material consisting of one or more layers of a flexible non-woven polyester felt with or without other additives such as fiberglass or other reinforcing additives. The felt tubing shall be impregnated with a thermosetting isothalic polyester resin and catalyst or vinyl ester and catalyst. The liner material and resin shall be completely compatible. The inside and/or outside layer of the tube shall be coated with an impermeable material compatible with the resin and fabric. The inside layer of the tube shall be resistant to blistering during the curing process. The liner shall cure in the presence of water or steam at the required temperature for the resin system.
- D. The felt material shall be manufactured by companies specializing in felt production for CIPP. The manufacturer shall have manufactured felt material for CIPP for at least 5 years as documented by references. The felt manufacturer, references and location of the manufacturing facility shall be submitted to the Engineer for review and approval. The felt material manufacturer and facility shall not change throughout the duration of the Contract unless specifically approved by the Engineer in writing.
- E. The polyester or vinyl ester resin shall be PREMIUM, NON-RECYCLED resin only. PET resins, or those containing fillers, additives or enhancement agents shall not be used. The resin manufacturer shall not include any old resin or rework in the product shipped to the wet-out facility. The resin shall be manufactured under ISO 9002 certified procedures. Such certification shall be submitted to the Engineer for each shipment of resin to the wet-out facility. The proposed resin shall equal or exceed the published properties of AOC 102NA or Reichhold PolyLite 33420 resin (for isothalic polyester resin) or Reichhold Atlac 580-20 (for vinyl ester resin).
- F. The exact makeup of the resin shall be submitted to the Engineer including chemical resistance information, cure logs and temperatures. Polyester resins shall have a minimum Heat Distortion Temperature of 212 degrees Fahrenheit per ASTM D648. Vinyl ester resins shall have a minimum Heat Distortion Temperature of 220 degrees Fahrenheit per ASTM D648.
- G. The exact mixture ratio of resin and catalyst shall also be submitted. The catalyst system shall be identified by product name. The resin/catalyst ratio shall be approved by the resin manufacturer in writing. The catalyst system shall be made up of a primary catalyst and a secondary catalyst. The primary catalyst shall be Akzo Perkadox 16 or approved equal and shall be added at a maximum of 1% of the resin volume by weight unless

otherwise approved by the Engineer. The secondary catalyst shall be Akzo Trigonox or approved equal and shall be added at a maximum of 0.5% of the resin volume by weight unless otherwise approved by the Engineer. The resin/catalyst system shall be formulated so that the CIPP will cure as specified below. Resins, catalysts and resin/catalysts mixing ratios shall not be changed during this Contract unless specifically approved by the Engineer in writing.

- H. The cure schedules for the CIPP shall be submitted to the Engineer for review. The curing process/schedules shall be approved by the resin manufacturer in writing. The cure schedules shall include specific information on stepping the temperature up to “cooking” temperatures, “cooking” temperatures and durations, and cool-down procedures – all to be approved in writing by the resin manufacturer. The CIPP shall cure in the presence of water or steam. The minimum cure/”cook” time shall be as recommended by the resin manufacturer. The cure time shall be increased as deemed necessary by the Contractor/resin manufacturer, including but not limited to, longer CIPP installations, active ground water infiltration into the existing sewers, pipe type, pipe location, etc.
- I. The resin shall be shipped directly from the resin manufacturer’s facility to the CIPP wet-out facility. The resin shall not be sent to any intermediate mixing facility. Copies of the shipment documents from the resin manufacturer shall be submitted to the Engineer showing dates of shipment, the originating location and the receiving location.
- J. The resin shall be used to manufacture the CIPP as shipped. No fillers or additives shall be added at the wet-out facility except for the required catalyst as recommended by the resin manufacturer. The Contractor shall submit a Certificate of Authenticity from the resin manufacturer for each shipment to the wet-out facility (to include the date of manufacture and the Heat Distortion Temperature). This information shall be submitted prior to manufacturing any CIPP.
- K. The Contractor shall identify the wet-out facility where all CIPP under this Contract will be manufactured. All CIPP shall be manufactured from this designated wet-out facility throughout the entire Contract unless specifically approved otherwise by the Engineer in writing. Multiple wet-out facilities shall not be allowed.
- L. The Engineer, Owner and/or an agent of the Owner may inspect the CIPP during manufacturing (during “wet-out”). The Contractor shall submit a schedule for manufacturing the CIPP to the Engineer every Friday for the following week. The Engineer and Owner must be given an opportunity to witness the manufacturing of all CIPP for this project. If the CIPP is manufactured without providing the required notice to the Engineer, the CIPP will be marked as rejected prior to installation and will not be approved for installation in this project.
- M. If the Engineer and/or Owner decide to inspect the manufacturing of the CIPP, the Contractor shall provide full access to witness the wet-out process and shall provide any

and all information related to the manufacturing as requested by the Engineer, Owner or the Owner's agent without delay and without claims of confidentiality or product privacy.

- N. The Engineer or Owner may take samples of the resin from the wet-out facility for infrared analyses (IR Scan) throughout the duration of this Contract. This standard analytical test involves shining a beam of light in the infrared frequency region through a thin sample of the subject resin. The frequency of light is then varied across the infrared spectrum. Chemical functional groups present in the resin being analyzed will absorb infrared light at specific frequencies and with characteristic absorption intensities.

The Owner will pay for all such infrared analyses and resin testing. To allow the resin samples to be taken, the Contractor shall place a sampling valve in-line at a point prior to the resin/catalyst mixing stage and after the resin/catalyst mixing stage. These sampling valves shall remain in place throughout the duration of the Contract and shall always be accessible to the Engineer and Owner.

The infrared analyses will be used to verify that the resin and resin/catalyst composition and mixture being used is the approved resin and resin/catalyst system. Payment will not be made for any CIPP manufactured with unapproved resin and resin/catalyst mixtures. The Contractor shall submit results of infrared analyses of the proposed resin and resin/catalyst mixture, performed and certified by the resin manufacturer, prior to manufacturing any CIPP as a shop drawing. The results of these analyses (the resin's chemical fingerprint) will be used as the standard for verifying the resin and resin/catalyst mixture being used throughout the Contract.

The Engineer will compare the submitted chemical fingerprint with the fingerprint of AOC 102NA or Reichhold PolyLite 33420 resin (for isothallic polyester resin) or Reichhold Atlac 580-20 (for vinyl ester resin) for a baseline comparison. The Contractor and resin manufacturer shall fully describe, explain and justify any differences between the AOC/Reichhold resin and proposed resin fingerprints without delay or claim to confidentiality.

- O. When cured, the CIPP shall form a continuous, tight-fitting, hard, impermeable liner which is chemically resistant to any chemicals normally found in domestic sewage. The liner shall be chemically resistant to trace amounts of gasoline and other oil products commonly found in municipal sewerage and soils adjacent to the sewer pipe to be lined.
- P. The CIPP shall be fabricated to a size that will tightly fit the sewer being rehabilitated after being installed and cured. The liner shall be capable of fitting into irregularly shaped pipe sections and through bends and dips within the pipeline. Allowance for longitudinal and circumferential expansion shall be taken into account when sizing and installing the liner. All dimensions shall be verified in the field by the Contractor prior to fabrication of the liner. Field measurements shall be used to ensure maximum closure between the new liner and the existing sewer pipe. There shall be no leakage of groundwater between the existing pipe and the CIPP at the manhole connection or service

lateral connections. Any leakage found shall be eliminated by the Contractor at no additional cost to the Owner.

- Q. The application of the resin to the felt tubing (wet-out) shall be conducted under factory conditions and the materials shall be fully protected against UV light, excessive heat and contamination at all times.
- R. The length of the liner shall be the length deemed necessary by the Contractor to effectively carry out the insertion of the liner and sealing of the liner at the outlet and inlet manholes. The required length of liner shall be verified in the field by the Contractor prior to fabrication of the liner.
- S. The installed thickness shall be measured as specified elsewhere herein. The Contractor shall submit his proposed plan for ensuring that the installed CIPP meets the above minimum thickness requirements. The plan shall include the proposed CIPP thickness to be installed (pre-installation thickness) and detailed inversion or pull-in procedures to reduce stretching and to reduce migration of resin.

PART 3 EXECUTION

- A. Care shall be taken in shipping, handling and laying to avoid damaging the CIPP. Any CIPP damaged in shipment shall be replaced as directed by the Engineer. Any CIPP showing a split or tear or has been mishandled shall be marked as rejected and removed at once from the work. The liner shall be maintained at a proper temperature in refrigerated facilities to prevent premature curing at all times prior to installation. Any liner showing evidence of premature curing will be rejected for use and will be removed from the site immediately.
- B. The Contractor shall continuously notify the public of the work being performed. Refer to Section 01010 for requirements.
- C. The Contractor shall develop and submit to the Engineer a protocol for addressing odor complaints during the CIPP installation process (primarily styrene odor complaints). The protocol shall include steps to be taken by on-site and management personnel immediately when the complaint is received, including discussing the odor with the property owners/residents to address their concerns and alleviating the odor from the home/residence or business using fans or other means as necessary. The Contractor shall also maintain a calibrated portable styrene test unit to immediately document the atmospheric concentrations of the styrene on the site and in the house/residence/business when a complaint is received. The styrene concentrations must be tested prior to exhausting the odors from the house/residence/business. The Contractor shall also utilize blowers (vacuum blowers) during the CIPP installation to exhaust odors from the sewers and into the atmosphere during the installation as deemed necessary. This will help to minimize the potential for odors to travel up service laterals and into homes/businesses. The blowers shall be strategically placed to exhaust the concentrated odors in an isolated

location. The costs for addressing such odors issues/complaints shall be included in the unit prices bid for CIPP.

- D. The Contractor shall perform and provide all necessary traffic control measures to complete the work. Refer to Section 01010 for requirements.
- E. The Contractor shall develop and submit to the Engineer a proposed shot plan at least 30 days prior to CIPP installation. The shot plan shall identify where the CIPP will be inserted, the direction of insertion (upstream or downstream), the sewers included in each shot, plans for addressing CIPP in manholes that the shot goes through, access points, curing method, and any other relevant information. The Engineer will review and comment or approve. The Contractor must address the Engineer's comments and resubmit until resolved.
- F. The Contractor shall clean and televise each length of pipe to be lined as specified in the Section 02650 – Cleaning and Television Inspection. Prior to lining the main sewer and the pre-rehabilitation television inspection, protruding service lateral connections shall be internally cut/ground down flush with the pipe wall with a robotic cutter specifically designed for this purpose and all required point repairs shall be completed. The internal cutter shall be capable of cutting any pipe material including cast iron, PVC, vitrified clay pipe, ductile iron pipe and orangeburg pipe.
- G. Water for use on this project will be available from selected hydrants owned and operated by the Owner. The Owner will provide water for use by the Contractor free of charge. The Contractor shall coordinate with the Owner to have bulk water meters provided at hydrants. Water from the Owner's hydrants may only be obtained by the connection of a Town-provided meter assembly.

The Contractor may use water from nearby streams, lakes, and ponds as needed. The water shall be filtered before use. All water pulled from nearby streams, lakes, and ponds must be discharged to the wastewater collection system.
- H. The Contractor shall bypass pump sewage flows around the lining work while it is being performed as specified in the Section 02150 – By-Pass System.
- I. The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the sewer being lined. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall document all backups and submit documentation to the Engineer including the reason for the backup, the time and date of the backup, the property owner's name, address and phone number, the resolution to problem, the time and date the problem was resolved, and any special cleanup work that had to be performed. This required documentation shall be submitted for all backups regardless of when they occur. All cleanup shall be completed within 4 hours of the backup.

- J. The Contractor shall furnish and install the CIPP lining in the full length of sewer. The installation of the CIPP shall be in complete accordance with the applicable provisions of ASTM F1216 or ASTM F1743 except as modified herein, these specifications and the manufacturers' specifications.
- K. Water or air shall be used to invert CIPP installed via ASTM F1216 or to invert the calibration hose through CIPP installed via ASTM F1743. The water inversion of the CIPP and calibration hoses shall be accomplished by using natural water pressure (head) achieved by erecting platforms or scaffolding to an elevation determined by the Contractor or by using CIPP installation vessels/units that creates water pressure. The Contractor shall determine the necessary inversion heads (pressure) for each line segment. If an installation vessel/unit is used, a pressure relief valve shall be installed on the vessel so that the necessary pressure/inversion heads are not exceeded at any time during the inversion. Water or air pressure shall not be varied by any means throughout the inversion process except when approved by the Engineer. The Contractor shall submit required inversion heads/inversion processes for each installation as a shop drawing without delay and claim to confidentiality or product/installation privacy.
- L. CIPP shall be cured with water or steam in strict accordance with the manufacturer's recommendations. This shall include achieving cooking temperatures, cooking times, and cool-down procedures. The Contractor shall submit required curing schedules and procedures for each installation as a shop drawing without delay and claim to confidentiality or product/installation privacy.

Cool down shall meet the minimum criteria established herein or the manufacturer's recommendations, whichever is more stringent. The water temperature inside the pipe shall be cooled at a maximum rate of 20 degrees per hour until the water temperature is within 20 degrees of the ambient temperature. Do not "shock" the liner with dramatically cooler water. Slowly introduce cooler water into the cool down cycle. The cool down period cannot be less than 1 hour even if the water temperature inside the pipe is within 20 degrees of the ambient temperature.

- M. The Contractor shall install and utilize the VeriCure process (or approved equal) for monitoring the cure temperature of the CIPP. VeriCure shall be installed from manhole to manhole under the bottom of the CIPP. The installation and use of VeriCure shall be in strict accordance with the manufacturer's recommendations. The cure temperature data shall be recorded electronically with the required monitoring devices/computers/computer software. Printed color data reports with detailed descriptions/summaries of the data along with the digital data file shall be submitted to the Engineer for review prior to requesting payment for the CIPP. All special software to review the data file shall also be submitted.
- N. In larger diameter sewers (30 inch or larger) and/or when the section being water cured has a volume of 20,000 gallons or greater, the cure water shall be released from the sewer being lined in a slow, methodical manner. A quick "batch" release of the water shall not be allowed. The cure water shall be released by cutting a small/narrow opening in the

CIPP to allow the water to slowly drain while the CIPP cool-down process is being implemented. This will serve to slowly release the water and also allow some cool-down of the water prior to/during the release. The entire release process shall occur over a minimum 6-hour period unless approved otherwise by the Engineer. The Owner may also sample the cure water during the release to test for chemical compounds that may have a detrimental effect on the downstream water reclamation facility. The Contractor shall accommodate all sampling efforts by the Owner. If damaging chemical compounds (such as styrene or vinyl chloride) exist at high enough levels that may impact treatment processes (as determined by the Owner), the Contractor shall modify the cure water release time to further slow the release of the water to allow additional time and dilution in the sewer system.

- O. The CIPP shall be neatly cut 2 inches from the manhole walls after installation unless otherwise directed by the Engineer. The CIPP shall be sealed at the manholes to provide a watertight liner connection at the manhole. There shall be no leakage of groundwater into the manhole between the CIPP and existing sewer pipe and between the existing sewer pipe and manhole wall. A hydrophilic waterstop (non-bentonite) comprised of modified chloroprene rubber shall be installed around the liner 6 inches from each manhole wall prior to processing the liner to provide additional waterstop protection. As the CIPP is expanded, the waterstop shall be pressed tightly against the existing sewer to provide a leak-tight seal. The waterstop shall be Hydrotite as manufactured by Greenstreak (St. Louis, Missouri) or equal. All CIPP connections to manholes shall be further sealed with an approved non-shrink grout to completely cover the CIPP/manhole connection point. CIPP lining shall be sealed to manhole linings (where specified) in an acceptable manner as approved by the Engineer. Further, all invert channels shall be coated with an approved grout to match the CIPP elevations in the manhole. Submit detailed drawings of the pipe-manhole connections to the Engineer for approval, including termination points in manholes and transitions with manhole linings where installed.
- P. The Contractor shall fully reopen all of the existing active service connections in each length of sewer following lining. The service connections shall be reopened from inside the sewer by means of a closed-circuit television camera controlled cutting device appropriate for the CIPP. All openings shall be clean and neatly cut and shall be flush with the lateral pipe. The openings shall also be buffed with a wire brush to remove rough edges and provide a smooth finish. The bottom of the openings shall be flush with the bottom of the lateral pipe to remove any lip that could catch debris. Openings shall be 100% of the service lateral pipe. The Contractor shall re-open any service lateral that does not meet this requirement as evidenced by the post-rehabilitation inspections at no additional cost to the Owner. The Contractor shall be fully responsible for all backups and damage caused by not fully opening a lateral connection, including paying all costs associated with repairing damage as required by the Engineer, Owner and/or property owner.
- Q. Preliminary Post-CIPP TV Inspections: Immediately after the CIPP is installed and the services connections are completely opened and brushed, the Contractor shall televise the

installed CIPP to verify and document that the CIPP was properly installed and cured and that all service connections have been opened as specified. The preliminary post-CIPP TV inspection videos shall be submitted to the Engineer within 1 day of the CIPP being installed. This will allow the Engineer to confirm that there are no CIPP issues that need addressed on this sewer and/or future installations and that the service laterals are properly opened. The preliminary post-CIPP inspections shall clearly show the CIPP liner and all service connections.

The Engineer will accept these preliminary post-CIPP TV inspections for approving payment of the installed CIPP with the final post-CIPP inspections as specified herein being required prior to final payment. The Contractor may submit these inspections as the final post-CIPP inspections if all grout/concrete work is finalized in the connecting manholes (including grouting the pipe connections, coating the invert channels, and performing the specified manhole rehabilitation) and all specifications are met. Completing all of the manhole work may be difficult to get finished so that the TV inspections can be submitted within 1 day as specified above. The Contractor's unit price bid for the CIPP shall include preliminary post-CIPP and final post-CIPP TV inspections.

- R. Installation reports shall be generated for each segment of liner installed. The reports shall document installation, including manhole numbers, street names/sewer location, project number, date, time, temperature, curing temperature, curing time, liner thickness, etc. A sample report shall be submitted to the Engineer for approval prior to installing any lining. The reports shall be submitted to the Engineer prior to requesting payment.
- S. For every sewer segment that is lined (sewer segment is defined as the sewer between two manholes), the Contractor shall remove one restrained sample of the installed liner at least 12 inches in length for testing of installed CIPP flexural properties and thickness. The CIPP testing shall include determining flexural strength, flexural modulus, tensile strength and thickness of each sample. These four separate individual tests make up one completed CIPP test. Payment will be made for each completed CIPP test at the unit price bid after the test results are submitted to the Engineer.

For sewers 12 inches in diameter and smaller, the sample shall be captured by installing the lining through a section of PVC pipe (same diameter as the existing sewer diameter) within the most downstream manhole of the installation and at all intermediate manholes if multiple sewer segments are lined at the same time. For sewers 15 inches in diameter and larger, plate samples shall be taken and cured in the same water as the installed CIPP.

The Contractor shall be responsible for capturing the samples and preparing the samples for testing (cutting the samples to the required dimensions, removing the PVC pipe, etc.). The testing laboratory shall specify the dimensions for the samples. In addition, the Contractor shall cut a 1-inch wide representative sample (taken at least 2 inches from the end of the specimen) for the Engineer's records. The Contractor shall label all samples including writing on the samples where they were taken (manhole numbers, work orders, and other relevant information) and the date they were taken.

The Engineer will direct the Contractor which samples to submit to the testing laboratory. The Contractor shall retain a sample from all samples that are submitted to the testing laboratory until the end of the project. These samples shall be available upon request from the Engineer. The Contractor will copy the Engineer on all submittals to the testing laboratory. The testing laboratory shall submit all test results directly back to the Contractor with a copy to the Engineer. The test results shall be returned to the Contractor and Engineer within 21 days from the laboratory receiving the samples. If the results are not received in this timeframe, payment will be withheld. It shall be the Contractor's responsibility to ensure that the laboratory meets the specified schedule.

The Contractor shall select the independent testing laboratory and shall pay the laboratory for all tests. The Contractor will be paid for the tests through the Contract at the unit price bid for each completed test. All testing shall be performed by an independent, accredited, certified and experienced (minimum 5 years of experience) testing laboratory as chosen by the Contractor. The Contractor shall submit the name and location of the testing laboratory for approval. The submittal shall include the laboratory's experience testing CIPP samples, the laboratory's accreditation/certification to perform CIPP testing from a recognized accreditation body, and a certified statement from the laboratory that they are independent from and not associated with the Contractor in any way.

The tests shall be used to verify that the installed CIPP meets these specifications. CIPP thickness shall be measured in accordance with ASTM D5813. Flexural properties shall be determined per ASTM D790. Tensile strength shall be determined per ASTM D638.

- T. Any lining that does not meet the specified installed strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liner that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, pipe bursting the sewer from manhole to manhole, re-lining sewers completely from manhole to manhole, or providing the Owner with a substantial credit.

Credits will only be considered for lining that does not meet the required thickness. CIPP lining thickness may be up to 5% below the specified minimum installed thickness before the credit will be applied. For example, if the minimum specified thickness is 6 mm, the credit will only apply if the CIPP is less than 5.7 mm thick. There will be no "re-calculations" of required thicknesses based on actual flexural test results for that sample. The minimum specified thicknesses shall be required regardless of the final flexural properties of the CIPP as installed. If a credit is acceptable to the Engineer and Owner, the credit shall be calculated by multiplying the bid price by the percent that the liner thickness is below the minimum required installed thickness as follows:

$$\text{Credit} = (1 - (\text{installed CIPP thickness}/\text{min required thickness})) \times \text{Bid Price}$$

The Contractor shall not assume that a credit will be acceptable to the Engineer or Owner or that the above formula will be used in all situations or for all installed CIPP thicknesses. Liner thickness of less than 85% of the required minimum thickness will not be eligible for any payment.

All credits shall be accounted for on the monthly pay estimates (each and every month) as the failed test results are received by the Engineer. Credits shall not accumulate until the end of the Contract. In addition, any other defective CIPP shall be repaired within 21 days of being identified or payment will be withheld and work will not be allowed to continue.

- U. Following installation of the CIPP, reopening and brushing of all active service lateral connections, and completion of all manhole rehabilitation including vacuum testing (where applicable), the Contractor shall conduct a final post-rehabilitation television inspection of the completed work to verify that the liner installation is acceptable as defined herein. The sewers shall be thoroughly cleaned prior to performing the television inspections. No cleaning equipment shall be in the sewers during the post-rehabilitation inspections. The pipe shall be dry so that the entire CIPP can be seen. This will require that temporary plugging or bypass pumping be provided for all post-rehabilitation television inspections.

The post-rehabilitation television inspections shall be in accordance with the inspections specified in Section 02650 – Cleaning and Television Inspection. The post-rehabilitation television inspections shall be within 3 feet of the actual sewer length as measured above ground from center of manhole to center of manhole. Any inspection that exceeds this limit shall be re-performed and re-submitted to the Engineer prior to payment at no additional cost to the Owner. One copy of the final post-rehabilitation inspections shall be submitted to the Engineer for review and approval as specified. The inspections must be in order, correct and complete or the Engineer will immediately return the inspections to the Contractor for corrections.

- V. Payment will not be made for any sewer lining until the Engineer has reviewed and approved the final CCTV inspection. The final CCTV inspection shall not be performed until all manhole rehabilitation work is completed (including vacuum testing where applicable). As specified previously herein, the Engineer will accept preliminary post-CIPP TV inspections for payment with the final post-CIPP TV inspections being required prior to payment of the manhole rehabilitation work (where applicable) and/or final payment. The Contractor shall submit the required digital inspections a minimum of 10 days in advance of any payment request to provide the Engineer ample time to review the information.
- W. There shall be no holes, dry spots, lifts, ribs, wrinkles, blisters, ridges, splits, bulges, cracks, delaminations or other type defects in the CIPP lining. In addition, there shall be no groundwater leakage through the CIPP or between the liner and the existing pipes including at the connections to manholes. Defective lining and groundwater leakage

shall be repaired in a manner suitable to and approved by the Engineer at no additional cost to the Owner.

The Engineer's decision on how to correct defective lining shall be final. Options for repairing defective lining that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, pipe bursting the sewer from manhole to manhole, re-lining sewers completely from manhole to manhole, or installing a sectional CIPP patch to repair the defective area.

In addition, the Engineer and Owner may require an additional warranty beyond the standard warranty period (defined elsewhere in these Specifications) for defective CIPP at no additional cost to the Owner. This additional warranty will be for a maximum of five years (one year standard warranty plus four additional years). The warranty should include all costs associated with the remedial work and be non pro-rated. This additional warranty may also be required on the entire "batch" of CIPP if the defect appears to be material related (resin, felt, catalyst, etc.) or wet-out related regardless of the acceptance test results or visual review of any particular CIPP liner section in that "batch".

If a CIPP patch is approved as a repair method for manhole-to-manhole CIPP, the Owner will not pay the full bid price for that sewer segment (manhole to manhole). The price reduction (credit) shall be negotiated with the Contractor and shall be acceptable to the Owner. The credit shall be equal to at least 25% of the unit price bid for the CIPP installation and shall apply to the entire CIPP lining from manhole to manhole. The Owner shall have the final decision on the amount of the credit. Any such credits shall be accounted for on the monthly pay estimates (each and every month) as the defective CIPP is repaired. Credits shall not accumulate until the end of the Contract.

END OF SECTION

SECTION 02651A

CURED-IN-PLACE PIPE LINING (CIPP) FOR MAIN SEWERS ULTRAVIOLET LIGHT CURED CIPP

PART 1 GENERAL

1.1 SCOPE

- A. Work under this section consists of furnishing all materials, labor, and equipment required for the installation of cured-in-place pipe (CIPP) in main sewers cured by ultraviolet (UV) light.

1.2 DESIGN AND PERFORMANCE REQUIREMENTS

- A. The CIPP shall be designed for a life of 50 years or greater in accordance with ASTM F1216, Appendix X.1, for “fully deteriorated gravity pipe conditions.” The Bid Form and/or Drawings may list alternate minimum required thicknesses for installation based on the Engineer’s decision for specific installations and may list specific thicknesses for larger diameter sewers.

Each CIPP shall be designed to withstand internal and/or external loads as dictated by the site and pipe conditions. Unless listed by the Engineer on the Bid Form and/or Drawings, the required installed thickness of the CIPP shall be derived using the standard engineering methodology as found in ASTM F1216, Appendix X1. In no case shall the installed thickness be less than 3 mm. The thickness calculations, signed and sealed by a registered North Carolina professional engineer, shall be submitted to the Engineer prior to CIPP installation. The designs shall include a step by step calculation that shows all equations, defines all variables, lists all assumptions, and clearly indicates all values used for the design.

- B. The layers of the finished CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or such that the knife blade moves freely between the layers. If separation of the layers occurs during testing of the field samples, new samples will be cut from the work. Any reoccurrence may be cause for rejection of the work.

- C. The cured liner shall have the following minimum structural properties:

Flexural Strength of 6,500 psi in accordance with ASTM D 790
Flexural Modulus of 725,000 psi in accordance with ASTM D 790
Tensile Strength of 9,000 psi in accordance with ASTM D 638

- D. The required structural CIPP wall thickness shall be based at a minimum on the

physical properties in Section 1.2.C above and in accordance with ASTM F2019-20 and the design equations in the Appendix X1 of ASTM F1216, with the following design parameter considerations:

Design Safety Factor	2.0
Creep Retention Factor	50%
Ovality	2%
Soil Modulus	1,000 psi
Soil Density	120 pounds per cubic foot
Soil Coefficient of Friction	0.130 r
Groundwater Depth	Ground Surface Elevation unless otherwise noted
Live Load	H20 Highway
Poisson's Ratio	0.3
Enhancement Factor, K	7
Service Temperature Range	40 to 140 degrees F
Maximum Long-Term Deflection	5 percent

A modification to the soil modulus may be considered for sewers with more than 30 feet of cover as approved or specified by the Engineer. In addition, where other data exists for ovality or other parameters, the required structural CIPP wall thickness shall be based on the more stringent parameters unless otherwise approved or specified by the Engineer.

1.3 SUBMITTALS

- A. Submit a contractor statement of qualifications which identifies key personnel and their specific UV light cured CIPP experience, and recent projects listing the total length of UV light cured CIPP installed by host pipe diameter. Work and personnel experience listed must reference projects that used process method and materials to be used on this project. Include project names, references/contacts and phone numbers.
- B. Submit, prior to the installation or use of any lining materials or equipment, certified test results from the manufacturers which indicate that all materials conform to the applicable requirements.
- C. Submit test results of the proposed resin that meet the chemical resistance requirements of ASTM F2019-20, Section 5.2.7. The chemical resistance tests will be completed in accordance with Test Method D5813.
- D. Submit manufacturer information that describes the materials, curing speeds, curing installation processes, installation pressures, temperature limitations, and recommended post curing documentation.
- E. Submit manufacturer material certifications that state conformance to the

specifications. Material certifications shall be current and must reference the project.

- F. Submit manufacturers' shipping, storage and handling recommendations for all components of the CIPP system.
- G. Submit CIPP wet-out information. Wet-out information shall include the identification of the wet-out facility and process description and a sample wet-out form. The wet-out forms shall document, at a minimum, the date and time of wet-out, the wet-out supervisor, the wet-out facility address, the location where the CIPP will be installed (by manhole numbers), the CIPP diameter, the length of wet-tube and dry-tube, the thickness of the CIPP, the roller gap setting for establishing the liner thickness, the liner manufacturer, the resin used (by product name and batch/shipment number) and quantity, the catalyst(s) used (by product name) and quantity, any quality control samples taken, and all else pertinent to the wet-out process.
- H. Installation procedures and curing schedules shall be submitted. The Contractor shall provide this information without delay or claim to any confidentiality. Testing procedures and quality control procedures shall also be submitted.
- I. Submit a sample CIPP installation report. The report shall include items such as manhole numbers, location, project number, date, time, temperature, curing time, liner thickness, etc.
- J. Submit the recording of the curing parameters for every segment. The recording shall include:
 - a. Curing speed
 - b. Light source working and wattage
 - c. Inner air pressure
 - d. Curing temperatures
 - e. Date and time
 - f. Length of liner
- K. Submit data from during the curing process. Infrared sensors shall be used to record curing data that shall be submitted to the Engineer with a post CCTV inspection. This shall be accomplished using a computer and database that are tamper proof.
- L. With each shipment of CIPP delivered to the jobsite, submit certifications that the CIPP lining was manufactured in accordance with these specifications and the appropriate ASTM standards. The certifications shall include a signed statement by the wet-out manager/supervisor that no fillers were added to the resin system during manufacture of the CIPP. In addition, wet-out forms

documenting the wet-out shall be delivered with each section of CIPP manufactured and delivered to the jobsite.

- M. With each shipment of resin to the wet-out facility, submit certification that the resin was manufactured under ISO 9001 certified procedures and meets these specifications.
- N. Submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the Engineer and shall be acknowledged as acceptable before any work is started.
- O. Submit CIPP thickness calculations sealed by a licensed North Carolina professional engineer. Any deviations from the design parameters should be clearly noted.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing, premature curing, or (UV) degradation. All damaged materials shall be promptly removed from the project site at the Contractor's expense.

1.5 QUALIFICATIONS

- A. The Contractor performing the CIPP installation shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be certified and/or licensed as an installer by the CIPP manufacturer. The Contractor must have successfully installed at least 1,000,000 feet of CIPP for a minimum of 10 years in wastewater collection systems of which at least 100,000 feet shall be the exact glass fiber reinforced, UV light cured product proposed by the Contractor. In addition, the Contractor shall have successfully installed three separate projects that included a minimum of 10,000 feet of 24-inch diameter CIPP or larger each. Included in the 30,000 feet of 24-inch diameter CIPP or larger shall be pipe diameters that are equal to or greater than the largest pipe diameter included in this project.

The Contractor shall submit detailed references (project names, dates, owner contact names and numbers, project descriptions with lengths installed, etc.) to the Engineer as requested to demonstrate compliance with the above experience requirements. The Engineer's decision on whether the Contractor meets the experience requirements shall be final, and the Contractor shall not be due any additional money if the experience requirements are not met.

- B. The Contractor's personnel shall have the following experience with the products

and installation method to be used on this project.

Project Manager – Shall have a minimum of 5 years managing CIPP projects for wastewater collection systems.

Superintendent - Shall have a minimum of 5 years of on-site supervision of CIPP projects for wastewater collection systems. The superintendent shall have supervised a minimum of 300,000 feet of installed CIPP in wastewater collection systems of the pipe diameters included in the project of which 50,000 linear feet must be with the exact glass fiber reinforced, UV cured product proposed by the Contractor. In addition, the superintendent shall have been the direct, on-site superintendent for three separate projects that included a minimum of 5,000 feet of 24-inch diameter CIPP or larger each.

- C. The CIPP product manufacturer shall have at least 10 years of experience in the successful manufacturing of glass fiber, UV cured-in-place liners. The CIPP product must have been installed in a minimum of 5,000,000 feet or 4,000 manhole to manhole line sections of successful wastewater collection system installations worldwide, of which 1,000,000 feet shall be within the U.S. The manufacturer and facility shall not change throughout the duration of the contract unless approved by the Engineer in writing.
- D. Approved CIPP products are listed in these specifications. Even though the Contractor's product may be listed as approved, the Contractor shall still meet the experience requirements specified above, or the Contractor will not be approved for this work.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. The use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant.

1.7 PROJECT ACCESS

- A. The Contractor shall utilize existing road rights-of-way and sanitary sewer easements to perform the work unless notified otherwise. The Contractor shall coordinate with and meet the requirements of North Carolina Department of Transportation, the Owner, or any other agency or municipality that may be impacted by the work.

1.8 WARRANTY

- A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the liner to be free from defects in raw materials for one (1) year from the date of final acceptance by the Owner.

The Contractor shall warrant the liner installation for a period of one (1) year from the date of final acceptance by the Owner.

1.9 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. The Contractor shall ensure that the products and work comply with the current version of the following American Society for Testing and Materials (ASTM) standards:

1. ASTM D543 - Test Method for Resistance of Plastics to Chemical Reagents
2. ASTM D578 - Standard Specification Glass Fiber Strands
3. ASTM D638 - Standard Test Method for Tensile Properties of Plastics
4. ASTM D790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
5. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin Impregnated Tube
6. ASTM F1743 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
7. ASTM F2019-20 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic Cured-in-Place (GRP-CIPP) Using the UV-Light Curing Method
8. ASTM D2122 Standard 1 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
9. ASTM D3567 Standard Practice for Determining Dimensions of “Fiberglass” (Glass-Fiber- Reinforced Thermosetting Resin) Pipe and Fittings
10. ASTM D5813 - Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe

PART 2 PRODUCTS

2.1 CURED-IN-PLACE-PIPE LINING

A. UV Cured-In-Place-Pipe (CIPP) lining shall be one of the following products or approved equal. The products below shall adhere to all requirements specified herein and shall be modified as necessary to meet these requirements

- Alphaliner by Reline America
- Inliner STX by Granite Inliner
- Saertex Liner by Saertex Multicom
- iPlus Glass by Insituform

- B. The CIPP can be installed and cured using water, steam, or ultraviolet. See Section 02651 - CIPP for Main Sewers for water and steam cured requirements.

The choice of installation method shall be the Contractor's choice except that the default installation method for sewers less than 18 inches in diameter shall be steam cured. UV cure for sewers less than 18 inches in diameter must be approved by the Engineer prior to installation. The choice of curing method shall be appropriate for the pipe being lined and must be ultimately approved by the Engineer as stated below. For example, sewers with heavy active leaks shall be lined using water cure unless the Contractor can prove to the Engineer that the UV cure can overcome the heat sink and active water stream.

The Engineer will note any concerns with UV curing methods during review of the pre-rehabilitation TV inspections. Those concerns will be in writing, and the Contractor shall fully address the concerns. If the Engineer's concerns are not fully addressed, the Contractor shall install those specific sewers using water cure at the bid price. Steam and ultraviolet cure will be paid at the same unit price bid. There is an adder bid item for water cure where required.

- C. The CIPP tube shall consist of one or more layers of glass fiber reinforced materials capable of carrying resin, withstanding installation pressures and curing temperatures. The CIPP tube should be compatible with the resin system to be used on this project. The material should be able to stretch to fit minor irregular pipe sections.
- D. The CIPP tube should be fabricated under controlled conditions to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. The tube shall be able to stretch to fit irregular pipe sections and negotiate bends of up to 30 degrees and shall have sufficient strength to bridge missing pipe sections, with the use of a canvas sleeve if necessary.
- E. The glass fiber tube shall be saturated with the appropriate resin using a resin bath system to allow for the lowest possible amount of air entrapment. An inner and outer material shall be added that are both impervious to airborne styrene with the outer material also having UV blocking characteristics. If required by the liner manufacturer, the inner membrane will be removed after the installation and curing processes are completed.
- F. The Contractor shall verify the lengths in the field before cutting the CIPP tube to length. Continuous individual liners can be made over one or more manhole to manhole sections.
- G. The CIPP tube shall be uniform in thickness and when subjected to the manufacturer recommended installation pressures shall meet or exceed the designed wall thickness.
- H. Interior and exterior plastics shall be styrene resistant to protect and contain the resin used in the liner.

- I. A pre-liner shall be inserted into the pipe prior to inserting the liner. If the fiberglass liner has a second outer layer applied during manufacturing such as UV blocking foil, a pre-liner will not be required.
- J. A third layer of protective foil shall be installed on the exterior of the liner to prevent liner damage during the installation process and block UV penetration causing the liner to cure prematurely.
- K. The liner is to be constructed of with an inner fleece layer giving the exposed inside surface a resin rich layer.
- L. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with CCTV inspection may be made.
- M. The fiberglass within the liner shall be non-corrosion (E-CR Glass) material and shall be free from tears, holes, cuts, foreign materials and other surface defects. Its glass fibers must extend in a longitudinal direction to ensure no longitudinal stretching during the pull-in process.
- N. At time of manufacture, each lot of CIPP tube shall be inspected and certified to be free of defects. The CIPP tube shall be marked for distance at regular intervals along its entire length, not to exceed five feet. Such markings shall also include the CIPP tube manufacturer's name or identifying symbol.
- O. The resin used to impregnate the liner shall produce a cured liner pipe resistant to shrinkage, corrosion, abrasion and shall have a proven resistance to municipal wastewater. The impregnation equipment shall contain devices to secure a proper distribution of resin. Following impregnation, the fabric tube shall be exposed to a resin thickening procedure.
- P. The resin shall be a chemically resistant, UV cured, isophthalic polyester resin or vinyl ester resin (as determined by the Engineer).
- Q. When combined with the CIPP tube, the resin system shall provide a CIPP that meets the structural requirements of ASTM F2019-20, the minimum physical properties specified in Section 1.2.C, and those properties which are to be utilized in the design of the lining system for this project.
- R. When combined with the CIPP tube, the resin system shall provide a CIPP that complies with the chemical resistance requirements specified in ASTM F2019-20, Section 5.2.7. The chemical resistance tests shall be completed in accordance with ASTM D5813.
- S. The exact makeup of the resin shall be submitted to the Engineer including chemical resistance information and cure logs. Polyester resins shall have a minimum Heat Distortion Temperature of 212 degrees Fahrenheit per ASTM D648. Vinyl ester resins

shall have a minimum Heat Distortion Temperature of 220 degrees Fahrenheit per ASTM D648.

- T. The resin shall be shipped directly from the resin manufacturer's facility to the CIPP wet-out facility. The resin shall not be sent to any intermediate mixing facility. Copies of the shipment documents from the resin manufacturer shall be submitted to the Engineer showing dates of shipment, the originating location and the receiving location.
- U. The resin shall be used to manufacture the CIPP as shipped. No fillers or additives shall be added at the wet-out facility except for the required catalyst as recommended by the resin manufacturer. The Contractor shall submit a Certificate of Authenticity from the resin manufacturer for each shipment to the wet-out facility (to include the date of manufacture and the Heat Distortion Temperature). This information shall be submitted prior to manufacturing any CIPP.
- V. The Contractor shall identify the wet-out facility where all CIPP under this Contract will be manufactured. All CIPP shall be manufactured from this designated wet-out facility throughout the entire Contract unless specifically approved otherwise by the Engineer in writing. Multiple wet-out facilities shall not be allowed.
- W. The Engineer, Owner and/or an agent of the Owner may inspect the CIPP during manufacturing (during "wet-out"). The Contractor shall submit UV wetout schedules so that an agent of the Owner may inspect the CIPP manufacturing process. The Contractor shall submit a schedule for manufacturing the CIPP to the Engineer every Friday for the following week. The Engineer and Owner must be given an opportunity to witness the manufacturing of all CIPP for this project. If the CIPP is manufactured without providing the required notice to the Engineer, the CIPP will be marked as rejected prior to installation and will not be approved for installation in this project.
- X. If the Engineer and/or Owner decide to inspect the manufacturing of the CIPP, the Contractor shall provide full access to witness the wet-out process and shall provide any and all information related to the manufacturing as requested by the Engineer, Owner or the Owner's agent without delay and without claims of confidentiality or product privacy.
- Y. The Engineer or Owner may take samples of the resin from the wet-out facility for infrared analyses (IR Scan) throughout the duration of this Contract. This standard analytical test involves shining a beam of light in the infrared frequency region through a thin sample of the subject resin. The frequency of light is then varied across the infrared spectrum. Chemical functional groups present in the resin being analyzed will absorb infrared light as specific frequencies and with characteristic absorption intensities.

The Owner will pay for all such infrared analyses and resin testing. To allow the resin samples to be taken, the Contractor shall place a sampling valve in-line at a point prior to the resin/catalyst mixing stage and after the resin/catalyst mixing stage. These sampling valves shall remain in place throughout the duration of the Contract and shall always be accessible to the Engineer and Owner.

The infrared analyses will be used to verify that the resin and resin/catalyst composition and mixture being used is the approved resin and resin/catalyst system. Payment will not be made for any CIPP manufactured with unapproved resin and resin/catalyst mixtures. The Contractor shall submit results of infrared analyses of the proposed resin and resin/catalyst mixture, performed and certified by the resin manufacturer, prior to manufacturing any CIPP as a shop drawing. The results of these analyses (the resin's chemical fingerprint) will be used as the standard for verifying the resin and resin/catalyst mixture being used throughout the Contract.

The Engineer will compare the submitted chemical fingerprint with the fingerprint of Reichhold PolyLite 33420 resin (for isothalic polyester resin) or Reichhold Atlac 580-20 (for vinyl ester resin) for a baseline comparison. The Contractor and resin manufacturer shall fully describe, explain and justify any differences between the Reichhold and proposed resin fingerprints without delay or claim to confidentiality.

- Z. The installed thickness shall be measured as specified elsewhere herein. The Contractor shall submit his proposed plan for ensuring that the installed CIPP meets the minimum thickness requirements. The plan shall include the proposed CIPP thickness to be installed (pre-installation thickness) and detailed installation procedures to reduce stretching and to reduce migration of resin.

PART 3 EXECUTION

- A. The Contractor shall continuously notify the public of the work being performed. Refer to Section 01010 for requirements.
- B. The Contractor shall develop and submit to the Engineer a protocol for addressing odor complaints during the CIPP installation process (primarily styrene odor complaints). The protocol shall include steps to be taken by on-site and management personnel immediately when the complaint is received, including discussing the odor with the property owners/residents to address their concerns and alleviating the odor from the home/residence or business using fans or other means as necessary. The Contractor shall also maintain a calibrated portable styrene test unit to immediately document the atmospheric concentrations of the styrene on the site and in the house/residence/business when a complaint is received. The styrene concentrations must be tested prior to exhausting the odors from the house/residence/business. The Contractor shall also utilize blowers (vacuum blowers) during the CIPP installation to exhaust odors from the sewers and into the atmosphere during the installation as deemed necessary. This will help to minimize the potential for odors to travel up service laterals and into homes/businesses. The blowers shall be strategically placed to exhaust the concentrated odors in an isolated location. The costs for addressing such odors issues/complaints shall be included in the unit prices bid for CIPP.
- C. The Contractor shall perform and provide all necessary traffic control measures to complete the work. Refer to Section 01010 for requirements.

- D. The Contractor shall develop and submit to the Engineer a proposed shot plan at least 30 days prior to CIPP installation. The shot plan shall identify where the CIPP will be inserted, the direction of insertion (upstream or downstream), the sewers included in each shot, plans for addressing CIPP in manholes that the shot goes through, access points, and any other relevant information. In addition, if there are any manhole to manhole sections that exceed the maximum length that can be provided, the Contractor shall submit information on the proposed methodology to install two or more shots, overlap details, sealing information, and all other relevant information. The Engineer will review and comment or approve. The Contractor must address the Engineer's comments and resubmit until resolved.
- E. The Contractor shall clean and televise each length of pipe to be lined as specified in the Section 02650 – Cleaning and Television Inspection. Prior to lining the main sewer and the pre-rehabilitation television inspection, protruding service lateral connections shall be internally cut/ground down flush with the pipe wall with a robotic cutter specifically designed for this purpose and all required point repairs shall be completed. The internal cutter shall be capable of cutting any pipe material including cast iron, PVC, vitrified clay pipe, ductile iron pipe and orangeburg pipe.
- F. Water for use on this project will be available from selected hydrants owned and operated by the Owner. The Owner will provide water for use by the Contractor free of charge. The Contractor shall coordinate with the Owner to have bulk water meters provided at hydrants. Water from the Owner's hydrants may only be obtained by the connection of a Owner-provided meter assembly.
- G. The Contractor shall bypass pump sewage flows around the lining work while it is being performed as specified in the Section 02150 – By-Pass System.
- H. The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the sewer being lined. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall document all backups and submit documentation to the Engineer including the reason for the backup, the time and date of the backup, the property owner's name, address and phone number, the resolution to problem, the time and date the problem was resolved, and any special cleanup work that had to be performed. This required documentation shall be submitted for all backups regardless of when they occur. All cleanup shall be completed within 4 hours of the backup.
- I. The Contractor shall furnish and install the CIPP lining in the full length of sewer. The installation of the CIPP shall be in complete accordance with the applicable provisions of ASTM F2019-20 except as modified herein, these specifications and the manufacturers' specifications.
- J. As required by the contractor, a plastic sheet at least 10 mil thick may be pulled into the host pipe prior to liner insertion to protect the liner from damage as the liner is pulled in.

- K. The liner shall be pulled-in through an existing manhole or approved access point and fully extend to the next designated manhole or termination point. The pulling speed shall not exceed 15 ft/min. Care shall be exercised not to damage the tube during the pulling phase.
- L. A constant tension winch should be used, as specified by the liner manufacturer, to pull the glass fiber liner into position in the pipe. The liner shall have a longitudinal fiberglass reinforcement band which runs the entire length of the liner ensuring that the pulling force is transferred to the band and not the fiberglass liner. Once inserted, end plugs shall be used to cap each end of the glass fiber liner to prepare for pressurizing the liner. The end plugs shall be secured to prevent them from being expelled due to pressure. Liner restraints shall be used in manholes.
- M. The liner shall then be inflated with air with sufficient pressure to hold the liner tight to the host pipe wall.
- N. The Contractor will video record the liner prior to commencement of the curing process, and make the recording available to the Engineer upon request.
- O. CIPP curing shall be in accordance with applicable ASTM F2019-20, Section 6.6 and 6.7, with the following modifications:
 - a. The ultraviolet curing lamps shall operate in a sufficient frequency range to ensure the curing of the resin.
 - b. A camera must be located on the ultraviolet light assembly to enable the video inspection of the liner and to ensure that the liner has been properly inflated and any liner problems can be identified before curing begins.
 - c. The Contractor shall submit a documented record of time, rate of travel of the ultraviolet light assembly, and internal temperatures and pressures during the curing process to the Engineer upon request.
- P. The UV light sources shall be assembled according to the manufacturer's specifications for the liner diameter. For the liner to achieve the required water tightness and specified mechanical properties, the following parameters must be controlled during the entire curing process, giving the Engineer a record of the curing parameters over every segment of the entire length of the liner. The recording shall include:
 - a. Curing speed
 - b. Light source working and wattage
 - c. Inner air pressure
 - d. Curing temperatures
 - e. Date and time
 - f. Length of liner

- Q. The optimal curing speed, or travel speed of the energized UV light sources, is determined for each length of liner based on liner diameter, liner thickness, and exothermic reaction temperature. Curing speed shall be as recommended by the manufacturer and determined by contractor based on various site specific field conditions. This shall be accomplished using a computer and database that are tamper proof. During the curing process, infrared sensors shall be used to record curing data that will be submitted to the Engineer with a post CCTV inspection.
- R. If the liner is manufactured with a removable inner film, the inner film material shall be removed and discarded after curing to provide optimal quality of the final product.
- S. The CIPP shall be neatly cut 2 inches from the manhole walls after installation unless otherwise directed by the Engineer. The CIPP shall be sealed at the manholes to provide a watertight liner connection at the manhole. There shall be no leakage of groundwater into the manhole between the CIPP and existing sewer pipe and between the existing sewer pipe and manhole wall. A hydrophilic waterstop (non-bentonite) comprised of modified chloroprene rubber shall be installed around the liner 6 inches from each manhole wall prior to processing the liner to provide additional waterstop protection. As the CIPP is expanded, the waterstop shall be pressed tightly against the existing sewer to provide a leak-tight seal. The waterstop shall be Hydrotite as manufactured by Greenstreak (St. Louis, Missouri) or equal. All CIPP connections to manholes shall be further sealed with an approved non-shrink grout to completely cover the CIPP/manhole connection point. CIPP lining shall be sealed to manhole linings (where specified) in an acceptable manner as approved by the Engineer. Further, all invert channels shall be coated with an approved grout to match the CIPP elevations in the manhole. Submit detailed drawings of the pipe-manhole connections to the Engineer for approval, including termination points in manholes and transitions with manhole linings where installed.
- T. The Contractor shall fully reopen all of the existing active service connections in each length of sewer following lining. The service connections shall be reopened from inside the sewer by means of a closed-circuit television camera controlled cutting device appropriate for the CIPP. All openings shall be clean and neatly cut and shall be flush with the lateral pipe. The openings shall also be buffed with a wire brush to remove rough edges and provide a smooth finish. The bottom of the openings shall be flush with the bottom of the lateral pipe to remove any lip that could catch debris. Openings shall be 100% of the service lateral pipe. The Contractor shall re-open any service lateral that does not meet this requirement as evidenced by the post-rehabilitation inspections at no additional cost to the Owner. The Contractor shall be fully responsible for all backups and damage caused by not fully opening a lateral connection, including paying all costs associated with repairing damage as required by the Engineer, Owner and/or property owner.
- U. Preliminary Post-CIPP TV Inspections: Immediately after the CIPP is installed and the service connections are completely opened and brushed, the Contractor shall televise the installed CIPP to verify and document that the CIPP was properly installed and cured and

that all service connections have been opened as specified. The preliminary post-CIPP TV inspection videos shall be submitted to the Engineer within 1 day of the CIPP being installed. This will allow the Engineer to confirm that there are no CIPP issues that need addressed on this sewer and/or future installations and that the service laterals are properly opened. The preliminary post-CIPP inspections shall clearly show the CIPP liner and all service connections.

The Engineer will accept these preliminary post-CIPP TV inspections for approving payment of the installed CIPP with the final post-CIPP inspections as specified herein being required prior to final payment. The Contractor may submit these inspections as the final post-CIPP inspections if all grout/concrete work is finalized in the connecting manholes (including grouting the pipe connections, coating the invert channels, and performing the specified manhole rehabilitation) and all specifications are met. Completing all of the manhole work may be difficult to get finished so that the TV inspections can be submitted within 1 day as specified above. The Contractor's unit price bid for the CIPP shall include preliminary post-CIPP and final post-CIPP TV inspections.

- V. Installation reports shall be generated for each segment of liner installed. The reports shall document installation, including manhole numbers, street names/sewer location, project number, date, time, temperature, curing time, curing parameters, curing speed, liner thickness, etc. A sample report shall be submitted to the Engineer for approval prior to installing any lining. The reports shall be submitted to the Engineer prior to requesting payment.
- W. For every sewer segment that is lined (sewer segment is defined as the sewer between two manholes), the Contractor shall remove one restrained sample of the installed liner at least 12 inches in length for testing of installed CIPP flexural properties and thickness. The CIPP testing shall include determining flexural strength, flexural modulus, tensile strength and thickness of each sample. These four separate individual tests make up one completed CIPP test. Payment will be made for each completed CIPP test at the unit price bid after the test results are submitted to the Engineer.

For sewers 12 inches in diameter and smaller, the sample shall be captured by installing the lining through a section of PVC pipe (same diameter as the existing sewer diameter) within the most downstream manhole of the installation and at all intermediate manholes if multiple sewer segments are lined at the same time. For sewers 15 inches in diameter and larger, plate samples shall be taken and cured in the same water as the installed CIPP.

The Contractor shall be responsible for capturing the samples and preparing the samples for testing (cutting the samples to the required dimensions, removing the PVC pipe, etc.). The testing laboratory shall specify the dimensions for the samples. In addition, the Contractor shall cut a 1-inch wide representative sample (taken at least 2 inches from the end of the specimen) for the Engineer's records. The Contractor shall label all samples including writing on the samples where they were taken (manhole numbers, work orders, and other relevant information) and the date they were taken.

The Engineer will direct the Contractor which samples to submit to the testing laboratory. The Contractor shall retain a sample from all samples that are submitted to the testing laboratory until the end of the project. These samples shall be available upon request from the Engineer. The Contractor will copy the Engineer on all submittals to the testing laboratory. The testing laboratory shall submit all test results directly back to the Contractor with a copy to the Engineer. The test results shall be returned to the Contractor and Engineer within 21 days from the laboratory receiving the samples. If the results are not received in this timeframe, payment will be withheld. It shall be the Contractor's responsibility to ensure that the laboratory meets the specified schedule.

The Contractor shall select the independent testing laboratory and shall pay the laboratory for all tests. The Contractor will be paid for the tests through the Contract at the unit price bid for each completed test. All testing shall be performed by an independent, accredited, certified and experienced (minimum 5 years of experience) testing laboratory as chosen by the Contractor. The Contractor shall submit the name and location of the testing laboratory for approval. The submittal shall include the laboratory's experience testing CIPP samples, the laboratory's accreditation/certification to perform CIPP testing from a recognized accreditation body, and a certified statement from the laboratory that they are independent from and not associated with the Contractor in any way.

The tests shall be used to verify that the installed CIPP meets these specifications. CIPP thickness shall be measured in accordance with ASTM D5813. Flexural properties shall be determined per ASTM D790. Tensile strength shall be determined per ASTM D638.

- X. Any lining that does not meet the specified installed strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liner that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, pipe bursting the sewer from manhole to manhole, re-lining sewers completely from manhole to manhole, or providing the Owner with a substantial credit.

Credits will only be considered for lining that does not meet the required thickness. CIPP lining thickness may be up to 5% below the specified minimum installed thickness before the credit will be applied. For example, if the minimum specified thickness is 6 mm, the credit will only apply if the CIPP is less than 5.7 mm thick. There will be no "re-calculations" of required thicknesses based on actual flexural test results for that sample. The minimum specified thicknesses shall be required regardless of the final flexural properties of the CIPP as installed. If a credit is acceptable to the Engineer and Owner, the credit shall be calculated by multiplying the bid price by the percent that the liner thickness is below the minimum required installed thickness as follows:

$$\text{Credit} = (1 - (\text{installed CIPP thickness}/\text{min required thickness})) \times \text{Bid Price}$$

The Contractor shall not assume that a credit will be acceptable to the Engineer or Owner or that the above formula will be used in all situations or for all installed CIPP thicknesses. Liner thickness of less than 85% of the required minimum thickness will not be eligible for any payment.

All credits shall be accounted for on the monthly pay estimates (each and every month) as the failed test results are received by the Engineer. Credits shall not accumulate until the end of the Contract. In addition, any other defective CIPP shall be repaired within 21 days of being identified or payment will be withheld and work will not be allowed to continue.

- Y. Following installation of the CIPP, reopening and brushing of all active service lateral connections, and completion of all manhole rehabilitation including vacuum testing (where applicable), the Contractor shall conduct a final post-rehabilitation television inspection of the completed work to verify that the liner installation is acceptable as defined herein. The sewers shall be thoroughly cleaned prior to performing the television inspections. No cleaning equipment shall be in the sewers during the post-rehabilitation inspections. The pipe shall be dry so that the entire CIPP can be seen. This will require that temporary plugging or bypass pumping be provided for all post-rehabilitation television inspections.

The post-rehabilitation television inspections shall be in accordance with the inspections specified in Section 02650 – Cleaning and Television Inspection. The post-rehabilitation television inspections shall be within 3 feet of the actual sewer length as measured above ground from center of manhole to center of manhole. Any inspection that exceeds this limit shall be re-performed and re-submitted to the Engineer prior to payment at no additional cost to the Owner. One copy of the final post-rehabilitation inspections shall be submitted to the Engineer for review and approval as specified. The inspections must be in order, correct and complete or the Engineer will immediately return the inspections to the Contractor for corrections.

- Z. Payment will not be made for any sewer lining until the Engineer has reviewed and approved the final CCTV inspection. The final CCTV inspection shall not be performed until all manhole rehabilitation work is completed (including vacuum testing where applicable). As specified previously herein, the Engineer will accept preliminary post-CIPP TV inspections for payment with the final post-CIPP TV inspections being required prior to payment of the manhole rehabilitation work (where applicable) and/or final payment. The Contractor shall submit the required digital inspections a minimum of 10 days in advance of any payment request to provide the Engineer ample time to review the information.
- AA. There shall be no holes, dry spots, lifts, ribs, wrinkles, blisters, ridges, splits, bulges, cracks, delaminations or other type defects in the CIPP lining. In addition, there shall be no groundwater leakage through the CIPP or between the liner and the existing pipes including at the connections to manholes. Defective lining and groundwater leakage

shall be repaired in a manner suitable to and approved by the Engineer at no additional cost to the Owner.

The Engineer's decision on how to correct defective lining shall be final. Options for repairing defective lining that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, pipe bursting the sewer from manhole to manhole, re-lining sewers completely from manhole to manhole, or installing a sectional CIPP patch to repair the defective area.

In addition, the Engineer and Owner may require an additional warranty beyond the standard warranty period (defined elsewhere in these Specifications) for defective CIPP at no additional cost to the Owner. This additional warranty will be for a maximum of five years (one year standard warranty plus four additional years). The warranty should include all costs associated with the remedial work and be non pro-rated. This additional warranty may also be required on the entire "batch" of CIPP if the defect appears to be material related (resin, tube, catalyst, etc.) or wet-out related regardless of the acceptance test results or visual review of any particular CIPP liner section in that "batch".

If a CIPP patch is approved as a repair method for manhole-to-manhole CIPP, the Owner will not pay the full bid price for that sewer segment (manhole to manhole). The price reduction (credit) shall be negotiated with the Contractor and shall be acceptable to the Owner. The credit shall be equal to at least 25% of the unit price bid for the CIPP installation and shall apply to the entire CIPP lining from manhole to manhole. The Owner shall have the final decision on the amount of the credit. Any such credits shall be accounted for on the monthly pay estimates (each and every month) as the defective CIPP is repaired. Credits shall not accumulate until the end of the Contract.

END OF SECTION

SECTION 02653

MANHOLE REHABILITATION

PART 1 GENERAL

1.01 SCOPE

- A. The work under this Section includes the rehabilitation of existing manholes throughout the project and/or service area.
- B. This Section covers the cleaning, repair, structural restoration, and rehabilitation of existing manholes as required to eliminate leakage into the manholes and to restore structural integrity. The work includes but is not limited to: cleaning entire manhole interior, repair/reconstruction of the failed sections of the structure; stopping active leaks through manhole walls and joints; preparation of surfaces to receive the application of coatings designed to resist the affects of hydrogen sulfide gas or the affects of aging; and, application of those coatings to provide a monolithic liner on the inside walls of the manhole as specified.
- C. All ancillary work shall be constructed properly in accordance with the Drawings and Specifications. All defects shall be remedied to the engineer's satisfaction prior to approval.

1.02 REFERENCE SPECIFICATION, CODES, AND STANDARDS

- A. The Contractor shall ensure that the products and work comply with the reference specifications listed in the Contract Documents.
- B. The Contractor shall ensure that the products and work comply with the current version of the following American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM C78 Standard Test Method for Flexural Strength of Concrete
 - 2. ASTM C94 Standard Test for Ready Mix Concrete
 - 3. ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
 - 4. ASTM C234 Standard Test Method for Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel
 - 5. ASTM C267 Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing
 - 6. ASTM C321 Standard Test Method for Bond Strength of Chemical-Resistant Mortars
 - 7. ASTM C496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens

8. ASTM C596 Standard Test Method for Drying Shrinkage of Mortar Containing Portland Cement
9. ASTM C666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
10. ASTM C827 Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
11. ASTM C882 Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete by Slant Shear
12. ASTM C952 Standard Test Method for Bond Strength of Mortar to Masonry Units
13. ASTM C1072 Test Method for Measurement of Masonry Flexural Bond Strength
14. ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test

1.03 QUALIFICATIONS

- A. The Contractor performing the work, as a company, must have at least five years of experience coating manholes with cementitious mortar, and shall have successfully installed a cementitious mortar lining product in a minimum of 2,000 manholes as documented by verifiable Owner references.
- B. The Contractor performing the work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be an approved installer as certified and licensed by the product manufacturer.
- C. The Contractor's proposed superintendent/foreman for the work under this Contract shall have successfully installed a cementitious lining product in a minimum of 1,000 manholes as documented by verifiable Owner references. The Contractor shall submit information to demonstrate that the experience requirements are met.
- D. The cementitious product shall have been manufactured for installation specifically in manholes for at least five years and shall have been installed in at least 10,000 manholes. References that are documented and that can be verified shall be submitted to demonstrate that the cementitious products meet these requirements. Contact names and numbers shall be included with the references.
- E. Approved cementitious products are listed in these specifications. Even though the product may be listed as approved, the product manufacturer and Contractor(s) shall still meet the experience requirements specified above, or the products and Contractor will not be approved for this work.

1.04 SUBMITTALS

- A. Three hard copies (one to be returned to Contractor after review, one to remain with the Engineer and one to remain with the Owner) and one pdf of all submittals specified herein shall be submitted to the Engineer.
- B. The Contractor shall submit complete shop drawings of the manhole lining system to demonstrate compliance with these specifications, to show materials of construction and to detail installation procedures. Testing procedures and quality control procedures shall also be submitted.
- C. Certifications that the manhole lining was manufactured in accordance with these specifications and the appropriate ASTM standards shall be submitted with each shipment.
- D. For all products to be used for manhole rehabilitation, the Contractor shall submit manufacturer documents containing product technical information, ASTM test results and certification, application procedures and specifications for approval, and testing and quality control procedures.
- E. References for the Contractor, superintendent and products shall be submitted to verify the specified experience.
- F. The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to complete the work. The plan shall be reviewed by the Engineer and shall be acknowledged as acceptable before any work is started. The bypass designs should be sealed by a licensed North Carolina professional engineer.

1.05 WARRANTY

- A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the cementitious liner material to be free from defects in raw materials for 1 year from the date of installation and acceptance by the Owner. The Contractor shall warrant the liner installation for a period of 1 year from final acceptance.

PART 2 PRODUCTS

2.01 MATERIALS – CEMENTITIOUS MORTAR LINING SYSTEM

- A. The Contractor shall line the interior of the manholes with a cementitious mortar lining system where specified in accordance with the specifications of the manufacturer.

- B. The cementitious manhole lining system for the interior of manholes shall be a monolithic system suitable for use as a trowel or spray-applied monolithic surfacing in sewer manholes. The cementitious lining system shall be a 100% calcium aluminate product (product comprised of calcium aluminate cement and calcium aluminate aggregate). Partial calcium aluminate products (or blended products) shall not be considered an equal and shall not be approved. The hydrogen sulfide resistant 100% calcium aluminate products shall be one of the following products or approved equal:
- High Performance by Strong Seal Systems
 - Aluminaliner PF by Quadex
 - Sewpercoat PG by Kerneos, Inc.
 - Mainstay ML-PF by Madewell
 - Cemtec HITECH 100 by A.W. Cook Cement
 - Maximum CA Plus Cement by Standard Cement Materials
- C. The cementitious lining system shall be a pumpable cement mixture. The lining shall be installed via low-pressure application only. The materials shall be suitable for all the specified design conditions. Trowel application may be approved by the Engineer.
- D. The cementitious lining shall provide a minimum service life of 25 years. The cured cementitious lining shall be continuously bonded to all the brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the sewer manhole. Provide bond strength data on cured, cementitious lining based on ASTM test methods referenced herein.
- E. The cementitious liner when cured shall have the following minimum characteristics at 28 days as measured by the applicable ASTM standards referenced herein:
1. Minimum compressive strength of 6,000 psi
 2. Minimum bond strength of 130 psi
 3. Shrinkage of less than 0.05%
- F. The cementitious lining shall be compatible with the thermal condition of the existing sewer manhole surfaces. Surface temperatures will range from 20°F to 100°F. Provide test data on shrinkage of the cementitious lining based on the ASTM standards referenced herein.
- F. Chemical sealants or grouts used to seal active manhole leaks, to patch cracks, to fill voids and to otherwise prepare the manhole surfaces for the lining installation shall be suitable for the intended purpose and shall be compatible with the lining as certified by the manufacturer.

- G. External Coating: Whenever the outside of exposed manholes walls are specified to be coated with a special exterior cementitious mortar product, the exterior mortar shall be HB2 Repair Mortar by ThoRoc, SikaTop 123 by Sika Corporation, or approved equal. The installed thickness shall be at least 2 inches, troweled smooth after application.

2.02 MATERIALS – INJECTION GROUTING

- A. The grout used to completely stop identified leaks shall be a polyurethane grout and shall be Hydro Active Cut by DeNeef Construction Chemicals, AV-202 Multigrout by Avanti International, or approved equal.
- B. The grout shall be suitable for injection and shall expand to seal identified leaks. The grout shall be installed per the manufacturer's recommendations. The material shall be suitable for all the specified design conditions.
- C. The grout shall provide a minimum service life of 25 years. When cured, the grout shall be suitable for sewer system service and chemically resistant to any chemicals or vapors normally found in domestic sewage. The grout shall be compatible with the thermal condition of the existing sewer manhole surfaces. Surface temperatures will range from 20°F to 100°F.
- D. The grout shall effectively seal the identified leak in the sewer manhole and prevent any penetration or leakage of groundwater infiltration at this location or other nearby locations or within the same pre-cast manhole joint as a direct result of the injected grout. Any leaks from such migration shall be sealed at no additional cost.

PART 3 EXECUTION

3.01 DELIVERY, STORAGE, AND SHIPPING

- A. Care shall be taken in shipping, handling and placing to avoid damaging the lining products. Any lining product damaged in shipment, showing deterioration, or which has been exposed to any other adverse storage condition that may have caused damage, even though no such damage can be seen, shall be marked as rejected and removed at once from the work.
- B. While stored, the lining products shall be adequately packaged and protected. The lining products shall be stored in a manner as recommended by the manufacturer.

3.02.1 INSTALLATION – CEMENTITIOUS LINING

- A. The Contractor shall notify all property owners who discharge sewage directly to the manhole being rehabilitated 72 hours in advance, giving the date, start time

and estimated completion time for the work being conducted and the impacts to the property owner.

- B. Water for use on this project will be available from selected hydrants owned and operated by the Owner. The Owner will provide water for use by the Contractor free of charge. The Contractor shall coordinate with the Owner to have bulk water meters provided at hydrants. Water from the Owner's hydrants may only be obtained by the connection of a Town-provided meter assembly.
- C. The Contractor shall clean each sewer manhole to be surfaced and shall dispose of any resulting material. The cleaning shall be performed using a high power jet wash at a minimum of 3500 psi water pressure to remove all dust, biological growths, grease, oil, paint or any other surface contaminants or coatings. The tip of the nozzle shall be a maximum of 4 inches from the manhole wall during cleaning to ensure that 3,500 psi is being applied to the walls.
- D. Coatings that cannot be removed shall be sanded with coarse sand paper to rough the surface sufficient to obtain and ensure adequate bonding of the lining. Roots shall be removed by manually cutting the roots from inside the manhole.
- E. The Contractor shall conduct a visual inspection of each manhole after it is cleaned. All active, hydrostatic infiltration leaks shall be plugged or sealed with an appropriate grout compatible with the cementitious lining. Injection grouting may be required to seal active leaks including leaks in existing invert channels and benches. All loose mortar and rubble of existing walls, benches and inverts shall be removed.
- F. Prior to installing the lining, the Engineer along with the Contractor must inspect and approve the surface preparation work. The Contractor shall notify the Engineer when the manholes are ready for inspection. The Contractor is responsible for ensuring proper preparation and installation conditions including temperature and moisture regardless of the findings by the Engineer during his inspection. The manhole lining shall be completed immediately after the inspection, or the manhole may need to be re-cleaned prior to spraying to remove accumulated debris on the benches and walls.
- G. The Contractor shall prepare the manhole to receive cementitious lining as necessary by reshaping and repairing benches, inverts, and walls where required including smoothing out irregular shaped corbel and chimney sections prior to spray application. All interior surfaces shall be prepared as recommended by the manufacturer. Minimum requirements are as listed below.
 - 1. All cracks and other voids must be repaired and filled with suitable non-shrinking cements, sealants or grouts, including all voids between the existing sewer pipes and manhole walls.
 - 2. All patches shall be smooth and even with the manhole wall.

3. All existing manhole rungs/steps shall be removed and voids filled.
 4. All surfaces shall be suitably prepared for the required bonding of the cementitious lining as recommended by the manufacturer.
 5. If steel reinforcement (rebar) is encountered when cleaning or preparing the surface, notify the Engineer before any additional work is performed so that the steel reinforcement can be evaluated.
- H. A complete, watertight seal shall be provided at pipe and manhole wall connections including filling in all voids around the connection and completely covering the connection with an approved non-shrink grout. Contractor shall submit details of how the watertight connections will be made to the Engineer for review and approval. The invert channel shall be coated with an appropriate quick-set grout product in complete accordance with the manufacturer's instructions.
- I. When CIPP is installed in the connecting sewer(s), the invert channel shall be coated with an approved grout to build up the invert channel to the invert elevations of the new cured-in-place pipe lining (CIPP); to fill all voids, cracks, holes, etc.; and to form a smooth flow channel. The entire channel shall be coated. The coating shall be a minimum ¼-inch thick. The Contractor shall submit details of the proposed grout for this application.
- J. The Contractor shall furnish and place the cementitious lining in each manhole as shown in the Details. The installation of the lining shall be in complete accordance with the applicable provisions of ASTM and the manufacturers' specifications.
- K. The Contractor shall bypass pump sewage flows around the manhole when the work is being performed. Contractor shall submit a detailed bypass pumping plan to the Engineer prior to starting any work. The Contractor is advised that a number of manholes will surcharge during rain events.
- L. The walls and benches shall be coated to the required minimum 1-inch thickness by spray-on methods. Invert channels shall also be coated as specified herein. Cementitious mortar may be trowel-applied if approved by the Engineer. Cementitious mortar lining shall be monolithically applied in one pass or application and shall be troweled smooth after application. The manhole lining shall not be installed until all required main sewer rehabilitation and other manhole rehabilitation work are complete.
- M. The cementitious lining shall cover the complete interior of the existing sewer manhole including the benches (shelves). The lining shall effectively seal the interior surfaces of the sewer manhole and prevent any penetration or leakage of groundwater infiltration. When cured, the lining shall form a continuous, tight-fitting, hard, impermeable surfacing which is suitable for sewer system service

and chemically resistant to any chemicals or vapors normally found in domestic sewage.

- N. The Contractor shall plug off and/or protect the connecting pipes while coating the manhole walls to prevent any material from washing down the sewers. If material enters the sewer pipes, the Contractor will be required to clean the sewers from manhole to manhole to remove all material and then televise the sewer to demonstrate that all material is removed at no cost to the Owner.
- O. The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the manhole being rehabilitated. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall document all backups and submit documentation to the Engineer including the reason for the backup, the time and date of the backup, the property owner's name, address and phone number, the resolution to problem, the time and date the problem was resolved, and any special cleanup work that had to be performed. This required documentation shall be submitted for all backups regardless of when they occur. All cleanup shall be completed within 4 hours of the backup.
- P. External Coating: Whenever the outside of exposed manholes walls are specified to be coated with a special exterior cementitious mortar product, the exterior mortar shall be HB2 Repair Mortar by ThoRoc, SikaTop 123 by Sika Corporation, or approved equal. The existing surface shall be completely cleaned and all loose material removed prior to applying the cementitious material. Installation shall be in strict accordance with the manufacturer's recommendations including utilizing any required bonding agents and providing proper curing conditions. The installed thickness shall be at least 2 inches, troweled smooth after application.

3.02.2 INSTALLATION – INJECTION GROUTING

- A. The Contractor shall notify all property owners who discharge sewage directly to the manhole being rehabilitated 72 hours in advance, giving the date, start time and estimated completion time for the work being conducted and the impacts to the property owner.
- B. The Contractor shall inject grout to seal the specified leaks. The grout shall be injected in accordance with the manufacturer's instructions. Grout shall continue to be pumped until the leak is completely sealed. The hole drilled to inject the grout shall be covered with non-shrink grout.

3.03.1 ACCEPTANCE TESTS - CEMENTITIOUS MORTAR LINING SYSTEM

- A. Field acceptance of the cementitious lining shall be based on the Engineer's field inspections and evaluation of the appropriate installation and curing test data.

The cementitious lining shall provide a continuous monolithic surfacing with uniform thickness throughout the manhole interior. If the thickness of the lining is not uniform or is less than specified, it shall be repaired or replaced at no additional cost to the Owner.

- B. If the Engineer has to enter the manholes to inspect the work, the Contractor shall provide forced air ventilation, gas monitors and detectors, harnesses, lights, confined space entry permits, etc. for the Engineer or Owner to enter the manhole and perform the inspection in complete accordance with OSHA requirements at no additional cost to the Owner.
- C. Samples shall be taken of the installed liner each day that cementitious lining is installed as follows: one sample if one to five manholes were coated that day, two samples if six to ten manholes were coated that day, three samples if eleven to fifteen manholes were coated that day, and four samples if sixteen or more manholes were coated that day. Samples shall be taken at equally spaced intervals throughout the day. The frequency of tests may be increased by the Engineer and performed by the Contractor at no additional cost to the Owner when the required tests show that the installed lining does not meet the specifications.
- D. Samples shall be cube samples. At least six cubes shall be taken for each sample for testing. All cube samples shall be taken in the field from the material being sprayed. The Contractor shall show the samples to the Engineer each day and the Engineer shall initial the samples for delivery to the testing laboratory. The Contractor shall properly take and store the samples and shall deliver the samples to the testing laboratory. The laboratory shall document that they received the initialed samples. The tests shall be performed by an independent testing laboratory. All costs associated with the tests shall be paid for by the Contractor. The test results shall be submitted to the Engineer immediately when available, no later than 30 days after the lining is installed, or payment will be withheld.

The samples shall be tested in accordance with the applicable ASTM standards to verify that the installed liner meets the compressive strength requirements specified herein and the lining manufacturer's published data on the product. Tests shall include 7-day and 28-day strength tests (3 tests/cubes for each time period for each sample). Shrinkage and bond strength tests shall be performed on each batch or lot of material shipped to the Contractor.

- E. The Engineer will direct which manholes shall be tested via vacuum testing when all manhole rehabilitation work to that manhole is complete. Manholes shall not be vacuum tested until at least 7 days after the cementitious lining was installed. Vacuum testing shall be performed in accordance with ASTM C-1244 except that the minimum test time shall be 1 minute. The Engineer or Owner shall be present for all testing. The Contractor shall notify the Engineer 48 hours prior to testing.

The Contractor shall submit test reports of the testing which include the project name, manhole tested, data on testing (vacuum pressure, test duration, etc.), and whether the manholes passed or failed the test. Test reports must be submitted for failed tests with the reason for failure noted on the report. The Engineer shall sign all test reports to document that the Engineer was present for the testing. Any manhole that fails the vacuum test shall be repaired and retested immediately by the Contractor at no additional cost.

- F. There shall be no groundwater infiltration or other leakage (active or previously active) through the manhole walls, benches, inverts or pipe connections at the manholes after it has been lined. If leakage is found, it shall be eliminated with an appropriate cement mortar, grout or sealant as recommended by the manufacturer and approved by the Engineer at no additional cost to the Owner. Injection grouting may be required to stop leaks around the pipe connections or in the invert channel or benches. The Engineer's decision on how defective lining is repaired shall be final. If any defective lining is discovered after it has been installed or during the warranty period, it shall be repaired or replaced in a satisfactory manner at no additional cost to the Owner. Repaired manholes including those repaired during the warranty period shall be vacuum tested at no additional cost to the Owner.
- G. Payment shall not be made for the installed cementitious lining until (1) the manhole passes the vacuum test, (2) all material tests are submitted, and (3) the final CCTV inspection of the CIPP liner is submitted as specified in Section 02651 (when CIPP is installed; final CCTV performed after manhole rehabilitation is completed).

3.03.2 ACCEPTANCE TESTS – INJECTION GROUTING

- A. Field acceptance of the grout shall be based on the Engineer's visual inspections, the Engineer's evaluation of the appropriate installation, and the absence of any visible active leaks in the general area of the original leak location or within the same pre-cast manhole joint.
- B. If the Engineer has to enter the manholes to inspect the work, the Contractor shall provide forced air ventilation, gas monitors and detectors, harnesses, lights, confined space entry permits, etc. for the Engineer or Owner to enter the manhole and perform the inspection in complete accordance with OSHA requirements at no additional cost to the Owner.
- C. There shall be no groundwater infiltration or other leakage (active or previously active) at or near the original leak location or within the same the pre-cast manhole joint after it has been repaired. If leakage is found and deemed to be a direct result of the original repair as determined by the Engineer, it shall be eliminated as approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how additional leak(s) are repaired shall be final. If any

additional leaks are discovered after it has been installed or during the warranty period, they shall be repaired in a satisfactory manner at no additional cost to the Owner.

END OF SECTION

SECTION 03000
CLEARING AND GRUBBING
(Revised 1-9-02)

PART 1 - GENERAL

- A. The Contractor shall furnish all labor, equipment, materials, tools, etc. and shall perform all clearing and grubbing of trees, down timber, logs, snags, brush undergrowth, heavy growth of grass or weeds, debris, and rubbish, etc. All such material shall be disposed of by burning (when permitted), suitable removal from the site, or other means acceptable to the Engineer.
- B. The width of clearing for the project shall be limited to the right of way and temporary and permanent easements as noted on the drawings. The entire width of the permanent easement is to be cleared unless otherwise indicated by clearing limits noted on the drawings. Clearing and grubbing shall be conducted in a manner to prevent damage to vegetation that is intended to remain growing and also to prevent damage to adjacent property.
- C. The Engineer will designate all areas of growth or individual trees inside the clearing limits, which are to be preserved due to their desirability. The trees to be preserved will be shown in the Contract Documents or designated by the Engineer.
- D. All spoil materials that are removed by clearing and grubbing operations shall be adequately disposed of, removed from the site or burned if permitted by the appropriate authorities. The contractor shall be responsible for controlling fires in compliance with all Federal, State or local laws.
- E. All work performed under this section shall cause a minimum of erosion and sediment pollution as outlined in Section 16000. Installation of temporary or permanent erosion control measures shall occur immediately after clearing and grubbing operations have begun or as directed by the Engineer.

PART 2 - PAYMENT

- A. Basis of Payment: Payment for "Clearing and Grubbing" shall be at the unit price per area basis or lump sum as indicated on the Itemized Proposal. If no line item is provided for clearing and grubbing, it shall be considered incidental to the project.

END OF SECTION 03000

SECTION 05000
ASPHALT CONCRETE
(Revised 1-9-02)

PART 1 - GENERAL

- A. The work covered by this section consists of the installation and/or removal of aggregate base course, asphalt concrete surface course, asphalt concrete intermediate course, asphalt concrete base course, asphalt tack coat, asphalt prime coat, Geotextile Interlayer, Asphalt Surface Treatments, and utility adjustments.
- B. No base material shall be placed on a roadway until the storm sewer, subgrade, utilities and all appurtenances have been inspected and approved by the Inspector.
- C. The latest revision of the "Standard Specifications for Roads and Structures" of the North Carolina Department of Transportation (NCDOT) shall apply to this project unless otherwise specified herein.
- D. Before the asphalt surface course is placed on the road, the aggregate base course shall be inspected and approved by the Inspector.

PART 2 - MATERIALS

- A. Aggregate Base Course:
 - i. This base course shall consist of an approved coarse aggregate produced in accordance with Section 520 in the NCDOT "Standard Specifications for Roads and Structures." All materials, construction requirements and other provisions in Section 520 shall apply. The subgrade for the coarse aggregate base course shall be constructed in accordance with the requirements of these Specifications.
 - ii. The subgrade shall be thoroughly compacted and constructed to the line, grade, and cross section on the plans or as directed by the Engineer. Before placing the base course, the subgrade shall be inspected and approved by the Inspector, and backfilling behind the curb shall be complete.
 - iii. The base course material shall be placed in lifts not to exceed eight (8) inches. Each layer shall be graded to the required section and compacted to at least one hundred percent (100%) of the density as determined by AASHTO T180. The base material shall be compacted at

a moisture content which is approximately that required to produce the maximum density.

- iv. After final shaping and compacting, the Inspector will check the surface of the base for conformance to grade and typical section. The thickness of the base shall be within a tolerance of plus or minus 1/2 inch of the base thickness required by the plans.
- v. Basis of Payment: Payment will be made under the contract unit price bid per square yard at the specified thickness for the actual amount of "Aggregate Base Course" used to construct the roadway base to the line, grade, and cross section indicated on the plans. The price of aggregate base course installed under curb and gutter shall be included in the price per linear foot for Curb and Gutter.

B. Superpave - Asphalt Concrete Surface Course: Type S 4.75 A, SF 9.5 B, S 9.5 A, S 9.5 B, S 9.5 C, S 12.5 B, S 12.5 C, & S 12.5 D:

- i. The Superpave surface course shall be Asphalt Concrete Surface Course, Type S 4.75 A, SF 9.5 B, S 9.5 A, S 9.5 B, S 9.5 C, S 12.5 B, S 12.5 C, or S 12.5 D shall be produced, delivered, placed, tested, compacted, and accepted in accordance with Sections 609 and 610 of the most current version of the NCDOT "Standard Specifications for Roads and Structures."
- ii. Sections of the newly finished pavement shall be protected from traffic until they have become properly hardened. Finished surfaces of the base shall be checked with a 10-foot straightedge, applied parallel to the center of the pavement, and any places that vary more than one-eighth (1/8) of an inch as measured from the bottom of the straightedge to the finished course shall be corrected.

C. Superpave - Asphalt Concrete Intermediate Course: Type I 19.0 B, I 19.0 C, & I 19.0 D:

- i. The Superpave intermediate course shall be Asphalt Concrete Intermediate Course, Type I 19.0 B, I 19.0 C, or I 19.0 D shall be produced, delivered, placed, tested, compacted, and accepted in accordance with Sections 609 and 610 of the most current version of the NCDOT "Standard Specifications for Roads and Structures."

D. Superpave - Asphalt Concrete Base Course: Type B 25.0 B, B 25.0 C, & B 37.5C:

- i. The Superpave base course shall be Asphalt Concrete Base Course, Type B 25.0 B, B 25.0 C, or B 37.5C shall be produced, delivered,

placed, tested, compacted, and accepted in accordance with Sections 609 and 610 of the most current version of the NCDOT "Standard Specifications for Roads and Structures."

E. Pavement Repair Patch

- i. Where it is necessary to open cut along or across streets with asphalt surfaces, the pavement shall be replaced with seven (7) inches of Superpave - Asphalt Concrete Intermediate Course: Type I 19.0 B, I 19.0 C, or I 19.0 D and two (2) inches of Superpave - Asphalt Concrete Surface Course: Type S 4.75 A, SF 9.5 B, S 9.5 A, S 9.5 B, S 9.5 C, S 12.5 B, S 12.5 C, or S 12.5 D, as directed by the Engineer. The replacement surface and/or base shall extend a minimum of 1 foot on each side of the excavated opening. The thickness of the replacement material shall be sufficient to provide a base and surface of equivalent strength to the undisturbed base and surface. The replaced pavement shall meet all applicable material and installation specifications outlined elsewhere in the Contract Documents.

F. Asphalt Tack Coat:

- i. The tack coat shall be asphalt or asphalt cement and shall meet the general, material, and construction specifications as specified in Section 605 of the NCDOT "Standard Specifications for Roads and Structures." The tack coat shall be uniformly applied at a rate of three hundredths (0.03) gallons per square yard and shall be applied beneath each layer of asphalt plant mix base or pavement to be placed except where a prime coat has been applied, unless otherwise approved or specified by the Engineer. There will be no direct payment for the work covered by this section.

G. Asphalt Prime Coat:

- i. The prime coat shall be asphalt and shall meet the general, material, and construction specifications as specified in Section 600 of the NCDOT "Standard Specifications for Roads and Structures." The prime coat shall be uniformly applied, in accordance with the referenced specifications, on existing non-asphalt base courses prior to placement of asphalt pavement, unless otherwise approved or specified by the Engineer. There will be no direct payment for the work covered by this section.

H. Asphalt Plant Mix:

- i. The production, delivery, and placement of all types of asphalt plant mixed bases, intermediate, and surface courses shall conform to

Sections 609 and 610 of the most current version of the NCDOT "Standard Specifications for Roads and Structures." There will be no direct payment for the work covered by this section.

PART 3 - PAYMENT FOR ASPHALT CONCRETES

A. Basis of Payment:

- i. Payment of Asphalt Concrete Surface Course (Type S 4.75 A, SF 9.5 B, S 9.5 A, S 9.5 B, S 9.5 C, S 12.5 B, S 12.5 C, or S 12.5 D), Asphalt Concrete Intermediate Course (Type I 19.0 B, I 19.0 C, & I 19.0 D), and Asphalt Concrete Base course (Type B 25.0 B, B 25.0 C, or B 37.5C) shall be paid at the contract unit price bid per square yard at the thickness designated or as indicated in the Itemized Proposal. The bid price shall be full compensation for all furnishing, mixing, hauling, placing and compacting all materials, and for all labor, equipment and incidentals necessary to complete the work.
- ii. Pavement repair patches shall be paid at the contract unit price bid per linear foot or per square yard for "Pavement Repair Patch" as indicated in the Itemized Proposal. The unit price for pavement repair shall be full compensation for all work necessary to repair the pavement and maintain the roadway. The unit price shall include all pavement repair(s) both temporary and permanent, furnishing, hauling, placing, and shaping the asphalt pavement to produce a uniform, smooth driving surface. No additional payments will be issued to replace pavement damaged by the Contractor outside of the standard trench opening as defined by the Contract Documents.
- iii. If the thickness of the asphalt concrete is suspected to be less than specified on the plans and Itemized Proposal, the Engineer shall have corings performed to determine the thickness in place. Corings shall be made at five-hundred (500) foot intervals or as determined by the Engineer. If the Contractor desires additional corings, the Engineer's material testing firm shall perform additional corings at the Contractor's expense. If the asphalt concrete is found to be thicker than specified, the Contractor shall not be compensated for asphalt concrete placed to a thickness above and beyond the specified thickness. If the asphalt concrete is found to be thinner than specified, the Engineer shall determine if: 1) more asphalt concrete must be placed to bring the thickness to the specified thickness or 2) the unit price shall be adjusted down to compensate the Owner for material which was not placed. The method of adjustment will be based on the ratio of thickness installed to the thickness specified.

PART 4 - CONSTRUCTION METHODS

A. Subgrade:

- i. Preparation of Subgrade: The subgrade shall be shaped to the lines, grades and typical sections established by the Owner. All unsuitable material, boulders and all vegetative matter shall be removed and replaced with suitable material. Suitable material shall come from sources approved by the Owner.
- ii. Compaction of Subgrade: The top one (1) foot of subgrade and the entire base course shall be compacted to a density of 100 PERCENT maximum dry density as determined by AASHTO method T99. For that portion of fill under roadways and extending beyond the back of curb, compact to a density of NO LESS THAN 95 PERCENT maximum dry density as determined by AASHTO method T99. Backfill material shall be placed in lifts of eight (8) inches or less of compacted soil.
 - a) The subgrade shall be compacted at a moisture content which is approximately that required to produce the maximum density indicated by the above test method.
 - b) The Contractor shall dry or add moisture to the subgrade when required to provide a uniformly compacted and acceptable subgrade.

B. Proofrolling:

- i. Equipment: The equipment shall consist of a loaded tandem-axle dump truck or similar pneumatic-tired equipment of a minimum ten (10) ton static weight. The Contractor is responsible for providing the equipment necessary in order to perform proofrolling at no additional cost to the Owner.
- ii. Method: After the roadbed has been completed within five hundredths (0.05) feet of final grade, the roadbed shall then be compacted and tested with two (2) or more coverages unless otherwise directed by the Owner, using a heavy pneumatic-tired roller meeting the requirements listed above. A coverage is considered that stage in the rolling procedure when the entire width of the area being proofrolled has been in contact with the pneumatic tires of the roller. The roller shall be operated in a systematic manner so that the number of coverages over all areas to be proofrolled can be readily determined and recorded.
 - a) The equipment shall be operated at a speed between two and one-half (2-1/2) and three and one-half (3-1/2) miles per hour. All proofrolling procedures shall be followed to the satisfaction of the Inspector on site during the proofrolling.

- iii. Corrective Action: If it becomes necessary to take corrective action, such as, but not limited to, underdrain installation, undercut and backfill of unsuitable materials, and aeration of excessively wet material in areas that have been proofrolled, these areas shall be proofrolled again following the completion of the necessary corrections. If the corrections are necessary due to the negligence of the Contractor or weather, the corrective work and additional proofrolling shall be performed by the Contractor at no cost to the Owner.

C. Placing Asphalt Concrete Mixture:

- i. The mixture shall be spread by means of a mechanical self-contained, power-propelled paver, capable of spreading the mixtures, without segregation, to the required grade and confine the mixture to true lines without the use of stationary side forms.
- ii. The term "screed" includes any "strike-off" device operated by cutting, crowding or other practical action which is effective on the mixtures at workable temperature without tearing, shoving or gouging and which produces a finished surface of the evenness and texture specified.
- iii. Longitudinal and transverse joints shall be made in a careful manner. Well bonded and sealed joints are required. If necessary to obtain this result, joints shall be painted with hot asphalt cement and heated. After the base course mixture has been spread and before roller compaction is started, the surface shall be checked and all flat spots and irregular areas removed and replaced with satisfactory material. Irregularities in grade shall be corrected before compacting.
- iv. Contact surfaces of headers, curbing, gutters, manholes, etc. shall be painted with an approved asphalt cement just before the base mixture is placed against them. All exposed longitudinal edges of the surface course shall be "set up" by tamping with a rake or lute at proper height and level to receive the maximum compression under rolling.
- v. Asphalt mixture shall not be produced or placed during rainy weather, when the subgrade or base course shows excess moisture, or when the air temperature is less than 40° F. in the shade away from artificial heat, unless otherwise permitted by the Owner. In applications involving less than one inch of asphalt, the temperature shall be at least 50° F. Should rain begin during paving operations, the Owner assumes no responsibility for asphalt left on the trucks at the time that the paving operation is halted.

D. Protection of Material:

- i. The Contractor shall provide and have ready for use at all times enough tarpaulins or covers for use in case of rain, chilly wind, or other delay, for the purpose of covering or protecting any material dumped but not spread.

E. Compacting Asphalt Concrete Mixture:

- i. After placing, the mixture shall be thoroughly and uniformly compacted with tandem rollers of eight (8) or ten (10) ton model weighing not less than 250 pounds per inch width of roller tread. The number and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition.
- ii. Each roller shall be operated by a competent, experienced operator and must be kept in continuous operation as nearly as practicable. Rolling shall start longitudinally at the outer edges and proceed toward the center of the pavement, overlapping on successive trips by at least one half (1/2) the width of the roller.
- iii. The speed of the roller shall be at all times slow enough to avoid displacement of the hot mixture as a result of reversing. Any displacement shall be immediately corrected. Rolling shall proceed at a rate not in excess of 500 square yards per hour per roller and shall continue until no further visible compaction is obtainable and all roller marks have been eliminated. Rolling shall compact the mixture to at least ninety-four (94) percent of the laboratory density as determined by the Marshall test method.
- iv. The asphalt concrete mixture shall have a temperature at the time of delivery of between 250° F and 300° F and shall be rolled with a temperature of not less than 235° F.
- v. Rolling shall be started as soon as the mixture will bear the roller without undue misplacement or hairline cracking. Delays in rolling hand raked mixture will not be tolerated.
- vi. To prevent adhesion of the mixture to the roller, the wheels shall be kept moistened with water. Places not accessible to the roller shall be thoroughly compacted with hot tamps.

F. Compacted Densities:

- i. Unless otherwise noted compaction and density control of Asphalt Pavements shall be in accordance with the requirements of Sections 609

and 610 of the most current version of the NCDOT “Standard Specifications for Roads and Structures.” There will be no direct payment for the work covered by this section.

- ii. The Contractor shall allow time for the inspections and testing of areas, as needed, by Town of Cary as directed by the Engineer.

G. Plant Tickets:

- i. The number of batches and total weight of all loads of mixture shall be recorded in duplicate upon plant ticket forms. With each load delivered to the work, the truck driver shall present one copy of the plant ticket to the Inspector. The driver shall retain one copy for the Contractor. Should the Engineer decide to provide a plant inspector, he/she shall keep the stub copy. The weights to be included in the estimate shall be the total of the tickets delivered by the truck driver to the Inspector at the work site. At any time, for the purpose of checking the weighing equipment at the plant, the Owner may direct the Contractor to weigh or cause to be weighed on tested and approved platform scales at the Contractor's expense the contents of any truckload that is to be delivered to the work site.

H. Protection of Pavement:

- i. When edges are not protected, planks of the same thickness shall be placed adjacent to longitudinal or transverse joints until the surface course is completed. Sections of newly finished pavements shall be protected from traffic until they have become properly hardened by temperature cooling.

PART 5 - REMOVAL OF EXISTING PAVEMENT

- A. The work covered by this section consists of the removal and disposal of the portland cement concrete or bituminous components of an existing pavement structure, including paved shoulders, within the limits shown on the plans or as directed by the Engineer. This work shall also include the removal of any temporary roadway pavement structure placed during construction to serve as a detour. The work covered by this section shall not include the removal and disposal of sidewalks, driveways, and curb and gutter, which are covered in the “Unclassified Excavation” subsection.
- B. Where concrete pavement is to be removed, the Contractor shall provide a neat edge along the pavement being obtained by sawcutting the pavement at least two (2) inches deep or greater as required to provide a neat, clean break from the pavement to remain, before breaking the adjacent pavement

away. The pavement shall be broken up and removed for its entire depth or milled to the specified depth as indicated in the Contract Documents. The disposal of all materials resulting from the pavement removal shall be done as provided herein.

- C. Insofar as possible, all materials shall be used in the construction of embankments, but such use shall be subject to the approval of the Engineer.
- D. Milling asphalt pavement shall be in accordance with Section 607 of the latest version of the NCDOT "Standard Specifications for Roads and Structures."
- E. All materials, which cannot be used in the work, shall be disposed of off site of the right of way in waste areas provided by the Contractor.

F. Basis of Payment:

- i. The quantity of pavement removed will be paid for at the contract unit price bid per square yard for "Removal of Existing Pavement" as indicated in the Itemized Proposal. Unless otherwise indicated the quantity of pavement to be removed will be determined by actual surface area measurement of the pavement prior to its removal. The unit price and payments shall be full compensation for all work covered by this section, including but not be limited to the satisfactory sawcutting, breaking up, removal, hauling, and disposal of existing pavement.
- ii. The quantity of paving to be milled shall be paid for at the contract unit price bid per square yard at the specified depth for "Milling Asphalt Pavement" as indicated in the Itemized Proposal. Unless otherwise indicated the quantity of milling will be determined by actual surface area measurement of the pavement prior to its removal. The unit price and payments shall be full compensation for all work covered by this section, including but not be limited to the milling and/or remilling of the pavement, cleaning the milled surface, loading, hauling, and disposal of all milled material.

PART 6 - ASPHALT RESURFACING

A. General:

- i. Asphalt Resurfacing shall meet all applicable material and installation specifications outlined elsewhere in the Contract Documents.
- ii. Should construction take place near signalized intersections, the Contractor shall contact the NCDOT Division Traffic Engineer to

schedule the field location of any traffic signal conflicts. The Contractor shall notify the Engineer of any potential conflict prior to construction. The Contractor shall be responsible for coordinating the conflict relocation with NCDOT during construction.

- iii. The Contractor shall prepare a weekly schedule detailing the construction activities planned for the following week. This schedule shall be presented to the Inspector before Friday, 12:00 noon of the week preceding the effective date of the schedule. Weekly meetings may be required to review construction activities as directed by the Engineer.
- iv. In the event that all vehicles are not removed from the construction area despite timely delivery of the construction notice letter, the Contractor shall attempt to contact vehicle owners by other means in an effort to find the vehicle's owner to have the vehicles relocated. If the Contractor is unsuccessful they shall contact the Engineer and provide the make, model, and license plate number of the vehicle as well as the vehicle location. The Engineer shall try contacting the vehicle owner and if unsuccessful shall contact a designated towing company to move the vehicle out of the construction area, to a neighboring street as directed by the Engineer, at the Town of Cary's expense. The towing company shall attach a standard letter to the vehicle upon towing. The Engineer will provide the standard letter.
- v. Construction traffic control shall be provided on each street by the Contractor in strict conformance with NCDOT "North Carolina Supplement to the MUTCD," the MUTCD, the Contract Documents, or as directed by the Engineer. No work shall begin on any street without the proper traffic control measures in place.
- vi. Construction traffic control shall be installed and practiced as a means to inform drivers that asphalt tack coat is being placed on the road surface.
- vii. The Contractor shall be responsible for spraying or burning all weeds growing on and in the streets. The Contractor shall be responsible for removing and properly disposing of the dead weeds as carefully cleaning each street before beginning asphalt concrete construction operations.
- viii. Asphalt resurfacing projects shall have a maximum acceptable elevation difference, between the top of the resurfacing layer and the gutter, of 1.0 inch. The Owner shall not accept any newly resurfaced streets exceeding this maximum elevation difference. Should it be determined that the resurfacing layer is more than 1.0 inch higher than the gutter elevation the resurfacing shall be removed and replaced or remedied as directed by the Engineer at the Contractor's expense.

- ix. The Contractor shall allow time for the inspection of areas, as needed, by a qualified testing firm as directed by the Engineer.
- x. The Contractor shall construct all improvements so as to create and/or maintain positive drainage.
- xi. The above listed requirements of this sub-part are considered incidental to the cost of the asphalt concrete surface course specified in the Itemized Proposal and Contract Documents.

B. Materials:

i. Geotextile Interlayer Installation:

- a) The geotextile interlayer shall be a needlepunched, nonwoven engineering fabric made of polypropylene and staple fiber; calendared on one side. It shall be resistant to ultraviolet degradation and have the following properties:

	<u>Typical</u>	<u>Test</u>
Grab Tensile Strength (lbs)	101	ASTM D 4632
Grab Elongation (%)	50	ASTM D 4632
Puncture Strength (lbs)	65	ASTM D 4833
Mullen Burst (psi)	220	ASTM D 3786
Trapezoidal Tear (lbs)	45	ASTM D 4533
Mass Per Unit Area (oz/sq yd)	4.1	ASTM D 5261
Thickness (mils)	35	ASTM D 5199
Melting Point (°F)	Greater than 150	ASTM D 276
UV Resistance (%)	70 at 500 hrs	ASTM D 4355

- b) For the tack coat, uncut asphalt cements are preferred, however, cationic or anionic emulsions may be used. For asphalt cements the minimum temperature shall be 150° C, but to avoid damage to the fabric the distributor tank temperatures shall not exceed 160° C. When asphalt emulsions are used, the emulsion shall be cured prior to placing the fabric.
- c) The engineering fabric shall be placed onto the asphalt sealant, calendared side up, prior to the time the asphalt has cooled and lost tackiness. Wrinkles or folds in excess of 1 inch shall be slit and laid flat. In order to maximize fabric contact with the pavement surface, blooming or pneumatic rolling will be required. The fabric joints shall be overlapped sufficiently to ensure full closure of the joint, but should not exceed 6 inches. To prevent edge pickup by the paver,

transverse joints shall be lapped in the direction of paving. A second application of sealant to the fabric overlaps will be required as directed by the Engineer.

- d) Quickly following the fabric installation, the hot-mix overlay should be placed evenly. Should the asphalt bleed through the fabric causing construction problems prior to overlay placement, the affected areas shall be blotted by spreading sand. Turning the paver and other vehicles shall be gradual and kept to a minimum to avoid movement of, or damage to the sealant saturated fabric.
- e) Basis of Payment: Payment shall be made under the contract unit price bid per square yard for the actual amount of "Geotextile Interlayer" as indicated in the Itemized Proposal and shall constitute full compensation for furnishing all labor, material, equipment, and performing all operations in connection with placing the geotextile interlayer as shown on the plans, Contract Documents, or as directed by the Engineer.

ii. Asphalt Surface Treatment:

- a) Chip seal shall be "straight seal" with 78M stone in accordance with Section 660 of the NCDOT "Standard Specifications for Roads and Structures." Careful attention shall be given to surface preparation (as specified in Section 660) under chip sealing.
- b) Cleanup: Excess aggregate resulting from straight seal shall be collected and removed from the construction site either before resurfacing occurs or one (1) week after the straight seal is applied, whichever occurs first.
- c) Basis of Payment: Payment shall be made under the contract unit price bid per square yard at the specified type of seal coat for the actual amount of "Asphalt Surface Treatment" as indicated in the Itemized Proposal and shall constitute full compensation for furnishing all labor, material, equipment, and performing all operations in connection with the placement and cleanup of the asphalt surface treatment as shown on the plans, Contract Documents, or as directed by the Engineer.

iii. Leveling Course

- a) In asphalt resurfacing projects a leveling course of Superpave - Asphalt Concrete Surface Course (Type S 4.75 A, SF 9.5 B, S 9.5 A, S 9.5 B, S 9.5 C, S 12.5 B, S 12.5 C, & S 12.5 D), as directed by the Engineer, shall be hand-placed in areas where the pavement is

depressed, sunken or uneven, and its surface grade varies from surrounding elevation by one (1) inch or greater. Leveling asphalt shall be placed prior to chip seal applications or as designated by the Engineer.

- b) Basis of Payment: Payment for this work shall be included in the unit price per ton for "Asphalt Leveling Course" as indicated in the Itemized Proposal. Plant tickets should be submitted with the pay request, and each ticket should include a date, time of delivery, signature of recipient and street name. Only those tickets with the above information will be approved.

PART 7 - SPEED HUMPS AND RAISED CROSSWALKS

A. General:

- i. Speed hump and raised crosswalk construction shall meet all applicable material and installation specifications outlined elsewhere in the Contract Documents.
- ii. In the event that all vehicles are not removed from the construction area despite timely delivery of the construction notice letter, the Contractor shall attempt to contact vehicle owners by other means in an effort to find the vehicle's owner to have the vehicles relocated. If the Contractor is unsuccessful they shall contact the Engineer and provide the make, model, and license plate number of the vehicle as well as the vehicle location. The Engineer shall try contacting the vehicle owner and if unsuccessful shall contact a designated towing company to move the vehicle out of the construction area, to a neighboring street as directed by the Engineer, at the Town of Cary's expense. The towing company shall attach a standard letter to the vehicle upon towing. The Engineer will provide the standard letter.
- iii. Construction traffic control shall be provided on each street by the Contractor in strict conformance with NCDOT "North Carolina Supplement to the MUTCD," the MUTCD, the Contract Documents, or as directed by the Engineer. No work shall begin on any street without the proper traffic control measures in place.
- iv. The maximum acceptable height of speed humps and/or raised crosswalks shall be as indicated in the Contract Documents or as designated by the Engineer. The Owner shall not accept any newly constructed speed humps and/or crosswalks exceeding the maximum specified elevation. Should it be determined that the height exceeds the maximum elevation, the speed humps and/or raised crosswalks shall be

removed and replaced or remedied as directed by the Engineer at the Contractor's expense.

- v. The Contractor shall construct all improvements so as to create and/or maintain positive drainage.

B. Basis of Payment:

- i. Payment for "Speed Humps" and/or "Raised Crosswalks" shall be paid at the contract unit price bid per each item or lump sum as indicated in the Itemized Proposal. The unit price shall be full compensation for furnishing all labor, material, equipment, and performing all operations in connection with placing the asphalt concrete and pavement markings as indicated in the Contract Documents or as directed by the Engineer.

PART 8 - UTILITY ADJUSTMENTS

A. General:

- i. No manholes or water valve boxes shall be raised and left for a period of time greater than fourteen (14) days before the street is resurfaced. Should this period of time be exceeded, all work shall be stopped until the resurfacing of such streets has been completed. Immediately after utility adjustments take place the sides of the utility shall be painted bright orange for visibility and if directed by the Engineer 36" (minimum) reflective orange traffic cones or other devices shall also be added for visibility. There will be no separate compensation for this work and shall be considered incidental to the cost of the items as defined under "Basis of Payment."
- ii. Cast iron risers will not be allowed for adjustment of manholes and water valve boxes.
- iii. If any existing broken manholes or water valve boxes are discovered, the Owner shall furnish new manhole rings and covers or new water valve boxes for replacement of the broken ones by the Contractor at no additional cost to the Owner. Replacements will be the same as stocked by the Town of Cary or approved as acceptable alternate by the Engineer.
- iv. Adjustment of fire hydrants shall include both horizontal and vertical adjustment to leave existing fire hydrants positioned in accordance with Town of Cary Standard Details 6.06 and 6.07, or as otherwise noted on plans.

B. Basis of Payment:

- i. Payment for these items shall be at the respective contract unit prices for “Adjust Water Valve Boxes,” “Adjust Manholes” and “Adjust Fire Hydrants” as indicated in the Itemized Proposal and shall be full compensation for all labor, equipment, materials, and incidentals necessary to complete the work. There shall be no separate compensation for the adjustment of manholes, water valves, and fire hydrants that are installed as a part of this Contract.

END OF SECTION 05000

SECTION 06000
CAST IN PLACE CONCRETE
(Revised 1-9-02)

PART 1 - MATERIALS

- A. Portland cement concrete for curb and gutter, driveways, driveway aprons, wheelchair ramps, sidewalks, traffic islands and other items as specified on the plans shall have a minimum 28 day compressive strength of 3,000 psi, a non-vibrated slump between 2.5 and 4 inches, a minimum cement content of 545 pounds per cubic yard, an air entrainment of 5 - 7%, and a maximum water-cement ratio of 0.545 in accordance with Class B concrete as described in the NCDOT "Standard Specifications for Roads and Structures" unless otherwise specified in the Contract Documents. Portland cement concrete for structures, culverts and other items as specified on the plans shall be Class A or Class AA in accordance with NCDOT "Standard Specifications for Road and Structures." Dyed concrete is not allowed in construction of driveway aprons or public sidewalks unless otherwise specifically required in the Contract Documents.
- B. Joint filler shall be a non-extruding joint material conforming to ASTM C1751.
- C. Aggregate for portland cement concrete shall meet the requirements for fine and course aggregate of Section 1014 of the NCDOT "Standard Specifications for Roads and Structures."
- D. Portland Cement and admixtures shall meet the requirements of Section 1000 of the NCDOT "Standard Specifications for Roads and Structures."
- E. Water for mixing or curing the concrete shall be free from injurious amounts of oil, salt, acid, or other products injurious to the finished product.

PART 2 - QUALITY ASSURANCE

- A. Concrete shall be only plant-mixed, transit-mixed or ready-mixed concrete. The time elapsing from mixing to placing the concrete shall not exceed ninety (90) minutes. Concrete shall not be deposited on frozen subgrade and shall not be poured when the air temperature is falling and below 40° F, and the predicted low temperature for the succeeding 24 hour period is less than 32° F.
- B. All concrete when placed in the forms shall have a temperature of between 50° F and 90° F and shall be maintained at a temperature of not less than 50° F for at least 72 hours for normal concrete and 24 hours for high early

strength concrete, or for as much time as is necessary to secure proper rate of airing and designed compressive strength. The use of admixture, retarders, and accelerators shall be used as directed by the Engineer.

PART 3 - CONSTRUCTION METHODS - GENERAL

- A. Proportioning of Concrete: The concrete shall be mixed in proportions discussed herein and approved by the Engineer.
- B. Mixing Concrete: The concrete shall be mixed by machine on the job or at a central mixing plant. A batch mixer of any approved type may be used. The method of measuring the materials for the concrete, including water, shall be one which will insure separate and uniform proportions of each of the materials at all times. The mixing shall continue at least 1-1/2 minutes after all ingredients have been emptied before receiving material for the succeeding batch.
- i. A central mixing plant shall not be used until approved by the Engineer and shall be certified by the NCDOT. The concrete from a central plant shall be delivered and deposited at the consistency specified without segregation. The time elapsing from mixing to placing the concrete shall not exceed ninety (90) minutes.
 - ii. Concrete shall be mixed only in such quantities as are required for immediate use and all such material shall be used while fresh and before initial set has taken place. Any concrete in which set has begun shall not be used in the work. Retempering of concrete will not be allowed.
- C. Subgrade: The subgrade shall be excavated to the required depth below the finished surface in accordance with the plans to the lines and grades established by the Engineer. All soft yielding material or other unsuitable material shall be removed and replaced with suitable material and the subgrade shall be compacted thoroughly and finished to a firm, smooth surface. No curb and gutter, driveways, driveway aprons, wheelchair ramps, sidewalks, or traffic islands shall be poured until the subgrade is approved by the inspector.
- D. Forms: The forms shall be of metal and of the necessary dimensions to construct the combined curb and gutters specified in the plans. Wood forms may be used where conditions make the use of metal forms impractical. The use of wood forms must be approved by the Engineer. The forms shall be set true to the line and grade established by the Engineer and held rigidly in position, so as to prevent leakage of mortar and springing out of line when the concrete is placed in them. The forms shall be true in line, free from warping or bending. No concrete shall be placed until the forms and subgrades have been approved by the Inspector.

- E. Placing of Concrete: The subgrade shall be moistened and the concrete shall be placed in the forms and tamped sufficiently to bring the mortar to the surface, after which it shall be finished smooth and even by means of a wooden float.
- i. The curb and gutter shall be constructed in place in uniform sections ten (10) feet in length. The joints between sections shall be formed by steel templates one-sixth (1/6) inch in thickness and of the width and depth of the curb and gutter. The templates shall be left in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place.
 - ii. Machine poured concrete curb and gutter will be scored at 15 feet intervals with expansion joints located at intervals no greater than 50 feet.
 - iii. Expansion joints shall be one-half (1/2) inch in width and shall be placed between all rigid objects at a distance of no more than fifty (50) feet apart and shall extend the full depth of the concrete with the top of the filler one-half (1/2) inch below the finished surface.
- F. Finishing: The edges of the curb and gutter shall be finished with an approved edging tool of one-half (1/2) inch radius. Joints shall be similarly finished immediately after the templates have been removed.
- G. Curing: Contractor may select method of curing provided that the method is approved by the Engineer and that the means and methods of curing conform to standards specified by current AASHTO or ASTM specifications.
- H. Removing Forms: Forms shall not be removed from freshly placed concrete until it has set for at least 12 hours. Forms shall be carefully removed in such a manner as to prevent damage to the edges of the concrete. Any honeycombed areas along the sides shall be filled promptly with mortar composed of one part cement and two parts of fine aggregate.
- I. Cold Weather and Night Concreting: Concreting shall be done when weather conditions are favorable unless otherwise directed by the Engineer. Concrete operations shall be discontinued when a temperature of 40° F is reached on a falling thermometer and may be continued when temperature reaches 35° F on a rising thermometer. No concreting shall be attempted when local weather bureau indicates temperature below freezing within the ensuing 24 hours unless proper precautions are made to protect the concrete by covering with straw or other thermal insulation satisfactory to the Engineer. The Contractor shall be responsible for the quality and strength of the concrete laid during cold weather and any concrete damaged

by frost action or freezing shall be removed and replaced as directed by the Engineer at the Contractor's expense.

- i. The Contractor may be permitted by the Engineer to proceed with concrete operations during cold weather in temperatures of not less than 25° F at placing time provided that the Contractor furnishes an approved admixture and uses an amount per batch not to exceed two percent (2%) by weight of the total amount of cement, and further provided that he takes other precautions deemed necessary by the Engineer to prevent concrete from freezing during curing period.
 - ii. No more concrete shall be laid than can be properly finished and covered during daylight, unless adequate artificial light satisfactory to the Engineer is provided.
- J. Protection of Concrete: Immediately after the forms have been removed and all honeycombed areas repaired, the back of the curb shall be backfilled to prevent underwash. Traffic shall be excluded from crossing the concrete for a period of approximately fourteen (14) days, by erection and maintenance of suitable barricades, unless otherwise specified in the Contract Documents or by the Engineer. Contractor shall be responsible for any damage resulting from traffic or vandalism until accepted by the Engineer, and he shall remove and replace any concrete damaged as directed by the Inspector.

PART 4 - CONSTRUCTION METHODS - CURB & GUTTER, DRIVEWAYS, DRIVEWAY APRONS, WHEELCHAIR RAMPS, SIDEWALKS, AND TRAFFIC ISLANDS

- A. Areas of concrete to be removed shall be sawcut before removing. The sawcut shall provide a smooth, straight edge approximately two (2) inches deep before breaking away the adjacent concrete. There will be no direct payment for the work covered by this section.
- B. Concrete shall be constructed in accordance with Section 825 of the NCDOT "Standard Specifications for Roads and Structures" and shall be given a "sidewalk finish," except as otherwise noted herein.
- C. Brooming of the concrete surface shall be done transverse to the direction of traffic. Joint spacing shall not be less than 5 feet. Where existing sidewalks are being widened, transverse joints shall be located so as to line up with existing joints in the adjacent existing sidewalk. Grooved joints shall not be sealed.
- D. No backfill shall be placed adjacent to the curb & gutter, driveways, driveway aprons, wheelchair ramps, or sidewalks until at least 3 curing days have

elapsed, as defined in Section 825-9 of the NCDOT “Standard Specifications for Roads and Structures.” However, all backfill shall be placed within 4 calendar days after the completion of this 3 curing day time period. Backfill shall clean earthen material free of all debris and shall be compacted to a degree comparable to the adjacent undisturbed material or as directed by the inspector.

PART 5 - PAYMENT

A. Basis of Payment: Compensation for cast in place concrete items shall be as follows:

- i. Payment for “Concrete Curb and Gutter” shall be paid at the unit price bid per linear foot for the type as indicated in the Itemized Proposal and in accordance with the Town of Cary Standard Details. The aggregate base course or asphalt concrete placed under the concrete curb and gutter shall be in accordance with the Town of Cary Standard Details and shall be included in the unit price bid for curb and gutter. Unit price shall be full compensation for all labor, equipment and materials to furnish and install curb and gutter, and aggregate base course or asphalt concrete under the curb and gutter. Payment for this item shall not be made until work is complete, including backfilling and seeding & mulching, and has been inspected and accepted by the inspector.
- ii. Payment for “Concrete Sidewalk” shall be paid at the unit price bid per linear foot at the width and thickness designated in the Itemized Proposal and in accordance with the Town of Cary Standard Details. Unit price shall be full compensation for all labor, equipment and materials to furnish and install concrete sidewalk. Payment for this item shall not be made until work is complete, including backfilling and seeding & mulching, and has been inspected and accepted by the inspector.
- iii. Payment for “Concrete Wheelchair Ramps” shall be paid at the unit price bid per each item as designated in the Itemized Proposal and in accordance with the Town of Cary Standard Details. Unit price shall be full compensation for all labor, equipment and materials to furnish and install concrete wheelchair ramps, depressed curb and gutter, and aggregate base course or asphalt concrete under the depressed curb and gutter or wheelchair ramp necessary for the construction of the concrete wheelchair ramp. Payment for this item shall not be made until work is complete, including backfilling and seeding & mulching, and has been inspected and accepted by the inspector.
- iv. Payment for “Concrete Driveway Aprons” shall be paid at the unit price bid per each at the width designated in the Itemized Proposal and in accordance with Town of Cary Standard Details. Unit price shall be full

compensation for all labor, equipment and materials to furnish and install concrete driveway aprons. Payment for this item shall not be made until work is complete, including backfilling and seeding & mulching, and has been inspected and accepted by the inspector.

- v. Payment for “Concrete Pipe Collars” and “Pipe Plugs” shall be paid at the unit price bid per cubic yard for each item as designated in the Itemized Proposal and in accordance with Section 840 of the NCDOT “Standard Specifications for Roads and Structures”. Unit price shall be full compensation for all labor, equipment and materials to furnish and install the concrete.
- vi. Payment for Concrete Driveways and other Miscellaneous Concrete shall be paid at the unit price bid per cubic yard at the class designated or as indicated in the Itemized Proposal. Unit price shall be full compensation for all labor, equipment and materials to furnish and install the concrete.

END OF SECTION 06000

SECTION 07000
UTILITY TRENCHES
(Revised 8-4-2010)

PART 1 - GENERAL

- A. The Contractor shall provide all labor, materials, tools, and equipment to perform all work and services necessary for, or incidental to, the excavation, shaping, and backfill of utility trenches in accordance with the Construction Drawings, Contract Documents, and the latest edition of the Town of Cary Standard Specifications and Details Manual (Standard Specifications).
- B. Existing Utilities:The Contractor shall be completely and solely responsible for locating all existing buried utilities and preventing damage to those utilities.
- C. Pavement Removal: Where trenches are excavated in paved areas, the pavement shall be saw-cut prior to removal. All pavement cuts shall be repaired within a maximum of three (3) calendar days from the date the cut is made.If conditions do not permit a permanent repair within the given time limit, permission to make a temporary repair must be obtained from the Engineer.
- D. Trench Excavation: Trenches for all buried utility installations, such as water distribution lines, sanitary sewer lines, force mains, and storm sewer lines shall be excavated to the required depth to permit installation of the pipe along the lines and grades as specified by the Contract Documents and Standard Specifications. The minimum trench width at the top of the pipe shall be at least 18-inches greater than the outside diameter of the pipe.Where excavation is in rock, the rock shall be removed to a depth of at least 6-inches below grade and the void shall be backfilled in accordance with the Contract Documents and Standard Specifications.Wet or unstable trenches shall be stabilized with #78 M stone or with a base layer of #57 stone at no additional cost to the Owner.
- E. Dewatering:The Contractor shall dewater the trench throughout construction by pumping in a manner that all pipe jointing may be made under dry conditions.Water shall be disposed of in a manner not detrimental to the public health or to public or private property.
- F. Rock Blasting and Excavation: Extreme care shall be exercised by the Contractor at all times in the blasting of rock to give maximum protection to both persons and surrounding property. "Extreme Care" is interpreted to mean the provision of protective devices, such as mats, that will be adequate to assure that there will be **no** projection of loose rocks into areas outside the right-of-way or easements provided for construction of the

watermain. Failure to take the necessary precautions will be considered a breach of Contract, and work will be stopped until the Engineer and Owner are satisfied that adequate protection will be provided on all remaining blasting operations for the project. There shall be no separate or additional payment for rock blasting, excavation, or removal of any kind.

- G. Pipe Laying: All pipe shall be laid in accordance with its manufacturer's recommendations and the Contract Documents and Standard Specifications. The subgrade at the bottom of the trench shall be shaped to secure uniform support throughout the length of the pipe. A space shall be excavated under the bell of each pipe to provide space to relieve bearing pressure on the bell and to provide room to adequately make the joint. Open ends of pipe shall be plugged with a standard plug or capped at all times when pipe laying is not in progress. Trench water shall not enter the pipe.
- H. Trench Backfill: All trenches shall be properly backfilled at the end of each working day. Backfill material shall be free of construction debris, frozen material, organic material, or unstable material. The upper 2-ft of backfill material shall be free from stones greater than 4-inches in diameter. In the event that unsuitable backfill is discovered as determined by the Engineer, the Engineer may direct the Contractor to replace all or portions of the unsuitable backfill with suitable backfill materials approved by the Engineer. The Contractor shall be prepared to remove unsuitable material from the site at no additional expense to the Owner.
- I. Compaction: Backfill shall be compacted to a density of no less than 95% maximum dry density as measured by AASHTO method T99. Backfill shall be placed in lifts of 8-inches or less of the uncompacted soil. When compacting in layers, each layer must be thoroughly tamped by a mechanical tamp, such as "Rammax Sheepsfoot" or equivalent, before the next layer is placed.
- J. Clean-up: The Contractor shall remove all excess excavation materials, earth, debris, etc. and shall clean up and leave all affected property, streets, roads and highways in a neat, clean and orderly condition as required throughout construction and upon completion of the work specified under this section. Unless directed by the Engineer, all affected areas shall be returned to the contour that existed prior to construction – mounding of the easement or right-of-way shall not be allowed. If so directed by the Engineer, the Contractor shall deposit all or a part of the excess earth at such point or points as may be designated. Excess earth from trenches along state controlled highways or roads shall be disposed of in a manner satisfactory to the State Department of Transportation. All temporary pipes and ditching used during construction to carry surface water shall be removed.

PART 2 - PAYMENT

- A. Basis of Payment: Direct payment shall not be issued for preparation, excavation, pavement removal, rock excavation, disposal, dewatering, sheeting, shoring and backfilling of utility trenches unless otherwise indicated by the Contract Documents.

END OF SECTION 07000

SECTION 11000
SANITARY SEWER GRAVITY MAINS
(Revised 7-21-2010)

PART 1 - GENERAL

- A. The Contractor shall provide all labor, materials, tools, and equipment to perform all work and services necessary for, or incidental to, the furnishing and complete installation of sanitary sewer gravity pipe, precast concrete manholes, service lateral piping and connections, and aerial crossings in accordance with the Construction Drawings, Contract Documents, and the latest edition of the Town of Cary Standard Specifications and Details Manual (Standard Specifications).
- B. Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a secure, complete and compatible installation shall be furnished and installed as part of this section.
- C. The Contractor shall submit to the Engineer, shop drawings for all products and materials specified under this section for the construction of this project.
- D. Pipe, fittings, manholes and all other essential products shall be delivered, handled, maintained, and installed in an appropriate manner to avoid damage. Provisions for handling, laying, protection and use of the products shall be in accordance with the manufacturer's recommendations, specifications and the Contract Documents and Standard Specifications. When the manufacturer's recommendations differ from the Contract Documents and Standard Specifications, the more stringent requirements shall govern unless otherwise directed by the Engineer.
- E. All materials used on this project must have a preliminary inspection by the Inspector before being used for construction purposes. Rejected materials shall be immediately removed from the job site.
- F. No prolonged interruption of wastewater flow through sewer mains or sewer service laterals shall be permitted, unless otherwise specified by the Contract Documents. The Contractor shall be responsible for utilizing bypass pumping and piping, flow diversion or other methods acceptable to the Engineer for the purpose of maintaining wastewater flows, without spills or service disruptions, throughout the entire duration of this construction project. There shall be no separate and/or additional payments for maintenance of flow unless specified as such by the Contract Documents. The Contractor shall be solely responsible for any fines and/or penalties

incurred due to spills or leaks resulting from faulty by-pass pumping and piping or flow diversion setups.

- G. Rock Blasting and Excavation: Extreme care shall be exercised by the Contractor at all times in the blasting of rock to give maximum protection to both persons and surrounding property. "Extreme Care" is interpreted to mean the provision of protective devices, such as mats, that will be adequate to assure that there will be **no** projection of loose rocks into areas outside the right-of-way or easements provided for construction of the sewer main. Failure to take the necessary precautions will be considered a breach of Contract, and work will be stopped until the Engineer and Owner are satisfied that adequate protection will be provided on all remaining blasting operations for the project. There shall be no separate or additional payment for rock blasting, excavation, or removal of any kind.
- H. Clean-up: The Contractor shall remove all excess excavation materials, earth, debris, etc. and shall clean up and leave all affected property, streets, roads and highways in a neat, clean and orderly condition as required throughout construction and upon completion of the work specified under this section. If so directed by the Engineer, the Contractor shall deposit all or a part of the excess earth at such point or points as may be designated. Excess earth shall only be placed and spread within the easement or right-of-way when approved by the Engineer. Excess earth from trenches along state controlled highways or roads shall be disposed of in a manner satisfactory to the State Department of Transportation.

PART 2 - SANITARY SEWER PIPE MATERIALS AND INSTALLATION

A. Materials

- i. General: Each length of pipe to be used shall have plainly and permanently marked thereon the following information, as well as any additional information specifically noted in the sections below:
- a) Pipe class
 - b) Pipe strength designation or profile number
 - c) Manufacturer's name or trademark
 - d) Nominal pipe size
 - e) Year in which the pipe was produced
- ii. Fittings: Pipe fittings shall be ductile iron conforming to the requirements of AWWA C110 and shall have a minimum rated working pressure of 250-psi.

B. Installation

- i. Piping Layout: The Contractor shall furnish a detailed piping layout for approval by the Inspector prior to beginning the pipe laying operation.
- ii. Use of Laser Beam For Line and Grade: When using a laser beam to control line and grade pipeline construction, the Contractor shall be required to set a survey point (accurate to line and grade) 50-ft upstream of each manhole to serve as a check point. The Contractor will be required to excavate the first 50-ft of trench and transfer the line and grade information from the check hub into the trench to verify the laser alignment prior to laying any pipe in the trench. This hub information shall show on the cut sheet.
- iii. Water in Trenches: The Contractor shall remove all groundwater encountered in the trenches by pumping, bailing, or by both and handling the water in a manner that all pipe jointing may be made under dry conditions.

Water shall be handled in such a manner to provide the best possible laying conditions and shall be disposed of in a manner not detrimental to the public health or to public or private property along the sewer right of way.

Pipes shall be kept adequately plugged at all points to prevent flow of ground or stormwater through the sewers and to prevent entry of sand, mud, or other debris into the sewer.

- iv. Sanitary Sewer Protection: The upstream side of the last manhole(s) of a sanitary sewer line extension under construction shall be plugged by constructing a brick/block wall to prevent the passage of groundwater, runoff and sediment into the sanitary sewer system. All water upstream of the wall shall be pumped out of the sanitary sewer line and all sediment and solids shall be removed and properly disposed of by the Contractor. The wall shall not be removed until the line has been inspected by the Town to ensure that all possible points of inflow or infiltration have been eliminated. Failure to meet these requirements will be deemed a violation of the Sewer Use Ordinance with fines up to \$1,000.00 per day.

C. Basis of Payment

- i. Sanitary Sewer Gravity Pipe: Payment for "Sanitary Sewer Gravity Pipe" shall be paid at the contract unit price bid per linear foot of sewer main installed as indicated by the Itemized Proposal for each pipe diameter as specified. Payment for depth shall be as specified in the Itemized Proposal and shall be measured based on the depth from the existing

ground surface (prior to construction) to the invert of the sewer main. The unit price shall include full compensation for all labor, equipment and materials necessary to furnish and install pipe, bedding, sheeting, and shoring including excavation, rock excavation and removal, bypass pumping and piping, cleaning, video survey and assessment, testing, and all other incidental items required for assembly and installation as specified by the Contract Documents and Standard Specifications. There shall be no separate or additional payment to replace backfill materials deemed unsuitable by the Engineer unless specified as such by the Contract Documents.

- ii. Sanitary Sewer Protection: Payment for "Sanitary Sewer Protection" shall be paid at the contract unit price per each wall installed as indicated by the Itemized Proposal. The unit price shall include all labor, equipment, and materials necessary to furnish and install the sewer protection and all other incidental items required for assembly and installation as specified by the Contract Documents (07020.C.1.a) and Standard Specifications.

PART 3 - SANITARY SEWER MANHOLE MATERIALS AND INSTALLATION

A. Installation

- i. Excavation and Bedding: Excavation shall be made to the required depth and the foundation onto which the precast concrete manhole is to be set shall be approved by the Inspector. The excavation shall include the removal of obstructions and the removal of unstable materials unsuitable for a good foundation.
- ii. Inverts: Inverts shall be field built with 1:2 concrete mortar. The shape of the invert shall conform exactly to the lower half of the pipe it connects. Side branches shall be connected with the maximum radius of curve that is practical. All inverts shall be troweled to a smooth, clean surface. The upstream half of the invert shall be built at the same slope as the incoming pipe and the downstream half of the invert shall be built at the same slope as the outgoing pipe, in order to conform with centerline inverts, unless otherwise specified by the Engineer.

B. Basis of Payment

- i. Precast Concrete Manhole: Payment for "Precast Concrete Manhole" shall be paid at the contract unit price per each manhole installed based on the depth of installation or per lump sum basis as listed in the Itemized Proposal for each manhole diameter as specified. The depth to be used for payment purposes shall be the depth from the existing ground surface (prior to construction) to the invert of the manhole. The unit price shall

include full compensation for all labor, equipment, and materials necessary to furnish and install a precast concrete manhole with the necessary frame, cover and flexible sleeves and all other incidental items required for assembly and installation as specified by the Contract Documents and Standard Specifications. There shall be no separate payments for excavation, bedding, rock removal, bypass pumping and piping, coatings, joint seals, joint wraps, sheeting and shoring, vacuum testing, watertight rings and covers, vents, extensions above the ground surface, or any other incidental items necessary to install the manhole unless otherwise specified by the Contract Documents.

- ii. XX-inch Cored Connection to Existing Manhole: Payment for “XX-inch Cored Connection to Existing Manhole” shall be paid at the contract unit price bid per each cored connection installed as listed in the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials necessary to furnish and install a cored connection of the specified diameter, rebuild the bench and invert of the existing manhole, provide a smooth transition for the flow stream, and all other incidental items required for assembly and installation as specified by the Contract Documents and Standard Specifications. Service connections cored directly into manholes shall be paid as part of the “Sanitary Sewer Service Connection” or “Sanitary Sewer Service Connection, Bored” with no separate payment for the core.

PART 4 - SERVICE LATERAL PIPING AND CONNECTIONS

A. Basis of Payment

- i. Sanitary Sewer Service Connection: Payment for “Sanitary Sewer Service Connection” shall be paid at the contract unit price bid per each service line installed as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials necessary to furnish and install the service saddle, service line, wye, cleanout, stand pipe, caps and all other incidental items required for assembly and installation as specified by the Contract Documents and Standard Specifications. There shall be no additional payment for depth or diameter unless otherwise specified by the Contract Documents.
- ii. Sanitary Sewer Service Connection, Bored: Payment for “Sanitary Sewer Service Connections, Bored” shall be paid at the contract unit price bid per each connection that is installed as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials necessary to bore the service line under the roadway as well as furnish and install the service saddle, service line, wye, cleanout, stand pipe, caps and all other incidental items required for assembly and

installation as specified by the Contract Documents and Standard Specifications. There shall be no additional payment for depth or diameter unless otherwise specified by the Contract Documents.

PART 5 – AERIAL CROSSINGS

A. General: The limits of the aerial crossing are defined from the outside face of the outermost piers.

B. Basis of Payment:

- i. Sanitary Sewer Aerial Crossing: Payment for “Sanitary Sewer Aerial Crossing” shall be paid at the lump sum price bid for the complete aerial crossing installed as indicated by the Itemized Proposal. The lump sum price shall be full compensation for all labor, equipment and materials necessary to furnish and install the aerial crossing, pipe, piers, and all other incidental items required for assembly and installation as specified by the Contract Documents and Standard Specifications. There shall be no additional payment for any item within the aerial crossing limits unless otherwise specified by the Contract Documents.

PART 6 – ABANDONMENT

A. Sewer Main Abandonment

- i. General: Sewer main abandonment involves removing the main from service and leaving it in such a manner that it poses no risk to the public health and safety. Sewer mains that are to be removed because they present a conflict with the proposed work shall be drained of all contents, removed and disposed of as part of the excavation process. There shall be no separate payment for the removal of abandoned utility mains in the direct path of the proposed work.
 - a) Paved Areas: Sewer mains scheduled for abandonment in paved areas or within 5-ft of a roadway shall be filled with cement grout. The cement grout shall have a minimum compressive strength of 500-psi and shall have a consistency to flow and be vibrated in order for the mix to flow uniformly into the pipe to be filled.
 - b) Unpaved Areas: Sewer main abandonment in unpaved areas more than 5-ft from a roadway shall consist of draining the contents of the main, removing the main from service and plugging all openings with 500-psi cement grout. The cement plugs shall be set to extend at least 2-ft inside the main in order to provide a watertight seal. All openings in the main created by removing service connections shall also be filled with a

plug of 500-psi cement grout extending to the bottom of the main. The Contractor shall be responsible for temporarily plugging the main in such a manner to hold the cement grout in place until it cures. Cement grout used to form plugs for abandoning sewer mains may be field mixed when approved by the Engineer.

ii. Basis of Payment:

- a) Sewer Main Abandonment, Paved Area: Payment for “Sewer Main Abandonment, Paved Area” shall be paid at the contract unit price per linear foot of sewer main abandoned as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials necessary to fill the main with cement grout and all other incidental items required to abandon the main as specified by the Contract Documents and Standard Specifications.
- b) Sewer Main Abandonment, Unpaved Area: Payment for “Sewer Main Abandonment, Unpaved Area” shall be paid at the contract unit price per each plug installed as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials necessary to install the plug and all other incidental items required to abandon the main as specified by the Contract Documents and Standard Specifications.

B. Manhole Abandonment

- i. General: Manhole abandonment involves removing the manhole from service and leaving it in such a manner that it poses no risk to the public health and safety.
 - a) Paved Areas: All manholes to be abandoned in paved areas or within 5-ft of a roadway shall have the ring, cover and chimney removed and disposed of at an appropriate dump site. All connecting utility pipes shall also be plugged with 500-psi cement grout set to extend at least 2-ft inside the main. The barrel of the manhole shall then be filled with non-excavatable flowable fill from the bottom of the manhole to within 8-inches of the surface of the roadway. The pavement shall be replaced as specified elsewhere in the Contract Documents.
 - b) Unpaved Areas: All manholes to be abandoned in unpaved areas more than 5-ft from a roadway shall have the chimney section of the manhole including the ring and cover removed. The uppermost barrel sections of the manhole shall also be removed up to a depth of at least 6-ft from the ground surface. All connecting utility pipes shall be plugged with 500-psi cement grout set to extend at least 2-ft inside the main. The manhole

barrel shall be filled with aggregate base course to within 12-inches of the ground surface. The manhole barrel shall be filled and tamped in 8-inch lifts with aggregate base course and compacted to a minimum of ninety percent (90%) Standard Proctor density. The upper 12-inches shall be filled with screened topsoil and graded uniformly with the surrounding area. The area shall be seeded and mulched as specified elsewhere in the Contract Documents.

ii. Basis of Payment

- a) Manhole Abandonment, Paved Area: Payment for “Manhole Abandonment, Paved Area” shall be paid at the contract unit price per each manhole abandoned as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials and all other incidental items required to abandon the manhole as specified by the Contract Documents and Standard Specifications. There shall be no separate payment or adjustments for extra depth or diameter.
- b) Manhole Abandonment, Unpaved Area: Payment for “Manhole Abandonment, Unpaved Area” shall be paid at the contract unit price per each manhole abandoned as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials and all other incidental items required to abandon the manhole as specified by the Contract Documents and Standard Specifications. There shall be no separate payment or adjustments for extra depth or diameter.

C. Manhole Removal (paved or unpaved areas)

- i. General: Manholes that are to be removed because they present a conflict with the proposed work shall be cleaned of all contents, removed, and disposed of as part of the excavation process. There shall be no separate payment for the removal of abandoned manholes in the direct path of a proposed utility.
 - a) Paved Areas: The Contractor shall completely remove and dispose of all components of the manhole, backfill the void space with flowable fill to within 8-inches of the surface of the roadway, and replace the pavement as specified elsewhere in the Contract Documents.
 - b) Unpaved Areas: The Contractor shall completely remove and dispose of all components of the manhole, backfill the void space with flowable fill within 12-inches of final grade, fill the remaining area with screened

topsoil graded uniformly with the surrounding area, and seed and mulch as specified elsewhere in the Contract Documents.

ii. Basis of Payment

- a) Manhole Removal, Paved Area: Payment for “Manhole Removal, Paved Area” shall be paid at the contract unit price per each manhole removed as listed in the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials and all other incidental items required to remove the manhole as specified by the Contract Documents and Standard Specifications. There shall be no separate payment or adjustments for extra depth or diameter.
- b) Manhole Removal, Unpaved Area: Payment for “Manhole Removal, Unpaved Area” shall be paid at the contract unit price for each manhole removed as indicated by the Itemized Proposal. The unit price shall include full compensation for all labor, equipment and materials necessary to remove the manhole as specified by the Contract Documents. There shall be no separate payment or adjustments for extra depth or diameter.

PART 7 – TESTING AND INSPECTION

- A. General: The Contractor shall provide all labor, equipment and materials to perform all testing in accordance with the Contract Documents and Standard Specifications. There shall be no additional payment for any testing, cleaning, or video assessment procedures.

END OF SECTION 11000

SECTION 13000
UTILITY WORK ALONG HIGHWAYS
(Revised 08-25-2010)

PART 1 - GENERAL

- A. The Contractor shall provide all labor, materials, tools, and equipment to perform all work and services necessary for, or incidental to, the furnishing, complete installation, and testing of all work along highways in accordance with the Construction Drawings, Contract Documents, and the latest edition of the Town of Cary Standard Specifications and Details Manual (Standard Specifications).
- B. Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a secure, complete, and compatible installation shall be furnished and installed as part of this section.
- C. All work within the North Carolina Department of Transportation (NCDOT) right of way is done under permit. The Contractor shall secure the necessary permits, notify NCDOT of proposed construction, and be responsible for any damage due to construction. In addition, the Contractor shall obey all traffic laws and comply with all NCDOT and local requirements, rules, and regulations.
- D. The Contractor shall provide adequate warning signs, lights, barriers, railing, flaggers, etc., and shall conduct all work in accordance with the latest versions of the NCDOT "Standard Specifications for Roads and Structures," NCDOT "Roadway Standard Drawings Manual," Manual on Uniform Traffic Control Devices (MUTCD), and the NCDOT Supplement to the MUTCD (NCSMUTCD). The Contractor shall possess one copy of each of the above referenced publications. Any conflicts found between the NCSMUTCD and the MUTCD shall be resolved in favor of the MUTCD.
- E. The Contractor shall conduct operations so as to maintain and protect access for vehicular and pedestrian traffic, to and from all properties affected by operations.
- F. Unless otherwise stated in the Encroachment Agreement, construction within 10-ft from the edge of pavement on a NCDOT maintained roadway shall be limited to the hours of 9:00 a.m. to 4:00 p.m.
- G. The Contractor shall schedule "on the site" inspection prior to beginning work at highway bridges and/or box culverts by contacting the NCDOT Head of Bridge Maintenance.

- H. Lines installed under major highways shall be constructed by boring or tunneling as may be required by the NCDOT, the Contract Documents, and the Standard Specifications.
- I. Any unpaved road, side road, dwelling entrance road, commercial entrance, road shoulder, or other area stabilized by rock material shall be protected from erosion during construction and shall be stabilized by the use of crusher run stone after backfilling. This stone stabilization shall be approximately 4-inches thick unless otherwise directed by the Engineer.

PART 2 - OPEN CUTTING OF HIGHWAYS

A. General

- i. Open cuts within the roadway shall have vertical faces where soil and depth conditions permit and shall be shored where necessary. All excess excavated material shall be removed and disposed of at a location provided by the Contractor outside the limits of the right of way unless otherwise approved by the NCDOT Division.
- ii. A trench made in the travel portion of the roadway shall not be left open overnight except in an emergency and only then when adequate barricades, signs, and torches or lights are prominently displayed to protect the traveling public.
- iii. The Contractor shall backfill and replace all pavement cuts. The Contractor shall also maintain ditches cut along and across roadways in accordance with the permits received from the NCDOT and as required by the Contract Documents and the Standard Specifications. Shoulders, side ditches and cut or fill slopes shall be repaired to the satisfaction of the NCDOT Division Engineer.
- iv. Trench installations that may be vulnerable to damage due to precipitation, or which may be hazardous to traffic shall be closed without delay. A trench shall not remain open longer than 24 hours except with the approval of the NCDOT Division Engineer.
- v. Where utility lines pass under culverts on the NCDOT right of way, the Contractor shall fill the void from the bottom of the utility line to the spring line of the culvert with #57 stone. Where the distance between the bottom of the culvert and the top of the utility line exceeds the radius of the culvert, the Contractor shall compact soil around and above the utility line to at least 95% of maximum dry density as measured by AASHTO Method T99 and place #57 stone from the spring line of the culvert to a depth below the bottom of the culvert at least equal to the culvert radius. There shall be no separate or additional payment for this work.

- vi. Excavation material shall not be stored on the pavement if it can reasonably be handled otherwise. In cases where storing of excavated material on pavement is absolutely necessary, it shall be moved as quickly as practical, and the pavement shall be thoroughly cleaned. Sand or screenings shall be placed on the pavement before the excavated material to allow for better clean up.
- vii. Excavation in the immediate vicinity of drainage structures shall be made with special care so as not to damage or interfere with the use of the existing drainage facilities. Drainage facilities that are damaged by the Contractor shall be repaired immediately at no additional expense to the Owner.

B. Perpendicular Trenching

Where a trench is cut perpendicular to the road, only one-half of the road width shall be obstructed at one time in order to maintain traffic. Before the other half is cut, the initial trench shall be made usable, safe, and maintained for traffic.

C. Parallel Trenching

- i. Where a trench is cut parallel to the road, adequate barricades and warning signs shall be placed and, if necessary, flaggers shall be employed to control traffic. If trenches are left open overnight, a sufficient number of barricades, signs and torches or lights shall be prominently displayed so that the traveling public will be adequately protected.
- ii. Where space permits, the trench bottom shall not be nearer the edge of the pavement (measured in a horizontal plane) than the depth of the excavation so that the theoretical slope from the edge of the pavement to the bottom of the ditch is no steeper than a one-to-one slope. On paved sections under 24-ft in width, consideration shall be given for future widening and paving of shoulders. Where, in the opinion of the NCDOT Division Engineer, soil conditions are such that sheet pilings or other shorings are necessary, they shall be placed by the Contractor. The trench shall not be closer than 3-ft to the edge of the pavement approved by the NCDOT Division Engineer.

D. Compaction

The backfill around and under pipes or other utility installations on all open-cut sections across or parallel to roadways shall consist of approved material free from rocks compacted in 6-inch lifts to at least 95% maximum dry density as measured by AASHTO Method T99. Trench backfill above

the pipe shall be placed in lifts of 8-inches or less of uncompacted soil. Each lift shall be thoroughly tamped by a mechanical tamp before the next lift is placed. A pneumatic tamp, a gasoline ram type tamp, or a vibrating tamp will be required to meet the specifications of a “mechanical tamp.”

END OF SECTION 13000

SECTION 16000
SOIL EROSION AND SEDIMENTATION CONTROL
(Revised 1-9-02)

PART 1 - GENERAL

- A. Temporary and permanent erosion control measures shall be provided for all land disturbing activities in accordance with the Contract Documents and/or an erosion control plan approved by the North Carolina Department of Environment and Natural Resources (NCDENR). Temporary measures shall be installed by the Contractor, then inspected by the Inspector and the NCDENR for compliance prior to any land disturbing activity. The inspection and approval process shall be required on each phase of construction. All permanent erosion control measures shall be incorporated into the work at the earliest practical time. All temporary measures shall be maintained until the permanent measures have taken effect. Temporary and permanent measures shall be coordinated to provide effective and continuous erosion control throughout the construction and post-construction period to minimize siltation of streams, lakes, reservoirs, and other impoundments, ground surfaces, and other property. These measures shall remain in effect until final approval for removal is given by the Inspector and/or the NCDENR at which time the Contractor shall remove all temporary erosion control measures at no additional cost to the Owner.
- B. The Contractor shall be familiar with the applicable provisions of the Sedimentation Pollution Control Act of 1973, General Statutes, Chapter 113A, Article 4. The Contractor shall be responsible for incorporating conservation procedures necessary to comply with this act in minimizing erosion and sediment pollution associated with the construction of this project as directed by the Engineer.
- C. The Contractor shall be financially responsible for any and all fines that result from the Contractor's failure to install and/or maintain erosion control measures in accordance with the Contract Documents.
- D. The Contractor shall check all erosion and sediment control measures for stability and operation following each rainfall event, and no less than once per week. The Contractor shall make any needed repairs immediately to maintain all control measures as designed.
- E. The 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.

PART 2 - TEMPORARY MEASURES

- A. Temporary Silt Fence shall be installed around inlets, at the toe of all fill slopes, and any other necessary locations as shown on the plans and as directed by the Engineer. Silt fence shall be erected in accordance with the Town of Cary Standard Specifications and Details.
- B. Inlet Protection shall be installed around inlets and any other necessary locations as shown on the plans and as directed by the Engineer. Inlet protection shall be erected in accordance with the Town of Cary Standard Specifications and Details.
- C. Diversion Ditches shall be installed at the top of cut and fill slopes and any other necessary locations as shown on the plans and as directed by the Engineer. Diversion ditches shall be installed in accordance with the Town of Cary Standard Specifications and Details.
- D. Tree Protection Fence shall be installed around the drip line of trees in the construction work area as shown on the plans and as directed by the Engineer. The tree protection fence shall be installed in such a manner that it prevents all construction activities from encroaching into the area inside the drip line of the tree. The material and installation specifications for the tree protection fence shall be approved for use by the Engineer prior to installation.
- E. Construction Entrances shall be installed at all points of access to the construction site. Any access point, which does not have a construction entrance, shall be barricaded to prevent its use. Construction entrances shall be installed in accordance with the Town of Cary Standard Specifications and Details. Construction entrances shall be included in the unit bid price for "Mobilization."
- F. Sediment and Filter Basins shall be installed at all points where accumulated runoff is released to natural drainage channels as shown on the plans and as directed by the Engineer. Sediment pits and filter basins shall be sized to hold 1800 cubic feet of sediment for every acre of denuded area tributary to the structure. Sediment and filter basins shall be installed in accordance with the Town of Cary Standard Specifications and Details.
- G. Catch Basin Risers/Filters shall be installed at proposed catch basin locations or at other necessary locations as shown on the plans and as directed by the Engineer. Catch basin risers/filters shall be erected in accordance with the Town of Cary Standard Specifications and Details.
- H. Check Dams shall be installed in ditches any and at other necessary locations as shown on the plans and as directed by the Engineer. Check dams shall be erected in accordance with the Town of Cary Standard Specifications and Details.

- I. Basis of Payment: Payment for temporary erosion control measures shall be at the contract unit price for each item as indicated on the Itemized Proposal in the contract documents. These prices will be full compensation for all work covered by this section including but not limited to the labor, equipment, and materials for furnishing and installing all temporary erosion control measures indicated on the plans, and maintenance of the work throughout the life of the project as required by the Inspector.

PART 3 - TEMPORARY AND PERMANENT NON LAWN SEEDING MEASURES

A. General:

- i. After construction is complete in any area or phase of the project, the disturbed areas shall receive a permanent ground cover. Seeding and mulching shall be performed immediately behind construction. The Contractor shall provide permanent seeding in all disturbed areas as indicated in the Contract Documents. The Contractor shall adapt permanent seeding operations to protect and to accommodate any temporary seeding and soil and erosion control measures that may already be in place during the work period.
- ii. When seeding must take place out of season for permanent grass the appropriate temporary seeding shall be done and the contractor shall be responsible for permanent seeding as specified in season at no additional cost to Owner.
- iii. Contractor shall be responsible for turf maintenance through substantial completion. Slopes must be at 90% coverage at substantial completion review to be accepted. If not at 90% coverage, substantial completion will be delayed until the following growing season.

B. Site Preparation and Installation:

- i. Ground Cover: All disturbed areas shall be dressed to a depth of five (5) inches. The top two (2) inches shall be pulverized to provide a uniform seedbed. Rake or harrow the site to establish a smooth and level final grade. Soil particles should be no larger than marble size, and pea gravel size is even better. Agricultural lime shall be applied at the rate of 95 lbs./1000 sq. ft. immediately before plowing. Grass seed shall be applied at the rates outlined in Tables 1 and 2.
- ii. 5-10-10 fertilizer shall be applied to all disturbed areas at a rate of 21 lbs./1000 sq. ft. Mulching shall consist of small grain straw applied at a rate of 70 lbs./1000 sq. ft. Mulched areas shall be tacked with asphalt or other approved method sufficient to hold the straw in place, at a rate of 150 to 200 gallons per ton of straw.

- iii. If active construction ceases in any area for more than thirty (30) days, all disturbed areas must be seeded, mulched, fertilized and tacked at no additional cost to the Owner.
- iv. Some areas may require temporary seeding due to an interruption of work exceeding thirty (30) days or seasonal restrictions as specified in the permanent seeding schedule, or a combination thereof. These areas shall be reseeded in accordance with the permanent seeding schedule. If temporary seeding is required due to Contractor delays, there will be no compensation for the temporary seeding. Temporary seeding shall be performed only at the direction of the Engineer or Inspector.
- v. When seeding must take place out of season for permanent grass the appropriate temporary seeding shall be done and the contractor shall be responsible for permanent seeding as specified in season at no additional cost to Owner.

C. Cleanup and Inspection:

- i. Upon completion of work, the Contractor shall remove from the site all equipment and other articles used. All excess soil, stone, and debris shall be removed and legally disposed of at no additional cost to the Owner. All work areas shall be left in a clean and neat condition. All damage to existing construction caused by landscaping operations shall be repaired to the satisfaction of the Town at the Contractor's expense.
- ii. Seeded areas shall be protected and replanted as necessary to establish a uniform stand of specified grass. Scattered bare spots, none of which shall be larger than one (1) square foot, will be allowed up to a maximum of 3% of the seeded area for each property. When seeded areas are ready for inspection, the maintained turf areas shall be neatly mowed to the uniform height of approximately two and one-half (2.5) inches. The lawns shall be considered established only when the specified grass is vigorous and growing well in addition to meeting the other requirements specified.
- iii. An inspection of the completed seeding shall be made at the conclusion of the landscape work upon written notice requesting such inspection submitted by the Contractor to the Engineer, at least ten (10) days prior to the anticipated date of inspection.
- iv. A final inspection shall be performed when a satisfactory stand of seeded turf grass has been produced, upon written notice requesting such inspection submitted by the Contractor to the Engineer, at least ten (10) days prior to the anticipated date of inspection. If a satisfactory stand of turf has not been produced at the time of final inspection, necessary repairs shall be performed in conformance with the requirements of this

section. Upon completion of these repairs, the seeded grass shall be reinspected upon written notice as above.

D. Basis of Payment:

- i. Payment for establishing permanent and temporary ground cover shall be the actual amount of seeding installed and will be paid for at the unit price bid per acre or square yard as indicated on the Itemized Proposal in the contract documents for “Non Lawn Seeding and Mulching” and/or “Temporary Seeding and Mulching.” These prices shall be full compensation for all work covered by this section including but not limited to furnishing all permanent and temporary seeding, mulching, fertilizing, tacking, site preparation, cleanup, maintenance, and warranty of work as specified.
- ii. Distribution of Billing and Payments for “Non Lawn Seeding and Mulching” and/or “Temporary Seeding and Mulching” shall be made as follows:
 - a) Fifty percent (50%) of the total quantity of the seeding and mulching items on the Itemized Proposal on the first partial payment estimate after which the initial seeding has been completed and accepted.
 - b) Twenty-five percent (25%) of the total quantity of the seeding and mulching items on the Itemized Proposal on the first partial payment estimate made after which the initial establishment of grass and any required reseeding is complete.
 - c) Twenty-five percent (25%) of the total quantity of the seeding and mulching items on the Itemized Proposal on the first partial payment after the final establishment of grass and the project is one hundred percent (100%) complete.

TABLE 1		
SHOULDERS, SIDE DITCHES, SLOPES		
(For Slopes Between 2:1 and 3:1)		
Date	Type	Planting Rate
Mar 1 - June 1	Sericea Lespedeza (scarified) and	50 lbs./acre
Mar 1 - Apr 15	Add Tall Fescue or	120 lbs./acre
Mar 1 - June 30	Add Weeping Lovegrass or	10 lbs./acre
Mar 1 - June 30	Add Hulled Common Bermudagrass	25 lbs./acre
June 1 - Sept 1	***Tall Fescue and ***Browntop Millet or ***Sorghum-Sudan Hybrids	120 lbs./acre 35 lbs./acre 30 lbs./acre
Sept 1 - Mar 1	Sericea Lespedeza (unhulled/unscarified) and Tall Fescue	70 lbs./acre 120 lbs./acre
Nov 1 - Mar 1	Add Abruzzi Rye	25 lbs./acre

TABLE 2		
SHOULDERS, SIDE DITCHES, SLOPES (For Slopes 3:1 and Flatter)		
Date	Type	Planting Rate
Aug 15 - Nov 1	Tall Fescue	300 lbs./acre
Nov 1 - Mar 1	Tall Fescue and Abruzzi Rye	300 lbs./acre
Mar 1 - Apr 15	Tall Fescue	300 lbs./acre
Apr 15 - June 30	Hulled Common Bermudagrass	25 lbs./acre
July 15 - Aug 15	Tall Fescue <u>and</u> ***Browntop Millet or***Sorghum-Sudan Hybrids	35 lbs./acre

Notes:

Consult Stormwater Management Engineer or Natural Resources Conservation Service (NRCS) for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those, which do well under local conditions; other seeding rate combinations may be possible but must be approved by the Engineer.

***Temporary - Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12 inches in height before mowing to keep fescue from being shaded out.

PART 4 - PERMANENT LAWN SEEDING MEASURES

A. General

- i. The following information shall be applicable for all permanent lawn seeding. Permanent lawn seeding shall take place within all developed areas of disturbance including residential and commercial areas and shall be replaced in kind of existing material by the Contractor. An approved turf type tall fescue blend shall be used per the Contract Documents. Kentucky 31 is not an acceptable blend.
- ii. When seeding must take place out of season for permanent grass the appropriate temporary seeding shall be done and the contractor shall be responsible for permanent seeding as specified in season at no additional cost to Owner.
- iii. Contractor shall be responsible for lawn maintenance through substantial completion. Lawns must be at 90% coverage at substantial completion review to be accepted. If not at 90% coverage, substantial completion will be delayed until the following growing season.

B. Site Preparation:

- i. Remove or kill any undesirable existing turf or vegetation. Herbicide spraying or other chemical treatment shall be approved by the Engineer prior to being used by the contractor. If preexisting turf or other vegetation is mixed with the soil to be reused, the contractor shall use

best judgement in removing it or incorporating it into the soil during preparation.

- ii. If topsoil was not used to reestablish the upper soil layer and the upper soil is heavy with high clay content, spread 1.5-2 inches of aged ground pine bark or bagged organic humus over the area to be repaired.
- iii. For all grasses except centipedegrass, apply per 1,000 square feet: 75 pounds of ground limestone and one of the following fertilizers: 40 pounds of 5-10-10; 20 pounds of 10-20-20; or 20 pounds of 8-8-8 or 10-10-10 in combination with 4 pounds of 0-46-0. Centipedegrass prefers acidic soils and low levels of phosphorus and may not require the addition of lime and phosphorus.
- iv. Incorporate lime and fertilizer (and pine bark if added) into the top 6 inches of the soil using a rototiller or by hand. Rototill or hand cultivate to well incorporate the amendments and get a uniform loosely textured soil of minimum 6-inch depth.
- v. Rake or harrow the site to establish a smooth and level final grade. Soil particles should be no larger than marble size, and pea gravel size is even better. Hand raking to level the soil and work out hills and hollows. For areas larger than 100 sq. ft. allow rain or irrigate to settle the soil. In some situations, the Engineer may require rolling or cultipacking to firm the soil before seeding. Hand rake again to break up the crusty surface before seeding or planting.

C. Installation:

i. General:

- a) Seed or plant the required grass according to Table 3.
- b) The choice of turfgrass type, variety and propagation form shall be specified in the Contract Documents, as specified in the Itemized Proposal, or as designated by the Engineer.
- c) Seed shall be tagged certified seed. Germination shall be a minimum of 95%. Seed shall be 98% pure with less than 2% other-crop seed or debris. Seed shall be free of noxious weed seed.
- d) Sod, sprigs, plugs or other vegetative plant propagation materials shall be certified free of noxious weeds. Materials shall be in good health and vigor, free of disease or pests, or damage from dryness, adverse temperature, herbicides, fertilizer or other chemicals. Sprigs that are older than 48 hours are not acceptable regardless of condition.

- e) The Contractor shall maintain a log of dates that sod, sprigs, plugs, or other seeding installation was completed for each individual property and shall notify the Engineer or Inspector of each day's progress.

ii. Seeding:

- a) Sow the seed on freshly prepared soil. Ensure uniform coverage by using a centrifugal (rotary) or drop-type spreader. Areas larger than 100 sq. ft. shall be seeded with a minimum of two passes at the appropriate partial rate for each pass. For areas averaging greater than 15 ft. width, apply half the seed in one direction and the other half at right angles to the first direction.
- b) Apply a starter-type fertilizer to the soil surface for example, 10 pounds of 5-10-10 or 5 pounds of 10-20-20 per 1,000 square feet at the time of seeding.
- c) Lightly cover the seed by hand raking or dragging with a mat or chain-link fence. Roll or tamp the soil lightly to firm the surface and provide good seed-to-soil contact.
- d) Mulch grass seed with weed-free small grain straw or hay. Use one bale per 1,000 square feet for warm-season grasses and 1 to 2 bales for cool-season grasses. Stabilize small areas of mulch by rolling, watering or tacking with asphalt tacking spray. Twine netting can be used if wind displacement is a problem. If applied evenly and lightly, these materials need not be removed. Larger areas shall be stabilized by asphalt tacking spray or twine netting.

ii. Sprigging or Broadcasting:

- a) Sprigging is the preferred method of installing bermudagrass in larger areas. For smaller areas of bermudagrass, sprigging and plugging are both good options. The less expensive is preferred. In some cases sod may be less expensive or necessary due to circumstances.
- b) Broadcasting sprigs uniformly over the entire area. Bermudagrass or zoysiagrass sprigs shall be broadcast at a minimum rate of 5 bushels (yards) of sprigs per 1,000 square feet. Up to 10 bushels (yards) may be used where very fast cover is desired. Press the sprigs into the top ½ to 1 inch of soil by hand, and then by using an old disk, set straight. In the case of very large areas use a sprigging machine, cultipacker, or roller. (Note - St. Augustinegrass is seldom established through broadcasting because the stems are too sensitive.)

iii. Plugging:

- a) Plugging is the preferred method of installing zoysia and St. Augustine except where sprigging or sod is less expensive or necessary due to circumstances.
- b) Plugs shall consist of individual pieces of sod that are 2 inches or larger. The plugs shall be planted at grade on 8 inch centers.

iv. Sodding:

- a) Lay sod as soon as possible after it has been harvested to prevent injury. Sod should be installed within 24 hours of delivery. While installing, take action as necessary to prevent heat buildup within the unlaied sod. Plan to unstack and unroll the sod if it cannot be laid within 48 hours. Soil should be moist (but not overly wet) before laying sod. Irrigating the soil several days before delivery is often adequate.
- b) Start sodding from a straight edge (driveway or sidewalk) and butt strips together, staggering them in a brick-like pattern. Avoid stretching sod. Use a knife or sharp spade for trimming to fit irregularly shaped areas. Lay sod lengthwise across the face of slopes and peg or stake the pieces to prevent slippage. After the sod has been placed, roll the lawn to ensure good sod-to-soil contact.
- c) Water sod immediately after installation. Soak sod thoroughly enough to penetrate soil below the newly installed sod to a minimum depth of two (2) inches. Contractor is responsible for insuring adequacy of water supply. The Contractor shall provided any necessary temporary means to properly water sod, including temporary pumps and sprinklers. Proper irrigation shall be required by the contractor until the project has been inspected and is accepted by the Town of Cary. (The Contractor shall be required to obtain all applicable watering permits from the Town of Cary prior to beginning watering activities.)
- d) In some cases sod can be laid in space planting "semi-checkerboard" fashion in order to lower costs. This method is described here assuming that the sod is cut into the standard 18 in. x 24 in. size. The first piece of sod is laid with the narrow side flush to a straight edge. This will start a row that is 24 in. wide. The next piece of sod is laid likewise but it is spaced 9 in. away and parallel to the first piece along the longer side. This is continued to make the first row. The next row is laid flush with the previous and in the same fashion except it laid offset by 9 inches, i.e. laid beginning at the centerline of the first piece of sod in the previous row. Subsequent rows are laid in this alternating pattern.

D. Cleanup and Inspection:

- i. Upon completion of work, the Contractor shall remove from the site all equipment and other articles used. All excess soil, stone, and debris shall be removed and legally disposed of at no additional cost to the Owner. All work areas shall be left in a clean and neat condition. All damage to existing construction caused by landscaping operations shall be repaired to the satisfaction of the Town at the Contractor's expense.
- ii. Seeded areas shall be protected and replanted as necessary to establish a uniform stand of specified grass. Scattered bare spots, none of which shall be larger than one (1) square foot, will be allowed up to a maximum of 3% of the seeded area for each property. When seeded areas are ready for inspection, the maintained turf areas shall be neatly mowed to the uniform height of approximately two and one-half (2.5) inches. The lawns shall be considered established only when the specified grass is vigorous and growing well in addition to meeting the other requirements specified.
- iii. An inspection of the completed seeding shall be made at the conclusion of the landscape work upon written notice requesting such inspection submitted by the Contractor to the Engineer, at least ten (10) days prior to the anticipated date of inspection.
- iv. A final inspection shall be performed when a satisfactory stand of seeded turf grass has been produced, upon written notice requesting such inspection submitted by the Contractor to the Engineer, at least ten (10) days prior to the anticipated date of inspection. If a satisfactory stand of turf has not been produced at the time of final inspection, necessary repairs shall be performed in conformance with the requirements of this section. Upon completion of these repairs, the seeded grass shall be reinspected upon written notice as above.

E. Basis of Payment:

- i. Payment for establishing permanent lawn ground cover shall be the actual amount of seeding, sprigging or broadcasting, plugging, and/or sodding installed and will be paid for at the unit price bid per acre or square yard for the appropriate method and grass type as indicated on the Itemized Proposal in the contract documents for "Permanent Lawn Seeding and Mulching." This price shall be full compensation for all work covered by this section including but not limited to furnishing all permanent and temporary seeding, sprigging or broadcasting, plugging, sodding mulching, fertilizing, tacking, watering, site preparation, cleanup, maintenance, and warranty of work as specified.

- ii. Distribution of Billing and Payments for “Permanent Lawn Seeding and Mulching” shall be made as follows:
- a) Fifty percent (50%) of the total quantity of the seeding and mulching items on the Itemized Proposal on the first partial payment estimate after which the initial seeding has been completed and accepted.
 - b) Twenty-five percent (25%) of the total quantity of the seeding and mulching items on the Itemized Proposal on the first partial payment estimate made after which the initial establishment of grass and any required reseeding is complete.
 - c) Twenty-five percent (25%) of the total quantity of the seeding and mulching items on the Itemized Proposal on the first partial payment after the final establishment of grass and the project is one hundred percent (100%) complete.

TABLE 3				
LAWN SEEDING				
(Cool- and Warm-Season Grasses)				
Typical Planting Rate/1,000 sq. ft.				
Lawn Grass	Planting Dates¹	Seeds²	Space Planting³	Sprigging⁴
Tall fescue	March 1 to Oct. 15 (Aug. 15 to Oct. 1 optimum)	6	-	-
Tall fescue/annual (winter) rye	Oct. 15 to March 1	6 fescue 1 rye		
Bermudagrass(seed)	Apr. 1 to Aug. 15	1 to 2	-	-
Bermudagrass (vegetative)	Apr. 15 to Aug. 30	-	5 ⁴	5
Centipedegrass	March to July	0.25 to 0.50	5 ⁴	-
Zoysiagrass	April to July	-	5 ⁴	5
St. Augustinegrass	Apr. to July	-	5 ⁴	-

Notes:

- ¹ Sod consisting of cool-season grasses can be installed anytime the ground is not frozen. Sod consisting of warm- season grasses can be installed as long as soil temperature exceeds 55°F. (typically April 15 to Oct. 1)
- ² Pounds of seed per 1,000 sq. ft.
- ³ Square yards of turf cut into 2-inch centers to plant 1,000 sq. ft.
- ⁴ Bushels of sprigs per 1,000 sq. ft. (1 sq. yd. of turf pulled apart is equivalent to 1 bushel of sprigs.)

PART 5 - MATTING FOR EROSION CONTROL

- A. Matting for erosion control shall be jute matting or excelsior matting. Matting for erosion control shall not be dyed, bleached, or otherwise treated in a manner that will result in toxicity to vegetation.
- B. Jute Matting: Jute matting shall be of a uniform open plain weave of single jute yarn, forty-eight (48) inches in width, plus or minus one (1) inch. The yarn shall be of a loosely twisted construction and shall not vary in thickness by more than one-half its normal diameter. There shall be 78 warp ends, plus or minus 2, per linear yard; and the weight shall average 1.22 pounds per linear yard of the matting with a tolerance of plus or minus 5 percent.
- C. Excelsior Matting: Excelsior matting shall consist of a machine-produced mat of curled wood excelsior at least 47 inches in width. The mat shall weigh 0.975 pounds per square yard with a tolerance of plus or minus 10 percent. At least 80% of the individual excelsior fibers shall be 6 inches or more in length. The excelsior fibers shall be evenly distributed over the entire area of the blanket. One side of the excelsior matting shall be covered with a woven fabric of twisted paper cord or cotton cord, or with an extruded plastic mesh. The mesh size for either the fabric or plastic mesh shall be a minimum of 1" x 1" and a maximum of 1-1/2" x 3".
- D. Wire Staples: Staples shall be machine-made of No. 11 gage new steel wire formed into a "U" shape. The size when formed shall be not less than 6 inches in length with a throat of not less than 1 inch in width.
- E. Basis of Payment: Payment for erosion control matting shall be based on the actual quantity of matting in square yards installed in accordance with the project Contract Documents and per unit price indicated on the Itemized Proposal for "Erosion Matting."

PART 6 - RIPRAP DISSIPATION PADS

- A. After construction is complete, all points of stormwater release shall be protected by riprap dissipation pads.
- B. Stone for plain riprap shall consist of field stone or rough unhewn quarry stone. The stone shall be sound, tough, dense, resistant to the action of air and water, and suitable in all other respects for the purpose intended. Stone shall vary in weight from 5 to 200 pounds. At least 30 percent of the total weight of the riprap shall be in individual pieces weighing a minimum of 60 pounds each. Not more than 10 percent of the total weight of the riprap may be in individual pieces weighing less than 15 pounds each.
- C. Unless otherwise directed by the Engineer, the stone shall be placed on a flat slope or as indicated on the plans. The stone shall be graded so that the smaller stones are uniformly distributed throughout the mass.

- D. The Contractor may place the stone by mechanical methods, augmented by hand-placing where necessary, provided that when the riprap is completed it forms a properly graded, dense, neat layer of stone.
- E. The completed riprap shall be at least the thickness indicated on the plans, with the top of the riprap pad flush with the surrounding finished grade.
- F. Geotextile fabric consisting of Mirafi 14ON or equivalent shall be installed under all riprap unless otherwise noted. No direct payment shall be made for geotextile fabric. The price for geotextile fabric used under riprap shall be included in the unit price bid for "Riprap."
- G. Basis of Payment: Payment for riprap shall be based on the actual quantity of riprap in tons provided and per the unit price for the appropriate class as indicated on the Itemized Proposal in the Contract Documents for "Riprap." The unit prices and payments for "Riprap" will be full compensation for all work covered by this section including, but not limited to, all excavation, embankment preparation, backfilling, and furnishing and placing riprap and other materials.

PART 6 - LEVEL SPREADERS

- A. Level spreaders shall be constructed in accordance with the most current Town of Cary, NCDOT, and NCDENR standards.
- B. Basis of Payment: Payment for "Level Spreader" shall be made under the contract unit price bid per linear foot for the type of level spreader as indicated on the plans and in the Itemized Proposal. The unit prices and payments shall be full compensation for all labor, equipment, and materials necessary to properly install and maintain the level spreader in accordance with the Contract Documents and shall also include any necessary clearing and grubbing, grading, seeding and mulching and other incidentals to satisfactorily install level spreaders.

END SECTION 16000

SECTION 21000
SPECIAL CONSTRUCTION
(03/03/2021)

The following items in Section 21000 are project specific and shall supercede any other conflicting portion of these contract documents.

1. **Debris Disposal**

The Town of Cary does not have a disposal site available to the contractor to receive debris retrieved from the sewers during cleaning operations. It shall be the contractor's responsibility to transport debris to a properly permitted disposal facility and to comply with all pertinent regulations.

The Town will provide a location for the placement of a temporary roll-off type dumpster/filter box for the purpose of temporary storage and dewatering of solids prior to transporting debris offsite for permanent disposal. The Town will assist the contractor by sampling the debris at the beginning of the project and sending it to a certified testing laboratory to generate a waste profile, if requested, to facilitate disposal at an approved facility.

Current note on Sheet C-5:

THE TRANSFER STATION FOR HOLDING SOLIDS REMOVED FROM THE SEWER DURING CLEANING OPERATIONS MAY BE LOCATED IN THIS AREA. COORDINATE WITH THE ENGINEER IN THE FIELD TO DETERMINE THE FINAL LOCATION. SEE SPECIFICATION 02650 - SEWER CLEANING AND TELEVISION INSPECTION AND DETAIL F ON SHEET D-4 FOR MORE INFORMATION.

Current language in **SEWER CLEANING AND TELEVISION INSPECTION:**

In lieu of immediately disposing of the solids off-site and at the Contractor's expense, the Contractor will be permitted to install a temporary transfer station. The Contractor will be permitted to discharge solids and minimal associated liquids removed during cleaning operations into the transfer station. Liquids shall be decanted from the transfer station and discharged into the Owner's collection system at an approved location. Solids shall be disposed of at an approved facility at regular intervals. The Contractor is responsible for odor control at the temporary transfer station. If any complaints are received or if the odor becomes noticeable, the Contractor will be required to immediately dispose of the contents of the transfer station. The Contractor is also responsible for ensuring that all solids and liquids are contained within the temporary transfer station. Any solids or liquids within the containment enclosure surrounding the temporary transfer station shall be immediately remediated. See Detail F on Sheet D-4 for additional information.

2. **Additional Work**

The Town reserves the right to negotiate with the contractor to include additional sewer rehabilitation work anywhere within the Town's wastewater collection system service area. If additional work is deemed necessary by the Town, the contractor's unit prices shall govern, where applicable. No additional payment will be made for mobilization to another location.

3. **Access through Private Property**

Private parking lots, driveways, or other areas for which temporary access has been granted by the property owner shall be maintained in satisfactory condition during construction of the project. If damage occurs to parking or driveway areas that impedes use by the property owners and/or tenants, or if debris, mud or sediment are deposited on private property and left unattended, the Contractor shall remedy the situation immediately upon receiving notice by the Engineer. Failure to do so may result in suspending the use of the specific access until satisfactory repairs are made.

When a specific temporary access location is no longer needed for construction, all final repairs to private property shall be complete within 15 days.

END OF SECTION 21000

FY20-21 SEWER REHABILITATION PROJECT

Appendix A - Approved Products List

APPROVED PRODUCTS LIST - WASTEWATER COLLECTION SYSTEM

updated: May 3, 2018

Product Category	Approved Manufacturer	Model/Series	Pressure/Load Rating	Website	Reference/Standard	Requirements
Ductile Iron Pipe 8-inch & 10-inch Diameter (and 4-inch & 6-inch services) Cement Mortar Lined	US Pipe	Tyton Joint	350 psi	http://www.uspipe.com/Main/	AWWA C150 and AWWA C151	Cement Mortar Lined with Exterior Bituminous Coating McWane Pipe stamped: 'McWane by Atlantic States or Clow' only
	American (ACIPCO)	Fastite Joint		http://www.acipco.com		
	McWane	Tyton Joint		http://atlanticstates.com/		
Ductile Iron Pipe 12-inch & Larger Diameter Protecto 401 Lined	US Pipe	Tyton Joint	250-350 psi see specification	http://www.uspipe.com/Main/	AWWA & DIPRA Standards	40-mils of Protecto 401 Interior Lining with Exterior Bituminous Coating (401 < 1yr old) McWane Pipe stamped: 'McWane by Atlantic States or Clow' only
	American (ACIPCO)	Fastite Joint		http://www.acipco.com		
	McWane	Tyton Joint		http://atlanticstates.com/		
Ductile Iron Fittings 8-inch to 10-inch Diameter (and 4-inch and 6-inch services) Cement Mortar Lined	Sigma	Mechanical Joint	350 psi	http://www.sigmaco.com/Products/Fittings.htm	AWWA C110/C111 and AWWA C153	Shall always meet or exceed pipe pressure rating
	Tyler Union			http://www.tylerunion.com/		
	SIP Industries			http://www.sipindustries.com/main/default.asp		
	Star			http://www.starpipeproducts.com/		
	American (ACIPCO)			http://www.acipco.com		
Ductile Iron Fittings 12-inch & Larger Diameter Protecto 401 Lined	Sigma	Mechanical Joint	250-350 psi see specification	http://www.sigmaco.com/Products/Fittings.htm	AWWA & DIPRA Stds	Shall always receive interior Protecto 401 Lining to meet or exceed main line pipe standards. P401 lining must be less than 1 year old.
	Tyler Union			http://www.tylerunion.com/		
	SIP Industries			http://www.sipindustries.com/main/default.asp		
	Star			http://www.starpipeproducts.com/		
	American (ACIPCO)			http://www.acipco.com		
PVC Pipe, SDR 35, 8-inch to 15-inch diameter Install depth of 4-ft to 14-ft	JM Eagle	ASTM D3034 Ring Tite Joint with Rieber Gasket	N/A	http://www.jmeagle.com/	ASTM and UNIBELL Stds.	ASTM D3034 Pipe with Cell Classification of 12454 or 12364.
	Diamond Plastics	ASTM D3034 Sewer Pipe with Rieber Gasket		http://www.dpcpipe.com/		
	National Pipe & Plastics			http://www.nationalpipe.com/		
	North American Pipe			http://www.northamericanpipe.com/		
PVC Pipe, Heavy Wall SDR 26 (Minimum Pipe Stiffness of 115) 8-inch to 27-inch Diameter and Depth of Install 4-ft to 30-ft	JM Eagle	ASTM D3034 or F679 Ring Tite Joint with Rieber Gasket Joint	N/A	http://www.jmeagle.com/	ASTM and UNIBELL Stds.	ASTM D3034 or ASTM F679 Pipe with Cell Classification of 12454 or 12364.
	Diamond Plastics	ASTM D3034 or F679 Sewer Pipe with Rieber Gasket Joint		http://www.dpcpipe.com/		
	National Pipe & Plastics			http://www.nationalpipe.com/		
	North American Pipe			http://www.northamericanpipe.com/		
Precast Concrete Manholes	Lindsay Precast	4-ft, 5-ft, & 6-ft diameter	H-20 Rating	http://www.stayright.com/	ASTM C478 and C923	All manhole bottoms greater than 5' diameter shall be a minimum of 8-inches thick. A minimum of 6inches for 4' diameter.
	Mack Industries			http://www.mackconcrete.com/		
	Precast Solutions			http://www.precast-solutions.com/		
	CP&P (Hanson, Carolina Precast)			http://www.carolinaprecast.com/		
	Tindall			http://www.tindallcorp.com/		
	OldCastle (NC Products)			http://oldcastleprecast.com/plants/ncproductsraleigh/Pages/		
	Eastern Vault Co. Inc.			http://easternvault.net		
Foltz	http://www.foltzconcretepipe.com					
Manhole Frame and Cover for Paved Areas w/ 1 Vent Hole	EJ	Model # V1384	40,000 lb proof load per AASHTO M306	www.ejco.com	CL35B ASTM-A48 Cover=120 lb min.	Type 1 - for installation in and near roadways
	US Foundry	669 Ring and LX Cover		www.usfoundry.com		
Manhole Frame and Rotating Cover for Outfall Areas (watertight)	EJ	41384037R01	12,000 lb proof load	www.ejco.com	CL35B ASTM-A48 Ring=80 lb min. Cover=50 lb min.	Type 2A - watertight for outfalls with elevated manholes (non-traffic bearing)
	US Foundry	8021464		www.usfoundry.com		
Manhole Frame and Rotating Cover w/ 1 vent hole for Outfall Areas (vented)	EJ	41384038R01	12,000 lb proof load	www.ejco.com	CL35B ASTM-A48 Ring=80 lb min. Cover=50 lb min.	Type 2B - vented for outfalls with elevated manholes (non-traffic bearing)
	US Foundry	8021472		www.usfoundry.com		

APPROVED PRODUCTS LIST - WASTEWATER COLLECTION SYSTEM

updated: May 3, 2018

Product Category	Approved Manufacturer	Model/Series	Pressure/Load Rating	Website	Reference/Standard	Requirements
Manhole Frame and Cover with 36-inch clear span opening for Large Diameter Manholes	EJ	Frame: 1581 Outer Cover: 1580EGS Inner Cover: 1040AGS	40,000 lb proof load per AASHTO M306	www.ejco.com	CL35B ASTM-A48 Minimum Weights: Ring=232lb Outer Cover=245lb Inner Cover=145lb	Type 3 - for large diameter outfall manholes
	US Foundry	Assembly: 8021054 Ring: 8020503 Outer Cover: 8015454 Inner Cover: 8015455		www.usfoundry.com		
Manhole Steps	M.A. Industries	PS1-PF or PS1-PF-DF	Horizontal Pull-out Load of 1000 lbs. when	www.maind.com	ASTM C478	Spaced 16" on center
	American Step Co.	ML-10-TDS-NCR		www.americanstep.com		
Exterior Joint Wrap for Manholes	ConSeal	CS-212	N/A	www.conseal.com	ASTM C990, E1745, C877	
	Henry	RN103 - RAM-NEK		www.henry.com		
	Infi-Shield			www.infi-shield.com		
Butyl Rubber Sealant	ConSeal	CS-102	N/A	www.conseal.com	SS-S-210 ASTM C990	
Manhole Epoxy Coating (Interior)	RLS	Raven 405	120-mils	www.ravenlining.com	Installed by:	www.dun-rightservices.com/
	Sherwin Williams	CorCote SC Epoxy		www.sherwin-williams.com	Installed by:	www.cmtcoatings.com
Exterior Manhole Coating for Wet Areas	Pro-Tech Coatings	EP-214	N/A	www.pro-techcoating.com	Corps of Engineers C-200	40-mil minimum thickness required. Interior epoxy coatings may also be used.
	Carboline	Bitumastic 300M		www.carboline.com		
	International	Devtar 5A		www.international-pc.com		
Mini Manhole Frame and Cover for Cleanout in Paved Areas	US Foundry	Ring: 8090167 Cover: 8090179	40,000 lb proof load	www.usfoundry.com	CL35B ASTM-A48 Ring=39 lb min. Cover=14 lb min.	Domestically Made
	EJ	Model # 1566		www.ejco.com		
Marking Tape	3M Marking Tape	7614-XR	N/A	http://solutions.3m.com/en_US/	APWA	Green for Wastewater
4-inch and 6-inch Service Saddle for existing 8-inch thru 12-inch DIP	Romac	Model "CB"	N/A	www.romac.com	ASTM A536 ASTM D2000 MBA 710	Service Line shall be DIP. Strap and Hardware shall be 304 Stainless Steel
	Ford	FSS-1440-4 & FSS-1440-6		www.fordmeterbox.com		
Ductile Iron Service Tee for PVC Main x 4" or 6" DIP Service line	Harco	280523-0804P 280523-0806P	350 psi	www.harcofittings.com	ASTM A536,F477 AWWA C153	Protecto 401 Lined

APPROVED PRODUCTS LIST - SEWER FORCE MAIN & PUMPING SYSTEMS

updated: May 3, 2018

Product Category	Approved Manufacturer	Model/Series	Pressure/Load Rating	Website	Reference/Standard	Requirements
Ductile Iron Pipe 4-inch & Larger Diameter Protecto 401 Lined	US Pipe	Tyton Joint	250-350 psi see specification	http://www.uspipe.com/Main/	AWWA C150 & C151 and DIPRA Stds	40-mils of Protecto 401 Lining (401 lining must be < 1yr old) McWane Pipe stamped: McWane by Atlantic States or Clow only
	American	Fastite Joint		http://www.acipco.com		
	McWane	Tyton Joint		http://atlanticstates.com/		
Ductile Iron Fittings 4-inch & Larger Diameter Protecto 401 Lined	Sigma	Mechanical Joint	250-350 psi see specification	http://www.sigmaco.com/Products/Fittings.htm	AWWA C110 & C153 and DIPRA Stds	Shall always receive interior Protecto 401 Lining to meet or exceed main line pipe standards. (401 lining must be < 1yr old)
	Tyler Union	Mechanical Joint		http://www.tylerunion.com/		
	SIP Industries	Mechanical Joint		http://www.sipindustries.com/main/default.asp		
	Star	Mechanical Joint		http://www.starpipeproducts.com/		
	American	Mechanical Joint		http://www.acipco.com		
Ductile Iron Restrained Joint Pipe 4-inch & Larger Diameter Protecto 401 Lined	Griffin	Snap Lok	250-350 psi see specification	http://www.griffinpipe.com/	AWWA C150 & C151 and DIPRA Stds	Boltless restraint unless otherwise specified
	American	Flex Ring		http://www.acipco.com		
	US Pipe	TR Flex		http://www.uspipe.com/Main/		
Wedge Action Retainer Glands	EBAA	Mega-Lug	350-psi through 12" 250-psi through 48"	http://www.ebaa.com/	UL/FM approved through 12"	All retainer glands shall be epoxy coated or polyester powder coated
	Romac	RomaGrip		http://www.romac.com/		
	Sigma	One Lok Model SLDE		http://www.sigmaco.com		
	SIP	EZ-Grip		http://www.sipindustries.com		
	Star	Stargrip		http://www.starpipeproducts.com		
	Tyler Union	TUFGrip TLD		http://www.tylerunion.com/		
Plug Valve (bi-directional)	Pratt	Ballcentric Plug Valve	4-12-inch, 175psi >12-inch, 150psi	www.henrypratt.com	AWWA C517	4"-12" Round Port & 14"-48" Rectangular, Full Port carrying 100% of pipe flow
	Milliken	600 N1BG		www.millikenvalve.com		
	DeZurik	PEF (14"-36" ONLY)		www.dezurik.com		
Ball Valve	Pratt	Rubber Seated Ball Valve	150 psi	www.henrypratt.com	AWWA C507	For use on large diameter pipe
Valve Box	E. Jordan Iron Works	Screw Type 8550 (or 8560)	N/A	http://www.ejco.com/		Telescoping Box Assembly & 6" lid with 4" skirt labeled "Sewer"
	Bingham & Taylor	Screw Type 4905		http://www.binghamandtaylor.com/		
Combination Air Valve	Vent-O-Mat	RGX	145 psi	www.ventomat.com	AWWA C512	Stainless steel valve bodies
	Vent-Tech	Series C - SWG, SWS	276 psi	http://www.internationalvalve.com/		
	ARI	Site Specific (D-020 or D-023)	250 psi	http://www.arivalves.com/		
Marking Tape & Marker Balls	3M Marker Ball	1404-XR	N/A	http://solutions.3m.com/en_US/	APWA	Green for Wastewater
	3M Marking Tape	7614-XR				
Manhole Epoxy Coating	RLS	Raven 405	120-mils	www.ravenlining.com	Installed by:	www.dun-rightservices.com/
	Sherwin Williams	Duraplate-5900		www.sherwin-williams.com	Installed by:	www.cmtcoatings.com
DIP Epoxy Coating	Induron	Protecto 401	N/A	www.protecto401.com	40-mil thickness required. Pipe must be installed within 1 year of date of lining. High pressure cleaning shall not exceed 1800psi. Lined carrier pipe shall be pulled through casing.	
Grinder	JWC Environmental	CMD-1800	N/A	http://www.jwce.com/	Must have integral rotating screen & a hydraulic power unit	

APPROVED PRODUCTS LIST - SEWER FORCE MAIN & PUMPING SYSTEMS

updated: May 3, 2018

Product Category	Approved Manufacturer	Model/Series	Pressure/Load Rating	Website	Reference/Standard	Requirements
Grinder Control Panel	JWC Environmental	B100R	N/A	http://www.jwce.com/		
Grinder Motor	Baldor	Site Specific	N/A	http://www.baldor.com	NEMA Design 'B' and TEFC	Minimum Motor Size: 5hp, 60Hz, 240V or 480V AC.
	Reliance			http://www.reliance.com/		
	US Motor			http://www.usmotors.com/		
Pump	Fairbanks Nijhuis	Site Specific	N/A	http://www.fairbanksnijhuis.com/		
	Xylem			http://www.xylem.com/pumping/us/brands/flygt		
	Sulzer			http://www.sulzer.com		
	Flowsolve			www.flowsolve.com/		
Flow Meter	ABB	Site Specific	N/A	www.abb.com		316 SS Flanges on meters less than 24-inches. Must have two, three, or four 316 SS or Hastelloy C electrodes
	Krohne			www.krohne.com		
	Rosemount			www.rosemount.com		
Pressure Transmitter	ABB	Site Specific	N/A	www.abb.com		
	Foxboro			www.fielddevices.foxboro.com/products/pressure		
	Rosemount			www.rosemount.com		
Odor Control Unit	Carbtrol	Site Specific	N/A	www.carbtrol.com		Properly sized passive units are preferable to motorized units with a fan. Media canister must provide for clean air intake or provide piping with PVC check valves.
	Wager	Typically 2050-I or larger		www.wagerusa.com		
Alarm Dialer	Butler National	ADAS II	N/A	www.butlernational.com		Shall be in a lockable NEMA 4 enclosure and have a thermostatically controlled heater
	Capital Controls	1520		www.severntrentservices.com		
Generator	CAT	Site Specific	N/A	www.cat.com		
	MTU			www.mtuonsiteenergy.com		
	ONAN			www.power.cummins.com		

FY20-21 SEWER REHABILITATION PROJECT

Appendix B - Executed Right-of-Entry for Select Properties

Note: The following Executed Right-of-Entries are provided for informational purposes of locations/properties where the Owner has arranged for access based on certain stipulations.

RIGHT OF ENTRY PERMIT

THIS AGREEMENT made this the 13th day of October 2020, by and between **WAKE COUNTY**, a body politic and corporate of the State of North Carolina (hereinafter called Landowner), and **THE TOWN OF CARY**, (hereinafter called Permit Holder).

The parties hereto agree as follows:

The Landowner hereby grants unto the Permit Holder, its employees, agents, consultants, contractors and cooperating parties, the right and privilege to enter the properties, Parcel PIN#0756800223, PIN#0765492268, PIN#0765386915, for the purpose of the Town of Cary FY20-21 Sewer Rehabilitation Project No. SW3501. This project includes rehabilitation of the Crabtree Creek Interceptor and Black Creek Interceptor sewer lines. The *portion* of "property" subject to this right of entry can be more particularly shown and described as:

Being *portions* of the Landowners properties, located in Cary, NC commonly known as Crabtree Creek Watershed Project Site#23, Wake County PIN# PIN#0756800223, PIN#0765492268, PIN#0765386915, and as further identified on the attached (Maps A-1 & A-2). The Right of Entry areas and scope of work are limited to and outlined in Exhibit A and (Maps A-1 & A-2), which are attached hereto and incorporated herein by reference.

This privilege to enter is subject to the following provisions and conditions:

1. The term of this permit shall be 18 Months. The commencement date for this permit shall begin the day the Permit Holder and Contractor execute a Notice to Proceed for construction of the Sewer Rehabilitation Project. The Permit Holder shall be required to provide the Landowner a fully executed Notice to Proceed to activate this permit. If necessary, said term may be extended subject to mutual agreement on behalf of all parties.
2. This Right of Entry is not assignable.
3. The permitted activities on the certain portions of the Landowners properties under this right of entry are limited to the scope of work and specific areas of said properties outside the Town of Cary existing sewer easement areas identified in the attached Exhibit A (Maps A-1 & A-2). The Permit Holder is responsible for locating all underground utilities in accordance with State and local laws or ordinances prior to boring, digging or excavating. The Permit Holder is responsible for repairing any damaged underground utilities as a result of the boring, digging, installing sewer liners or excavation. The temporary above ground bypass piping

will remain in existing Town of Cary sewer easements unless otherwise noted on (Maps A-1 & A-2). No excavation, equipment storage, or staging is permitted in the auxiliary spillway. No fill material shall be placed within the flood pool of the flood control structure. No excavation is permitted anywhere on the flood control structure without prior review and written approval from Wake County and NRCS. Minor excavation may be performed around a manhole. Minor excavation is defined as a depth not to exceed two times the diameter of the manhole and width not to exceed a radius of two times the manhole diameter from the center point of the manhole cover. Minor excavation is envisioned to address such items as grade ring adjustments/repairs, barrel repairs, or other shallow manhole structural components damaged during the project work.

4. The Permit Holder shall be responsible for any personal injury/death occurring on the Property. The Permit Holder agrees to defend, indemnify, and hold harmless the Landowner from any and all loss, liability, claims or expense (including reasonable attorney's fees) arising from bodily injury, including death or property damage, to any person or persons caused in whole or in part by the negligence or misconduct of the Permit Holder resulting from activities conducted on said property by the Permit Holder, its contractors, subcontractors, agents or employees. It is the intent of this section to require Permit Holder to indemnify Landowner to the extent permitted under North Carolina law.

5. The Permit Holder shall develop a construction sequence that will maintain access to greenways to the extent practical during construction. The sewer rehabilitation work shall be staged in such a manner that will maximize the length and connectivity of greenways accessible to the public during the project. specifically:
 - When bypass piping needs to cross greenway trails, the Permit Holder is requiring the contractor to bury the pipe beneath the greenway and repair the trail immediately thereafter, so that the temporary piping does not block the greenway.
 - The first phase of the project will consist of rehabilitating approximately 7,000 feet of the Crabtree Creek Interceptor, beginning at Evans Road. For the first couple thousand feet, there is adequate separation between the sewer line and the greenway to allow the greenway to remain open.
 - While work is underway on the Crabtree Creek Interceptor, the Black Creek Greenway will remain accessible to the public in its entirety.
 - While work is taking place on the 54-inch pipe on the Black Creek Greenway, the Crabtree Creek Greenway will be open and access to the Black Creek Greenway south of the greenway bridge will be maintained.
 - The Permit Holder shall develop and maintain a communication strategy to the public. The Permit Holder shall install signs informing greenway users of the project and direct them to a website that will provide key project information. The Permit Holder's web page for the project should

be updated as work progresses to inform the public of the project and the status of the greenways within the project limits.

6. The Permit Holder shall be responsible for any damage to the Property or fixtures on the Property. The Permit Holder shall install required erosion control measures and devices for the project within the project limits-existing sewer easements and Permit Areas if required for grading and/or excavation. The Permit Holder shall restore the affected manholes to their previously sealed condition. In any activities undertaken pursuant to this Right of Entry, the Permit Holder, its contractors, subcontractors, agents or employees agree to exercise reasonable care in order to minimize physical damage to Landowner's property and agree to restore the Landowner's property to its original condition. The Permit Holder shall secure the construction areas and equipment at the end of each day.
7. In any activities undertaken pursuant to this Right of Entry, the Permit Holder shall comply and cause its contractors, subcontractors, agents, and employees to comply with all federal, state, and local laws; and shall be responsible for obtaining any permits required to undertake such activities.
8. This right of entry is revocable by the Landowner. In the event the Landowner determines at any time that the Permit Holder, its contractors, agents or employees interferes with the Landowners use or access to the property, violates any law or restriction in this permit, permits sediment from the project to enter Lake Crabtree, and/or creates a safety hazard or nuisance, the Landowner may terminate this permit by providing written notice to the Permit Holder.
9. This Right of Entry does not bind the Landowner to financial responsibility for services rendered on the Property by Permit Holder or any contractors, subcontractors, agents, employees and other designees of Permit Holder and shall not subject the Property to any claimed liens.
10. The Parties designate the following as authorized contacts for their respective organizations:

LANDOWNER'S CONTACT INFORMATION:

Chris Snow
Director, Wake County Parks, Recreation & Open Space
P.O. Box 550, Suite 1000
Raleigh, NC 27602
Telephone: (o) (919) 856-6677, (m) (919) 422-7272
Email: csnow@wakegov.com

Rick Stogner, P.E., CEM, BEP
Facility & Field Services Director
P.O. Box 550
Raleigh, N.C. 27602
Telephone: (o) (919) 870-4025, (m) (919) 623-0646
Email: rick.stogner@wakegov.com

PERMIT HOLDER'S CONTACT INFORMATION:

Lynn A. Brilz, P.E.
Senior Project Manager
Town of Cary Utilities Department
P.O. Box 8005
Cary, N.C. 27512-8005
Telephone: (919) 460-1047
Email: lynn.brilz@townofcary.org

IN WITNESS WHEREOF, the parties have executed this agreement as of the above stated date.

LANDOWNER

WAKE COUNTY




By: Mark Forestieri
Director, Facilities, Design & Construction
P.O. Box 550, Suite 1100
Raleigh, NC 27602
Telephone: (919) 856-6356
Email: mforestieri@wakegov.com

10-1-20
Date

PERMIT HOLDER

TOWN OF CARY



By: Jamie Revels
Utilities Director
P.O. Box 8005
Cary, N.C. 27512-8005
Telephone: (o) (919) 469-4303, (m) (919) 418-7572
Email: jamie.revels@townofcary.org

9/25/20
Date



Exhibit A

UTILITIES DEPARTMENT

June 16, 2020

Mr. Rick Stogner, P.E., CEM, BEP
Wake County Facility and Field Services Director
P.O. Box 550
Raleigh, NC 27602

Re: Right of Entry Authorization Request
FY20-21 Sewer Rehabilitation Project
Town of Cary Project No. SW3501

Dear Mr. Stogner,

The Town of Cary is planning to perform rehabilitation and repairs to deteriorated sewer lines and manholes along Crabtree Lake from Evans Road downstream to the Lake Crabtree Dam and ultimately to the North Cary Water Reclamation Facility on Old Reedy Creek Road near I-40. Rehabilitation of these sewers is needed to ensure continued reliable wastewater service to Town of Cary utility customers, protect the environment and to protect public health. Also, rehabilitation of the 54-inch sewer that runs through the Lake Crabtree Dam property is essential to ensuring the long-term integrity of the dam.

The first step in this process will be to set up temporary bypass pumps and above-ground piping to reroute sewer flows around pipe and manholes being worked on. Once the bypass system is in place for a given area, the sewer lines will be cleaned using high-pressure hydraulic jetting equipment and inspected with sewer cameras. Following review of the camera inspection footage, cured-in-place pipe (CIPP) liners will be installed to renew the sewer lines, assuming no repairs requiring excavation will be necessary. The CIPP liner is fully structural and is designed to extend the life of these sewer lines by 50 or more years. The last stage of this process involves repairing the manholes and applying a corrosion-resistant mortar lining on the inside walls of the manholes.

To complete the above-mentioned work, construction equipment and trucks will need access to the manholes and sewer lines along the construction corridor. Based on our observation of the work area, the contractors should generally be able to perform the work within the existing sewer easements, with additional access needed at a few key areas. Regarding property owned by Wake County, additional access will be needed in the vicinity of the Lake Crabtree Dam. Attached, for reference, are maps identifying the location of the sewer rehabilitation work along Crabtree Lake. As requested, the approximate location of the flood pool at elevation 284.9 is shown on the maps. Construction vehicles and equipment will need access to the dam area from Old Reedy Creek Road and will travel along the greenway at the crest of the dam to access manholes on the 54-inch sewer line running through the dam area as shown on the map for the Black Creek Interceptor sewer rehabilitation. Typical equipment for this type of construction will include combination jet-vacuum trucks to clean sewers, semi tractor-

TOWN of CARY

400 James Jackson Avenue • Cary, NC 27513 • PO Box 8005 • Cary, NC 27512-8005
tel 919-469-4000 • fax 919-469-4304 • www.townofcary.org

trailers to transport liners to manholes for installation, boiler trucks to cure the liners, and box trucks equipped with specialty camera equipment to video the sewer lines before and after installation of the liners. Additionally, excavators or off-road forklifts are commonly used to lift the liners into place above the manholes for installation. We do not anticipate any excavation being required within the parcel occupied by the dam, except to remove and reinstall the top sections of manholes to provide sufficient access for liner installation. Finally, we anticipate needing to trim tree limbs overhanging the sewer easement in the area just north of Evans Road.

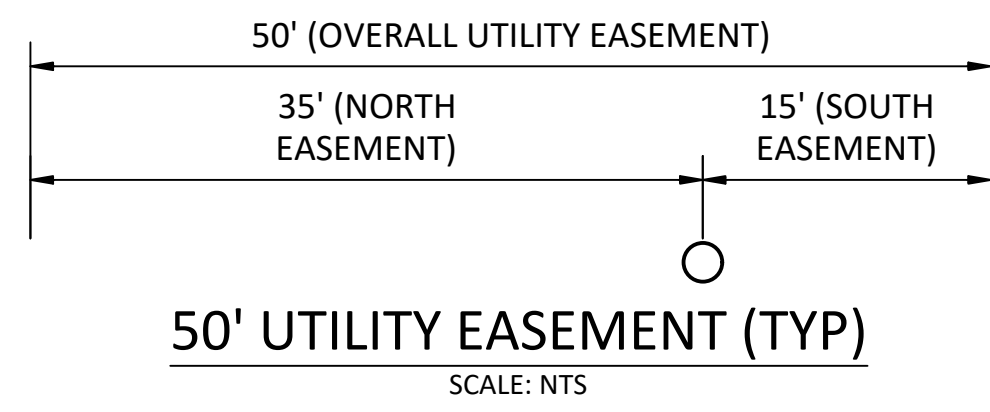
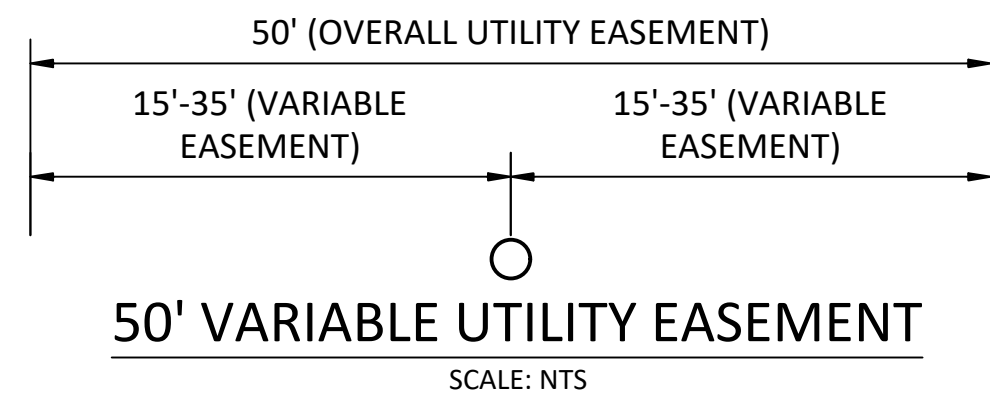
On behalf of the Town of Cary, we are respectfully requesting a Right of Entry Authorization from Wake County to complete the above-mentioned improvements. Please feel free to contact me via email at lynn.brilz@townofcary.org or by calling my personal cell phone at 919-810-0898.

Respectfully submitted,

A handwritten signature in blue ink that reads "Lynn A. Brilz". The signature is written in a cursive, flowing style.

Lynn A. Brilz, P.E.
Senior Project Manager – Utility Engineer

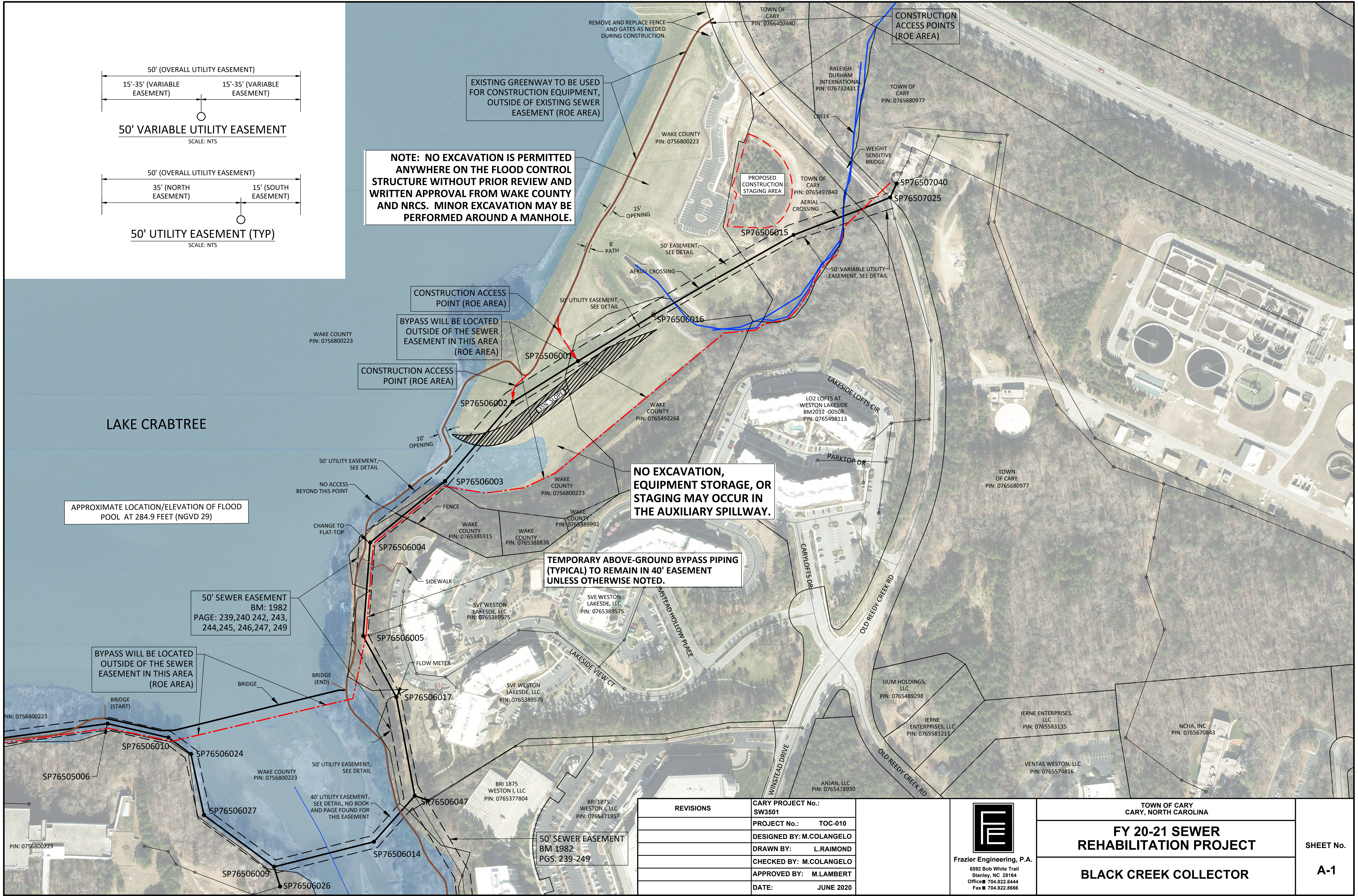
Enclosure: Project Maps



NOTE: NO EXCAVATION IS PERMITTED ANYWHERE ON THE FLOOD CONTROL STRUCTURE WITHOUT PRIOR REVIEW AND WRITTEN APPROVAL FROM WAKE COUNTY AND NRCS. MINOR EXCAVATION MAY BE PERFORMED AROUND A MANHOLE.

NO EXCAVATION, EQUIPMENT STORAGE, OR STAGING MAY OCCUR IN THE AUXILIARY SPILLWAY.

TEMPORARY ABOVE-GROUND BYPASS PIPING (TYPICAL) TO REMAIN IN 40' EASEMENT UNLESS OTHERWISE NOTED.



APPROXIMATE LOCATION/ELEVATION OF FLOOD POOL AT 284.9 FEET (NGVD 29)

50' SEWER EASEMENT
BM: 1982
PAGE: 239,240,242,243,244,245,246,247,249

BYPASS WILL BE LOCATED OUTSIDE OF THE SEWER EASEMENT IN THIS AREA (ROE AREA)

50' SEWER EASEMENT
BM 1982
PGS. 239-249

REVISIONS	CARY PROJECT No.: SW3501
	PROJECT No.: TOC-010
	DESIGNED BY: M.COLANGELO
	DRAWN BY: L.RAIMOND
	CHECKED BY: M.COLANGELO
	APPROVED BY: M.LAMBERT
	DATE: JUNE 2020

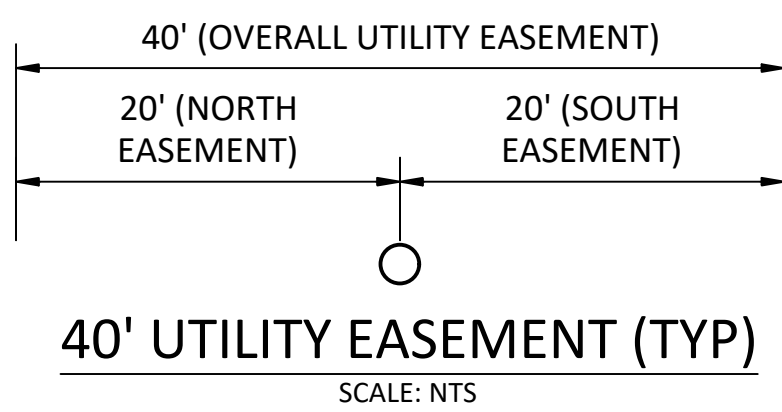
Frazier Engineering, P.A.
6592 Bob White Trail
Stanley, NC 28164
Office 704.822.8444
Fax 704.822.8666

TOWN OF CARY
CARY, NORTH CAROLINA

FY 20-21 SEWER REHABILITATION PROJECT

BLACK CREEK COLLECTOR

SHEET No.
A-1

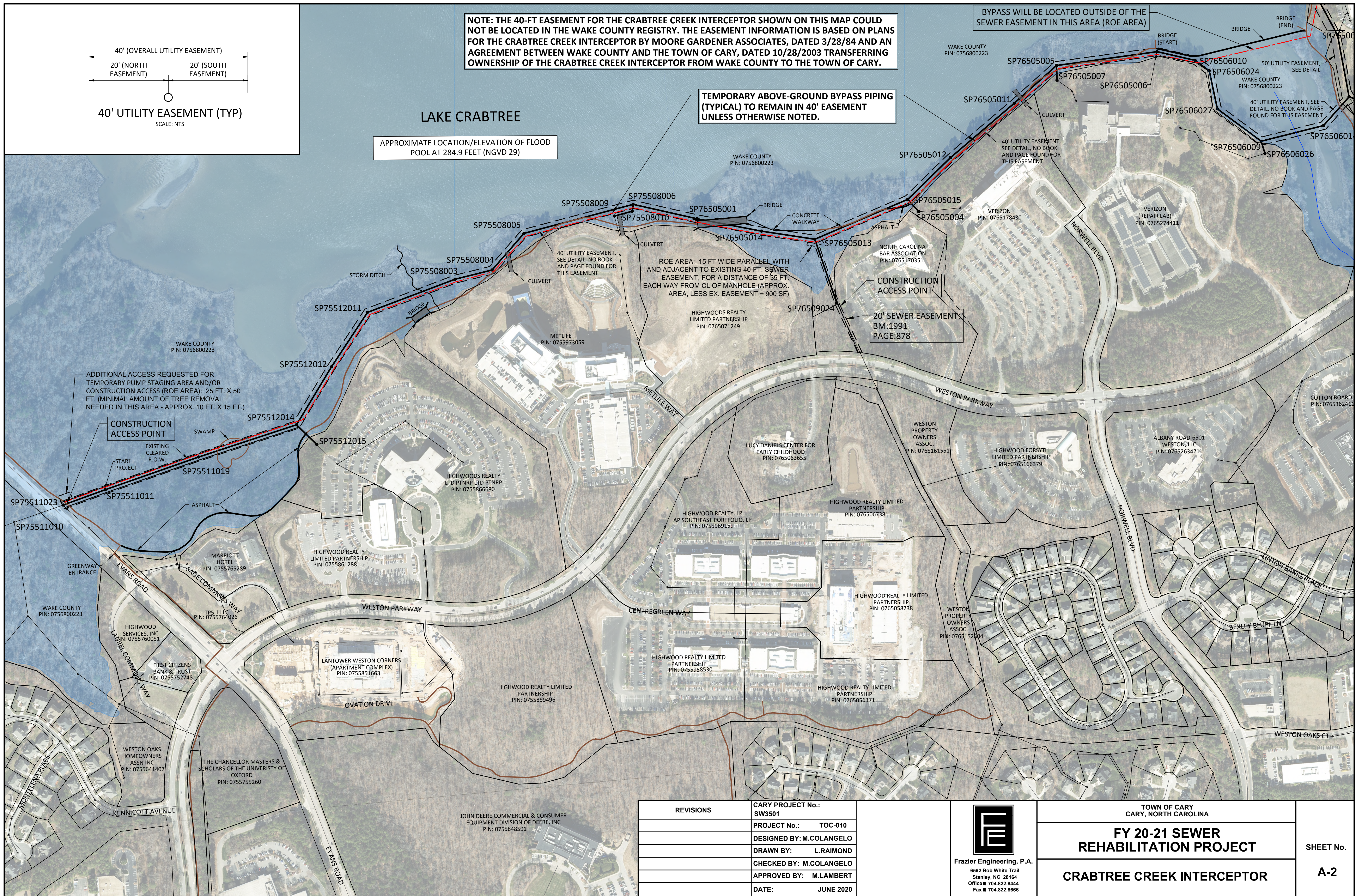


NOTE: THE 40-FT EASEMENT FOR THE CRABTREE CREEK INTERCEPTOR SHOWN ON THIS MAP COULD NOT BE LOCATED IN THE WAKE COUNTY REGISTRY. THE EASEMENT INFORMATION IS BASED ON PLANS FOR THE CRABTREE CREEK INTERCEPTOR BY MOORE GARDENER ASSOCIATES, DATED 3/28/84 AND AN AGREEMENT BETWEEN WAKE COUNTY AND THE TOWN OF CARY, DATED 10/28/2003 TRANSFERRING OWNERSHIP OF THE CRABTREE CREEK INTERCEPTOR FROM WAKE COUNTY TO THE TOWN OF CARY.

BYPASS WILL BE LOCATED OUTSIDE OF THE SEWER EASEMENT IN THIS AREA (ROE AREA)

TEMPORARY ABOVE-GROUND BYPASS PIPING (TYPICAL) TO REMAIN IN 40' EASEMENT UNLESS OTHERWISE NOTED.

APPROXIMATE LOCATION/ELEVATION OF FLOOD POOL AT 284.9 FEET (NGVD 29)



ADDITIONAL ACCESS REQUESTED FOR TEMPORARY PUMP STAGING AREA AND/OR CONSTRUCTION ACCESS (ROE AREA): 25 FT. X 50 FT. (MINIMAL AMOUNT OF TREE REMOVAL NEEDED IN THIS AREA - APPROX. 10 FT. X 15 FT.)

ROE AREA: 15 FT WIDE PARALLEL WITH AND ADJACENT TO EXISTING 40-FT. SEWER EASEMENT, FOR A DISTANCE OF 35 FT. EACH WAY FROM CL OF MANHOLE (APPROX. AREA, LESS EX. EASEMENT = 900 SF)

CONSTRUCTION ACCESS POINT

20' SEWER EASEMENT
BM:1991
PAGE:878

REVISIONS	CARY PROJECT No.: SW3501
	PROJECT No.: TOC-010
	DESIGNED BY: M.COLANGELO
	DRAWN BY: L.RAIMOND
	CHECKED BY: M.COLANGELO
	APPROVED BY: M.LAMBERT
	DATE: JUNE 2020

Frazier Engineering, P.A.
6592 Bob White Trail
Stanley, NC 28164
Office 704.822.8444
Fax 704.822.8666

TOWN OF CARY
CARY, NORTH CAROLINA

**FY 20-21 SEWER
REHABILITATION PROJECT**

CRABTREE CREEK INTERCEPTOR

SHEET No.
A-2



UTILITIES DEPARTMENT

June 3, 2020

MCI Worldcom Network Services, Inc.
1133 19TH St. NW
Washington, D.C. 200036-3607

PIN Number: 0765274411 Property: 6400 Weston Parkway, Cary, NC 27513

Subject: Granting of Temporary Right-of-Entry to Rehabilitate Sewer Lines and Manholes

To Whom it May Concern:

The Town of Cary (Town) is planning to rehabilitate existing large diameter sewer lines and manholes along property owned by MCI Worldcom Network Services, Inc. adjacent to Crabtree Lake. Rehabilitation of sewer lines will be accomplished by installing flexible liners in the existing sewers that, when cured are fully structural and resistant to corrosion. This process will extend the service life of these sewer lines by 50 or more years. Manholes will be rehabilitated by application of a corrosion-resistant mortar.

The first step in this process is to assemble a temporary system of pumps and above-ground pipes to redirect the sewer flows around the sewer lines and manholes being rehabilitated. Next, the sewer lines and manholes will be cleaned using special hydraulic cleaning equipment. Once this has been accomplished, liners will be installed in the sewer lines and the manholes will be rehabilitated. To accomplish this work, it will be necessary to access the existing manholes with trucks and equipment. The existing sewer easements, while sufficient for routine maintenance and inspection, do not provide sufficient access, for additional access is needed to perform the above-mentioned sewer rehabilitation work. We are hereby requesting authorization to enter property owned by MCI Worldcom Network Services, Inc. with trucks and construction equipment to perform this work. The proposed access location is identified on the attached map identified as "Exhibit A." Following completion of the proposed sewer system improvements, any disturbed areas will be restored to their previous or better condition.

This letter shall act as your approval for the Town of Cary and/or its contractors to enter upon MCI Worldcom Network Services, Inc. property to complete the above work. By your signature below, you authorize the Town of Cary and/or its contractors to perform the above-referenced construction related activities.

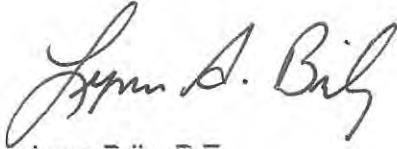
The parcel covered by this Right-of-Entry is identified by Wake County PIN # 0765274411 and is defined in Map Book 1998, Page 1221, Wake County Registry. This Right-of-Entry is temporary and will terminate upon the completion of the work. We anticipate work beginning in late 2020 or early 2021 and taking approximately 18 to 24 months to complete. Any and all improvements made in conjunction with said Right-of-Entry will remain the property of the undersigned.

If you wish to grant the Town the above described Right-of-Entry, please sign where noted below and return to my attention. I can be reached via email at lynn.brilz@townofcary.org or on my personal cell phone at 919-810-0898 if you have any questions or require further information. Thank you for your time and consideration of this request.

TOWN of CARY


400 James Jackson Avenue • Cary, NC 27513 • PO Box 8005 • Cary, NC 27512-8005
tel 919-469-4000 • fax 919-469-4304 • www.townofcary.org

Sincerely,



Lynn Briiz, P.E.
Senior Project Manager

Consent and Agreed to:

By:  (SEAL)

Title: MGR - GRE Date: 8/21/2020

Enclosure: Exhibit A (Map)