Addendum #3 – Emailed Questions

Twin Lakes Dam Rehabilitation Project
February 20, 2025

Bidders on this Project are hereby notified Addendum #3 shall be attached to and made a part of the Contract Documents and Project Manual dated January 2025.

The following items are issued to add, modify, and clarify the Contract Documents, and cost involved shall be included in the bid prices. Bids to be submitted on the specified date shall be based on the additions and revisions listed herein.

Acknowledging receipt of each of the 3 Addendum should be done by signature and date at the bottom of the Bid Form page 00300-8 and by signature and date at the Excel Bid Form.

Table of Contents

Contract Documents

1. Section 00300 - Bid Proposal has been revised and is attached. It includes mobilization and acknowledgements for receiving Addendum #1- TEAMS Meeting & #2 – Pre-Bid Meeting Minutes and Addendum #3 – Emailed Questions.

2. An excel spread sheet of the itemized proposal has been attached for your use. Fill in the “Unit Bid Price” column and “Amount Bid” will auto-populate.

Twin Lakes Questions

Date Received: 2/10/25
Kevin Dedene – Morgan Corp. KDedene@morgan-corp.com

Question: *Is the safety rail as depicted in the detail on Sheet 1D-04 the same as the guard rail (triple pipe as show?) – If so does the Owner want vertical pickets or triple rail as shown on the outlet control endwall outlet – they refer to mounting detail only.*
Response: These are different rails. The safety rail is located on the top of the dams as called out on Sheets 01C-05 and Sheets 01C-06 and describe in Section 21000 Part 33. The guardrails are located on top of the box outlet headwall and wingwalls as shown on Sheets 01S-02,03, and 04 and described in Section 21000 Part 19.

Question: *Low flow drain trash rack (12" DIP) – there is a note that says to refer to detail – please provide details.*
Response: The low flow drain trash rack detail is shown on detail C on Sheet 01D-02

Question: *Due to the sizes of the trashracks please proved stamped/engineered drawings along with any pertinent information.*
Response: The trash rack shown on Sheet 01D-04 is from a prefabricated supplier. The contractor can provide a fabricated trash rack that satisfies the dimensions and typical openings. The trash rack shop drawings shall be reviewed and approved by the Engineer.

Date Received: 2/11/25
Antony Biagini – Road Works Construction Company – abiagini@roadworksconstruction.com

Question: *The quantity bid item 68 Live stakes 1,200 ea. and 69 Tree/Shrub containerized 500 each do not appear to match the quantities called out on the planting list on sheet 01D-07. Please clarify the anticipated live stake and tree/shrub quantities along the stream restoration.*
Response: *The planting list table on sheet 01D-07 are the correct quantity estimates. The itemized proposal quantities for Item No. 68, 69, and 70 were modified to be consistent with sheet 01D-07. Item No. 72 was added to the itemized proposal and Section 21000 Part 47 for the plugs. This addendum includes and updated Section 21000, updated Section 00300 Bid Proposal and an updated Itemized Bid Proposal Spreadsheet.*

Date Received: 2/12/25
Al Kurdieh– Lorient Companies – akurdieh@lorienthomes.com

Question: *What NC contractor licenses are required for this work? If Building-unlimited sufficient?*
Response: The Contractor shall have an Unlimited General Contractor license that allows them to perform site work, reinforced concrete construction, and storm drainage installations.

Date Received: 2/14/25
Juan Prieto– Conti Civil – jprieto@conitcivil.com

Question: *What is the DBE goal for the project?*
Response: The Town has not set any particular DBE goals for this project.

Question: *What is the timeline, or expected completion date , for this project.*
Response: The project duration as noted in the agreement is 450 days (consecutive/calendar days) from the date specified in the Notice to Proceed. The Notice to Proceed date will be set based on the performance of several items such as but not limited to the Town Council approval of the recommend bid and successful execution of the agreement and supporting information. The goal of the Town is to begin construction in June 2025 and complete construction in September 2026.

Date Received: 2/17/25
Dustin Futrell– Mersino Water Solutions– dustin.futrell@mersino.com

Question: *I have a question on the Lower Lake Outlet Channel Pump around. The plans call for a pump around and it shows 1 pump and flexible hose which is typical for that sort of work. The 1-year storm event flow is stated as 70 cfs which is approximately 31,000 GPM which would be a massive pump around operation and several large pumps and large diameter pipe. I just wanted to make sure I was interpreting the information correctly.*
Response: Note 1 requires the contractor to protect the work area from stream flows up to the 1-year event not pump the 1-year event around the work area. The pump should be sufficient to bypass the stream flow when working on the stream restoration channel. The stream flow will vary throughout the year and is also dependent on the rainfall prior to the work being performed. At the end of each workday, the stream bypass pump will be shut off and the temporary impervious dikes that isolate the work area removed so the stream will be allowed to freely flow through the work area. The contractor is responsible to protect the work area from erosion when the pump around is not in place for up to a 1-year event.

Date Received: 2/18/25
Andrew Simanskly - RES– asimansky@res.us

Question: *What are the dimensions (L x W x D) of the individual boulders in the cascade structure?*
Response: The dimensions have been added to Section 21000 Part 37. This addendum includes an updated Section 21000.

Question: *What is the thickness of the pool material in the channel restoration (01C-13)?*
Response: The thickness of the pool material should be 12-inches.

Date Received: 2/18/25
Kevin Dedene – Morgan Corp. – KDedene@morgan-corp.com

Question: *Is survey data available on the upper lake to better determine it's size and depths at the north end?*
Response: The available detail survey of the upper lake is what is shown on Sheet 01X-02.

Date Received: 2/18/25
Peter Jelenevsky– Fluvial Solutions – peter@fluvialsolutions.com

Question: *Do any of the earth volumes in line items 32 through 40 represent the area along the front face of the dams where you typically will encounter unconsolidated muck? My assumption is that it is item 32, please verify*.
Response: The quantities associated with Zone 1A as shown on Sheets 01-3C and 01-3D and defined in Section 21000 Part 15 and Part 16 include all the material associated with the dam embankment and would include any unconsolidated muck on the front face of the dam. Please note that these are now items 33-36 in the updated itemized proposal issued with Addendum 3.
Question: *What is the estimated start date?*
Response: The Notice to Proceed date will be set based on the performance of several items such as but not limited to the Town Council approval of the recommend bid and successful execution of the agreement and supporting information. The goal of the Town is to begin construction in June 2025.
Question: *Are there any permits that the contractor will be required to obtain from the Town of Cary prior to starting the project?*
Response: All the necessary permits have been received.

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":

Twin Lakes Dam Rehabilitation PR1303

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 00300-13 and 00300-14 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 half of the Work is performed with the Bidder's employees (provide statement on bidder's letterhead);
5. Certified List of Major Subcontractors;
6. Certified List of Equipment/Material Manufacturers;
7. Bidder's Certificate as to Organization and Authority;
8. Equal Employment Opportunity Addendum;
9. Qualifications of Bidders;
10. Non-Collusive Affidavit;
11. Nondiscrimination Clause.

BID PROPOSAL

GENERAL CONSTRUCTION
FOR THE

Twin Lakes Dam Rehabilitation

(the “Project”)

]

ITEMIZED PROPOSAL

ITEM NO.	ITEM DESCRIPTION	SPECIFICATION REFERENCE	QUANTITY	UNIT	UNIT BID PRICE	AMOUNT BID
1	Construction Surveying - Site Staking and Project Survey	21000.4	1	LS		
2	Construction Surveying - As Built Survey and Drawings	21000.5	1	LS		
3	Traffic Control	20000.4.A.(i)	1	LS		
4	Concrete Truck Washout Pit	21000.6	1	EA		
5	Upper Lake Draining and Filling	21000.7	1	LS		
6	Lower Lake Draining and Filling	21000.7	1	LS		
7	Temporary Bypass Storm Sewer (36" HDPE)	21000.8	748	LF		
8	Temporary Outlet Protection	21000.9	1	TN		
9	Temporary Conveyance Channel	21000.1	1,775	SY		
10	Temporary Chain Link Fence and Gates - Site Access Control	21000.12	70	LF		
11	Tree Protection Fence	16000.2	3,674	LF		
12	Tree Protection Fence with Silt Fence	16000.2	3,172	LF		
13	Temporary Silt Fence	16000.2	386	LF		
14	Temporary Silt Fence Outlet	16000.2	11	EA		

15	Rock Pipe Inlet Protectiom	21000.44	7	EA		
16	Curb Inlet Potection	16000.2	4	EA		
17	Stone Stabilization (6" thick ABC)	05000.3.A.(i)	5,606	SY		
18	Standard Temporary Stream Crossing (36")	21000.13	30	LF		
19	Temporary Seeding	16000.3.D.(i)	20	AC		
20	Permanent Seeding with Mulch	16000.3.D.(i)	8	AC		
21	Sod	16000.3.E.(i)	10,375	SY		
22	Erosion Control Matting	16000.5	1,500	SY		
23	Complete Clearing & Grubbing (area outside of lake water surface)	03000.2.A	9	AC		
24	Dam Embankment Tree Clearing	21000.45	700	SY		
25	Upper Dam Riser Structure (Reinforced Concrete Riser, Box, and Wingwalls)	06001	126	CY		
26	Lower Dam Riser Structure (Reinforced Concrete Riser, Box, and Wingwalls)	06001	174	CY		
27	Upper Dam Outlet Structure Construction Dewatering	21000.11	1	LS		
28	Lower Dam Outlet Structure Construction Dewatering	21000.11	1	LS		
29	Unclassified Excavation	4000.2	5,440	CY		
30	Embankment	4000.4	1,230	CY		
31	Undercut Excavation	4000.5	100	CY		
32	Borrow Excavation	4000.6	50	CY		
33	Upper Lake Dam Embankment Excavation	21000.15	2,100	CY		
34	Lower Lake Dam Embankment Excavation	21000.15	1,900	CY		

35	Upper Lake Dam Embankment Fill	21000.16	6,320	CY		
36	Lower Lake Dam Embankment Fill	21000.16	4,550	CY		
37	Lower Lake Grading	21000.17	18,200	CY		
38	ASTM C33 Fine Aggregate	21000.27	530	CY		
39	NCDOT No. 78M Coarse Aggregate	21000.28	270	CY		
40	6 Inch PVC Well Casing Pipe	21000.26	610	LF		
41	Riprap	16000.6.G	260	TN		
42	Class B Riprap	21000.35	1,200	TN		
43	Class A Riprap	21000.36	25	TN		
44	15-inch Class III RCP Storm Sewer	09000.5.A.(i)	103	LF		
45	18-inch Class III RCP Storm Sewer	09000.5.A.(i)	126	LF		
46	24-inch Class III RCP Storm Sewer	09000.5.A.(i)	68	LF		
47	15-inch Flared End Section	09000.5.A.(ii)	4	EA		
48	18-inch Flared End Section	09000.5.A.(ii)	4	EA		
49	24-inch Flared End Section	09000.5.A.(ii)	2	EA		
50	Upper Lake Outlet Guardrail	21000.19	32	LF		
51	Lower Lake Outlet Guardrail	21000.19	39	LF		
52	20' X 20' Trash Rack	21000.21	1	EA		
53	9' X 9' Trash Rack	21000.21	1	EA		
54	Low Flow Drain Inlet	21000.22	2	EA		
55	Low Flow Drain Pipe and Fittings - 12-inch DIP	21000.23	60	LF		
56	Low Flow Drain Gate Valve	21000.24	2	EA		

57	Observation Well	21000.25	3	EA		
58	Safety Rail	21000.33	42	LF		
59	Concrete Curb and Gutter	06000.5.A.(i)	51	LF		
60	Replace Existing Sidewalk	06000.5.A.(ii)	240	SY		
61	Aggregate Base Course - Greenway Full Section	05000.3.A.(i)	675	SY		
62	Asphalt Concrete Base Course Final Grade Adjustment	05000.3.A.(i)	2,447	SY		
63	Asphalt Concrete Surface Course - Greenway	05000.3.A.(i)	3,122	SY		
64	Lake Normal Pool Bench Plantings	21000.34	2,122	SY		
65	Boulder	21000.37	100	TN		
66	# 57 Stone Aggregate	21000.29	62	TN		
67	Biomix Filter Media	21000.38	367	CY		
68	Live Stakes	21000.39	750	EA		
69	Tree/Shrub - Containerized	21000.4	69	EA		
70	Riparian Seeding	21000.41	1470	SY		
71	Pump Around Operation	21000.42	20	DY		
72	Plugs	21000.47	770	SY		

Subtotal (Items 1-72)	

73	Mobilization/Demobilization	Mobilization & Insurance (5% max)	

TOTAL BID PRICE	

Bidder_____
(Print)

I acknowledge that I have received and reviewed Addendum #1 dated 2/3/2024.

Signature Date

I acknowledge that I have received and reviewed Addendum #2 dated 2/7/2024.

Signature Date

I acknowledge that I have received and reviewed Addendum #3 dated 2/20/2024.

Signature Date

NOTE: PROPOSAL SIGNATURE REQUIRED ON PAGE 00300-12**.** ALL PROPOSALS MUST BE PROPERLY EXECUTED TO BE CONSIDERED A VALID BID.

(Remainder of page is blank)

CERTIFIED LIST OF MAJOR SUBCONTRACTORS

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:

SUBCONTRACTOR	SUBCONTRACTOR'S NAME AND ADDRESS
REINFORCED CONCRETE:	
Other:	

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: _____

CERTIFIED LIST OF EQUIPMENT/MATERIAL MANUFACTURERS

The Bidder, as part of the procedure for the submission of Bids on the Project, submits the following list of Equipment/Materials Manufacturers to be used in the performance of work to be done on said Project. The list of Manufacturers and all equipment/materials furnished shall be based on requirements of the Contract Documents. 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:

EQUIPMENT/MATERIALS	MANUFACTURER

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. Failure to identify a manufacturer for any or all of the items listed shall constitute an entry of one of the manufacturers listed in its respective technical specification.

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___.

_____(SEAL)
Bidder—Legal Entity

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: _____ _____(4) (Name) (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:

General Partners	Limited Partners

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:

Managers	Members

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):

_____
Corporate Name

ATTEST:

_____ BY:_____
(Assistant) Secretary (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:

_____

NON-COLLUSIVE AFFIDAVIT

State of _____)
) ss.
County of _____)

_____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, to the extent permitted by law, the parties hereto, their agents, officials, employees, contractors, agents, successors, or permitted assigns shall not discriminate against any member of a protected class as defined by federal, state, or local law, including Wake County Code of Ordinances Section 34.01.

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):

_____
Corporate Name

ATTEST:

BY:_____

_____ _____
(Assistant) Secretary (Vice) President

_____ _____
(Printed Name) (Printed Name)

(Corporate Seal)

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

_____ _____(SEAL)
WITNESS Partnership Name

_____ BY:_____(SEAL)
(Printed Name) 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 21000

SPECIAL CONSTRUCTION

Contents

PART 1 – GENERAL

1. The following items contained in Section 21000 are project-specific and shall supersede any other conflicting portion of these Contract Documents.
2. All construction shall conform to the most recently adopted edition of the Town of Cary (TOWN) Standard Specifications and Details, the "NCDOT Standard Specifications for Roads and Structures" and the "NCDOT Standard Drawings Manual".
3. The CONTRACTOR shall accept the actual conditions at the site and perform the work specified without additional compensation for possible variation from grades and conditions shown whether surface or subsurface, except as provided for by the Contract Documents. If existing conditions are at a variance with the drawings, the TOWN and ENGINEER shall be notified before proceeding with the work, and adjustments shall be made only as directed by the ENGINEER.
4. The CONTRACTOR, at his sole expense, will be required to replace or repair any damages to existing items adjacent to or within the project limits if damaged occurred during this project. Items include, but are not limited to fences, existing buildings, mailboxes, existing utilities, trees and other landscaping, driveways and walkways, pavement, curb and gutter, and catch basins, sanitary sewer, gas, and electrical lines. The CONTRACTOR shall use special care working in, around and near all existing utilities that are encountered during construction, protecting them where necessary so that they will give uninterrupted service.

PART 2 – SEQUENCE OF CONSTRUCTION

GENERAL SITE PREPARATIONS

1. The CONTRACTOR is required to perform date stamped video documentation and photographs of all the existing conditions within the entire project area before mobilizing to the site in accordance with the General Conditions. Approval to mobilize and install erosion and sediment controls shall not be granted until the CONTRACTOR has provided and received written approval for the content of the videos and photographs the content from the TOWN.
2. Call NC 811 (1-800-632-4949) and TOC Utilities 311 to locate all utilities a minimum of three (3) working days before you plan to begin digging. Coordinate with utility companies to relocate or protect utilities.
3. The CONTRACTOR shall install the initial erosion and sediment control measures and follow the construction sequence noted on the drawings. The CONTRACTOR shall maintain the erosion control measures and manage the normal stream flow through the work area to minimize the amount of sediment that leaves the site.

GENERAL SITE COMPLETION

4. The lake low flow drains shall remain open until the approval to impound is received from the State of North Carolina Dam Safety Program.
5. Repair areas used for construction access, construction activities and stockpile locations. Ensure all sediment is swept, vacuumed, or otherwise collected and prevented from running off into drainage ditches or swales.
6. Complete site cleanup and stabilize surfaces as called for on the plans and specifications.

7. Erosion control devices shall be removed from their respective locations only when the stabilization of the adjacent ground has been established.
8. Remove pedestrian traffic control devices.
9. Obtain final approvals from TOWN.
10. Complete the Record Drawing Checklist and submit as-built survey.
11. Demobilize.
12. Upon receipt of the Approval to Impound from NC Dam Safety Program. Close the low drain gate valves to allow the lakes to fill up.

PART 3 – MOBILIZATION/DEMOBILIZATION

A. Payment for "Mobilization/Demobilization" will be made under the contract lump sum price and shall include all activities and associated costs for transportation of CONTRACTORS personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the Contractor's operations at the site; including the disassembly, removal and site cleanup, of offices, buildings and other facilities assembled on the site specifically for this project.
B. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the CONTRACTOR shall get approval from the ENGINEER prior to the mobilization.
C. Payment for "Mobilization/Demobilization" shall be made under the following pay item:

Mobilization/Demobilization LS

PART 4 - CONSTRUCTION SURVEYING – SITE STAKING AND PROJECT SURVEY

A. All survey work shall conform to the TOWN's Standard Specifications (Section 4.05, 4.07, and 6.11).
B. Payment for Site Staking, Project Surveying will be made under the contract lump sum price for "Construction Surveying – Site Staking and Project Survey". This item shall include all labor, equipment, and materials necessary to perform construction surveying and staking during the duration of the contract and after construction as required.
C. Payment for "Construction Surveying – Site Staking and Project Survey" shall be made under the following pay item:

Construction Surveying – Site Staking and Project Survey LS

PART 5 - CONSTRUCTION SURVEYING – AS-BUILT SURVEY AND DRAWINGS

A. All survey work shall conform to the TOWN Standard Specifications (Section 4.05, 4.07, and 6.11).
D. Payment for As-Built surveys, record drawings, and surveys required for earthwork quantities will be made under the contract lump sum price entitled "Construction Surveying – As-Built Survey and Drawings". This item shall include all labor, equipment, and materials necessary to perform surveying required to complete the as-built/record drawing

plans and submittal of one (1) set of record drawing plans to the Owner shall be included in the price.

E. Record Drawings shall meet requirements set forth in Section 10000 (Record Drawing Checklist attached) of the TOWN Standard Specification and Details and shall be delivered and approved by the Owner prior to Final Application for Payment.
F. Payment for “Construction Surveying – As-Built Survey and Drawings” shall be made under the following pay item:

Construction Surveying – As-Built Survey and Drawings	LS

PART 6 - CONCRETE TRUCK WASHOUT PIT

A. Install concrete truck washout pit as shown on the plans. Installation shall be according to plan detail.
B. Remove the concrete washout structures and sign upon project completion. Grade the earth material to match the existing contours and permanently stabilize with sod.
C. The cost for “Concrete Truck Washout Pit” shall be made as indicated in the itemized proposal. The unit price shall include full compensation for all labor, equipment, materials, excavation, maintenance, and removal for concrete truck washout pit.
D. Payment for “Concrete Truck Washout Pit” shall be paid for under the following pay item:

Concrete Truck Washout Pit	EA

PART 7 – LAKE DRAINING AND FILLING

A. Includes all the equipment and resources except for items specifically identified separately in the unit price schedule required to drain the lake, keep the lake drained while the temporary bypass storm sewer and temporary conveyance channels are installed and subsequently maintain drainage through the conveyance channels during the entire construction period.
B. This item includes but not limited to pumps and associated piping, pipe outlet protection, fuel, operation, operation of valves, inspection, and adjustments to maintain sufficient draw down periods, supplemental pumping and when necessary, after rainfall events, removal and disposal of wildlife and fish and any other activities required to keep the lake sufficiently drained during construction. Payment shall also include activities required to properly fill the lake including but not limited to daily inspections.
C. No separate measurement will be made for this item and payment shall be by lump sum.
D. Payment for “lake Draining and Filling” shall be made under the following pay item:

Upper Lake Draining and Filling	LS
Lower Lake Draining and Filling	LS

PART 8 – TEMPORARY BYPASS STORM SEWER

A. Includes the furnishing of all materials including fittings, bends, joints and other incidentals labor, tools and equipment required to install the temporary bypass storm sewers including excavation of material not performed as part of the dam embankment excavation,

installing the bypass storm sewers, hauling in and placing the work area berm. Payment shall also include the removal and proper disposal of the work area berm and storm sewers prior to placement of the dam embankment material. Payment also includes measures required to during construction operations to keep the pipes in place. No separate payment shall be made to relocate the storm sewers to accommodate construction activities.

B. Measurement shall be made along the centerline of the pipe.
C. Payment shall be made by the linear foot unit cost for the size in diameter established in the itemized bid proposal.
D. Payment for "Temporary Bypass Storm Sewer" shall be made under the following pay item:

Temporary Bypass Storm Sewer LF

PART 9 – TEMPORARY OUTLET PROTECTION

A. Includes the furnishing of all materials, labor, tools and equipment required to install the filter fabric and rip rap at the outlet of the temporary bypass storm sewer as shown on the drawings. Rip Rap material and fabric shall be per Section 16000. Payment shall also constitute full compensation for removing and hauling away or relocating the temporary outlet protection when directed by the Owner's Representative.
B. Measurement shall be made for the amount of the rip rap installed.
C. Payment for "Temporary Outlet Protection" shall be made by the under the following pay item:

Temporary Outlet Protection TN

PART 10 – TEMPORARY CONVEYANCE CHANNEL

A. Includes the furnishing of all materials, labor, tools and equipment required to construct the temporary conveyance channels through the lower lake including shaping the channel to match flowline dimensions, constructing temporary berms if necessary to meet the minimum flowline depths, installing the geomembrane liner, maintaining the membrane liner during construction, relocating the temporary conveyance channel as needed to accommodate the lower lake grading, and removing and hauling away upon approval by the Owner's Representative and DEQ Land Quality Section.
B. The geomembrane liner shall be a 40 ml low density polymer. The purpose of the liner is to prevent scouring of the temporary conveyance channels during base flow conditions and minor rain events. The geomembrane line shall be installed and the seams sealed to prevent water from getting underneath the liner. The liner shall be keyed into the top of the channel as shown on the drawing. The liner shall be inspected daily to make sure that all the connections are secure, and water is not undermining the liner.
C. Measurement shall be made for the SY of the temporary liner installed. Separate payment for relocating a temporary conveyance channel will not be made.
D. Payment for "Temporary Conveyance Channel shall be made by the under the following pay item:

Temporary Conveyance Channel SY

PART 11 - OUTLET STRUCTURE CONSTRUCTION DEWATERING

A. Includes the furnishing of all materials, labor, tools, and equipment required to install and maintain the dewatering operation of the temporary work area required to facilitate the construction of the upper and lower lake outlet structures including but not limited to pumps, strainers, hoses, sediment bags, sediment bag stone base, and sediment bag base filter fabric. Payment shall also constitute full compensation for inspecting and maintaining the dewatering operation throughout the construction of the outlet structure including the removal, proper disposal, and replacement of filled silt bags. Payment shall also constitute full compensation for removal of the dewatering operation when the outlet structure is placed into service.
B. No separate measurements will be made for this item and payment will be by lump sum.
C. Payment for “Outlet Structure Construction Dewatering” shall be made by under the following pay item:

Upper Lake Outlet Structure Construction Dewatering LS
Lower Lake Outlet Structure Construction Dewatering LS

PART 12 - TEMPORARY CHAIN LINK FENCE AND GATES – SITE ACCESS CONTROL

A. Includes the furnishing of all materials, labor, tools and equipment required to install the temporary chain link fence, vehicle gates and pedestrian gates regardless of the height to control access. Payment shall also constitute full compensation for maintaining and repairing the temporary fence and gates throughout the project, removing, and properly disposing offsite at the completion of the project. Payment shall include all appurtenances required for the proper operation of the vehicle and pedestrian gates including measures to secure the gates.
B. Measurement shall be made of the linear foot of fence and gates installed, measuring length through the gate. No separate payment for temporary vehicle or pedestrian gates shall be made.
C. Payment for “Temporary Chain Link Fence and Gate” shall be made by under the following pay item:

Temporary Chain Link Fence and Gate LF

PART 13 – TEMPORARY CULVERT STYLE STREAM CROSSING

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the temporary stream crossings as shown on the drawings including but not limited to the culvert pipes, rip rap, washed stone and geotextile fabric. Payment shall also constitute full compensation for performing incidental grading, earthen fill material, maintaining and repairing the stream crossings, relocating the stream crossing as necessary to accommodate construction activities and phasing of work and removing the material and properly disposing offsite at the completion of the lake grading operations.

B. Measurement shall be along the centerline of the culvert pipe installed. Separate payment for relocating the temporary stream crossing will not be made.
C. Payment for "Temporary Culvert Style Stream Crossing" shall be made for the actual linear feet of culvert crossing installed at the unit cost for the respective pipe diameter under the following pay item:

Temporary Culvert Style Stream Crossing LF

PART 14 – EARTHWORK

A. Section 04000 Earthwork specification applies to all project areas except for the Dam Embankment Excavation and Dam Embankment Fill (Zone 1A) and Lower Lake Grading (Zone 1) as shown on the construction drawings.
B. UNCLASSIFIED EXCAVATION Basis of Payment. The quantity of excavation to be paid for will be the actual number of cubic yards of excavation as computed using the existing and final surface areas for all project areas outside of Zone 1A and Zone1 as shown on the construction drawings. The existing grades shown on the construction drawings will be used to define the existing surface and the final grades shown on the as-built drawings will be used to define the final surface area. The contractor shall be allowed to submit partial payment for the Unclassified Excavation based on the estimated quantity of excavation and removal of material as approved by the Owner.
C. EMBANKMENT Basis of Payment. The quantity of excavation to be paid for will be the actual number of cubic yards of fill as computed using the existing and final surface areas for all project areas outside of Zone 1A and Zone1 as shown on the construction drawings. The existing grades shown on the construction drawings will be used to define the existing surface and the final grades shown on the as-built drawings will be used to define the final surface area. The contractor shall be allowed to submit partial payment for the EMBAKMENT based on the estimated quantity of fill material as approved by the Owner.
D. UNDERCUT EXCAVATION Basis of Payment.
E. BORROW EXCAVATION Basis of Payment. It is anticipated that borrow material will not be required to construct the embankments outside of Zone 1A and Zone 1. If borrow excavation is required in these areas, the quantity shall be based on the truck tickets.

PART 15 –DAM EMBANKMENT EXCAVATION

A. Includes the furnishing of all materials, labor, tools, and equipment required to excavate the existing dam embankments sufficiently to install the temporary bypass pipes and construct the outlet structure. Payment is considered full compensation for excavating, hauling, and stockpiling the material onsite in the designated spoil area.
B. The dam embankment area is shown as Zone 1A on the construction drawings.
C. Prior to stockpiling the excavated material, the Contractor shall remove any foreign material, so the material is ready to be replaced as dam embankment fill. Excavated material that is not suitable for dam embankment fill shall be stockpiled separately or removed offsite. No separate payment will be made for material removed offsite.

D. The dam embankment material shall be stockpiled and maintained separately from other onsite stockpile materials.
E. Upon completion of the excavation and prior to construction of the outlet structure, the Contractor will survey the Zone 1A dam embankment area and generate a surface that includes the excavated area.
F. Measurement of the dam embankment excavation quantity will be the net cubic yards of material calculated from the existing dam embankment area surface and the post embankment excavation surface area. The earthwork calculations will not include any adjustments for expansion or contraction of material.
G. Payment shall be made under the following pay items:

Upper Lake Dam Embankment Excavation	CY
Lower Lake Dam Embankment Excavation	CY

PART 16 - DAM EMBANKMENT FILL

A. Includes the furnishing of all materials, labor, tools, and equipment required to backfill the outlet structure and construct the dam embankment to the lines and grades shown on the construction drawings. Payment is considered full compensation for preparing existing embankment surface, hauling the stockpiled dam embankment material, finding, and hauling approved dam embankment material from offsite, and installing and properly compacting the dam embankment material around the outlet structure and on top of the existing dam embankment to achieve the final grades complete in place. Separate payment will be made for the filter diaphragm, blanket drain, and toe drain material.
B. The dam embankment area is shown a Zone 1A on the construction drawings.
C. Dam embankment fill material shall be free of foreign debris, vegetative debris, trash, topsoil, or other biodegradable materials.
D. Soils that classify as Organic soils (OL, OH), Elastic Silt (MH), Fat Clay (CH), or peat (PT) shall not be used for dam embankment fill.
E. Dam embankment fill material shall consist of low to moderately plastic clays and silts with Unified Soil Classifications of CL, CL-CH, ML, and MH.
F. Liquid Limit shall be less than 50 percent and Plasticity Index shall be less than 20 percent as determined by Atterberg Limit (ASTM D4318) laboratory testing.
G. Maximum particle size shall be 3-inches and maximum percentage of fines shall be 70% by weight.
H. Moisture conditioning of fill materials including wetting, drying, discing, or processing as required will be considered a requirement of the work to produce an acceptable product.
I. The geotechnical engineer shall approve the dam embankment material prior to installation. The Contractor shall submit laboratory testing data on the proposed borrow source substantiating that the proposed materials meet the requirements of this section, including performing a consolidated-undrained triaxial test. The undrained shear strengths will be used to perform a rapid drawdown analysis to confirm the shear strength requirements are met for a 1-day drawdown.
J. The existing embankment material shall be scarified or stepped prior to placement of fill on top or adjacent to the existing embankment surface.

K. Dam embankment fill shall be compacted to a minimum of 95% of the maximum dry density and within -3 % to +3% of the optimum moisture content as determined by ASTM D698.
L. The moisture content of dam embankment fill shall be uniformly distributed throughout the material and lift such that a consistent material is placed and compacted.
M. Compaction of soil materials within 8 feet of concrete structures, whether pre-cast or cast-in-place, shall be performed with hand operated or remote operated compaction equipment. Soils within the 8 feet of concrete structures shall be placed in 4-inch loose lifts and compacted with vibratory plate tampers for non-plastic soils and a sheepsfoot trench roller for soils with a PI of greater than 7.
N. Dam embankment fill material outside 8 feet of concrete structures shall be placed and compacted in loose lifts not exceeding 8 inches in thickness.
O. The entire area of a lift shall be compacted with equipment passes overlapping a minimum of 1 foot for heavy equipment and overlapping 6 inches for hand or remote operated equipment.
P. Construct fill to the lines and grades shown on the Project Drawings unless otherwise directed by the Owner. All subgrades and foundations for fill shall be inspected and approved by the Owner prior to permanent fill placement.
Q. Contractor shall limit excavations and fill placement to the lines, grades and boundary extents shown on the Project Drawings unless coordinated with and approved by the Owner.
R. For purposes of this specification, an equipment pass is defined as the movement of the compaction equipment over a location in one direction regardless of single drum or multiple drum equipment.
S. Equipment
    a. Tandem Roller: Tandem roller for compaction of ASTM C33 Fine Aggregate and NCDOT No. 78M Coarse Aggregate shall have minimum operating weight of 5,000 pounds and a minimum centrifugal force at the drum of 4,000 pounds-force.
    b. Hand or Remote Operated Equipment:
        i. Hand or remote operated equipment shall have a minimum operating weight of 3,000 pounds and a minimum centrifugal force at the drum of 7,000 pounds-force.
        ii. Equipment may be smooth drum or kneading type dependent upon material being compacted.
        iii. Hand operated vibrating plate tamper shall have a minimum operating weight of 220 pounds and minimum of 5.5 horsepower engine.
R. Upon completion of the placement of the dam embankment fill material, the Contractor will survey the Zone 1A dam embankment area and generate a surface.
Q. Measurement of the dam embankment fill quantity will be the net cubic yards of material calculated from the final dam embankment fill surface minus post dam embankment excavation surface, minus the outlet structure volume, filter diaphragm volume, blanket drain volume, and toe drain volume. The earthwork calculations will not include any adjustments for expansion or contraction of material. No separate payment for material brought in from offsite shall be made.
R. Payment shall be made under the following pay items:

Upper Lake Dam Embankment Fill CY
Lower Lake Dam Embankment Fill CY

PART 17 – LOWER LAKE GRADING

A. Includes the furnishing of all materials, labor, tools, and equipment required to remove the lower lake sediment, excavate, and grade the lower lake area below the proposed normal pool surface to achieve the final grades shown on the construction drawings. Payment shall constitute full compensation for removing the lake sediment, debris, and excavating as necessary to achieve the final grades shown on the construction drawings, properly disposing of the material offsite and performing incidental grading. It is assumed that all the material for the lower lake grading will be required to be hauled offsite and properly disposed. If the Contractor choses to use the material onsite, it is the Contractor's responsibility to test the material to demonstrate that it is suitable for onsite use. It is the Contractor's responsibility to maintain, repair, and relocate temporary stream crossings and rock pipe inlets as necessary to accommodate construction activities and phasing of work. It is the Contractor's responsibility to removing the material and properly disposing offsite at the completion of the lake grading operations.
B. The lower lake grading area is shown as Zone 1 on the construction drawings.
C. Upon completion of the lower lake grading, the Contractor will survey the lower lake area and generate a surface area.
D. Measurement of the lower lake grading will be the net cubic yards of material calculated from the existing conditions lower lake surface and the final lower lake surface. The earthwork calculations will not include any adjustments for expansion or contraction of material. No separate payment shall be made for material hauled offsite.
E. Payment shall be made under the following pay items:

Lower Lake Grading CY

PART 18 – DEMOLITION

A. The cost for all removal of existing stormwater pipe and riprap marked as to be removed on the plans shall be incidental to unclassified excavation and no separate shall be made for these items.
B. The cost for all removal of existing pavement, sidewalk, curb and gutter, etc. shall be incidental to unclassified excavation and no separate payment shall be made for these items.

PART 19 - LAKE OUTLET GUARDRAIL

A. Guardrails shown on the structures shall be 1-1/2-inch nominal galvanized steel pipe per Section 460 of the NCDOT Standard Specification for Roads and Structures.
B. Shop drawings shall be provided showing the fabrication and/or layout drawings, anchorage system, expansion joints, materials of construction, acknowledgment that products submitted meet requirements of standards referenced, and manufacturer's installations instructions

C. Payment shall be by the linear foot along the top of the guardrail and shall include the furnishing of all materials, labor, tools, and equipment required to install the gaurdrail on the concrete structure, as shown on the drawings including but not limited to the fabrication and delivery of the guardrail, providing, and installing hardware, field welding and other associated appurtenances
D. Payment shall be made under the following pay item:

Upper Lake Outlet Guardrail	LF
Lower Lake Outlet Guardrail	LF

PART 20 – TRAFFIC CONTROL

A. Payment for “Traffic Control” will be made under the contract lump sum price and shall include all lane closures, road closures, sidewalk closures, temporary pedestrian crossings and traffic signage needed throughout the project construction duration. The “Traffic Control” shall include but is not limited to all labor, signs, drums, and portable devices required to provide traffic control as called for on the plans and in accordance with the TOWN, NCDOT, and MUTCD Standards.
B. Payment for “Temporary Traffic Control” shall be made under the following pay item:

Temporary Traffic Control	LS

PART 21 –LAKE TRASH RACK

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the trash cover on the riser structure at the normal pool elevation, as shown on the drawings including but not limited to the fabrication and delivery of the trash rack, providing, and installing hardware, field welding and other associated appurtenances.
B. The contractor shall be responsible for coordinating any openings in the trash rack are aligned with other features that extend through the trash rack.
C. No separate measurement shall be made for this item.
D. Payment shall be the lump sum unit cost as established in the unit price schedule.
E. Payment shall be made under the following pay item:

Lower Lake Trash Rack	EA
Upper Lake Trash Rack	EA

PART 22 - LOW FLOW DRAIN INLET

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the low flow drain inlet complete in place as shown on the drawings including but not limited to excavating material and installing the crushed stone bedding, setting the dry well, fabricating and installing the trash racks, grouting the pipe opening.
B. Precast dry well with 2-IN tapered openings and 2’ diameter top opening.
C. Class A riprap shall meet Part 36. Providing and placement of the Class A riprap shall be paid for separately at the unit price identified in the itemized proposal.
D. NCDOT #57 aggregate shall meet Part 29. Providing and placement of the #57 aggregate shall be paid for separately at the unit price identified in the itemized proposal.

E. Products shall be installed in accordance with manufacturer's instructions and NCDOT standard specifications.
F. Low flow drain inlet stone and dry well shall be cleaned of built-up sediment prior to filling the lake.
G. No separate measurement will be made for this item.
H. Payment for “Low Flow Drain Inlet” shall be made for each of the inlets installed, under the following pay item:

Low Flow Drain Inlet EA

PART 23 – LOW FLOW DRAIN PIPE AND FITTINGS – 12-inch DIP

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the low flow drain pipe and associated fittings complete in place as shown on the drawings including but not limited to excavating the trench, establishing adequate bearing support, laying the low flow drain pipe and installing fittings, connecting the pipe through the wall sleeve in the riser box, installing the gate valve, sealing the wall sleeve and backfilling the trench as necessary.
B. Ductile iron pipe and fittings shall conform to the following material and installation standard specifications:
   i. AWWA/ANSI C115/A21.15
   ii. AWWA/ANSI C150/A21.50
   iii. AWWA/ANSI C151/A21.51
C. Measurement shall be along the centerline of the low flow drain pipe installed.
D. Payment shall be made for the actual linear feet of low flow drain pipe installed. Payment shall be made under the following pay item:

Low Flow Drain Pipe and Fittings – 12-inch DIP LF

PART 24 – LOW FLOW DRAIN GATE VALVE

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the low flow drain gate valve completely in place as shown on the drawings, including but not limited to installing the valve, valve stem, valve stem supports, valve stem handwheel, and lock and chain. The contractor shall coordinate with the manufacturer for the number of valve stem supports and shall coordinate with the trash rack provider to make sure the valve stem will go through the trash rack and the handwheel will be above the trash rack. The lock and chain shall be provided so the handwheel can be locked to the trash rack to prevent unauthorized operation.
B. No Separate measurement will be made for this item.
C. Payment for “Low Flow Drain Gate Valve” shall be made for each of the gate valves installed under the following pay item:

Low Flow Drain Gate Valve EA

PART 25 - OBSERVATION WELL

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the observation well completely in place as shown on the drawings, including but not limited to drilling the hole, casing, screenings, cap and other features on the drawings.
B. Borings for installation of instrumentation shall be advanced with hollow stem augers.
C. Casing for observation well construction shall consist of 2-inch I.D. Schedule 40, flush-joint-threaded PVC pipe or as specified by the Engineer. The top of the casing shall be provided with a lockable well cap with a ⅛-inch diameter vent hole drilled through it.
D. Screens shall consist of two-inch diameter, Schedule 40 flush-joint-threaded PVC pipe slotted with three rows of machined slots of 0.01-inch width spaced at 0.25-inch centers throughout the screened intervals specified by the Engineer. A solid PVC cap shall be securely fastened to the bottom end of the screen.
E. Prior to construction of each instrument, the depth of the boring shall be measured with a weighted tape. The actual depth shall be recorded on the boring log for the instrument.
F. Instrumentation shall be constructed in accordance with “Detail 1 - Observation Well” on Sheet 01D-06 of the project drawings.
G. Filter sand shall consist of a well-graded mixture of sand conforming to the following gradation:

U.S. Standard Series Sieve Size	Percent Passing (by Dry Weight)
No. 20	100
No. 40	20

H. Bentonite pellets shall consist of high-grade sodium bentonite compressed into hard dense pellets having a diameter of ¼ to ⅜ inches.
I. Concrete used to construct the well pad around each instrument shall have a 28-day unconfined compressive strength of 3,000 pounds per square inch (psi) or greater.
J. Standpipe type observation wells shall be installed in designated boreholes immediately following the drilling of the hole to the required depth.
K. Install the screen to the depth specified by the Engineer. Backfill around the screen with filter sand. The sand should extend from approximately one foot below the screened interval to approximately one foot above the screened interval. Place the sand in such a manner that no bridging in the borehole occurs, and the sand completely fills the required interval, and no gaps or voids remain. The depth to the top of the filter sand shall be measured with a weighted measuring tape.
L. Place a layer of bentonite pellets directly on top of the sand interval. The thickness of the bentonite layer shall from the top of the screened interval extending up to the ground surface. Place the bentonite in such a manner that the pellets form a full seal above the

filter sand. Care shall be taken to ensure that the pellets do not bridge between the standpipe and borehole perimeter leaving a void. Add sufficient water to hydrate the pellets and do not install surface pad for at least one (1) hour to allow time for the bentonite to hydrate.

M. The PVC pipe should remain below the ground surface elevation, but within the protected interval of the flush mount well cover.
N. Observation wells shall be installed at the shoulder of the proposed greenway trail, on the proposed embankments at the prescribed depth shown on the drawings.
O. Approval of shop drawing for the observation wells must be obtained from the Engineer prior to installation.
P. Payment for "Observation Well" shall be made for each of the observation wells installed under the following pay item:

Observation Well EA

PART 26 – 6-INCH PVC WELL CASING PIPE

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the 6-inch PVC well casing pipe that is part of the blanket drain and toe drain. Payment includes but not limited laying the pipe once the blanket drain or toe drain aggregate layer reaches the required grade. Making sure the joints are properly connected and secured, and proper connection.
B. Well casing pipe shall be new or shall be pipe or casing in like new condition. Such casing or pipe shall not be used unless free of leaks, corrosion, and dents; is straight and true, and is not out of round.
C. Polyvinyl Chloride (PVC) pipe shall be used for well casing. The pipe shall have a working pressure rating of not less than 200 psi at seventy-three degrees (73F) Fahrenheit or shall meet requirements for ASA Schedule 40.
D. The well screen shall be attached to the casing with a watertight seal.
E. Payment for the well casing pipe shall be made under the following pay item:

6-inch PVC Well Casing Pipe LF

PART 27 – ASTM C33 FINE AGGREGATE

A. Shall consist of non-calcareous screened natural alluvial sand or material manufactured from quarried rock. Material shall be composed of tough and durable particles free from thin, flat, and elongated pieces (less than 3% by weight mica content); and shall contain less than 3% weight of organic matter or soft, friable particles.
B. Shall consist of sand meeting the quality requirements of ASTM C33/C33M Concrete Fine Aggregate.
C. Placement of material shall be as close to final placement areas as practical with long pushing or spreading action avoided to reduce the potential for segregation.
D. Compaction of aggregate materials within 8 feet of concrete structures, whether pre-cast or cast-in-place, shall be performed with hand operated or remote operated compaction equipment. Soils and aggregates within the 8 feet of concrete structures shall be placed

in 4-inch loose lifts and compacted with vibratory plate tampers for non-plastic soils and aggregate and a sheepsfoot trench roller for soils with a PI of greater than 7.

E. Placement of aggregate material outside of 8 feet from concrete structures, shall be a maximum of 24-inch loose lifts.
F. Provide material compacted in place that meets the specified gradation limits in Table 1

Table 1 - Gradation Limits

Standard U.S. Sieve Size	Percent Passing by Weight
3/8-inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10
No. 200	0-5

G. Payment for ASTM C33 Fine Aggregate shall be made under the following pay item:

ASTM C33 Fine Aggregate CY

PART 28 – NCDOT No. 78M COARSE AGGREGATE

A. Aggregate material obtained, shall be free of foreign debris, vegetative debris, trash, topsoil, or other biodegradable materials. Aggregate materials not meeting these requirements will be rejected by the Owner as unacceptable for use in construction.
B. Shall consist of well-graded, non-calcareous crushed stone. Materials shall be composed of tough, durable, angular particles free from thin, flat, and elongated pieces; and shall contain no organic matter or soft, friable particles.
C. Shall consist of crushed rock meeting the quality and gradation requirements of NCDOT Coarse Aggregate No. 78M.
D. Provide material compacted in place that meets the specified gradation limits provided in Table-2.

Table 2 - Gradation Limits

Standard U.S. Sieve Size	Percent Passing by Weight
3/4-inch	100
1/2-inch	98-100
3/8-inch	75-100
No. 4	20-45
No. 8	0-15

No. 200	0-2

E. Aggregates contaminated or otherwise altered, including gradation, due to the construction activities shall be removed and replaced by the contractor at no cost to the owner.
F. Stockpiles of aggregate shall be managed using best practices to prevent segregation of materials stored on site.
G. Once stockpiled by dumping from delivery trucks, material shall be moved, handled, or disturbed as little as possible to reduce potential segregation.
H. Stockpiles shall not be reworked or restacked multiple times which will increase the probability of segregation prior to use on the project.
I. Placement of material shall be as close to final placement areas as practical with long pushing or spreading action avoided to reduce the potential for segregation.
J. Compaction of aggregate materials within 8 feet of concrete structures, whether pre-cast or cast-in-place, shall be performed with hand operated or remote operated compaction equipment. Soils and aggregates within the 8 feet of concrete structures shall be placed in 4-inch loose lifts and compacted with vibratory plate tampers for non-plastic soils and aggregate and a sheepsfoot trench roller for soils with a PI of greater than 7.
K. Placement of aggregate material outside of 8 feet from concrete structures, shall be a maximum of 24-inch loose lifts.
L. Payment for NCDOT #78 Aggregate shall be made under the following pay item:

NCDOT No. 78 M CY

PART 29 - #57 STONE AGGREGATE

A. Includes the furnishing of all material, labor, tools and equipment required to furnish and place #57 stone aggregate in accordance with these provisions and the plans. Stone aggregate shall meet the material requirements of NCDOT section 1005 General Requirements for Aggregate.
B. Stone Material shall consist of durable field or quarry stone that is sound, hard, dense, slightly rounded, resistant to the action of air and water, and free of seams, cracks, or other structural defects. The Contractor cannot use limestone or concrete waste for stone.
C. Aggregate material obtained, shall be free of foreign debris, vegetative debris, trash, topsoil, or other biodegradable materials. Material not meeting these requirements will be rejected by the Owner as unacceptable for use in construction.
D. Aggregate shall be protected from contamination by soils, disturbance due to construction activity, or other damage. Equipment shall not cross contaminate materials by tracking or carrying materials onto adjacent fill surfaces. Aggregate contaminated or otherwise altered, including gradation, due to the Contractor's construction activities shall be removed and replaced by the Contractor at no cost to the Owner.
E. Stockpiles of aggregate shall be managed using best practices to prevent segregation of materials stored at the site. Once stockpiled by dumping from delivery trucks, material shall be moved, handled, or disturbed as little as possible to reduce potential for

segregation. Stockpiles shall not be reworked or restacked multiple times which will increase the probability of segregation prior to use in the project.

F. During placement of materials, aggregate shall not be allowed to free fall more than 3 feet. At no time shall aggregate be dropped or end dumped into the excavation.
G. Contractor shall place and spread materials using means and methods that prevent segregation. Placement of materials shall be as close to final placement areas as practical with long pushing or spreading action avoided to reduce the potential for segregation.
H. Aggregate shall be compacted with a smooth drum roller or vibratory plate unless equivalent equipment is proposed by the Contractor and approved by the Owner.
I. Aggregate shall be placed and compacted in loose lifts not exceeding 8 inches.
J. Aggregate shall be compacted with one pass of a tandem roller or hand or remote operated equipment meeting the requirements of Part 16-J.
K. The work covered by this section shall be paid for at the contract per cubic yard for "#57 Stone" will be full compensation for all work covered in this special provision, including, but not limited to grading, installation of materials, adjusting, and for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the Engineer.
L. Payment for "#57 Stone" shall be made under the following pay item.

#57 Stone	TN

PART 30 – FILTER DIAPHRAGM

A. The filter diaphragm shall consist of non-calcareous screened alluvial sand. Material shall be composed of tough and durable particles free from thin, flat, and elongated pieces (less than 3% by weight mica content); and shall contain less than 3% of organic matter or soft, friable particles.
B. The filter diaphragm shall consist of aggregate meeting the quality requirements of ASTM C33 fine aggregate.
C. Material shall be protected from contamination from soils, disturbance due to construction activity, or other damage.
D. Subgrades surrounding the filter diaphragm shall be sloped to drain away where practical. Where drainage away from filter materials is not practical, erosion control devices shall be used to protect aggregate material.
E. Placement of the filter materials shall precede placement of dam embankment fill material as construction of embankment progresses.
F. Filter materials may be constructed thicker than shown on project drawings but in no instance thinner than shown. Contractor shall coordinate with the owner to determine the maximum allowable thickness for filter materials at specific locations based on constructability and dam safety considerations.
G. Contractor shall employ means and methods to ensure adequate compaction at interface of embankment fill and filter material. Proper compaction at interface may require additional passes or use of hand or remote operated equipment.
H. The filter material shall be compacted at a moisture content between 3% and 8% of the dry unit weight, with 2 passes of hand or remote operated rollers.

I. Filter diaphragm shall be constructed in one of the two following construction sequences at the discretion of the Contractor:
    a. Trenching Method:
        i. Place and compact embankment structural fill to the requirements of the specifications.
        ii. Using stakes and/or survey, locate and maintain the alignment of the filter diaphragm.
        iii. Trench through the compacted embankment fill placed in step a. Once the full width and length of the trench is excavated, place filter diaphragm material in trench in 4-inch loose lifts and compact each lift with three passes of a vibratory plate tamper until the trench is backfilled.
        iv. Repeat Steps i through iii until the full height of the filter diaphragm is complete. The depth of the trench in Step iii shall be limited to 2 feet in depth, thereby limiting the depth of embankment fil placed in Step i to 2 feet.
        v. During each successive placement of filter diaphragm material, the surface will require removal of embankment fill with hand tools such that the subgrade surface of the filter diaphragm is not contaminated with embankment fill material.

J. Payment will be made for the materials installed as per the unit cost.
K. No separate measurement shall be made for this item.

PART 31 – TOE DRAIN

A. The toe drain shall consist of a 6” PVC well casing pipe surrounded by #78 coarse aggregate and ASTM C33 fine aggregate place located near the downstream to of the dam embankment as shown on the drawings.
B. Material shall be protected from contamination from soils, disturbance due to construction activity, or other damage.
C. The toe drain shall be placed at the locations shown on the drawings and daylight through the outlet structure wingwall. The outlet of the toe drain shall be the lowest point of the toe drain. The toe drain shall be placed so there is a positive slope from beginning to the outlet and there shall be no dips in the drain. There shall be at least 1 foot of cover over the outside aggregate.
D. Payment will be only made for the materials installed at the per the unit cost.
E. No separate measurement shall be made for this item.

PART 32 – BLANKET DRAIN

A. The blanket drain shall consist of a layer of ASTM C33 fine aggregate that extends from the toe drain towards the dam centerline at the locations shown on the drawings. The blanket drain shall be constructed at a slight slope so that seepage that enters the blanket drain will flow towards the toe drain.
B. Material shall be protected from contamination from soils, disturbance due to construction activity, or other damage.

C. Payment will be only made for the materials installed at the per the unit cost.
D. No separate measurement shall be made for this item.

PART 33 – SAFETY RAIL

A. Includes the furnishing of all materials, labor, tools, equipment, fabrication, excavation, backfilling, and any incidentals required to install the safety rail as shown in drawings and as approved by the engineer.
B. Steel material for fence framework (i.e. tubular pickets, rails, and posts), when galvanized prior to forming, shall conform to the requirements of ASTM A924/A924M, with a minimum yield strength of 45,000 psi (310 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.60 oz/ft2 (276 g/m2)
C. Material for fence pickets shall be 3/4" square x 17 Ga. tubing.
D. The pickets shall have an outside cross-section dimension of a 1.50" square and a minimum thickness of 14 Ga. Picket holes in the runner rail shall be spaced 4.70" on-center.
E. Picket retaining rods shall be 0.125" diameter galvanized steel.
F. High quality PVC grommets shall be used to seal all picket-to-rail intersections.
G. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 36”.
H. Concrete shall have a minimum compressive strength of 3600 P.S.I.
I. Payment for “Safety Rail” shall be made at the unit price per linear foot under the following pay item:

Safety Rail LF

PART 34 - LAKE NORMAL POOL BENCH PLANTINGS

A. Includes the furnishing of all materials, labor, tools, equipment, mixing fertilizer, lime, excavation, backfilling, and any incidentals required to install the lake floodplain bench plantings as approved by the engineer.
B. Contractor to submit a list of plant species that will be planted around lake to obtain approval from the engineer.
C. No separate measurement will be made for any soil amendments required for the selected plantings.
D. Payment for “Lake Floodplain Bench Plantings” shall be made at the unit price per square yard under the following pay item:

Lake Normal Pool Bench Plantings SY

PART 35 – CLASS B RIPRAP

A. Includes the full compensation for providing and installing class B riprap at the locations and elevations shown on the drawings. Class B riprap is used at multiple locations throughout the project including the dam embankment wave protection and the regenerative stormwater conveyance. Payment shall include, but not limited to installation, adjusting, minor grading required for installation, maintaining the feature

through acceptance, and for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the Engineer.

B. Class B riprap shall meet the NCDOT specifications section 1042.
C. Fabric shall be nonwoven, Type 2 geotextile fabric meeting AASHTO M288 shall be installed under the rip rap unless shown otherwise on the drawings. The price for the geotextile fabric shall be included in the unit price and no separate payment will be made.
D. The installed and accepted quantity of Class B riprap will be paid for at the unit price per ton of boulder under the following pay item:

Class B Riprap	TN

PART 36 – CLASS A RIPRAP

A. Includes the full compensation for providing and installing class A riprap at the locations and elevations shown on the drawings. Class A riprap is used at multiple locations throughout the project including the low flow drain inlet and the stream channel. Payment shall include, but not limited to installation, adjusting, minor grading required for installation, maintaining the feature through acceptance, and for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the Engineer.
B. Class A riprap shall meet the NCDOT specifications section 1042.
C. Fabric shall be nonwoven, Type 2 geotextile fabric meeting AASHTO M288 shall be installed under the rip rap unless shown otherwise on the drawings. The price for the geotextile fabric shall be included in the unit price and no separate payment will be made.
D. The installed and accepted quantity of Class A riprap will be paid for at the unit price per ton of boulder under the following pay item:

Class A Riprap	TN

PART 37 - BOULDER

E. Includes the full compensation for all work covered in this specification, including, but not limited to installation, adjusting, placing backfill, bedding materials, filter fabric, and maintaining the feature through acceptance, and for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents, or as directed by the Engineer.
F. Boulders shall consist of flat-sided, durable quarry stone that is sound, hard, dense, angular, and resistant to the action of air and water, and free of seams, cracks, or other structural defects. The Contractor cannot use limestone or concrete waste for stone. Stone shall be approved by the Engineer.
G. The size (length, width and depth (thickness)) of the boulder material shall be as specified below. Stone shall be approved by the Engineer.
    a. Cascade Boulder: L=4ft, W=2ft, T=1.5ft
    b. Cascade Tie Out Boulder: L=2ft, W=2ft, T=1.5ft

H. Boulders for cascade structures shall conform to the specifications for boulders in accordance with the construction documents.
I. Fabric shall be nonwoven, Type 2 geotextile fabric meeting AASHTO M288 shall be installed under boulders as shown otherwise on the drawings. The price for the geotextile fabric shall be included in the unit price and no separate payment will be made.
J. Prepare the cascade for the placement of boulders by excavating and shaping the slopes of the subgrade for the structure. Subgrade for the placement of the footer boulders shall be onsite material on the cascade slope and biomix filter mixture at the base. The compaction and extents of the subgrade shall be approved by the Engineer prior to placement of the boulders.
K. Place the footer boulders using mechanical means that creates a uniformly sloped face, maintains desired orientation of boulder axis, and minimizes distances and gaps between adjacent boulders.
L. Place header boulders, and footer boulders using mechanical means that create a uniform, parabolic cascade crest at the control point elevation and design dimensions. Soil backfill may be required to provide proper subgrade to place the boulders.
M. Pack down the installed boulders without breaking once in place to ensure tight fit with minimal voids. Fill voids firmly with cobble material. Limit handwork to the amount necessary to fill small voids or correct localized areas.
N. Finish grade the adjacent areas to provide a smooth even grade transition between project structure components (boulder cascades, riffles) and the existing and/or proposed ground surface.
O. The installed and accepted quantity of boulder will be paid for at the unit price per ton of boulder under the following pay item:

Boulder	TN

PART 38 – BIOMIX FILTER MEDIA

A. Includes the furnishing of all materials, labor, tools, and equipment required to install the Biomix filter media as shown in drawings and as approved by the engineer.
B. Biomix filter media shall consist of Sand and Woodchip mix as specified in drawings.Sand shall meet the AASHTO-M-6 or ASTM-C-33 Standard, 0.02 inches to 0.04 inches in size.
C. Sand substitutions such as diabase and graystone (AASHTO) #10, calcium carbonate, dolomitic sand substitutions or rock dust are not acceptable.
D. Woodchips should be made from hardwood trees, recently chipped (green), and un-composted.
E. Woodchips are mixed with sand on-site, to increase the organic content in support of denitrification.
F. The engineer shall approve the sand-woodchip mix before installation.
G. Fabric shall be nonwoven, Type 2 geotextile fabric meeting AASHTO M288 shall be installed under the biomix as shown on the drawings. The price for the geotextile fabric shall be included in the unit price and no separate payment will be made.
H. The contractor shall be responsible for all costs incurred for material that does not meet requirements including but not limited to removal of unsuitable material from the feature, disposing of the unsuitable material, replacing with suitable material.

I. The Contractor must supply a “Biomix Filter Media” analysis certification that shows the Phosphorus Index (PI) of the media for approval by the Engineer prior to furnishing the media or beginning work. The media phosphorus index shall be a minimum of 10 and maximum of 30.
J. Payment for “Biomix Filter Media” shall be made for the cubic yards of material installed per the unit cost under the following pay item:

Biomix Filter Media CY

PART 39 – LIVE STAKES

A. Includes the furnishing of all materials, labor, tools and equipment required to install the and maintain the live stakes on the channel restoration stream banks as shown on the drawings and approved by the Engineer.
B. All plantings shall be executed in the dormant season for each species (generally between November 15 through March 15.
C. Live Stakes shall measure one-half inches to two inches diameter, two to three feet in length, angled on the bottom, and cut flush on the top, with buds oriented upwards. Live stakes shall be living based on the presence of young buds and green cambium. All side branches shall be cleanly trimmed, so cutting is a single stem. They shall be cut at a 45-degree angle on the basal end and cut flat on the other end. The basal end is intended as the end to take root and shall be the end installed in the ground. Live stakes shall not be harvested after March 15 or before November 15.
D. The contractor shall furnish a copy of the tags used to identify the cuttings after harvest and during transport or any tickets, tags, or manifests for purchased materials, as applicable base on the Contractor’s method of live stake procurement/harvesting. If the Contractor decides to harvest the live stakes on their own in lieu of purchasing them, the Contractor shall request the required documentation from the Owner.
E. Live stakes shall be installed per the spacing requirement shown on the plans. No planting shall be done in soil that, in the opinion of the Owner’s Representative, is too wet, too dry, or not properly conditions as provided on the drawings. No planting shall be done on channel banks that have not been seeded and stabilized with erosion control matting unless directed otherwise by the Owner’s Representative.
F. Materials shall be installed the same day as prepared or stored in a refrigerated area that has been kept moist for not longer than ten calendar days.
G. Protect plants at all times from sun, drying winds, and frost. Plants that cannot be planted immediately on delivery shall be well protected from winds and frost. Bundles of harvested live material should be kept with the cut end submerged in water to keep the cut ends moist and all times. Cuttings that appear to be dried out or damaged during transportation will not be accepted.
H. All live stakes installed by the Contractor shall be assessed by the Owner’s Representative at the end of the same planting season they were installed. One hundred percent of the live stakes must be installed correctly and still be alive at the time of the assessment. If a dead plant material is found, the Contractor is responsible for replacing the material before the completion of the planting season (March 15). At the completion of one full growing season following planting, all live stakes installed shall be assessed by the Owner’s Representative. Eighty percent of the live stakes must survive after one full growing season. If the Contractor does not meet this requirement, then all dead plant material

shall be removed and replanted during the next planting season. The replaced plants shall be painted with yellow paint and inspected at the conclusion of the next growing season.

I. Measurement shall be made by each unit furnished, properly installed and accepted by the Owner's Representative.

J. Payment shall be made by the actual number installed at the unit price under the following pay item:

Live Stakes EA

PART 40 – TREE/SHRUBS - CONTAINERIZED

A. Includes the preparation, furnishing equipment, materials and labor necessary to install and maintain trees and containerized shrubs in Zone B of the channel restoration as shown on the plans and/or as directed by the Town. Plantings shall be installed in accordance with techniques described in the contract documents.

Planting materials shall be made up of the species and quantities specified on the plans. Apply the plantings as shown on the Planting Plan and details.

All plantings installed by the Contractor shall be assessed by the Engineer or representative thereof at the end of the same planting season they were installed. One hundred percent of the plantings must be installed correctly and still be alive at the time this assessment is completed. If dead plant material is found, the Contractor is responsible for replacing that material before the completion of that planting season. At the completion of one full growing season following planting, all plantings installed by the Contractor shall be assessed by the Engineer. Eighty percent (80%) of the plantings must survive after one full growing season. If the Contractor does not meet this requirement, then all dead plant material shall be removed and replanted during the next planting season. The new replacement plantings will also be under warranty and be assessed at the conclusion of the next full growing season. Replacement of plantings under warranty is required to have 80% survival of the original planting at the end of any new warranty period.

The Contractor shall be responsible for furnishing equipment, materials, labor, incidentals and water to maintain plant survival in accordance with these specifications during the construction contract and during the warranty period.

B. This item will be measured by each unit furnished, properly installed and accepted by the Engineer, including all labor, machinery, materials, maintenance, hauling, preparing and installing of the item to complete the work in an acceptable manner.

Payment shall be made under the following pay item.

Tree/Shrub - Containerized EA

PART 41 – RIPARIAN SEEDING

A. includes the preparation, furnishing equipment, materials and labor necessary to install and maintain containerized shrub plantings on bioretention basin finished surface as shown on the plans and/or as directed by the Town. Plantings shall be installed in accordance with techniques described in the contract documents.

   Planting materials shall be made up of the species and quantities specified on the plans. Apply the plantings as shown on the Planting Plan and details.

   All plantings installed by the Contractor shall be assessed by the Engineer or representative thereof at the end of the same planting season they were installed. One hundred percent of the plantings must be installed correctly and still be alive at the time this assessment is completed. If dead plant material is found, the Contractor is responsible for replacing that material before the completion of that planting season. At the completion of one full growing season following planting, all plantings installed by the Contractor shall be assessed by the Engineer. Eighty percent (80%) of the plantings must survive after one full growing season. If the Contractor does not meet this requirement, then all dead plant material shall be removed and replanted during the next planting season. The new replacement plantings will also be under warranty and be assessed at the conclusion of the next full growing season. Replacement of plantings under warranty is required to have 80% survival of the original planting at the end of any new warranty period.

   The Contractor shall be responsible for furnishing equipment, materials, labor, incidentals and water to maintain plant survival in accordance with these specifications during the construction contract and during the warranty period.

B. This item will be measured by each unit furnished, properly installed and accepted by the Engineer, including all labor, machinery, materials, maintenance, hauling, preparing and installing of the item to complete the work in an acceptable manner.

   Payment shall be made under the following pay item.

   Tree/Shrub - Containerized EA

PART 42 - PUMP AROUND OPERATION

A. Includes the furnishing, installation, maintenance, and removal of the pump around operation including but not limited to providing the pump, hoses, sediment bag, impervious dikes or sandbags, outlet dissipation pad and other features required to provide the daily pump around operation used to construct the channel restoration downstream of the lower lake. If the pump around system is to be used for other items on the project, prior approval by the Engineer shall be obtained prior to implementing.
B. The quantity of pump around shall be increased, decreased, or eliminated entirely as needed to maintain the baseflow.
C. Pumps shall be of sufficient size to divert the stream flow around the work area, as approved by the Engineer.

D. The pumping operations shall include but not be limited to, diverting the stream flow around the work area and pumping runoff or groundwater from the work area into a sediment bag.
E. Payments will be full compensation for all work covered, including, but not limited to furnishing all the necessary materials, construction, adjustment of pump around operation, daily installation and removal of the impervious dikes or sandbags, daily protection of unfinished areas of work from erosion, relocation of the pump around operation as the work progresses, maintenance and removal of pump around system.
F. Payment for "Pump Around Operation" shall be made per each day of active pump around operation. The contractor shall not be paid for days where activities do not require the pump around operation to be engaged. The pump around operation will be paid under the following pay item:

Pump Around Operation DY

PART 43– ROCK INLET PROTECTION

A. Includes the furnishing of all materials, labor, tools and equipment required to construct and maintain the temporary rock pipe inlet protection including installing the pipe, connection the pipe to the temporary conveyance channel, installing the filter fabric, rip rap and stone as shown on the drawings, and maintaining the protection throughout the project, relocating the rock pipe inlet protection as needed to accommodate the lower lake grading, and removing and hauling away upon approval by the Owner's Representative and DEQ Land Quality Section.
B. The purpose of the rock pipe inlet protection is to drain the disturbed lower lake areas into the temporary conveyance channels and provide a sedimentation trap behind the inlet prior to the runoff from entering the temporary conveyance channel. The excavated area behind the rock pipe inlets should increase as part of the lower lake grading. Excavation and removal of material behind the rock pipe inlets will be included in the lower lake grading pay item.
C. The Contactor shall maintain the stone filter as identified on the drawings. No separate payment shall be made for maintenance of the rock pipe inlet features.
D. Measurement shall be made each rock pipe inlet filter installed. Separate payments for relocating a rock pipe inlet to accommodate construction activities will not be made
E. Payment for shall be made by the under the following pay item:

Rock Pipe Inlet EA

PART 44- DAM EMBANKENT TREE CLEARING

A. Includes the furnishing of all materials, labor, tools and equipment required to properly clear trees from the existing dam embankment.
B. Trees from the dam embankment shall be removed by chainsaw.
C. All stumps shall be removed by carefully digging around the stump and by cutting off all roots. Stumps shall not be pulled from the dam embankment because pulling of the roots could create void spaces.

D. Once the main stump is removed, remaining roots shall be removed by cutting to a depth determined by the geotechnical engineer.
E. The embankment shall be stepped prior to receiving dam embankment material.
F. All material removed shall be hauled offsite and properly disposed. No separate payment shall be made to remove the material from the site.
G. Measurement shall be made by the square yard of area disturbed for the trees removed on the dam embankment.
H. Payment for shall be made by the under the following pay item:

Dam Embankment Tree Removal SY

PART 46– WAVE PROTECTION

A. Following the embankment fill placement operations shape and compact the embankment surface to install the wave protection.
B. Wave protection shall be installed to stay flush with the adjacent finish grade.
C. Install 4-in lifts of ASTM C33 Fine Aggregate and compact with hand operated compaction equipment and perform multiple passes till a 6-in depth of filter sand layer is obtained.
D. Install 4-in lifts of NCDOT No. 78M Coarse Aggregate and compact with hand operated compaction equipment and perform multiple passes till a 6-in depth is obtained.
E. Riprap rock should be well graded and free from spalls while meeting NCDOT Class B Riprap specifications.
F. Riprap shall be angular in shape to allow interlocking and to prevent displacement after placement.
G. Regular inspection and monitoring of the wave protection must be performed to detect problems.
H. Payment will be only made for the materials installed as per the unit cost.
I. No separate measurement shall be made for this item.

PART 47 – Plugs

A. Includes the preparation, furnishing equipment, materials and labor necessary to install and maintain the plugs in Zone B of the channel restoration as shown on the plans and/or as directed by the Town. Plugs shall be installed in accordance with techniques described in the contract documents

Planting materials shall be made up of the species and quantities specified on the plans. Apply the plantings as shown on the Planting Plan and details.

All plantings installed by the Contractor shall be assessed by the Engineer or representative thereof at the end of the same planting season they were installed. One hundred percent of the plantings must be installed correctly and still be alive at the time this assessment is completed. If dead plant material is found, the Contractor is responsible for replacing that material before the completion of that planting season. At the completion of one full growing season following planting, all plantings installed by the Contractor shall be assessed by the Engineer. Fifty percent (50%) of the plantings must survive after one full growing season. If the Contractor does not meet this requirement,

then all dead plant material shall be removed and replanted during the next planting season. The new replacement plantings will also be under warranty and be assessed at the conclusion of the next full growing season. Replacement of plantings under warranty is required to have 30% survival of the original planting at the end of any new warranty period.

The Contractor shall be responsible for furnishing equipment, materials, labor, incidentals and water to maintain plant survival in accordance with these specifications during the construction contract and during the warranty period.

B. This item will be measured by the square yards, properly installed and accepted by the Engineer, including all labor, machinery, materials, maintenance, hauling, preparing and installing of the item to complete the work in an acceptable manner.

Payment shall be made under the following pay item.

Plugs SY