

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER 3

DATE: January 14, 2021

PROJECT: Bradford Circle Drainage Improvements
CONTRACT NUMBER: SD-2021-01

OWNER: The City of Durham

ENGINEER: Rummel, Klepper & Kahl, LLP

TO: Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated November 30, 2020, Addendum No.1, dated January 6, 2021, Addendum No.2, dated January 8, 2021; with amendments and additions noted below.

Acknowledge receipt of this Addendum in the space provided in the Bid form. Failure to do so may disqualify the Bidder.

This Addendum consists of 55 pages.

CHANGES TO THE PROJECT MANUAL (2 pages)

1. A revised cover sheet dated January 14, 2021 is included with this addendum.

DOCUMENT 00 01 10 - TABLE OF CONTENTS (2 pages)

2. A revised table of contents dated January 14, 2021 is included with this addendum.

DOCUMENT 00 41 43 – BID FORM – UNIT PRICE (SINGLE PRIME CONTRACT) (12 pages)

3. Remove document 00 41 43 – BID FORM – UNIT PRICE (SINGLE PRIME CONTRACT), dated January 6, 2021 and replace with document 00 41 43 – BID FORM – UNIT PRICE (SINGLE PRIME CONTRACT), dated January 14, 2021 included with this addendum.

DOCUMENT 00 52 15 – AGREEMENT FORM – EJCDC STIPULATED SUM (SINGLE-PRIME CONTRACT) (19 pages)

4. Remove document 00 52 15 – AGREEMENT FORM – EJCDC STIPULATED SUM (SINGLE-PRIME CONTRACT), dated January 6, 2021 and replace with document 00 52 15 – AGREEMENT FORM- EJCDC STIPULATED SUM (SINGLE-PRIME CONTRACT), dated January 14, 2021 included with this addendum.

DOCUMENT 30 11 00 – PROJECT SPECIAL PROVISIONS (18 pages)

5. Remove document 30 11 00 – PROJECT SPECIAL PROVISIONS, dated November 30, 2020 and replace with document 30 11 00 – PROJECT SPECIAL PROVISIONS, dated January 14, 2021 included with this addendum.

REQUESTS FOR INFORMATION AND CLARIFICATION (0 pages)

6. Unit Price Work item A10 Undercut, A11 Unsuitable Excavation, A12 Unclassified Excavation
 - a. How is the City quantifying the item for payment?
 - i. Where these materials are encountered, the items will be quantified by the Contractor, Contractor's geotechnical engineer, and the City's on-site inspector. Where determinations are required, testing and inspections on the project will be paid for using the Testing and Inspections allowance pay item.
7. Unit Price Work item A26 for Traffic Control (Furnish, Install, and Maintain)
 - a. Can traffic control items be lump sum items?
 - i. Traffic control for the project is revised to be one lump sum item. See section 30 11 00, Project Special Provisions, for the Work Zone Traffic Control pay item. See plan sheet C401 for notes pertaining to the contractor's responsibilities for traffic control on the project.
8. Unit Price Work item A29 Aggregate Base Course
 - a. The road section detail in the construction drawings show aggregate base course (ABC) material used as the base for constructing the road section. Material B25.0C will not be used in construction of the road section. See the revised
9. Unit Price Work item A31 for #8 Choking Stone
 - a. Can #78 stone be used as choking stone at the bottom of the reservoir in lieu of #8 stone?
 - i. No substitutions for #8 stone shall be made. See section 30 11 00, Project Special Provisions, for gradation specifications for #8 stone.
10. Unit Price Work item A55 for Water Service and Meter Relocation
 - a. Water service and meter relocation have been separated from the adjustment of meter boxes and valves. See section 30 11 00, Project Special Provisions, for work associated with this item.

END OF DOCUMENT

CITY OF DURHAM

PROJECT MANUAL

INCLUDING

**BIDDING DOCUMENTS, CONTRACT DOCUMENTS, AND
TECHNICAL SPECIFICATIONS**

FOR



**CITY OF
DURHAM**

CONTRACT: SD-2021-01

Issued: November 30, 2020

Revised: January 6, 8, and 14, 2021

Project:

Bradford Circle Drainage Improvements

**Stormwater & GIS Services Division
Public Works Department
101 City Hall Plaza, Durham NC 27701**

CONTRACT: SD-2021-01

Issued: November 30, 2020

Revised: January 6, 8, and 14, 2021

PROJECT:

Bradford Circle Drainage Improvements

**STORMWATER & GIS SERVICES DIVISION
PUBLIC WORKS DEPARTMENT
CITY OF DURHAM NC**

DOCUMENT 00 01 10

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CONTRACT: SD-2021-01
PROJECT: Bradford Circle Drainage Improvements
DATE: January 14, 2021

STORMWATER & GIS SERVICES DIVISION
PUBLIC WORKS DEPARTMENT
CITY OF DURHAM, NORTH CAROLINA

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DOCUMENT 00 41 43

BID FORM - UNIT PRICE (SINGLE-PRIME CONTRACT)

To: The City of Durham NC
c/o Antwon Williams, P.E.
101 City Hall Plaza
Durham NC 27701

Date:

Contract: SD-2021-01

Project: Bradford Circle Drainage Improvements

Sites: Bradford Circle (ROW-154)

Name of Bidder:
Address of Bidder:
.....
.....
Phone Number of Bidder:
Contact Person for Bidder:
Phone Number of Contact:
Bidder's North Carolina General Contractor's License Number:

1. OFFER

The undersigned Bidder hereby declares that the names of all persons interested in this Bid as principals appear in the blank spaces hereinafter provided for such purpose, that this Bid is in all respects fair and without collusion, that the Bidder has examined the locations of the proposed Work, the Advertisement, the Instructions to Bidders, the Technical Specifications, UBE requirements of the Department of EO/EA of the City of Durham, the Contract Documents and bond forms, and the Drawings therein referred to and fully understands the same and agrees and accepts the terms and conditions thereof, that it is understood that the estimated quantities are approximate only and are given for the purpose of comparing Bids upon a uniform basis, and that said estimate shall in no way affect the unit prices for the Work.

The undersigned Bidder hereby agrees to furnish at the Bidder's cost the expense of all the necessary labor, tools, apparatus, machinery, equipment, transportation, and all other things which may be required to fully and properly perform all the terms, covenants, provisions, and agreements of the annexed Contract.

The undersigned hereby agrees to do said Work and furnish said materials as prescribed in the Contract Documents and Technical Specifications, and, according to the Drawings and

requirements of the Engineer under said Contract Documents and Technical Specifications, in a first-class manner and to the best of the undersigned's ability at the following unit prices.

Having examined the Site of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by the Engineer for the Project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the unit prices listed in this Bid form in lawful money of the United States of America.

We have included the Bid security as required by the Instruction to Bidders.

All applicable federal taxes are included and State of North Carolina taxes are excluded from the unit prices.

All Cash and Contingency Allowances described in Section 01 20 00 - Price and Payment Procedures are included in the Bid Prices.

2. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable, except as required by law, for ninety (90) days from the Bid opening date.

If this Bid is accepted by the City of Durham within the time period stated above, we will:

- Execute the Agreement within fifteen (15) days of receipt of Notice of Award.
- Furnish the required bonds within fifteen (15) days of receipt of Notice of Award.
- Commence Work within ten (10) days after written Notice to Proceed.

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required bonds, the Bid security shall be forfeited as damages to the City of Durham by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which a Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit will be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

3. CONTRACT TIME

If this Bid is accepted, we will:

- Complete the Work in 120 calendar days (4 calendar months) from Notice to Proceed.

4. UNIT PRICES

Contract: SD-2021-01

Project: Bradford Circle Drainage Improvements

The following are unit prices for specific portions of the Work as listed. The unit price Bid for items in this Contract are for furnishing, installing all items of Work as indicated on the Drawings and Technical Specifications, complete, in place and accepted, per the City of Durham Standards and Specifications, North Carolina Department of Transportation (NCDOT) Standards and Specifications, and the North Carolina Department of Environment and Natural Resources (NCDENR) Erosion and Sediment Control Planning and Design Manual. The following is the list of unit prices:

Standard			Item Description	Unit	Quantity	Unit Price	Item Value
No.	Specification	Drawing					
Abandonment, Demolition, and Removal							
A1	NCDOT 200	N/A	Select Tree Removal (4 to 8-inch diameter)	EA	2		
A2	NCDOT 200	N/A	Select Tree Removal (8.1 to 16-inch diameter)	EA	3		
A3	NCDOT 250	N/A	Removal of Existing Asphalt Pavement	SY	185		
A4	NCDOT 340	N/A	Pipe Removal 12-inch HDPE (No earthwork Included)	LF	17		
A5	NCDOT 340	N/A	Pipe Removal 15-inch (No earthwork Included)	LF	61		
A6	NCDOT 340	N/A	Pipe Removal 24-inch	LF	55		
A7	NCDOT 1530	N/A	Removal of Existing 8" PVC Sanitary Sewer	LF	18		
A8	NCDOT 250	N/A	Remove Concrete Driveway	SY	20		
A9	301100	N/A	Temporary Relocation of Mailbox and Street Signs	EA	7		
Subtotal for Abandonment, Demolition, and Removal							
Earthwork							
A10	NCDOT 225	N/A	Undercut Excavation	CY	55		
A11	NCDOT 225	N/A	Unsuitable Excavation	CY	25		
A12	NCDOT 225	N/A	Unclassified Excavation	CY	135		
A13	NCDOT 230	N/A	Borrow Excavation	CY	25		
A14	NCDOT 410/1016	N/A	Select Backfill Material (Class II)	CY	55		
Subtotal for Earthwork							
Soil Erosion and Sediment Control							
A15	NCDOT 876	N/A	Rip Rap, Class 1	TN	10		
A16	NCDOT 876/1056	N/A	Geotextile for Drainage (Type 2)	SY	30		
A17	NCDOT 1056	N/A	Geotextile for Pervious Pavement	SY	100		
A18	NCDOT 1605	NCDOT 1605.01	Temporary Silt Fence	LF	580		
A19	NCDOT 1606	NCDOT 1606.01	Silt Fence Outlet (Special Sediment Fence)	EA	4		
A20	NCDOT 1607	NCDOT 1607.01	Construction Entrance	EA	2		
A21	NCDOT 1607	NCDOT 1607.01	Temporary Concrete Washout	EA	1		
A22	NCDOT 1660	N/A	Seeding and Mulching	AC	0.5		
A23	NCDOT 1631	NCDOT 1631.01	Erosion Control Matting	SY	200		
A24	NCDOT 1632	NCDOT 1635.03	Inlet Protection	EA	4		
A25	NCDOT 1635	NCDOT 1635.02	Rock Pipe Inlet Sediment Trap Type B	EA	3		
Subtotal for Soil Erosion and Sediment Control							
Traffic Control							
A26	301100	N/A	Traffic Control (Furnish, Install, and Maintain)	LS	1		
Subtotal for Traffic Control							
Paving							
A27	NCDOT 610	N/A	Asphalt Concrete Surface Course, Type S9.5B (1-inch)	TN	27		
A28	NCDOT 610	N/A	Asphalt Concrete Surface Course, Type S9.5B (1.5-inch)	TN	40		
A29	NCDOT 520	N/A	Aggregate Base Course	TN	660		
A30	NCDOT 520	N/A	#57 Stone	TN	200		
A31	NCDOT 520	N/A	#8 Choking Stone	TN	43		
A32	301100	N/A	Pervious Concrete Pavement	CY	103		
A33	301100	N/A	Concrete Baffles	LF	170		
A34	301100	N/A	Obsevation Wells	EA	3		
A35	NCDOT 846	NCDOT 846.01	2-foot Concrete Curb and Gutter	LF	670		
A36	NCDOT 848	NCDOT 848.01	4-inch Concrete Sidewalk	SY	137		
A37	NCDOT 848	CoD SSD	Concrete Wheelchair Ramps City Detail No. 405.08	EA	3		
A38	NCDOT 848	CoD SSD	6-inch Concrete Driveway City Detail No. ST-9.0 and ST-10.0	SY	215		
Subtotal for Paving							

Storm Drainage						
A39	NCDOT 840	N/A	Drainage Structures	EA	10	
A40	NCDOT 310	NCDOT 300.01	15-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	55	
A41	NCDOT 310	NCDOT 300.01	18-inch R.C. Pipe Culverts, Class III (0 to 5-feet)	LF	49	
A42	NCDOT 310	NCDOT 300.01	24-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	234	
A43	NCDOT 310	NCDOT 300.01	30-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	257	
A44	NCDOT 310	NCDOT 300.01	36-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	40	
A45	NCDOT 815	N/A	6-inch SCH 40 PVC Perforated Pipe	LF	580	
A46	NCDOT 815	N/A	6-inch SCH 40 PVC	LF	40	
A47	301100	N/A	Cleanouts	EA	9	
A48	NCDOT 838	NCDOT 838.01	Headwall	EA	2	
A49	NCDOT 300		Pipe Bedding	TN	84	
A50	NCDOT 840		Pipe Plug	CY	2	
Subtotal for Storm Drainage						
Utilities						
A51	NCDOT 1520	N/A	8-inch Sanitary Gravity Sewer (DIP)	LF	18	
A52	NCDOT 1540	N/A	16-inch Encasement Pipe (Steel)	LF	12	
A53	301100	N/A	Relocate Sanitary Sewer Service	EA	3	
A54	NCDOT 858	N/A	Adjustment of Meter Boxes or Valve Boxes	EA	1	
A55	301100	City Detail 516.01	Water Service and Meter Relocation	EA	5	
A56	NCDOT 858	N/A	Adjustment of Manholes	EA	2	
Subtotal for Utilities						
Miscellaneous						
A57	301100	N/A	Construction Surveying	LS	1	
A58	NCDOT 1660	N/A	Sweet Bay Magnolia (1.5" Cal.)	EA	4	
A59	NCDOT 1660	N/A	Eastern Redbud (1.5" Cal.)	EA	10	
A60	NCDOT 1660	N/A	3 inch Triple Shredded Hardwood Mulch	CY	5	
A61	NCDOT 1660	N/A	Landscaping Topsoil (4 inch Depth) and Soil Amendments	CY	10	
A62	NCDOT 1660	N/A	Other Topsoil (4 inch Depth) and Soil Amendments	CY	195	
A63	301100		Testing and Inspections Allowance	LS	1	\$10,000.00
A64	301100	N/A	As Builts and Videos	EA	1	
A65	NCDOT 800	N/A	Mobilization (Single Large Project) 10% of total for SD-2020-01	LS	1	
Subtotal for Miscellaneous						
Total for SD-2021-01						

We agree to diligently perform the Work in accordance with all Contract Documents, to complete such Work within the period as outlined in the Contract, and to begin Work within ten (10) days after receipt of the Notice to Proceed from the Engineer.

5. ADDENDA

The following Addenda have been received. The modifications to the Bidding Documents noted below have been considered and all costs are included in the Bid.

Addendum No.:, Dated: Addendum No.:, Dated:

Addendum No.:, Dated: Addendum No.:, Dated:

Addendum No.:, Dated: Addendum No.:, Dated:

6. APPENDICES

The following Documents shall be submitted to the Issuing Office within five (5) days after the Bid opening:

1. EBOP Construction Form (E-105) – Statement of Intent to Perform as Subcontractor
2. Non-Collusion Affidavits of all Subcontractors (see Appendix E for blank affidavits)

The following information is included with Bid submission:

1. Bid Form
2. EBOP Construction Forms (see Appendix B)
3. Non-Collusion Affidavit of Bidder (see Appendix E for blank affidavits)
4. Bid Security (see Appendix F for blank Bid bond forms)
5. List of Contractor Equipment and Personnel
6. List of N.C. Division of Water Resources Violations
7. Contractor Safety Record Information
8. Project Information Sheets
9. Covid-19 Work Plan

7. CONTRACTOR EXPERIENCE

The undersigned Contractor has regularly engaged in contract work of this class for years, and has executed the following work as principal(s):

.....
.....
.....
.....
.....

List of Contractor's personnel experienced to do this Work including and designating the Superintendent to be in charge of this Work showing the length of their varied experience with this particular Work. The list shall not include Subcontractor personnel.

Name	Experience	Name	Experience
.....
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List of Contractor's equipment in good condition and suitable for completion of this Contract. Contractor must be able to demonstrate ownership of all equipment necessary to complete all portions of the Contract. The list shall not include Subcontractor equipment.

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Please attach additional sheets as necessary to complete the items above.

10. LIST OF N.C. DIVISION OF WATER RESOURCES VIOLATIONS

The undersigned Contractor has received no N.C. Division of Water Resources violations within the past years (YES or NO). If NO, list the violations below and provide an explanation of each violation and how it was addressed.

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Please attach additional sheets as necessary to complete the item above.

9. BID FORM SIGNATURES

Refer to Document 00 21 15 for specific Bid form signature requirements for corporations, partnerships, limited liability companies, individuals, or sole proprietorships.

CORPORATION

The Corporate Seal of

.....
(Bidder - print the full corporate name of firm)

.....
(President/Vice President/Authorized Corporate Officer)

(Seal)

was hereunto affixed in the presence of:

.....
(Secretary/Assistant Secretary)

(Seal)

Corporate Address:

.....
.....
.....

.....
(State of Incorporation)

LIMITED LIABILITY COMPANY

.....
(Bidder - print the full name of firm)

.....
(Authorized Firm Member)

(Seal)

was hereunto affixed in the presence of:

.....
(Witness)

(Seal)

Firm Address:

.....
.....
.....

.....
(State of Formation)

INDIVIDUAL OR SOLE PROPRIETORSHIP

.....
(Bidder - print the full name of individual or sole proprietorship)

(Seal)

Individual or Sole Proprietorship Address:

.....
.....
.....

PARTNERSHIP

.....
(Bidder - print the full corporate name of partnership)

.....
(Partner and Title)

(Seal)

.....
(Partner and Title)

(Seal)

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(Partner and Title)

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(Partner and Title)

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(Partner and Title)

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(Partner and Title)

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(Partner and Title)

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(Partner and Title)

(Seal)

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(Partner and Title)

(Seal)

.....
(Partner and Title)

(Seal)

(All Partners shall sign, additional signatures with titles and seals may be added below.)

was hereunto affixed in the presence of:

.....
(Witness)

(Seal)

Partnership Address:

.....
.....
.....

CONTRACT: SD-2021-01
PROJECT: Bradford Circle Drainage Improvements
DATE: January 14, 2021

STORMWATER & GIS SERVICES DIVISION
PUBLIC WORKS DEPARTMENT
CITY OF DURHAM

JOINT VENTURE

If the Bid is a joint venture, add additional forms of execution for each member of the joint venture in the appropriate manner using the forms from above.

END OF DOCUMENT

DOCUMENT 00 52 15

AGREEMENT FORM - EJCDC STIPULATED SUM (SINGLE-PRIME CONTRACT)

THIS AGREEMENT is by and between the City of Durham (Owner), a North Carolina municipal corporation, and [*to be completed upon execution*] (Contractor).

The City of Durham and Contractor, in consideration of the mutual covenants set forth herein, agree as follows:

1.1 WORK

- A. Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:
- B. The Work involves the furnishing of all materials, labor, equipment, tools, etc. unless otherwise specified, for the complete installation of repairs, rehabilitation, and improvements of the stormwater drainage system along the Bradford Circle right-of-way and adjacent properties. Currently Bradford Circle is a gravel road. The gravel road surface will be replaced with asphalt and pervious concrete pavement along with the installation of sidewalk.

1.2 THE PROJECT

- A. The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Contract: SD-2021-01, Project: Bradford Circle Drainage Improvements
- B. Listed below is the Site that the Contractor may be instructed to complete construction under this Contract.
 - 1. Bradford Circle Drainage Improvements (ROW-154)

1.3 ENGINEER

- A. The Project has been designed by the following firm.
 - 1. Rummel, Klepper & Kahl, LLP. (RK&K)
- B. RK&K will act as the City of Durham's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

1.4 CONTRACT TIMES

- A. Time of the Essence

1. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- B. Days to Achieve Substantial Completion and Final Payment
 1. The Work shall be substantially completed within 90 days after the date when the Contract Times commence to run (Notice to Proceed) as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 120 days after the date when the Contract Times commence to run (Notice to Proceed).
- C. Liquidated Damages
 1. Contractor and the City of Durham recognize that time is of the essence of this Agreement and that the City of Durham will suffer financial loss if the Work is not completed within the times specified in Paragraph 1.4.B.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the City of Durham if the Work is not completed on time. Accordingly, instead of requiring any such proof, the City of Durham and the Contractor agree that as liquidated damages for the delay (but not as a penalty), Contractor shall pay the City of Durham four hundred dollars (\$400.00) for each day that expires after the time specified in Paragraph 1.4.B.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by the City of Durham, Contractor shall pay the City of Durham four hundred dollars (\$400.00) for each day that expires after the time specified in Paragraph 1.4.B.1 for completion and readiness for final payment until the Work is completed and ready for final payment.
 2. Failure of the Contractor to commence construction within ten (10) days of the Notice to Proceed shall begin a daily liquidated damages assessment against the Contractor at a rate of fifty percent (50%) of the daily liquidated damages specified in Paragraph 1.4.C.1.
- D. Weather Related Delays
 1. The Contractor may request for an extension of Contract Times for delays related to adverse weather as described in the General Conditions, Paragraph 12.02A.

1.5 CONTRACT PRICE

- A. The City of Durham shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amount determined pursuant to Paragraphs 1.5.A.1 and 1.5.A.2 below:
 1. Not used.
 2. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this Paragraph 1.5.A.2:

As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by the Engineer as provided in Paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in Paragraph 11.03 of the General Conditions.

UNIT PRICE WORK

		Standard					
No.	Specification	Drawing	Item Description	Unit	Quantity	Unit Price	Item Value
Abandonment, Demolition, and Removal							
A1	NCDOT 200	N/A	Select Tree Removal (4 to 8-inch diameter)	EA	2		
A2	NCDOT 200	N/A	Select Tree Removal (8.1 to 16-inch diameter)	EA	3		
A3	NCDOT 250	N/A	Removal of Existing Asphalt Pavement	SY	185		
A4	NCDOT 340	N/A	Pipe Removal 12-inch HDPE (No earthwork Included)	LF	17		
A5	NCDOT 340	N/A	Pipe Removal 15-inch (No earthwork Included)	LF	61		
A6	NCDOT 340	N/A	Pipe Removal 24-inch	LF	55		
A7	NCDOT 1530	N/A	Removal of Existing 8" PVC Sanitary Sewer	LF	18		
A8	NCDOT 250	N/A	Remove Concrete Driveway	SY	20		
A9	301100	N/A	Temporary Relocation of Mailbox and Street Signs	EA	7		
Subtotal for Abandonment, Demolition, and Removal							
Earthwork							
A10	NCDOT 225	N/A	Undercut Excavation	CY	55		
A11	NCDOT 225	N/A	Unsuitable Excavation	CY	25		
A12	NCDOT 225	N/A	Unclassified Excavation	CY	135		
A13	NCDOT 230	N/A	Borrow Excavation	CY	25		
A14	NCDOT 410/1016	N/A	Select Backfill Material (Class II)	CY	55		
Subtotal for Earthwork							
Soil Erosion and Sediment Control							
A15	NCDOT 876	N/A	Rip Rap, Class 1	TN	10		
A16	NCDOT 876/1056	N/A	Geotextile for Drainage (Type 2)	SY	30		
A17	NCDOT 1056	N/A	Geotextile for Pervious Pavement	SY	100		
A18	NCDOT 1605	NCDOT 1605.01	Temporary Silt Fence	LF	580		
A19	NCDOT 1606	NCDOT 1606.01	Silt Fence Outlet (Special Sediment Fence)	EA	4		
A20	NCDOT 1607	NCDOT 1607.01	Construction Entrance	EA	2		
A21	NCDOT 1607	NCDOT 1607.01	Temporary Concrete Washout	EA	1		
A22	NCDOT 1660	N/A	Seeding and Mulching	AC	0.5		
A23	NCDOT 1631	NCDOT 1631.01	Erosion Control Matting	SY	200		
A24	NCDOT 1632	NCDOT 1635.03	Inlet Protection	EA	4		
A25	NCDOT 1635	NCDOT 1635.02	Rock Pipe Inlet Sediment Trap Type B	EA	3		
Subtotal for Soil Erosion and Sediment Control							
Traffic Control							
A26	301100	N/A	Traffic Control (Furnish, Install, and Maintain)	LS	1		
Subtotal for Traffic Control							
Paving							
A27	NCDOT 610	N/A	Asphalt Concrete Surface Course, Type S9.5B (1-inch)	TN	27		
A28	NCDOT 610	N/A	Asphalt Concrete Surface Course, Type S9.5B (1.5-inch)	TN	40		
A29	NCDOT 520	N/A	Aggregate Base Course	TN	660		
A30	NCDOT 520	N/A	#57 Stone	TN	200		
A31	NCDOT 520	N/A	#8 Choking Stone	TN	43		
A32	301100	N/A	Pervious Concrete Pavement	CY	103		
A33	301100	N/A	Concrete Baffles	LF	170		
A34	301100	N/A	Obsevation Wells	EA	3		
A35	NCDOT 846	NCDOT 846.01	2-foot Concrete Curb and Gutter	LF	670		
A36	NCDOT 848	NCDOT 848.01	4-inch Concrete Sidewalk	SY	137		
A37	NCDOT 848	CoD SSD	Concrete Wheelchair Ramps City Detail No. 405.08	EA	3		
A38	NCDOT 848	CoD SSD	6-inch Concrete Driveway City Detail No. ST-9.0 and ST-10.0	SY	215		
Subtotal for Paving							

Storm Drainage						
A39	NCDOT 840	N/A	Drainage Structures	EA	10	
A40	NCDOT 310	NCDOT 300.01	15-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	55	
A41	NCDOT 310	NCDOT 300.01	18-inch R.C. Pipe Culverts, Class III (0 to 5-feet)	LF	49	
A42	NCDOT 310	NCDOT 300.01	24-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	234	
A43	NCDOT 310	NCDOT 300.01	30-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	257	
A44	NCDOT 310	NCDOT 300.01	36-inch R.C. Pipe Culverts, Class III (5.1 to 11-feet)	LF	40	
A45	NCDOT 815	N/A	6-inch SCH 40 PVC Perforated Pipe	LF	580	
A46	NCDOT 815	N/A	6-inch SCH 40 PVC	LF	40	
A47	301100	N/A	Cleanouts	EA	9	
A48	NCDOT 838	NCDOT 838.01	Headwall	EA	2	
A49	NCDOT 300		Pipe Bedding	TN	84	
A50	NCDOT 840		Pipe Plug	CY	2	
Subtotal for Storm Drainage						
Utilities						
A51	NCDOT 1520	N/A	8-inch Sanitary Gravity Sewer (DIP)	LF	18	
A52	NCDOT 1540	N/A	16-inch Encasement Pipe (Steel)	LF	12	
A53	301100	N/A	Relocate Sanitary Sewer Service	EA	3	
A54	NCDOT 858	N/A	Adjustment of Meter Boxes or Valve Boxes	EA	1	
A55	301100	City Detail 516.01	Water Service and Meter Relocation	EA	5	
A56	NCDOT 858	N/A	Adjustment of Manholes	EA	2	
Subtotal for Utilities						
Miscellaneous						
A57	301100	N/A	Construction Surveying	LS	1	
A58	NCDOT 1660	N/A	Sweet Bay Magnolia (1.5" Cal.)	EA	4	
A59	NCDOT 1660	N/A	Eastern Redbud (1.5" Cal.)	EA	10	
A60	NCDOT 1660	N/A	3 inch Triple Shredded Hardwood Mulch	CY	5	
A61	NCDOT 1660	N/A	Landscaping Topsoil (4 inch Depth) and Soil Amendments	CY	10	
A62	NCDOT 1660	N/A	Other Topsoil (4 inch Depth) and Soil Amendments	CY	195	
A63	301100		Testing and Inspections Allowance	LS	1	\$10,000.00
A64	301100	N/A	As Builts and Videos	EA	1	
A65	NCDOT 800	N/A	Mobilization (Single Large Project) 10% of total for SD-2020-01	LS	1	
Subtotal for Miscellaneous						
Total for SD-2021-01						

1.6 PAYMENT PROCEDURES

- A. Submittal and Processing of Payments
 1. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.
- B. Progress Payments; Retainage
 1. The City of Durham shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the first day of each month during performance of the Work as provided in Paragraphs 1.6.B.1.a through 1.6.B.1.d below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:
 - a. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amount as Engineer may determine or the City of Durham may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.

- b. The City of Durham will retain five (5) percent of the amount of each estimate until Work covered by the Contract is fifty percent (50%) complete. If after the Project is deemed fifty percent (50%) complete based upon the Contractor's gross Project invoices, excluding the value of materials stored on and off-site, and the Contractor provides the City and the Engineer the following:
- 1) Written verification evidencing fifty percent (50%) completion of the Project; and,
 - 2) Written consent of the surety named in the Project performance and payment bonds agreeing that the City shall not retain any further retainage from periodic payments due to the Contractor; the City shall cease holding retainage from future periodic payments if the City finds that the Contractor is performing satisfactorily, and any nonconforming Work identified in writing by the Engineer or City (prior to the point of fifty percent (50%) Project completion) has been corrected by the Contractor and accepted by the Engineer or City, whoever provided such prior notice of nonconforming Work. If, however, the City determines the Contractor's performance is unsatisfactory, the City may reinstate the specified retainage for each subsequent periodic payment. Notwithstanding anything to the contrary, City may assess retainage after fifty percent (50%) project completion, even if the Contractor has complied with Paragraphs 1.6.B.1.b.1 and 1.6.B.1.b.2 (above) and continues to perform satisfactorily as necessary to retain two and one-half percent (2.5%) total retainage through the completion of the Project.
- c. Notwithstanding any of the retainage provisions described herein, there shall be no retainage on periodic or final payments for Contracts having a total project cost less than \$100,000.00, and, in addition to the retainage amounts allowed to be held by the City of Durham, the City shall also retain all rights allowed under this Agreement to withhold payment to the Contractor in accordance with Article 14 of the General Conditions and for unsatisfactory job progress, defective or nonconforming construction not remedied, disputed Work, or third-party claims filed against the City of Durham or reasonable evidence that a third-party claim will be filed.
- d. Within sixty (60) days of receipt by City of (1) an Application for Payment and (2) written consent of the surety, and after City has either (1) received a certificate of Substantial Completion or (2) received beneficial occupancy or use of the Project (if applicable), the City of Durham shall pay an amount sufficient to increase total payment to Contractor to the Contract Price, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions, including up to two hundred fifty percent (250%) of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

C. Final Payment

1. Prior to issuing final payment, the Contractor will furnish to the City of Durham certification that: All Subcontractors and vendors associated with this Contract have been paid; no liens and/or lawsuits have been placed against the Contractor for this Work; and the total dollar amount has been paid to all Subcontractors, Suppliers, and others associated with this project.
2. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, the City of Durham shall pay the remainder of the Contract price as recommended by Engineer as provided in said Paragraph 14.07.

1.7 NOT USED

1.8 CONTRACTOR'S REPRESENTATIONS

- A. In order to induce the City of Durham to enter into this Agreement Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 2. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied all:
 - a. Reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in Paragraph 4.02 of the General Conditions; and
 - b. Reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in Paragraph 4.06 of the General Conditions.
 5. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional and supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.
 6. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
 7. Contractor is aware of the general nature of work to be performed by the City of Durham and others at the Site that relates to the Work as indicated in the Contract Documents.

8. Contractor has correlated the information known to the Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The Contractor affirmatively acknowledges and agrees that (a) the Contract Time provide for in the Contract Documents to complete the Work is reasonable and (b) the compensation provided for the Work in the Contract Documents is reasonable.

1.9 CONTRACT DOCUMENTS

A. Contents

1. The Contract Documents consist of the following:
 - a. This Agreement (pages 1 to 19, inclusive).
 - b. Performance and Payment bonds (*[to be completed upon execution]*).
 - c. Not used.
 - d. General Conditions (pages 1 to 54, inclusive, of the Project Manual).
 - e. Technical Specifications as listed in the table of contents of the Project Manual.
 - f. Drawings consisting of 20 sheets bearing the general titles below and as listed in Section 00 31 00, Paragraph 1.3, dated June 15, 2020.
 - 1) "BRADFORD CIRCLE DRAINAGE IMPROVEMENTS," 20 sheets.
 - g. Addenda (numbers *[to be complete upon execution]* to *[to be completed upon execution]*, inclusive).
 - h. Exhibits to this Agreement (enumerated as follows):
 - 1) Contractor's Bid, *[to be completed upon execution]* (pages *[to be completed upon execution]* to *[to be completed upon execution]*, inclusive, Appendix *[to be completed upon execution]* of the Project Manual).
 - 2) Contract Certificates of Liability/Insurance (Appendix *[to be completed upon execution]* of the Project Manual).
 - 3) Documentation submitted by Contractor prior to Notice of Award (Appendix *[to be completed upon execution]* of the Project Manual).
 - i. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - 1) Notice to Proceed.
 - 2) Work Change Directives.
 - 3) Change Order(s).

- B. The documents listed in Paragraph 1.9.A.1 are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Paragraph 1.9.A.1.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.
- E. Coordination of General Conditions, Supplementary Conditions, Agreement, Drawings and Technical Specifications
 - 1. All components of the Contract Documents are essential elements of the Contract between the Owner and Contractor, and notwithstanding the requirements of Paragraph 3.03 of the General Conditions, in case of a conflict or contradiction among the General Conditions (including Supplementary Conditions), Agreement, Drawings, and Technical Specifications, the following shall be the order of controlling authority as among these documents: The Technical Specifications and Drawings shall control over the Agreement and the Agreement shall control over the General Conditions (including Supplementary Conditions). The Technical Specifications and the Drawings are intended to work together and complement each other. Any discrepancy or ambiguity between the Technical Specifications and the Drawings shall be interpreted consistent with the clear intent of the Engineer. If the intent of the Engineer is not clear, the Engineer shall determine which is controlling.

1.10 MISCELLANEOUS

- A. Terms
 - 1. Terms used in this Agreement will have the meanings stated in the General Conditions.
- B. Assignment of Contract
 - 1. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- C. Successors and Assigns
 - 1. The City of Durham and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.
- D. Severability
 - 1. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all

remaining provisions shall continue to be valid and binding upon the City of Durham and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

E. Notices and Communications

1. All notices and other communications required or permitted by Contract shall be in writing and shall be given by personal delivery, fax, or certified United States mail (return receipt requested) addressed/faxed as follows:

To the City of Durham (Owner):
Attention: Antwon Williams, P.E.
City of Durham
Public Works Department
Stormwater & GIS Services Division
101 City Hall Plaza
Durham NC 27701
E-mail: antwon.williams@DurhamNC.gov
Fax: (919) 560-4326 ext. 30254

To the Contractor:
[to be completed upon execution]

2. A change of address, fax number, or person to receive notices or communications may be made by either party by notice given to the other party. Any notices or communications under Contract shall be deemed given at the time of actual delivery, if it is personally delivered or faxed. If the notices or communications are sent by United States mail, it shall be deemed given upon the third calendar day following the day on which the notices or communications were postmarked, or upon actual delivery, whichever first occurs.

F. Not Used

G. Technical Data and Other Work

1. Subsurface and Physical Conditions
 - a. A subsurface investigation was conducted in advance of the Project.
 - 1) "Report of Subsurface Exploration and Geotechnical Engineering Evaluation Bradford Circle Pavement Design," dated August 23, 2018.
2. Hazardous Environmental Condition
 - a. No reports or drawings related to Hazardous Environmental Condition are known to the City of Durham or Engineer.
3. Other Work

- a. The City of Durham and Engineer are unaware of any other work on the Site at the time of Notice to Proceed.
- H. Contractor's Insurance Requirements -- Contractor shall maintain the insurance coverage required under Article 5 of the General Conditions and in the amounts identified below. In the case of any conflict between this Paragraph 1.10.H and Article 5 of the General Conditions, the Contractor shall comply with more stringent requirement.
1. Contractor agrees to maintain, on a primary basis and at its sole expense, at all times during the life of this Contract the following applicable coverage's and limits. The requirements contained herein, as well as City's review or acceptance of insurance maintained by Contractor is not intended to and shall not in any manner limit or qualify the liabilities or obligations assumed by Contractor under this Contract.
 2. Commercial General Liability – Combined single limit of no less than \$1,000,000 each occurrence and \$2,000,000 aggregate. Coverage shall not contain any endorsement(s) excluding nor limiting Product/Completed Operations, Contractual Liability, Cross Liability, or Personal and Advertising injury Liability.
 3. Automobile Liability – Limits of no less than \$1,000,000 Combined Single Limit. Coverage shall include liability for Owned, Non-Owned and Hired automobiles. In the event Contractor does not own automobiles, Contractor agrees to maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Auto Liability policy. Automobile coverage is only necessary if vehicles are used in the provision of services under this Contract and/or are brought on a City of Durham site.
 4. Umbrella or Excess Liability – Contractor may satisfy the minimum liability limits required above under an Umbrella or Excess Liability policy. There is no minimum Per Occurrence limit of liability under the Umbrella or Excess Liability, however, the Annual Aggregate limits shall not be less than the highest 'Each Occurrence' limit for required policies. Contractor agrees to endorse City of Durham as an 'Additional Insured' on the Umbrella or Excess Liability, unless the Certificate of Insurance states the Umbrella or Excess Liability provides coverage on a 'Follow-Form' basis.
 5. Worker's Compensation & Employers Liability – Contractor agrees to maintain Worker's Compensation Insurance in accordance with North Carolina General Statute Chapter 97 and with Employer Liability limits of no less than \$500,000 each accident, each employee and policy limit. This policy must include a Waiver of Subrogation.

6. Additional Insured – Contractor agrees to endorse the City as an Additional Insured on the Commercial General Liability. The Additional Insured shall read ‘City of Durham as its interest may appear’.
- Certificate of Insurance – Contractor agrees to provide City of Durham a Certificate of Insurance evidencing that all coverage’s, limits and endorsements required herein are maintained and in full force and effect, and Certificates of Insurance shall provide a minimum thirty (30) day endeavor to notify, when available, by Contractor’s insurer. If Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify the City within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. The Certificate Holder address should read:

City of Durham
ATTN: Antwon Williams, P.E.
Public Works Department
101 City Hall Plaza
Durham, NC 27701

7. All insurance companies must be authorized to do business in North Carolina with a Best rating A-VIII or higher.

I. E-verify Requirements

1. If this contract is awarded pursuant to North Carolina General Statutes (NCGS) 143-129
- a. the contractor represents and covenants that the contractor and its subcontractors comply with the requirements of Article 2 of Chapter 64 of the NCGS;
 - b. the words "contractor," "contractor’s subcontractors," and "comply" as used in this subsection (1) shall have the meanings intended by NCGS 143-129 (j); and
 - c. the City is relying on this subsection (1) in entering into this contract.
2. If this contract is subject to NCGS 143-133.3, the contractor and its subcontractors shall comply with the requirements of Article 2 of Chapter 64 of the NCGS.

- J. Change “SDBE” to “UBE” – Paragraph 6.06.K, and subparagraphs, are amended by replacing the phrase “Small Disadvantaged Business Enterprises” with “Underutilized Business Enterprises” and replacing “SDBE” with “UBE”.

- K. Indemnification provision replacement –Paragraph 6.20 (Indemnification) of the General Conditions is deleted in its entirety and replaced with the following new paragraph:

6.20 *Indemnification applicable to construction agreements or design professional agreements.*

- A. (Definitions). These definitions apply to this Paragraph 6.20 unless otherwise stated.

Contractor – Each party to this contract except the City of Durham.

Construction agreement -- any promise or agreement in, or in connection with, a contract or agreement relative to the design, planning, construction, alteration, repair, or maintenance of a building, structure, highway, road, appurtenance, or appliance, including moving, demolition, and excavating connected therewith.

Defend -- to pay for or furnish counsel at the expense of the Contractor to defend any of the Indemnitees against claims alleged or brought against any of the Indemnitees by a third party alleged or brought in any court or other tribunal, including forms of alternative dispute resolution required by law or contract, before the court or tribunal has reached a final determination of fault.

Derivative parties -- with respect to a party, any of that party's subcontractors, agents, employees, or other persons or entities for which the party may be liable or responsible as a result of any statutory, tort, or contractual duty.

Design professional -- a person or entity who is licensed under and provides professional services regulated by Chapters 83A, 89A, 89C, 89E, or 89F of the N. C. General Statutes.

Design professional services -- a service or work performed by a design professional for which licensure is required under Chapters 83A, 89A, 89C, 89E, or 89F of the N. C. General Statutes.

Fault – a breach of contract; negligent, reckless, or intentional act or omission constituting a tort under applicable statutes or common law; or violations of applicable statutes or regulations.

Indemnitees -- City and its officers, officials, independent contractors, agents, and employees, excluding the Contractor.

Subcontractor – any person or entity, of any tier, providing labor or material through the Contractor for use on the project at issue in the applicable construction agreement or design professional agreement.

B. (Standard Indemnification). (i) To the maximum extent allowed by law, the Contractor shall defend, indemnify and hold harmless Indemnitees from and against all Charges that arise in any manner from, in connection with, or out of this contract as a result of acts or omissions of the Contractor or its derivative parties. In performing its duties under this subparagraph “i,” the Contractor shall at its sole expense defend Indemnitees with legal counsel reasonably acceptable to City. (ii) “Charges” means claims, judgments, costs, damages, losses, demands, liabilities, duties, obligations, fines, penalties, royalties, settlements, and expenses. Included without limitation within “Charges” are (1) interest and reasonable attorney’s fees assessed as part of any such item, and (2) amounts for alleged violations of sedimentation pollution, erosion control,

pollution, or other environmental laws, regulations, ordinances, rules, or orders -- including but not limited to any such alleged violation that arises out of the handling, transportation, deposit, or delivery of the items that are the subject of this contract. (iii) Other Provisions Separate. Nothing in this Paragraph 6.20 shall affect any warranties in favor of the City that are otherwise provided in or arise out of this contract. This Paragraph 6.20 is in addition to and shall be construed separately from any other indemnification provisions that may be in this contract. (iv) Survival. This Paragraph 6.20 shall remain in force despite termination of this contract (whether by expiration of the term or otherwise) and termination of the services of the Contractor under this contract.

C. (Restriction regarding Indemnitees' Negligence). This contract shall not require the Contractor to indemnify or hold harmless Indemnitees against liability for damages arising out of bodily injury to persons or damage to property proximately caused by or resulting from the negligence, in whole or in part, of Indemnitees.

D. (Restriction regarding Fault). Nothing in this contract requires the Contractor to indemnify or hold harmless Indemnitees or any other person or entity against losses, damages, or expenses unless the fault of the Contractor or its derivative parties is a proximate cause of the loss, damage, or expense indemnified.

E. (Restriction regarding Negligence). Nothing in this contract requires the Contractor to defend Indemnitees or any other person or entity against liability or claims for damages, or expenses, including attorney's fees, proximately caused or alleged caused by the professional negligence, in whole or in part of the Contractor, the City, or their derivative parties, whether the claim is alleged or brought in tort or contract.

F. (Liability When at Fault). It is agreed without limitation that nothing in this contract shall be interpreted to exclude from any indemnity or hold harmless provisions enforceable under subparagraphs 6.20.C and 6.20.D any attorneys' fees, litigation or arbitration expenses, or court costs actually incurred by the City to defend against third party claims alleged in any court, tribunal, or alternative dispute resolution procedure required of the City by law or by contract, if the fault of the Contractor or its derivative parties is a proximate cause of the attorney's fees litigation or arbitration expenses, or court costs to be indemnified.

G. (Insurance contracts and bonds) This Paragraph 6.20 does not affect an insurance contract, workers' compensation, or any other agreement issued by an insurer; and does not apply to lien or bond claims asserted under Chapter 44A of the N.C. General Statutes.

L. Performance of Private Work in Conjunction with Contract

1. The Contractor shall not perform work for private citizens or agencies in conjunction with this Project or within the Project Sites of this Contract. Any other work performed by the Contractor within the vicinity of the Project Sites shall be completed prior to mobilization to each individual Site or after substantial completion and demobilization from the individual Site.

M. NCDENR Fines

1. In addition to Liquidated Damages, Contractor shall pay Owner for any NCDENR fines that may be levied against the Owner but related to the Contractor's actions.

NON-COLLUSION STATEMENT BY CONTRACTOR

The City of Durham prohibits collusion, which is defined as a secret agreement for a deceitful or fraudulent purpose.

I,, affirm that I have not engaged in collusion with any City employee(s), other person, corporations, or firms relating to this Bid, proposals, or quotations. I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences, and civil damage awards.

.....
CONTRACTOR

CONTRACT: SD-2021-01
PROJECT: Bradford Circle Drainage Improvements
DATE: January 14, 2021

STORMWATER & GIS SERVICES DIVISION
PUBLIC WORKS DEPARTMENT
CITY OF DURHAM, NORTH CAROLINA

IN WITNESS WHEREOF, the City and the Contractor have caused this contract to be executed under seal themselves or by their respective duly authorized agents or offices on this [*to be completed upon execution*] day of [*to be completed upon execution*], 20[*to be completed upon execution*] (the “Effective Date”).

ATTEST:

CITY OF DURHAM

_____ By: _____

preaudit certificate, if applicable _____

Address for giving notices:

Attention: Antwon Williams, P.E.
City of Durham
Public Works Department
Stormwater & GIS Services Division
101 City Hall Plaza
Durham NC 27701
E-mail: antwon.williams@DurhamNC.gov
Phone No.: (919) 560-4326, ext. 30254
Fax No.: (919) 560-4316

CONTRACTOR (CORPORATION):

.....

By:

Title:

(CORPORATE SEAL)

Attest:

Title:

(CORPORATE SEAL)

Address for giving notices:

.....

.....

.....

Phone No.:

Fax No.:

License No.:

Agent for service or process:

.....

(If Contractor is a corporation or partnership,
attach evidence of authority to sign.)

State of ACKNOWLEDGMENT BY CORPORATION

County of

I, a notary public in and for the aforesaid county and state, certify that
personally appeared before me this day and stated that he or she is

(Strike through the inapplicable:) chairperson/ president/ chief executive officer/ vice-president/
assistant vice-president/ treasurer/ chief financial officer of

[to be completed upon execution], a corporation, and that by authority duly given and as the act of the
corporation, he or she signed the foregoing contract or agreement with the City of Durham and the
corporate seal was affixed thereto. This the day of,
20.....

My commission expires:
..... Notary Public

CONTRACT: SD-2021-01
PROJECT: Bradford Circle Drainage Improvements
DATE: January 14, 2021

STORMWATER & GIS SERVICES DIVISION
PUBLIC WORKS DEPARTMENT
CITY OF DURHAM, NORTH CAROLINA

END OF DOCUMENT

SECTION 30 11 00

PROJECT SPECIAL PROVISIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Testing and Inspecting Allowances
 2. Utility Line/Pole Relocation and Coordinate Allowances
 3. Temporary Relocation of Mailbox
 4. Work Zone Traffic Control
 5. Construction and As-Built Surveying
 6. Water and Sewer Service Adjustments (Including Fittings)
 7. Landscaping
 8. Tree Protection Fencing
 9. Select Tree Removal
 10. Pervious Concrete Pavement
 11. #8 Stone AASHTO Gradation

1.2 TESTING AND INSPECTING ALLOWANCES

- A. Contractor shall be responsible for all testing and inspecting costs associate with the Work.
- B. Contractor shall perform all testing and inspecting as required by the Engineer. Contractor shall submit the qualifications of the testing and inspecting subcontractor to the Engineer for approval.
- C. Contractor shall pay all costs related to testing and inspecting. Contractor will be reimbursed through allowance for this Work. Contractor shall submit invoice from the approved testing firm to Engineer for reimbursement. Contractor is not entitled to any overhead cost for testing and inspecting.
1. Contractor shall submit testing and inspecting company estimates to Engineer for approval prior to commencing any testing and inspecting Work.

1.3 UTILITY LINE/POLE RELOCATION AND COORDINATION ALLOWANCES

- A. Contractor is responsible for all coordination related to temporary and permanent utility line/pole relocation. This includes coordination between the Owner, Engineer, Property Owner (and tenants), and the utility company.
- B. Contractor shall pay all costs related to utility line/pole relocation and coordination. Contractor will be reimbursed through allowance for this Work. Contractor shall submit invoice from the utility company to Engineer for reimbursement. Contractor is not entitled to any overhead cost for utility line/pole relocation and coordination.

- C. Contractor shall submit utility company estimates to Engineer for approval prior to commencing any utility line/pole relocation Work.

1.4 WORK ZONE TRAFFIC CONTROL

- A. The replacement of the Bradford Circle pavement will be performed under temporary road closure and one-lane traffic patterns. Install and maintain all traffic control devices as shown in the Roadway Standard Drawings or as directed by the Engineer.
- B. The lump sum price bid for traffic control shall include but not be limited to providing Signs (portable and stationary), Changeable Message Signs (CMS), Pedestrian Access Paths, Cones, Skinny Drums and Drums and all labor, tools, equipment and incidentals necessary to furnish, install, maintain and remove traffic control devices when no longer required.
- C. Basis of Payment: Partial payments will be made on each payment estimate based on the following: Fifty percent of the contract lump sum price bid will be paid on the first monthly estimate and the remaining 50% of the contract lump sum price bid will be paid on each subsequent estimate based on the percent of the project completed.

1.5 TEMPORARY RELOCATION OF MAILBOX

- A. Remove existing mailboxes and post, relocate as necessary, and upon completion of work reinstall in original location shown on plan or approved by the Engineer. Contractor shall reinstall the mailboxes and post in the same working and cosmetic condition as found. Any noted deficiencies with the existing mailbox and post shall be disclosed to the resident project representative prior to work commencing.

1.6 CONSTRUCTION SURVEYING AND AS-BUILT SURVEY

- A. Construction Surveying
 - 1. Description

Construction Survey shall be performed in accordance with Section 801 of the NCDOT Standard Specifications for Roads and Structures and shall include but not be limited to the layout of the culvert, stream channel, temporary and permanent easements, right-of-way, and all sensitive areas associated with the implementation of the design as indicated in the Drawings.

Contractor shall maintain a level and rod on-site at all times for use by the Engineer to evaluate culvert and stream grades. This condition shall not alleviate the Contractor's responsibility to make certain that the culvert and stream is constructed in accordance with the Contract Documents.

- 2. Method

Refer to Section 801 – Construction Stakes, Lines and Grades in the NCDOT Standard Specifications for Roads and Structures. Prior to any clearing activities, the Contractor shall install temporary stakes to mark the limits of disturbance, staging and stockpile areas, and jurisdictional wetlands for approval by the Engineer.

Staking may not be required if GPS is used for grading activities. If GPS is used, the Engineer shall have the ability to use the Contractor's GPS unit to field verify stream alignment.

3. Measurement and Payment

Construction Survey will be measured and paid for as a lump sum price in accordance with Article 801-3 of the NCDOT Standard Specifications for Roads and Structures. Such price and payment will be full compensation for all work covered by this section, including but not limited to construction layout, boundary surveying, and engineering necessary for the proper construction of the project in accordance with the Construction Documents. Any adjustments to the culvert and stream alignment shall be considered incidental to the lump sum price for Construction Survey.

Partial payments will be made for this work based on the percentage complete of Construction Survey as approved by the Engineer. The Contractor shall submit a certified statement each month indicating the percentage of Construction Survey work completed.

4. Pay Item

Payment will be made under Construction Survey, Lump Sum (LS).

B. As-Built Survey

1. Description

2. The Contractor shall prepare and submit to the Engineer a certified As-Built Survey of the completed construction that fully illustrates all construction completed within the Limits of Disturbance.

As-Built Survey must be submitted to the Engineer after grading is completed and not later than 30 days after the project is accepted. An electronic CAD file must accompany the hard copy submittal bearing the PLS seal.

3. Method

The As-built Survey is only required within the Limits of Disturbance of the current project and must include the following surveyed features:

Plan View of the project area that should include the following information:

- Limits of grading;
- Elevation contour lines at one-foot increments within the grading limits;
- Location and size, where appropriate, of all structures and utility lines within the disturbance areas verified prior to construction, including bridges, crossings, buildings, utility poles, pipes (sewer, stormwater outfalls, culverts), and underground utilities (sanitary sewer, storm sewer, fiber optic lines, etc.);
- Surveyed benchmarks (e.g. permanent, TBM, property boundaries);
- Road and Sidewalk;
- Other features flagged by the consultant construction manager.

4. Measurement and Payment

All work completed under this section shall be considered incidental to Construction Surveying (Section 1.4.A), therefore no separate pay item for this work is provided.

1.7 WATER AND SEWER SERVICE ADJUSTMENTS (INCLUDING FITTINGS)

- A. The measurement for payment for all water and sewer service adjustments shall be the actual number of service adjustments located on the Drawings or encountered in the field during excavation.
- B. The unit price bid shall include all materials, labor, tools, equipment, and all work including the preconstruction investigation of the location and routing of the service lines, any temporary service lines required (including temporary jumpers for water services), operating of shut-off valves, replacement of pipes and fittings (including valves and cleanouts in damaged during construction) in accordance with the appropriate sections of the City of Durham Water and Sewer Construction Standards.

1.8 LANDSCAPING

- A. In addition to the NCDOT Standard Specifications (Division 16), the below items for landscaping shall apply. When varying specifications for the same item are identified, the more conservative/stringent shall apply.

The Contractor shall be responsible to replace in-kind any tree, bush, plant or grass that is disturbed or significantly damaged, outside of the prescribed construction limits during construction or identified to be preserved or protected within the limits of construction. Damage requiring replacement shall be the opinion of the Engineer. The Contractor shall make every effort to minimize the destruction of vegetation within the limits of construction and utilize effective soil erosion control measures at all times.

Use primarily native trees and shrubs. Each tree shall have a 5 foot diameter minimum mulch ring.

The Contractor shall provide a licensed and insured landscaper to perform all landscape work including, but not limited to, planting, fertilizing, watering, etc. of vegetation, shrubs, bushes, trees, etc. for the project throughout the duration of the specified warranty period.

The preferred planting time is between October 15 and March 15 and when ground is not frozen (exceptions require approval by the Engineer).

Warranty Period Requirements – Unless otherwise specified, the warranty period shall be for one month or until the plants are established. During the warranty period after planting, the Contractor shall be responsible for ensuring the plants receive sufficient watering to become established, use watering bags for all tree watering during the warranty period, and keep watering and maintenance records submitted monthly during the warranty period to the Owner. The warranty requires that plants be healthy, vigorous and thriving after a period of one (1) month from the date of planting or until established. Any replacement plants shall be inspected by the Engineer prior to re-planting. Dead or

dying plants will be documented and removed immediately by the Contractor. The Contractor shall call for a review of the plantings at the end of the warranty period by the engineer and owner. At this meeting the plants will be field reviewed to confirm the acceptance to the end of the contractors warranty period or to determine if replacement plants are required. Replacement dates for supplemental plantings will be established by mutual agreement between the Engineer, Owner and the Contractor. New plants shall be subject to the original warranty for that plant.

B. Plants

1. The Contractor must provide a list of sources for all plant material for the Engineer's review.
2. No substitute plants shall be ordered by the Contractor without the written approval of the Engineer and Owner.
3. Plants shall be measured when branches are in the normal position. Height and spread dimensions refer to the main body of the plant and not branch tip to tip. If a range of size is given, no plant shall be less than the minimum size and not less than 40% of the plants shall be as large as the maximum size specified. The measurements specified are the minimum size acceptable and are the measurements after any pruning, where pruning is required. Plants that meet the measurements specified, but do not have a normal balance between height and spread shall be rejected.
4. A complete list of plantings and necessary landscape material is provided on the Drawings.

C. Trees and Shrubs

1. Furnish plants in quantities required to complete the work as indicated on the Drawings and per bid schedule.
2. Use plants that are symmetrical and typical of its species, healthy, well branched and well-proportioned in respect to height and width, free from disease, injury, insects and weak roots, and conforming to the requirements of the American Standard for Nursery Stock, ANSI 260 I 1990. All plants are subject to inspection. All trees shall have been grown in areas of Zone 7 hardiness or colder.
3. Botanic and Common Names – Nomenclature is in conformance with standard horticultural practice in the area. Plants are to be delivered to the site with tags bearing the botanic name as indicated by the plant list.
4. Plant Protection – Plants shall be handled so that roots are adequately protected at all times from drying out and from other injury. Protect balls of balled plants which cannot be planted within 12 hours of delivery with soil or other suitable materials. Where possible, store plants in the shade. Keep all plant roots moist before, during and after planting.

D. Live Staking

1. Species used shall be harvested during dormancy when no leaves are present. If the construction/planting sequence allows, the cuttings may be propagated at a nursery over winter to develop roots before planting.
2. See Drawings for installation details and live staking sizing specifics. These units shall be free from all side branches. Stakes shall be 0.5 to 1.5 inch in diameter and 2- to 3 feet long with the bottom end cut off at an angle and the top end with a straight cut.

3. Live branch cuttings shall consist of a mix of the woody plant species as called for on the Drawings. The species will be selected for a combination of trees and shrubs for the piedmont physiographic region. The live stakes will be selected from available species that are produced and available at local nurseries that include but are not limited to Cure Nursery, Cill Ide Native Plant Nursery, Mellow Marsh Farm, and Coastal Plain Conservation Nursery. Plant substitutes may be approved by the Engineer if named species are not available during the time of planting.
4. The use of chainsaws, weed whips with metal blades, loppers, and pruners shall be permitted provided that they are used in such a manner that they leave clean cuts. Live plant materials shall be cut and handled with care to avoid bark stripping and trunk wood splitting. Cuts shall be made 8 in to 10-in from the ground when cutting from the approved, natural growing source sites. Cuts shall be made flat or at a blunt angle. This assures that the source sites shall regenerate rapidly.
5. The harvesting site must be left clean and tidy. Large unused material shall be cut up into 16-inch lengths and evenly distributed around the site.
6. Live branch cuttings shall be bound together securely with twine at the collection site, in groups, for easy handling and for protection during transport. Live branch cuttings shall be grouped in such a manner that they stay together when handled. Five cuttings shall be allowed per bundle.
7. During transportation, the live cut branch groups shall be placed on the transport vehicles in an orderly fashion, to prevent damage and to facilitate handling. The live cut plant materials shall be covered with a tarp or burlap material during transportation.
8. Upon arrival at the construction site, live branch cuttings shall be inspected for acceptability. Live cut material shall be collected from sources that shall be approved prior to the commencement of culling operations. Only healthy, well-branched and disease-free stock shall be acceptable.
9. All cut plant materials shall arrive on the job site within 8 hours of cutting. Prior to planting, the cuttings shall be soaked by submerging at least 2/3 of their length in containers of water, free from any harmful oil, chemical, sprays, or other materials. The cuttings shall be kept in the shade at all times.
10. Plants not installed on the day of arrival at the job site shall be stored and protected until installation. Unless otherwise specified, all live plant materials will be used within 24 hours after cutting. Outside storage locations shall be continually shaded and protected from the wind. Live cut plant material shall be heeled in moist soils or kept in water. Live cut materials shall be protected from drying at all times.
11. The Contractor shall use augers, stingers, hand held dibble bars or similar method to prepare planting pits for willow cuttings or bundles. Cuttings shall be inserted in the ground the bud scars or tip pointing upward and to a sufficient depth such that the butt end of the cutting penetrates the water table. Earth shall be tamped around the cuttings or bundles to insure proper soil contact. Following installation, all live stakes or bundles shall be pruned so that no more than 1 to 2-feet of the cuttings are aboveground.
12. Warranty - The Contractor shall maintain a 1 year, 85 percent care and replacement warranty for all live stakes. The period of care and replacement

shall begin after inspection and approval of the initial installation of all live stakes and continue for 1 year, with one potential replacement period. The Contractor will not be responsible for live stakes that have been damaged by vandalism, fire, flooding or other activities beyond the Contractor's control.

E. Tublings and Rooted Plant Plugs

1. A minimum stem caliper for tublings and rooted plant plugs is 1/8 inch. For guidance, see Section 10 of the American Standard for Nursery Stock 2004.
2. Tublings and rooted plant plugs shall consist of a mix of the following species as called for on the Drawings. The species will be selected for a combination of trees and shrubs for the piedmont physiographic region. The tublings and rooted plant plugs will be selected from available species that are produced and available at local nurseries that included but are not limited to Cure Nursery, Cill Ide Native Plant Nursery, Mellow Marsh Farm, and Coastal Plain Conservation Nursery. Plant substitutes may be approved by the Engineer if named species are not available during the time of planting.
3. During transportation, the plants shall be placed on the transport vehicles in an orderly fashion, to prevent damage and to facilitate handling. The live cut plant materials shall be covered with a tarp or burlap material during transportation.
4. Upon arrival at the construction site, the plants shall be inspected for acceptability. Only healthy, well-branched and disease-free stock shall be acceptable. Plants not installed on the day of arrival at the job site shall be stored and protected until installation. While plants are being transported to and from storage, or are being distributed in plantings beds or are awaiting planting after distribution, the Contractor shall protect the plants from drying out by means of wet canvas, burlap or straw, or by other means acceptable to the Engineer and appropriate weather conditions and the length of time the roots will remain out of the ground. Plant materials shall be protected from drying at all times.
5. Installation of tublings and rooted plant plugs shall be conducted in designated areas according to the planting plan or as directed by the Engineer. Soil in the area of shrub and tree plantings shall be loosened to a depth of at least one foot. This is only necessary on compacted soil. Plants may be planted in holes made by an auger, mattock, dibble, planting bar, or other means that meet the approval of the Engineer. Following plant hole excavation, gently place watered plant in the hole immediately ensuring that the roots are not tangled, compacted, or curled up at the ends. Plants shall be planted in a vertical position with the root collar approximately 0.5 inches below the soil surface. The planting trench or hole shall be deep and wide enough to permit roots to spread out and down without J-rooting. After planting, compress the soil at the base of the plant to eliminate voids between the rootball and existing soil. Straw mulch shall be placed around the base of each plant at least 4-6 inches thick. Straw bale may be torn into segments and placed around the base of each plant.

- F. Seed Mixes – Riparian seed mix shall be Earnst Conservation Seeds NC Piedmont Riparian Mix or approved equal with an application rate of 20 pounds per acre. Seed mixes for individual projects may be shown on the plans and shall be provided in lieu of the NC Piedmont Riparian Mix stated above.

- G. Erosion Control Blanket (C700 Type) – In general, erosion control blankets should be applied to channels, and other steeply sloped areas which are disturbed by construction operations and/or which are to remain as finish grade surfaces. Erosion control blankets shall be a machine-produced 100% biodegradable mat. The blanket shall be of consistent thickness with the coconut fiber evenly distributed over the entire area of the mat. Erosion Control Blankets will only be used in locations specified on the plans or as directed by the Engineer.
1. Materials – Coconut fiber matting shall be provided to meet the specifications provided below:

Matrix	100% Coconut Fiber
Weight	20 oz/SY (678 gm/m ²)
Tensile Strength	1348 x 626 lb/ft minimum (1650.5 x 766.5 kg/m)
Elongation	34% x 38%
Open Area (measured)	50%
Thickness	0.30 inches minimum (7.6 mm)
Flexibility (mg-cm)	65030 x 29590
Recommended Flow	11 feet/second (3.35 m/s)
Size	6.6 x 164 feet (120 SY) or (100 SM)
“C: Factor	0.002

Stakes will be wooden stakes 12 inch (300 mm) in length with a notch cut 1 inch (25 mm) from the top. These stakes shall be used to stake the matting along the slopes. Wooden 3 foot stakes spaced approximately 4 feet apart shall be used to secure the matting at the toe of the slope. The toe stakes shall have a minimum 1-inch by 1-inch cross-section and shall be designed so that the matting cannot slide past the exposed end of the stake.

1.9 TREE PROTECTION FENCING

- A. Basis of Measurement: By linear feet (LF).
- B. Basis of Payment: Includes the work described in this specification section and will be paid as the actual number of linear feet of tree protection fence approved by the Engineer and installed by the Contractor.
- C. Tree protection fencing shall conform to the current “Construction and Tree Protection” document prepared by the North Carolina State University – North Carolina A&T State University Cooperative Extension. The document may be downloaded at the following web page: <https://content.ces.ncsu.edu/construction-and-tree-protection>.
- D. and preventing erosion.

1.10 SELECT TREE REMOVAL

- A. The Unit Price Work Item “Select Tree Removal” shall include all the work described in the NCDOT Standard Specifications Section 200 “Clearing and Grubbing.”

- B. The diameter of the tree will be determined by measuring the circumference of the trunk in inches at 4.5 feet above the existing ground surface (Diameter Breast Height) and dividing the length by π (approximately 3.14). Payment will be made on each/individual basis.

1.11 PERVIOUS CONCRETE PAVEMENT

- A. DESCRIPTION: This work shall consist of constructing pervious Portland cement concrete roadway pavements, alleys, sidewalks, or trails on a prepared sub-grade in accordance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown in the contract documents or as directed by the Chief Engineer.
The pervious concrete pavements and sidewalks shall consist of a mixture of Portland cement, aggregate, water, admixtures and other ingredients as may be specified.
- B. REFERENCES
 - ACI 522R-10 Report on Pervious Concrete
 - ACI 522.1-13 Specifications for Pervious Concrete Pavement
 - ACI 211.3R - Guide for Selecting Proportions for No-Slump Concrete
 - ACI 325.12R-02 Guide for the design of Jointed Concrete Pavements for Streets and Local Roads
 - ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - ASTM C94 - Standard Specification for Ready-Mixed Concrete
 - ASTM C150 – Standard Specification for Portland Cement
 - ASTM C595 - Standard Specification for Blended Hydraulic Cements
 - ASTM C979 – Standard Specification for Pigments for Integrally Colored Concrete
 - ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction
 - ASTM C1116 – Standard Specification for Fiber Reinforced Concrete
 - ASTM C1688 - Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete
 - ASTM C1701 - Standard Test Method for Infiltration Rate of In Place Pervious Concrete
 - ASTM C1754 - Standard Test Method for Density and Void Content of Hardened Pervious Concrete
 - ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete
 - ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction

ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

NCDOT Standard Specifications, 2018

NRMCA – National Ready Mix Concrete Association

Washington State DOT – Preliminary Procedures for Structural Design of Pervious Concrete Pavements.

C. MATERIALS

1. Portland Cement shall be:
 - a. Type I or II conforming to AASHTO M85 or ASTM C150; or
 - b. Type IP or IS conforming to ASTM C595.
1. Aggregate
2. Maximum coarse aggregate size shall be No. 8.
 - a. Coarse and fine aggregate conforming to NCDOT Standard Specifications Sections 1014-2 and 1014-1 of the DDOT Standard Specifications shall be double-washed. Washing shall be sufficient to remove dust and other coatings.
3. Admixtures – Water reducing, hydration stabilizers, air entrainment, and other admixtures conforming to DDOT Specifications shall be allowed in the mix design.
4. Fibers – Reinforcing fibers conforming to DDOT Specifications and ASTM C1116 shall be allowed in the mix design.
5. Pigments – Pigments conforming to ASTM C979 shall be allowed in the mix design.
6. Joint Material – Filler for expansion joints shall be in accordance with Section 807.01 of the DDOT Standard Specifications.

D. PROPORTIONING

Comply with ASTM C94 and develop a concrete mix design meeting the following requirements in accordance with ACI 211.3R, Appendix 6:

1. Concrete shall achieve a minimum infiltration rate of 50 inches/hour (25 gallons/hour in a 12 inch diameter cylinder). Testing shall be in accordance with ASTM 1701.
2. Concrete shall meet a minimum 28-day design flexural strength of 450 psi. Concrete shall achieve a compressive strength of 3,000 psi.
3. A combined coarse and fine aggregates gradation shall be provided and material passing the #4 sieve shall be between 4% and 7%.

4. Mix Water: Mix water quantity shall be such that the cement paste displays a wet metallic sheen without causing the paste to flow from the aggregate. Mix water yielding a cement paste with a dull-dry appearance has insufficient water for hydration. Insufficient water results in inconsistency in the mix and poor bond strength between aggregate particles. High water content results in the paste reducing or eliminating the void system required for porosity.

E. SUBMITTALS

1. Contractor Qualifications
 - a. At the time of bid submission, Contractor shall submit the name and qualifications of the pervious concrete installer, providing written evidence of the following:
 - (i) Employment of one (1) NRMCA certified Pervious Concrete Craftsman who shall be on site, overseeing each placement crew, during all concrete placement; or
 - (ii) Employment of at least two (2) NRMCA certified Pervious Concrete Installers who shall be on site, overseeing each placement crew, during all concrete placement.
 - b. Not later than fourteen (14) days before construction of pervious concrete, Contractor shall furnish evidence of employment of at least three (3) certified Pervious Concrete Technicians who will perform the pervious concrete construction.
2. Testing Agency – Within seven (7) days after notice to proceed, Contractor shall furnish the name and location of the proposed testing agency meeting the requirements of Section O of this specification.
3. Concrete Producer Qualifications – Within seven (7) working days after notice to proceed, Contractor shall furnish the name and location of an NRMCA certified plant that will produce and provide pervious concrete.
4. Concrete Mix Design – Not later than thirty-five (35) days before construction of pervious concrete, Contractor shall furnish:
 - a. A proposed mix design with proportions of materials for acceptance as described in section D of this specification or otherwise specified in Contract Documents. The data shall include unit weight, void ratio, and strength.
 - b. Samples of individual concrete materials contained in the mix design for sampling and testing of material prior to use, in accordance with Section 106.02 of the DDOT Standard Specifications.
5. Product Sample (Test Panel) – At least fifteen (15) working days before construction of pervious concrete, and following the Design Engineer's

acceptance of the mix design, Contractor shall provide a sample of the product (test panel) in accordance with section F of this specification.

F. TEST PANEL

1. Contractor shall provide a minimum of one (1) test panel for acceptance. Place, joint and cure the test panel, a minimum of 275 square feet in size or as specified in the Contract Documents, at the required project thickness to demonstrate that in-place void contents, unit weights, and infiltration rates can be met and to demonstrate effective jointing that does not compromise the cured concrete integrity.
2. Test Panel Infiltration: Test panels shall be tested for infiltration in accordance with ASTM C1701.
3. Test Panel Cores: Test panels shall have three (3) cores, each six (6) inches in diameter, taken from the panel a minimum of seven (7) days after placement of the pervious concrete. At least one core shall be taken within six (6) inches of a contraction joint. The cores shall be measured for thickness, void structure, and unit weight. Untrimmed, hardened core samples shall be used to determine thickness in accordance with ASTM C42. After thickness determination, the cores shall be trimmed and measured for unit weight in a saturated condition and void content in accordance with ASTM C1754.
4. Test Panel Acceptance: Satisfactory test panels will be determined by:
 - a. Infiltration rate of at least 50 inches per hour.
 - b. Compacted thickness within 1/4" of the specified thickness.
 - c. Void Content \pm three (3) percent of the design void content.
 - d. Unit weight \pm five (5) pounds per cubic foot of the design unit weight.

If test panels meet the above mentioned requirements, they can be left in-place and included in the completed work. If test panels do not meet the above mentioned requirements, they shall be removed and disposed of in an approved manner, and replaced with an acceptable test panel at the contractor's expense.

G. PREPARATION OF GRADE

1. Sub-Grade Preparation – Shall be in accordance with project construction plans and NCDOT Specifications
2. Base Materials – Shall be in accordance with project construction plans and NCDOT Specifications

H. HANDLING, MEASURING AND BATCHING MATERIALS

Pervious concrete shall be transported from batching plant to the location of placement by a rolling drum mixer truck with current (within 12 months) certification by the

NRMCA. Non-agitating trucks shall not be used. Each truck should not haul more than two (2) loads before being cycled to another type of concrete, unless a stabilizing hydration agent is used in the pervious concrete mix design or if DDOT determines that there is no significant concrete build-up in the concrete mixer after delivery of each load.

I. MIXING CONCRETE

1. Concrete shall be mixed for a minimum of one (1) minute after introduction of all materials into the mixer. Truck mixers shall be operated at the speed designated by the concrete producer for at least 75 to 100 revolutions of the drum.
2. Concrete mixing shall comply with ASTM C94 except that discharge shall be completed within sixty (60) minutes after the introduction of mix water to the cement. This time can be increased to ninety (90) minutes when utilizing a hydration stabilizer. Further water addition is permitted at the point of discharge provided the design water/cement ratio is not exceeded.

J. LIMITATIONS ON MIXING AND PLACING

Do not install pervious concrete when ambient temperature is below 40°F or above 90°F, or when ambient temperature is forecasted to be below 40°F or above 90°F at any time during the seven (7) days following placement, unless otherwise permitted in writing by the Chief Engineer.

K. PLACING AND CONSOLIDATING CONCRETE

1. Pre-Construction Conference - A mandatory pre-construction conference will take place at least seven (7) days prior to installation of work and shall include at a minimum engineer, inspector, general contractor, pervious concrete contractor, concrete supplier, and field testing agency.
2. Wet the base materials or sub-grade immediately prior to concrete placement.
3. Deposit concrete directly from the transporting equipment onto the base materials or sub-grade, as appropriate.
4. Discharge: Each truckload shall be visually inspected for moisture consistency prior to discharge. Water addition shall not be permitted at the point of discharge to obtain the required mixture consistency and truckloads lacking the required moisture consistency shall be rejected as determined by the inspector. Discharge shall be a continuous operation and shall be completed as quickly as possible. Concrete shall be deposited as close to its final position as practical and such that discharged concrete is incorporated into previously placed and plastic concrete. If consolidation occurs during concrete discharge, placement shall be halted, the mixture shall be addressed, and the consolidated portion removed and replaced immediately.

5. Other methods of discharging the concrete may be used when specified in the Contract Documents or as allowed by the Chief Engineer.
6. Spread the concrete using a come-along, short-handle square ended shovel or rake, or similar equipment.
7. Rolling compaction shall be achieved using a motorized or hydraulically actuated, rotating, weighted tube screed that spans the width of the section placed and exerts a minimum vertical pressure of 10 psi on the concrete. Alternatively a steel pipe roller meeting the same criteria may be used.
8. Plate compaction is not recommended, but may be necessary in small areas. When necessary, a standard soil plate compactor with a base area of at least two square feet that exerts a minimum pressure of 10 psi on the concrete through a $\frac{3}{4}$ inch minimum plywood cover shall be used.
9. Cross rolling shall be performed using a roller specifically designed to smooth and compact pervious concrete. Lawn rollers are not allowed.
10. Foot-traffic shall not be allowed on fresh concrete.

L. STRIKE-OFF, CONSOLIDATION AND FINISHING

1. Strike off concrete between forms using a form riding paving machine, vibrating screed, or roller screed.
2. Do not use steel trowels or power finishing equipment.
3. Final surface texture shall be achieved by finishing the fresh concrete using a full-width steel roller that provides a minimum compactive pressure to achieve the required tolerances.
4. Hand tools shall be used to finish the concrete along the slab edges immediately adjacent to forms.
5. Other methods of producing final surface texture may be permitted when specified in the Contract Documents or approved by the engineer.

M. CURING

1. Begin curing within twenty (20) minutes of concrete discharge unless longer working time is approved by the Chief Engineer.
2. Curing Material:
 - a. The pavement surface shall be entirely covered with a minimum six (6) mil thick polyethylene. Sheeting shall be cut to a minimum of the full lane width and pavement shall remain covered for at least seven (7) uninterrupted days.

- b. Alternate curing materials may be used as approved by the Chief Engineer.
3. Curing sheets shall be secured and kept secure at all times without using dirt.
4. Hot Weather Curing: A fog shall be sprayed above the surface, before covering, when required due to hot weather conditions. Equipment must include fog nozzles that atomize water using air pressure to create a fog blanket over the slab.
5. Cold Weather Curing: Curing shall be in accordance with NCDOT Cold Weather Specification 420-7.

N. JOINTS

1. Contraction joints shall be installed at locations and spacing described in N.2 at one-quarter ($\frac{1}{4}$) the depth of the thickness or a maximum of one and a half ($1\frac{1}{2}$) inches for roadway and alley pavements, and at one-half inch ($\frac{1}{2}$ "') for sidewalks and trails. Allowable methods for joint placement, as directed by the Chief Engineer, include:
 - a. Rolled Joints - shall be formed in plastic concrete using a steel pipe roller to which a beveled fin with the required diameter to achieve the joint depth has been attached around the circumference of the roller. Rolled joints are formed immediately after roller compaction and before curing. Sidewalks and trails shall have rolled joints.
 - b. Sawed joints - shall be constructed as soon as the pervious pavement can be sawed without raveling the sawed edge and before initial cracking occurs, using a wet saw or an early-entry saw. Sawed joints shall typically be constructed between 24 hours and 48 hours after concrete placement, depending on site conditions. At no time during the sawing process shall more pavement surface be exposed than that needed for sawing. Any dust or slurry generated during sawing shall be immediately removed during the sawing operation.
2. Construction joints shall be installed at a spacing of no greater than 12 feet with a maximum length to width (L:W) ratio of 1.25 Long to 1.0 Wide and whenever concrete placement is suspended for a sufficient length of time that concrete may begin to harden.
3. Expansion joints shall be installed when pervious concrete will abut existing concrete slabs or other structures such as walls, curbs, clean out aprons, footings, columns, catch basins, stairs, light poles, and other points of restraint.
4. To reduce raveling at joints, or where pervious concrete meets impervious pavement, finishing may be necessary in accordance with Section L, Item 4 of this specification.

O. TESTING

Testing responsibilities will be performed by the testing agency at the Contractor's expense. Concrete materials and operations may also be tested and inspected by the owner as work progresses. Use of testing services will not relieve Contractor of the responsibility to furnish materials and construction in full compliance with the Contract Documents. Failure to detect defective work or materials early will not prevent rejection if a defect is discovered later nor shall it obligate the Engineer for final acceptance at any time.

1. Testing Agency: Agencies that perform testing services on concrete shall be AASHTO accredited per AASHTO R18 and meet the requirements of ASTM C1077. Testing agencies performing the testing shall also have experience in testing pervious concrete and shall be accepted by the Engineer before performing any work. Field tests of concrete shall be made by an individual certified as an NRMCA Certified Pervious Concrete Technician, who is also an ACI Concrete Field Testing Technician, Grade 1 in accordance with ACI CPI.
2. Testing Procedure:
 - a. Conduct tests in accordance with ASTM C1688 at the beginning of each pervious concrete placement operation for each batch, or for every 50 cubic yards (maximum), or a minimum of one test for each day's placement, to verify fresh density and void content.
 - b. A minimum of seven (7) days following each placement, three (3) cores, six (6) inches in diameter, shall be taken. The cores shall be measured for thickness, void content and unit weight determined using the methods described in section F of this specification Test Panels. Satisfactory test panels will be determined by:
 - i. Compacted thickness $+3/4"$, $-1/4"$ of the specified thickness.
 - ii. Void Content \pm three (3) percent of the design void content.
 - iii. Unit weight \pm five (5) pounds per cubic foot of the design unit weight.
 - c. If pervious concrete fails to meet the above requirements, the Chief Engineer shall make a determination of acceptance, rejection, or acceptance at a reduced price, per Section 501.15 paragraph (A) of the DDOT Standard Specifications.
3. The infiltration of the pavement surface shall be tested in accordance with ASTM C1701. All applied water shall infiltrate directly without puddle formation or surface runoff, and the testing shall be observed by DDOT. A minimum infiltration rate of 60 inches per hour shall be achieved.
4. Submit all test results to the Chief Engineer.

5. Cores holes shall be filled with standard concrete.

P. OPENING TO TRAFFIC

Both vehicular traffic and pedestrian traffic shall be excluded from pervious concrete pavement after the placement of curing materials as follows:

- 7 days for pedestrian traffic on sidewalks or pavements
- 14 days for vehicular traffic on alleys
- As determined by Chief Engineer for vehicular traffic on roadways, but not less than 14 days.

Q. TOLERANCES

Pavement must be mechanically swept and finished before testing for compliance with tolerances. Construct pavement to comply with the tolerances of Section 501.23 of the DDOT Standard Specifications and the following:

- Thicknesses: + 3/4 inch; - 1/4 inch
- Elevation: + or - 1/2 inch
- Contraction joint depth: +1/4 inch, -0 inch

R. MEASURE AND PAYMENT

The unit of measure for Pervious Concrete Pavement will be the square yard at the specified thickness. The actual number of square yards, complete in place measured along the surface, will be paid for at the contract unit price per square yard, or adjusted unit price per square yard if required under Section 501.23 of the DDOT Standard Specifications, which payment will be full compensation for furnishing, hauling, and placing all materials, including formwork, concrete work, joints, expansion joint materials, waterproofing, load transfer devices, impervious material, sealing of joints and curing. Payment for will include all costs for furnishing all materials, labor, tools, equipment and incidentals to complete the work.

1.12 #8 STONE AASHTO GRADATION

A. Gradation Table:

% Passing	Sieve
100% Passing	½ Sieve
85 to 100% Passing	3/8 Sieve
10 to 30% Passing	No. 4 Sieve
0 to 10% Passing	No. 8 Sieve
0 to 5% Passing	No. 16 Sieve

CONTRACT: SD-2021-01
PROJECT: Bradford Circle Drainage Improvement
DATE: January 14, 2021

STORMWATER & GIS SERVICES DIVISION
PUBLIC WORKS DEPARTMENT
CITY OF DURHAM, NORTH CAROLINA

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION