CITY OF CHARLOTTE

GENERAL SERVICES

PROJECT MANUAL

FOR

Unspecified Roadway and Signal Construction Services-FY26A

PROJECT NUMBER:

269-2025-130

CITY OF CHARLOTTE, NORTH CAROLINA

ADVERTISEMENT DATE: JUNE 23, 2025

2024 NCDOT STANDARD SPECIFICATIONS

v.9-12-2024 (Bonfire Version)

Docusign Envelope ID: 91E8A218-7310-4082-AEEE-1F0B965B8710

PROFESSIONAL ENGINEER SEAL

(Project Special Provisions Prepared for the City of Charlotte, General Services, 600 East Fourth Street, Charlotte, North Carolina 28202):

Signed by:

DocuSigned by:
Allison Brickey
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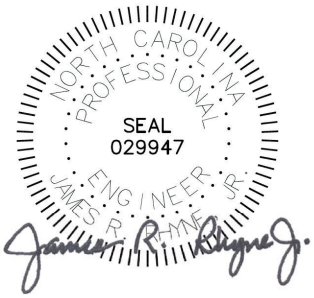
06/13/2025



06/17/2025

PROFESSIONAL ENGINEER SEAL

(Project Special Provisions Prepared for the City of Charlotte, General Services, 600 East Fourth Street, Charlotte, North Carolina 28202):

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LIST OF PLANS

Plans will be issued with Work Orders under the Contract as applicable.

00 10 00 – INVITATION TO BID

The City of Charlotte (hereinafter the "City") will receive sealed bids for the following Project:

PROJECT NAME:	**Unspecified Roadway and Signal Construction Services FY26A**
PROJECT NUMBER:	**269-2025-130**
PRE-BID DATE:	**July 8, 2025**
PRE-BID TIME:	**10:00 AM**
PRE-BID LOCATION:	**Charlotte Mecklenburg Government Center (CMGC)** **Basement, Room CH14** **600 East 4th Street** **Charlotte, NC 28202** *The Pre-Bid meeting is not mandatory, but attendance is strongly encouraged.*
BID DUE DATE:	**July 22, 2025**
BID DUE TIME:	**Before 1:00 PM**
BID SUBMISSION LOCATION:	**Bids must be submitted electronically through the Procurement Portal (https://charlottenc.bonfirehub.com)**
BID OPENING DATE:	**July 22, 2025**
BID OPENING TIME:	**1:00 PM**
BID OPENING LOCATION:	**Microsoft Team Meeting Only** **Meeting Link: Join the meeting now** **Meeting Number (access code): 224 706 392 888 4** **Meeting Password: LU6Si3Uw** **Call in (audio only): 1-872-256-4172, 783 073 175#**

NOTICE TO BIDDERS

(As a precautionary measure due to COVID-19), the City will hold all Bid Opening Meetings **via conference call or video conference only** until further notice.

DESCRIPTION OF WORK:

This unspecified contract will provide construction services on an as-needed basis to the Engineering Department. The work includes traffic control, erosion control, clearing and grubbing, grading, drainage systems, pedestrian islands and wheelchair ramps, water/sewer relocations, new installs, and adjustments, and traffic signal and pedestrian crossing systems.

Bidding documents, which includes a downloadable copy of one (1) Project Manual and one (1) full-size Drawing set, are available for free from the Procurement Portal.

Bidders must be properly licensed under North Carolina state law to perform the work.

A **5%** bid security is required with each bid that equals or exceeds **$300,000**.

The estimated cost of this Project is between $5,000,000 - $9,000,000.

For information regarding this Invitation to Bid, contact as follow:

Penny Helms, Contracts Administrator
600 East Fourth Street, Charlotte, NC 28202
Direct Phone: (980) 613.1923
Email: Penny.Helms@charlottenc.gov

Please submit questions or inquiries at least seven (7) calendar days before the Bid Due Date. Questions or inquiries past this deadline may not be addressed by the City prior to the Bid Due Date. Questions or inquiries should be submitted in writing through the **Vendor Discussions** section of the Procurement Portal (https://charlottenc.bonfirehub.com).

The City of Charlotte reserves the right to reject any and all bids and to waive any informalities or technicalities as it may deem to be in its best interest.

This project is subject to the requirements of the City's Charlotte Business INClusion Program to promote diversity, inclusion, and local business opportunities in the City's contracting and procurement process for Minority, Women, and Small Business Enterprises headquartered in the Charlotte Combined Statistical Area.

Following Charlotte Business INClusion goals have been established for this project:

MBE = 5%
SWBE = 14%

Questions relating to the CBI Program should be addressed *in writing* to:

Joshua Burrus, Business Inclusion Specialist Lead
Email: Joshua.Burrus@charlottenc.gov

00 20 00 – INSTRUCTIONS TO BIDDERS

ARTICLE 1: DEFINITIONS

Whenever the following terms are used in the NCDOT Standard Specifications, in any of the Contract Documents, or in the plans, the intended meaning of such terms shall be as follows:

1) "**Chief Engineer**", or "**State Highway Administrator"** shall mean the "City Engineer"
2) "**Alternate**" or "**Alternate Bid**" shall mean the amount stated in the Bid which may be added to or subtracted from the Base Bid amount if such Alternate(s) are accepted by the City.
3) "**Total Amount Bid"** or **"Total Base Bid**" shall mean the correct sum total obtained by adding together the amounts bid for every item in the proposal including contingencies or allowances, but excluding Alternates.
4) "**Board of Transportation**" shall mean "City Council"
5) "**City**" shall mean the "City of Charlotte, North Carolina"; the City is the Project Owner
6) "**City Engineer**" shall mean the "Head of the City of Charlotte Engineering and Project Management Division".
7) "**City Standard**" shall mean the latest edition of the applicable "Charlotte Land Development Standards Manual (CLDSM)", "Charlotte-Mecklenburg Storm Drainage Design Manual", "Charlotte Mecklenburg BMP Design Manual" and "Charlotte-Mecklenburg Utility Department Policies, Procedures, Standards and Specifications"
8) "**Construction Manager**", "**Engineer**", **"Division Engineer"** or "**Resident Engineer**" shall mean the City Engineer's duly authorized Construction Manager to oversee the construction of the project
9) "**Contract**" shall mean the reciprocal undertakings, obligations, and rights of the City and the Contractor evidenced by the executed agreement and other Contract Documents between the City and the Contractor, covering the performance of and compensation of the Work.
10) **"Contract Amount", "Total Contract Amount"** or **"Contract Sum"** shall mean the Total Base Bid plus Alternates accepted by the City.
11) "**Contract Documents**" shall consist of the Project Manual, all forms from Section 00 40 00, Bonds and Certificate of Insurance,, Acceptance by the City, and any change orders issued after execution of the contract.
12) "**Date of Availability**" shall mean "Notice to Proceed Date"
13) "**Department**", "**Department of Transportation**", "**Division of Highways**", and "**Raleigh Central Office**" shall all mean "City of Charlotte General Services".
14) "**Procurement Portal**" shall mean the electronic portal where Bids will be digitally submitted. The portal can be accessed at https://charlottenc.bonfirehub.com.
15) "**Project Manual**" shall mean the complete set of bidding documents issued by the City of Charlotte General Services to include the Invitation to Bid, Instructions to Bidders, Bid Forms, sample project forms, conditions and special provisions of the contract, addenda issued prior to the execution of the contract, and drawings.
16) "**State**" shall mean "City of Charlotte"
17) **"State Contract Officer"** shall mean "Contract Officer"
18) "**Supplemental Agreements**" shall mean "Change Orders"

ARTICLE 2: BIDDER'S REPRESENTATIONS

2.1 Contractor's Licenses

Bidders shall be properly licensed under North Carolina state law to perform the Work specified in the Bidding Documents and per SECTION 102-14 of the NCDOT Standard Specifications. Bids received from bidders not meeting the applicable Contractors' licensure requirements as required by law and as determined by the Engineer's estimate may be considered non-responsive and may not be considered for award.

2.2 Bidder Qualifications

Bidders must be experienced in the class of work proposed who can refer to projects of similar magnitude and scope that have been successfully completed by them within the past three (3) years. Bidders to whom award of a Contract is under consideration may be required to submit to the City, upon request, a properly executed Contractor's Qualifications Statement. The Contractor's Qualifications Statement may include, but is not limited to, the Bidder's past projects, financial capability, staff qualifications and availability, references, litigation or claims against the Bidder, list of equipment available to execute the Work and NCDOT pre-qualification status. The City reserves the right to request such qualifications from Bidders as part of its bid evaluation. The Bidder's failure to submit the requested Qualifications Statement within the timeframe specified by the City may be grounds for bid rejection.

2.3 Site Investigation and Conditions Affecting the Work

By submitting a bid, Bidders certify to have carefully examined the Project site and familiarized themselves with the existing conditions on the Project, affecting the cost and execution of the work as described in Section 102-6 of NCDOT Standard Specifications.

ARTICLE 3: BIDDING PROCEDURES

3.1 Electronic Bids

All bids shall be prepared and submitted in accordance with the following requirements. Failure to comply with any of the requirement may cause the bid to be considered irregular and may be grounds for bid rejection.

1) Obtain an account on the Procurement Portal 'Bonfire' to bid electronically at https://charlottenc.bonfirehub.com.
2) Download and read carefully the Project Manual, Plans, and other supplemental documents related to this project from the Procurement Portal.
3) Download electronic bid submittal forms from the Procurement Portal. Bid submittal forms includes 1) Itemized Bid Form, 2) CBI Form -3 : Subcontractor / Supplier Utilization Commitment , 3) Commercial Non-Discrimination Certification Form, and 4) Execution of Bid Form. Each form must be completed in its entirety. Upon completion, bidders shall upload them back on the Procurement Portal as part of the bid submittal. Failure to complete and submit the required forms may be grounds for bid rejection.
4) Itemized bid form in Microsoft Excel format must be completed in its entirety. Bidders shall enter a unit price for each line item requiring a bid amount. The electronic version of the Itemized Bid Form will contain formulas to calculate the extensions, percentages and totals which shall not be altered by the bidders.
5) The bid shall be accompanied by a bid bond or bid deposit when applicable. The bid bond shall be prepared in accordance with Article 3.3 Bid Security of this section.
6) Addenda will be published on the Procurement Portal. Bidders shall be responsible for inquiring if any addendum has been issued and shall acknowledge receipt of all addenda on the "Execution of Bid" Form. All addenda shall become part of the Contract Documents whether or not received or acknowledged by the Bidder.
7) All bids shall be submitted with an electronically affixed digital signature. Affixing a digital ID to the bid shall be equivalent of signing before a notary public. If the bidder does not have such digital ID, a wet signature will be acceptable when it is notarized on the bid form.

8) On the day of the bid opening, bids will be opened and read publicly at the time mentioned on the Invitation to Bid.

3.2 The Project Manual
The Project Manual is the bidding document and shall not be altered.

3.3 Bid Security
A **five-percent (5%)** bid security is required with each bid that equals or exceeds **$300,000**. Bid Bond or Bid Deposit, made payable to the City of Charlotte, must be provided in accordance with Section 102-10 of NCDOT Standard Specifications.

3.3.1 Electronic Execution of Statutorily-Required Bid Bond
Traditionally, the City has required bonds to be submitted as hard copies with wet signatures. Until further notice, the City will also accept electronically executed bid bonds to satisfy the requirements of N.C.G.S. 143-129(b). In order for electronically executed bid bonds to be valid, a principal and N.C. licensed surety must agree to transact by electronic means. Additionally, the City requires the bidder and surety to use digital signatures that have the following characteristics: (a) each signature is unique to the person using it; (b) the signatures are capable of certification; and (c) each signature is under sole control of the person using it. The notary requirement is waived for bid bonds that are signed electronically.

The bid bond must meet all other statutory criteria for bid bonds and must be submitted in compliance with the Instruction to Bidders. The City reserves the right to reject bid bonds that do not meet the above criteria.

3.4 Sales and Use Tax
Refer to Section 00 70 00 of this Project Manual for additional information on sales and use tax. The City reserves the right to request from the bidder after bid opening the estimated amount of total Eligible Taxes that were used to calculate the Bid and any supporting documentation of such. The Bidder, in submitting the Bid for consideration, agrees to provide any such sales or use tax estimates or documentation that may be requested by the City.

ARTICLE 4: BID AWARDS AND REJECTIONS

4.1 Bid Opening
Bid Opening will be conducted in accordance with Section 102-13 of NCDOT Standard Specifications.

4.2 Rejection of Bids and Disqualification of Bidders
Rejection of Bids and Disqualification of Bidders will be provided in accordance with Sections 102-14 and 102-15 respectively of NCDOT Standard Specifications.

4.3 Award and Execution of Contract
Award and execution of Contract will be in accordance with Section 103 of NCDOT Standard Specifications.

The City will award the contract or contracts conditioned upon funds being available for construction and other governmental approvals as may be required.

The City reserves the right to accept Alternates in any order or combination. The City further reserves the right to determine the low bidder on the basis of the Total Base Bid with Accepted Alternates.

ARTICLE 5: POST-AWARD

5.1 Bonds and Insurance

For bids equal to or greater than **$300,000**, the successful bidder shall provide the City with performance and payment bonds each in the amount equal to **one hundred percent (100%)** of the contract amount. Bonds shall be submitted to the City upon ten (10) calendar days of award of the Contract and shall be in conformance with NC GS 44A-33. Failure to provide acceptable bonds within ten (10) calendar days of award of the Contract shall be just cause for forfeiture of the bid bond or bid deposit and rescinding the award of the Contract. Award may then be made to the next lowest responsive, responsible bidder or the Project may be re-advertised at the City's sole discretion.

The Contractor shall submit to the City within ten (10) calendar days of recommendation of award of the Contract a certificate of insurance in the minimum amounts required in the Contract Documents.

5.1.1 Electronic Execution of Statutorily-Required Performance and Payment Bonds

Traditionally, the City has required bonds to be submitted as hard copies with wet signatures. Until further notice, the City will also accept electronically executed performance and payment bonds to meet the requirements of N.C.G.S. 143-129(c) and Article 3 of Chapter 44A of the General Statutes. In order for electronically executed bonds to be valid, a principal and N.C. licensed surety must agree to transact by electronic means. Additionally, the City requires the bidder and surety to use digital signatures that have the following characteristics: (a) each signature is unique to the person using it; (b) the signatures are capable of certification; (c) each signature is under sole control of the person using it; and (d) each signature is linked to document in such a manner that if the text of the document is changed, the electronic signature is invalidated. The notary requirement is waived for payment and performance bonds that are signed electronically and electronically submitted.

Per N.C.G.S. 44A-33, bonds are still required to be submitted to the City upon ten (10) calendar days of award of the Contract.

The bonds must meet all other statutory criteria for payment and performance bonds and must be submitted in compliance with the Instruction to Bidders. The City reserves the right to reject payment and performance bonds that do not meet the above criteria.

5.2 Pre-Construction Conference

A pre-construction conference will be scheduled as soon as practical after award of the Contract. The Contractor shall attend the pre-construction conference with the prospective project superintendent, any anticipated major subcontractors and major suppliers. A proposed progress schedule in a form satisfactory to the Construction Manager and a statement of the anticipated monthly progress payments showing the percent of progress each month shall be submitted by the Contractor to the City. The Contractor shall also provide at least two (2) local telephone numbers that may be used to contact the Contractor or the Contractor's authorized representative in the event of an emergency after normal business hours. The Contractor shall also provide the name of the Contractor's on-site representative who is OSHA certified for trenching, shoring, and confined space entry.

5.3 Notice to Proceed

The City will issue a Notice to Proceed (NTP) to the Contractor upon award and execution of the contract. The Contractor shall not perform any Work prior to the date on which the NTP commences. The City reserves the right to issue an Administrative Notice to Proceed authorizing the Contractor to place orders for products requiring long lead times, or to obtain certain permits prior to beginning any Work. If an Administrative Notice to Proceed is issued, the Contractor shall not perform any Work prior to the date on which the Notice to Proceed commences.

00 40 00 – BID FORMS AND SUPPLEMENTS

Bidder shall download individual BID FORMS posted on the Procurement Portal at https://charlottenc.bonfirehub.com

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

SECTION 1: BID

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
1	SP-01	Project Mobilization ($2,500)	20	EA	**2500.00**	
2	SP-03	Select Material	500	TN		
3	SP-04	Clearing and Grubbing	20	EA	**500.00**	
4	SP-04	Selective Tree Removal	50	EA		
5	SP-04	Mowing	25	EA		
6	SP-05	Removal of Existing Pavement, Drives & Sidewalks	1000	SY		
7	SP-05	Removal of Existing Curb & Gutter	1000	LF		
8	225	Unclassified Excavation	10000	CY		
9	226	Undercut Excavation	50	CY		
10	230	Borrow Excavation	1000	CY		
11	270	Geotextile for Soil Stabilization	250	SY		
12	300	Foundation Conditioning Material, Minor Structures	500	TN		
13	300	Foundation Conditioning Geotextile	150	SY		
14	310	15" R.C. Pipe Culverts, Class III	500	LF		
15	310	15” R.C. Pipe Culverts, Class IV	500	LF		
16	310	18" R.C. Pipe Culverts, Class III	500	LF		
17	310	18" R.C. Pipe Culverts, Class IV	500	LF		
18	310	24" R.C. Pipe Culverts, Class III	100	LF		
19	310	24" R.C. Pipe Culverts, Class IV	100	LF		
20	310	15” Precast Parallel End Section	15	EA		
21	310	18” Precast Parellel End Section	15	EA		
22	310	24” Precast Parellel End Section	5	EA		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
23	310	15” Precast Flared End Section	15	EA		
24	310	18” Precast Flared End Section	15	EA		
25	310	24” Precast Flared End Section	5	EA		
26	340	Pipe Removal	50	LF		
27	350	Pipe Cleanout	160	EA		
28	520	Aggregate Base Course	500	TN		
29	545	Incidental Stone Base	500	TN		
30	607	Milling Asphalt Pavement, 0.0" to 3.0"	2000	SY		
31	610	Asphalt Concrete Base Course, Type B 25.0C	250	TN		
32	610	Asphalt Concrete Intermediate Course, Type I 19.0C	250	TN		
33	610	Asphalt Concrete Surface Course, Type S 9.5C	300	TN		
34	610	Asphalt Concrete Surface Course, Type S 9.5B	250	TN		
35	620	Asphalt Binder for Plant Mix	20	TN		
36	654	Asphalt Plant Mix, Pavement Repair	20	TN		
37	840	Frame with Grate (All Types)	10	EA		
38	840	Masonry Drainage Structures	10	EA		
39	840	Masonry Drainage Structures	20	LF		
40	840	Pipe Collars	5	CY		
41	840	Pipe Plugs	5	CY		
42	846	1' 6" Concrete Curb and Gutter	500	LF		
43	846	2' 0" Concrete Valley Gutter, CLDS 10.17B	500	LF		
44	846	2' 6" Concrete Curb and Gutter	500	LF		
45	846	6" X 18" Concrete Curb	500	LF		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
46	SP-06	6” Shared-Use-Path	500	SY		
47	SP-07	6" Reinforced Concrete Sidewalks (Bridging Tree Roots, CLDS 40.11)	250	SY		
48	SP-08	6" Concrete Wheelchair Ramps	1000	SY		
49	SP-09	Pedestrian Refuge Island (Pass-Thru)	250	SY		
50	SP-10	Concrete Bicycle Ramps	250	SY		
51	848	6" Concrete Driveway	250	SY		
52	848	6" Concrete Sidewalk	25	SY		
53	848	4" Concrete Sidewalk	500	SY		
54	852	4" Concrete Island Cover	75	SY		
55	852	5" Monolithic Concrete Islands, (Keyed In)	75	SY		
56	853	5" Monolithic Concrete Islands, (Surface Mounted)	75	SY		
57	853	5" Monolithic Concrete Medians, (Keyed In)	75	SY		
58	854	5" Monolithic Concrete Medians, (Surface Mounted)	75	SY		
59	858	Adjustment of Catch Basins	5	EA		
60	858	Adjustment of Drop Inlets	5	EA		
61	858	Adjustment of Manholes	5	EA		
62	859	Convert Existing Catch Basin to Drop Inlet	5	EA		
63	859	Convert Existing Catch Basin to Junction Box with Manhole	5	EA		
64	859	Convert Existing Drop Inlet to Catch Basin	5	EA		
65	859	Convert Existing Drop Inlet to Junction Box with Manhole	5	EA		
66	859	Convert Existing Junction Box to Drop Inlet	5	EA		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
67	859	Convert Existing Junction Box to Catch Basin	5	EA		
68	SP-11	Wall, Precast Modular Block Retaining	1500	SF		
69	SP-12	Safety Rail, Metal CLDS 50.04	750	LF		
70	867	4' Chain Link Fence Reset	50	LF		
71	867	8' Chain Link Fence Reset	50	LF		
72	867	10' Chain Link Fence Reset	50	LF		
73	867	12' Chain Link Fence Reset	50	LF		
74	867	8' Wooden Privacy Fence Reset	50	LF		
75	867	10' Wooden Privacy Fence Reset	50	LF		
76	876	Geotextile for Drainage	200	SY		
77	876	Rip Rap Class I	50	TN		
78	876	Rip Rap Class II	50	TN		
79	901	Contractor Furnished, Type D Sign	150	SF		
80	901	Contractor Furnished, Type E Sign	150	SF		
81	903	Supports, 3-lb Steel U-Channel	150	LF		
82	904	Sign Erection, Type D	25	EA		
83	904	Sign Erection, Type E	25	EA		
84	904	Sign Erection, Relocate Type D (Ground Mounted)	10	EA		
85	904	Sign Erection, Relocate Type E (Ground Mounted)	10	EA		
86	907	Disposal of Sign System, U-Channel	10	EA		
87	1115	Flashing Arrow Board	15	EA		
88	1205	Paint Pavement Marking Lines, 4", 90 mils	500	LF		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
89	1205	Paint Pavement Marking Lines,24", 90 mils	500	LF		
90	1205	Thermoplastic Pavement Marking Lines, 4", 90 mils	500	LF		
91	1205	Thermoplastic Pavement Marking Lines, 6", 90 mils	500	LF		
92	1205	Thermoplastic Pavement Marking Lines, 8", 90 mils	500	LF		
93	1205	Thermoplastic Pavement Marking Lines, 24", 90 mils	500	LF		
94	1205	Thermoplastic Pavement Marking Symbols, 90 mils	25	EA		
95	1205	Thermoplastic Pavement Marking Characters, 90 mils	25	EA		
96	1205	Removal of Pavement Marking Lines, 4"	500	LF		
97	1205	Removal of Pavement Marking Lines, 8"	500	LF		
98	1205	Removal of Pavement Marking Lines, 24"	500	LF		
99	1205	Removal of Pavement Marking Symbols & Characters	25	EA		
100	SP-13	Green Thermoplastic (90 mils)	5000	SF		
101	SP-14	Reflective Paddles	10	EA		
102	SP-15	6" Yellow Tactile Guide Strip	150	LF		
103	1605	Temporary Silt Fence	1000	LF		
104	1610	Sediment Control Stone	100	TN		
105	1610	Erosion Control Stone Class A	75	TN		
106	SP-16	Tree Protection Fence	500	LF		
107	SPSRW-01	Matting for Erosion Control	250	SY		
108	1630	Silt Excavation	30	CY		
109	1632	¼" Hardware Cloth	100	LF		
110	1642	Coir Fiber Wattle Barrier	250	LF		
111	SP-17	Permanent Seeding and Mulching	1500	SY		
112	SP-17	Temporary Seeding and Mulching	1500	SY		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
113	SP-17	Repair Seeding and Mulching	500	SY		
114	SP-18	Catch Basin or Drop Inlet Protection - Filter Bag	25	EA		
115	SP-19	Traffic Control (NCDOT Major or Minor Thoroughfare)	5	EA		
116	SP-19	Traffic Control (City Major or Minor Thoroughfare)	5	EA		
117	SP-19	Traffic Control (Collector)	5	EA		
118	SP-19	Traffic Control (Local)	5	EA		
119	SP-20	Concrete Foundation for 15-foot Metal Base/ Pole/Pedestrian Signal	5	EA		
120	SP-20	Concrete Foundation for 10-foot Metal Base/ Pole/Pedestrian Signal	15	EA		
121	SP-20	15 ft. Metal Base/Pole/Cap for Pedestrian Signal	12	EA		
122	SP-20	10 ft. Metal Base/Pole/Cap for Pedestrian Signal	13	EA		
123	SP-21	Concrete Base for Controller Cabinet	15	EA		
124	SP-22	Supply/Install/Activate Controller Cabinet	4	EA		
125	SP-23	2070LX Controller w/1C CPU, Modules, and Accessories	15	EA		
126	SP-24	Supply/Install APS Pedestrian Pushbutton Detector, Sign, & 3-Wire Control Board	25	EA		
127	SP-25	Core drill concrete cabinet foundation	8	EA		
128	SP-26	Green Uninterruptible Power Supply (UPS)	5	EA		
129	SP-27	16" Pedestrian Signal Head	25	EA		
130	SP-28	Vehicle Signal Head (Polycarbonate, 12", 3-section)	25	EA		
131	SP-28	Vehicle Signal Head (Polycarbonate, 12", 3-section HAWK)	25	EA		
132	SP-28	Vehicle Signal Head (Polycarbonate, 12", 3-section Bi-Modal FYA)	25	EA		
133	SP-28	Vehicle Signal Head (Polycarbonate, 12", 4-section)	25	EA		
134	SP-28	Vehicle Signal Head (Polycarbonate, 12", 4-section FYA)	25	EA		
135	SP-28	Vehicle Signal Head (Polycarbonate, 12", 5-section)	25	EA		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
136	SP-29	Lead in Cable (1726 Modified)	2000	LF		
137	SP-30	Standoff Bracket Assembly	8	EA		
138	SP-31	LED Blankout Sign	10	EA		
139	SP-32	3 Section 12" Signal Head Cover	50	EA		
140	SP-32	4 Section 12" Signal Head Cover	50	EA		
141	SP-32	5 Section 12" Signal Head Cover	50	EA		
142	SP-32	Pedestrian Signal Cover	25	EA		
143	1705	Signal Cable (16 AWG - 4 Conductor)	20000	LF		
144	1705	Signal Cable (16 AWG - 7 Conductor)	20000	LF		
145	1706	Backplates	100	EA		
146	1710	Messenger Cable (3/8" Galvanized)	10000	LF		
147	1715	Tracer Wire	2000	LF		
148	1715	Unpaved Trenching (1-2" SCH80)	400	LF		
149	1715	Unpaved Trenching (2-2" SCH80)	1000	LF		
150	1715	Unpaved Trenching (3-2" SCH80)	750	LF		
151	1715	Unpaved Trenching (4-2" SCH80)	750	LF		
152	1715	Unpaved Trenching (5-2" SCH80)	750	LF		
153	1715	Unpaved Trenching (6-2" SCH80)	500	LF		
154	1715	Paved Trenching (2-2" SCH80)	250	LF		
155	1715	Paved Trenching (6-2" SCH80)	250	LF		
156	1715	Directional Drill (2-2")	50	LF		
157	1715	Directional Drill (3-2")	50	LF		
158	1715	Directional Drill (4-2")	250	LF		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
159	1715	Directional Drill (6-2")	250	LF		
160	1715	Directional Drill (8-2")	250	LF		
161	1716	Junction Box (24"x36"x30" PC, CDOT FIBER OPTIC logo)	15	EA		
162	1716	Junction Box (13"x24"x12" PC, TRAFFIC SIGNAL logo)	50	EA		
163	1716	Junction Box (24"x36"x24" PC, TRAFFIC SIGNAL logo)	10	EA		
164	1716	Junction Box (17"x30"x24" PC, CDOT FIBER OPTIC logo)	3	EA		
165	1716	Junction Box (24"x36"x24" PC, CDOT FIBER OPTIC logo)	10	EA		
166	1716	Junction Box (30"x48"x36" PC, TRAFFIC SIGNAL logo)	3	EA		
167	SP-33	Adjust Existing 13”x 24"x 12” CDOT PULL BOX	3	EA		
168	SP-33	Adjust Existing 17”x 30"x 24” CDOT PULL BOX	2	EA		
169	SP-33	Adjust Existing 24”x 36"x 24” CDOT PULL BOX	2	EA		
170	SP-33	Adjust Existing 36”x 36"x 12” CDOT VAULT	2	EA		
171	SP-33	Relocate Existing CDOT PULL BOX	5	EA		
172	SP-34	Relocate/Adjust Conduit to Existing Pull Box	10	EA		
173	SP-35	Supply/Install Video Detection Camera	10	EA		
174	SP-35	Supply/Install Video Detection Comm Manager	10	EA		
175	1720	Supply/Install Wood Poles (40/5)	6	EA		
176	1721	Supply/Install Down Guy	7	EA		
177	1721	Supply/Install Anchor	7	EA		
178	1725	Inductive Loop Sawcut	4000	LF		
179	1734	Remove Existing cable	1250	LF		
180	1745	Sign for signals	20	EA		
181	SP-36	Solar Powered Rectangular Rapid Flashing Beacons (RRFB)	10	PR		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
182	SP-37	Screw-In Helical Foundation Assembly (Type I)	4	EA		
183	SP-37	Screw-In Helical Foundation Assembly (Type II)	8	EA		
184	SP-38	24 Fiber Aerial Fiber Optic Cable (With Hardware)	3000	LF		
185	SP-38	36 Fiber Aerial Fiber Optic Cable (With Hardware)	750	LF		
186	SP-38	48 Fiber Aerial Fiber Optic Cable (With Hardware)	750	LF		
187	SP-38	72 Fiber Aerial Fiber Optic Cable (With Hardware)	350	LF		
188	SP-39	24 Fiber Underground Fiber Optic Cable	3000	LF		
189	SP-39	36 Fiber Underground Fiber Optic Cable	750	LF		
190	SP-39	48 Fiber Underground Fiber Optic Cable	750	LF		
191	SP-39	72 Fiber Underground Fiber Optic Cable	350	LF		
192	SP-40	6-Fiber Cable Stub	1250	LF		
193	SP-41	Fiber Optic Patch Panel	5	EA		
194	SP-42	Supply/Install Aerial Fiber Optic Splice Enclosure	5	EA		
195	SP-43	Supply/Install Underground Fiber Optic Splice Enclosure	5	EA		
196	SP-44	Fiber Optic Cable Splicing Assembly Unit	100	EA		
197	SP-45	Fiber Optic Power Level Test Assembly Unit	100	EA		
198	SP-46	Fiber Optic Splice Test Assembly Unit	100	EA		
199	SP-47	Supply/Install Fiber Curb Marker	25	EA		
200	SP-48	Supply/Install Electronic Ball Marker	25	EA		
201	SP-49	Supply/Install Cable Riser Guard Unit	4	EA		
202	SP-50	Supply/Install 24 Fiber Optic Cable-Slack Stow	250	LF		
203	SP-50	Supply/Install 36 Fiber Optic Cable-Slack Stow	50	LF		
204	SP-50	Supply/Install 48 Fiber Optic Cable-Slack Stow	50	LF		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
205	SP-50	Supply/Install 72 Fiber Optic Cable-Slack Stow	50	LF		
206	SP-50	Supply/Install 24 Fiber Optic Cable Splice-Slack Stow Unit	250	LF		
207	SP-50	Supply/Install 36 Fiber Optic Cable Splice-Slack Stow Unit	50	LF		
208	SP-50	Supply/Install 48 Fiber Optic Cable Splice-Slack Stow Unit	50	LF		
209	SP-50	Supply/Install 72 Fiber Optic Cable Splice-Slack Stow Unit	50	LF		
210	SP-51	Supply/Install Fiber Optic Jumper Assembly	50	EA		
211	SP-52	Supply/Install SFP	42	EA		
212	SP-53	Ethernet Switch Unit/Module-ARUBA (FOE(TRX)(ESU)AR(4100i)	25	EA		
213	SP-54	Remove Existing Fiber Cable from Conduit	250	LF		
214	SP-55	Communication Cable De-lashing	300	LF		
215	SP-56	Communication Cable Lashing	400	LF		
216	SP-57	Install Copper Interconnect Cable	150	LF		
217	SP-58	Copper Interconnect Splicing	5	EA		
218	SP-59	Supply/Install Copper Interconnect Splice Enclosure	3	EA		
219	SP-60	Supply/Install Observation Camera	5	EA		
220	SP-61	Aerial CAT 6 Ethernet Cable for Observation Camera	600	LF		
221	SP-61	Aerial CAT 6 IP66 Ethernet Cable for Observation Camera	500	LF		
222	SP-62	Underground CAT6 Ethernet Cable for Observation Camera	500	LF		
223	SP-62	Underground CAT6 IP66 Ethernet Cable for Observation Camera	500	LF		
224	SP-63	Pole Ground Assembly Unit	6	EA		
225	SP-64	Remove Existing Junction Box	5	EA		
226	SP-64	Remove Existing Wood Pole	10	EA		
227	SP-64	Remove Existing Down Guy	5	EA		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
228	SP-64	Remove Existing Anchor	5	EA		
229	SP-64	Remove Pedestrian Signal	10	EA		
230	SP-64	Remove Push Button	10	EA		
231	SP-64	Remove Pedestrian Signal Pole Foundation	10	EA		
232	SP-65	Combination Meter Pedestal and Grounding Grid	5	EA		
233	SP-66	Concrete Washout Structure	25	EA		
234	SP-67	Riser Assembly (2" Sch. 80 PVC)	60	EA		
235	SPU-01	Adjust Existing Water Valve	15	EA		
236	SPU-01	Adjust Existing Meter Box	15	EA		
237	SPU-01	Adjust Existing Fire Hydrant	5	EA		
238	SPU-01	Adjust Existing Water Manhole	5	EA		
239	SPU-01	Adjust Existing Water Vault	5	EA		
240	SPU-01	Adjust Existing Sewer Manhole	5	EA		
241	SPU-01	Adjust Existing Sanitary Sewer Cleanout	5	EA		
242	SPU-01	Convert to Solid Lid & Sealed Frame & Cover (Watertight)	5	EA		
243	SPU-02	Relocate Existing Water Meter & Meter Box	5	EA		
244	SPU-03	Relocate Existing Fire Hydrant	3	EA		
245	SPU-04	4” DI Restrained Joint Water Pipe, PC 350	50	LF		
246	SPU-04	6” DI Restrained Joint Water Pipe, PC 350	50	LF		
247	SPU-05	DI Restrained Joint Water Pipe Fittings	100	LB		
248	SPU-06	4" Line Stop	2	EA		
249	SPU-06	6" Line Stop	2	EA		
250	SPU-06	8" Line Stop	2	EA		

ITEMIZED BID

Bidder Name: _____

Project #: **269-2025-130**

Project Name: **Unspecified Roadway and Signal Construction Services FY26A**

Item #	Section	Item Description	Quantity	Unit	Unit Price	Amount
251	SPU-06	12" Line Stop	2	EA		
252	SPU-07	Concrete Thrust Blocking	25	CY		
					TOTAL BID	

CBI FORM 3B: UTILIZATION COMMITMENT – TASK ORDER

(page 1 of 2)

This form **MUST** be submitted at the time of Task Order Submittal. Copy this CBI Form 3B as needed.

Failure to properly complete and submit Form 3B at the time of Task Order Submittal constitutes grounds for denial of the Task Order.
All MBEs, WBEs, SBEs, and other subcontractors/suppliers that are intended to be used on the Task Order ***FOR ALL TIERS*** must be documented.
For Construction Contracts under $500,000, any MWSBE must satisfy the requirements of the CBI Manual in order to count its performance with its own current workforces towards the Contract Goal and must list itself below along with their projected utilization amount.

Contractor Name:			
Contract Name:	**Unspecified Roadway and Signal Construction Services FY26A**		
Contract Number:			
Task Order Number:			
Established MBE Goal:	**Established WBE Goal:**	**Established SBE Goal:**	

List below all **MBEs, WBEs, and/or SBEs (Non-Hauling Services)** that you intend to use on this Task Order. **NOTE: You will only receive credit, as of the Task Order Submittal Date, for SBEs that are currently certified with the City or MBEs and WBEs that are registered with the City.**

MBE/WBE/SBE Vendor Name (Non-Hauling Services)	Description of work / materials	NIGP Code	Vendor #	Total Projected Utilization ($)

For all hauling services only, list below all MBEs, WBEs, and SBEs that you intend to provide such work and the Total Projected Utilization ($).

MBE/WBE/SBE Vendor Name (Hauling Services)	Description of work / materials	NIGP Code	Vendor #	Total Projected Utilization ($)

Total Subcontractor / Supplier Utilization (including MBEs, WBEs, SBEs, and Non-MWSBEs) **$** _____

Total MBE Utilization **$** _____

Total WBE Utilization **$** _____

Total SBE Utilization **$** _____

Total Task Order Amount (including Contingency) **$** _____

Percent MBE Utilization* (Total MBE Utilization *divided by* Total Task Order Amount) _____ **%**

Percent WBE Utilization* (Total WBE Utilization *divided* by Total Task Order Amount) _____ **%**

Percent SBE Utilization* (Total SBE Utilization *divided* by Total Task Order Amount) _____ **%**

** The Utilization percentage stated MUST be rounded to (2) decimal places.*

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CBI FORM 3: UTILIZATION COMMITMENT – TASK ORDER (page 2 of 2)

List below all **non-MWSBE (subcontractors and suppliers)** that you intend to use on this Task Order

Vendor Name	Description of work / materials	NIGP Commodity Code	Vendor #	Projected Utilization (if known) ($)

Letters of Intent submitted upon notice from the City
Pursuant to the CBI Manual, within three (3) Business Days after receiving a request from the City (or within such longer time as may be communicated by the City in writing), Contractors must submit a separate Letter of Intent (**CBI Form 4**) for each MBE, WBE, and/or SBE listed on this **CBI Form 3B**. Each Letter of Intent must be executed by each MBE, WBE, and/or SBE and the Contractor. The City shall not count proposed MBE, WBE, and/or SBE utilization for which it has not received a Letter of Intent by this deadline. The Contractor is still obligated to pay the MBE, WBE, and/or SBE the full amount listed with the MBE, WBE, and/or SBE regardless of what percentage is actually counted towards the Contract Goal.

Adding subcontractors or suppliers after submitting this form
Nothing in this certification shall be deemed to preclude you from entering into subcontracting arrangements after submission of this form. However, per the CBI Manual, you must comply with the following:

- You must maintain the level of MBE, WBE, and/or SBE participation proposed on this **CBI Form 3B** throughout the duration of the Task Order.
- If you need to terminate or replace a MBE, WBE, and/or SBE, you must comply with the CBI Manual requirements.
- If the scope of work on the Task Order increases, or if you elect to subcontract any portion of work not identified on this form as being subcontracted, then you must comply with the CBI Manual requirements.
- A Letter of Intent (**CBI Form 4**) must also be submitted for each MBE, WBE, and/or SBE you add subsequent to Task Order assignment.

All Subcontractors and Suppliers must be registered with the City of Charlotte.
Pursuant to the City's Vendor Registration Policy, each subcontractor or supplier that you use on this contract must be registered in the City's vendor database. You will need to provide the vendor number for each subcontractor or supplier used on this contract as a condition for receiving payment on this Contract.

Signature
Your signature below indicates that the undersigned firm certifies and agrees that:

(a) It has complied with all provisions of the CBI Manual; and,
(b) Failure to properly document such compliance in the manner and within the time periods established by the CBI Manual shall constitute grounds for liquidated damages under the CBI Manual.

Signature of Authorized	Printed Name	Title	Submittal Date

Version 06-2023

COMMERCIAL NON-DISCRIMINATION CERTIFICATION

Project: Unspecified Roadway and Signal Construction Services FY26A

Name of Company (Bidder): _____

The undersigned Bidder hereby certifies and agrees that the following information is correct:

1. In preparing its Bid, the Bidder has considered all bids submitted from qualified, potential subcontractors and suppliers, and has not engaged in or condoned discrimination, as defined in Section 2 below.

2. For purposes of this form, discrimination means discrimination in the solicitation, selection, or treatment of any subcontractor, vendor, supplier or commercial customer on the basis of a person's race, color, gender, religion, national origin, ethnicity, age, familial status, sex (including sexual orientation, gender identity and gender expression), veteran status, pregnancy, natural hairstyle or disability, or any otherwise unlawful form of discrimination. Without limiting the foregoing, discrimination also includes retaliating against any person or other entity for reporting any incident of discrimination."

3. Without limiting any other remedies that the City may have for a false certification, it is understood and agreed that, if this certification is false, such false certification will constitute grounds for the City to reject the bid submitted with this certification and terminate any contract awarded based on such bid. It shall also constitute a violation of the City's Commercial Non-Discrimination Ordinance and shall subject the Bidder to any remedies allowed thereunder, including possible disqualification from participating in City contracts or bid process for up to two years.

4. As a condition of contracting with the City, the Bidder agrees to promptly provide to the City all information and documentation that may be requested by the City from time to time regarding the solicitation and selection of subcontractors in connection with this solicitation process. Failure to maintain or failure to provide such information shall constitute grounds for the City to reject the bid submitted by the Bidder and terminate any contract awarded on such bid. It shall also constitute a violation of the City's Commercial Non-Discrimination Ordinance and shall subject the Bidder to any remedies allowed thereunder.

5. As part of its bid, the Bidder shall provide to the City a list of all instances within the past ten years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that the Bidder discriminated against its subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

6. As a condition of submitting a bid to the City, the Bidder agrees to comply with the City's Commercial Non-Discrimination Policy as described in Section 2, Article V of the Charlotte City Code, and consents to be bound by the award of any arbitration conducted thereunder.

By: _____
Signature of Company's Authorized Representative

Title: _____

Date: _____

EXECUTION OF BID

NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the Bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the Bidder has not been convicted of violating North Carolina General Statute 133-24 within the last three years, and that the Bidder intends to do the work with its own bona fide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

NC General Statute 133-32 prohibits the offer to, or acceptance by, any City employee of any gift from anyone with a contract with the City or State, or from any person seeking to do business with the City of Charlotte. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

In the event the Bidder is awarded the Contract, execution of the Bid by the Bidder is considered the same as execution of the Contract. Affixing the corporate seal to this document is only intended to verify the officer signing on behalf of the corporation has the authority to do so.

The undersigned, having carefully examined the site and familiarized himself with the existing conditions on the Project area affecting the cost of work and hereby proposes to furnish all supervision, labor, equipment, materials and services required to construct and complete the Project in accordance with the Project Manual at and for the Total Amount Bid, excluding any Allowances, such as contingency, which may be used by the Contractor only upon written instructions from the Engineer in accordance with the terms of this Contract.

The undersigned agrees to comply with the self-performance requirement identified within Section 108-6 of the 2024 NCDOT Standard Specifications for Roads and Structures. 2024 Standard Specifications for Roads and Structures.pdf.

The undersigned acknowledges receipt of the following addenda (initial next to each addendum):

1: _____ # 2: _____ # 3: _____ # 4:_____ # 5: _____ #6: _____ # 7: _____ # 8: _____ # 9: _____

Type of Bidder: ☐ **Sole Proprietor** ☐ **Partnership** ☐ **Corporation** ☐ **Limited Liability Company** ☐ **Joint Venture**

(check 1 box)

(if joint venture, complete this "Execution of Bid" sheet for each joint venture company and identify the "Name of Joint Venture" on each sheet)

NAME OF JOINT VENTURE: _____

Company Name: _____

Mailing Address: _____

City/State/Zip: _____

Phone: _____ Email: _____

Printed Name: _____ Title: _____

Signature: _____ NC Gen. Contractor License #: _____

Subscribed and sworn to before me this _____ day of _____ 202___

Signature of Notary Public _____

of _____ County

State of _____

My Commission Expires: _____

00 50 00 – ACCEPTANCE BY THE CITY

A CONTRACT FOR:

PROJECT NAME: **Unspecified Roadway and Signal Construction Services FY26A**

PROJECT NUMBER: **269-2025-130** CONTRACT NUMBER: _____

CONTRACT AMOUNT ($): _____

THIS CONTRACT (the "Contract") is made and entered into and shall be by and between the CITY OF CHARLOTTE, a North Carolina Municipal corporation (the "City"), and _____, a company doing business in North Carolina (the "Contractor").

WHEREAS the City of Charlotte advertised an Invitation to Bid (ITB) for the Project on _____, together with all attachments and addenda,

WHEREAS the Contractor submitted to the City a Bid on _____ in response to the ITB, together with all attachments and separately sealed confidential trade secrets, herein referred to as the "Bid",

WHEREAS the execution of the Bid is the same as the execution of the Contract by the Contractor,

WHEREAS the City of Charlotte Council, on _____, authorized the City to enter into this Contract with the Contractor for construction services for the Project,

WHEREAS this Contract includes the following:

a. Project Manual, including all addenda issued prior to execution of the Contract;
b. Plans;
c. Contractor's Bid;
d. Performance & Payment Bonds;
e. Acceptance by the City; and
f. Executed Change Orders issued after execution of the Contract.

WHEREAS the City and the Contractor now desire to fully execute this Contract for the Contractor to provide construction services for the Project in accordance with the terms and conditions set forth in the Contract,

NOW, THEREFORE, the City of Charlotte, acting through its City Council, has caused this Contract to be executed in the name of the City of Charlotte by an authorized official.

CITY OF CHARLOTTE:

By: _____

Print Name: _____

Title: _____

Date: _____

00 55 00 – CHARLOTTE BUSINESS INCLUSION (CBI) PROGRAM

CBI Policy adopted July 1, 2023

The Charlotte Business INClusion (CBI) Program seeks to enhance competition and participation of Minority-owned, Women-owned, and Small Business Enterprises (MWSBEs) in City contracting.

To accomplish this, the City has increasingly examined its procurements and set specific MWSBE participation goals on a contract-by-contract basis.

In addition, CBI makes a concerted effort to expand its certified MWSBE vendor pool and assist city-certified firms in growing, enhancing, and developing their businesses. CBI currently offers numerous development programs that support certified businesses in organizational training, strategic development, and networking opportunities.

A complete list of City of Charlotte certified Small Business Enterprises (SBEs) and City of Charlotte registered Minority-Owned Business Enterprises (MBEs) and Women-Owned Business Enterprises (WBEs) (SBE, MBE, and WBE, collectively MWSBE) is available on the City's InclusionCLT system: http://charlotte.diversitycompliance.com

PROJECT SUBCONTRACTING GOAL:
MBE Goal: 5%
SWBE Goal: 14%

In order to count MWSBE firms toward to project goal, MWSBEs must be certified with the City of Charlotte at the time of bid. For more information around certification requirements, please review the CBI Manual.

1. APPLICATION:

The City's Charlotte Business INClusion (CBI) Policy and CBI Manual are incorporated into and made a part of this solicitation and the resulting contract (the "Contract"). Copies of the CBI Policy and CBI Manual may be obtained by:

Internet: www.charlottebusinessinclusion.com

Mail: Charlotte Business INClusion Office
600 East Trade Street
Charlotte, North Carolina 28202

Capitalized terms used in this document shall have the meanings set forth in the CBI Manual. Each reference to "you" or "your" in these provisions refers to any entity that submits a bid, proposal or statement of qualifications on a City contract, and any entity that enters into a contract with the City.

For this solicitation, the CBI Manual requires that you either (a) meet the established Contract Goal, as listed on the first page of this document; or (b) comply with the Good Faith Efforts and Good Faith Negotiation requirements referenced in Section 3 below. Failure to comply with the CBI Policy and CBI Manual in the bid phase constitutes grounds for rejection of your Bid. Failure to comply after the contract award may result in the assessment of damages and/or termination of your contract.

2. SUBCONTRACTING GOALS:

You must submit your proposed MWSBE utilization for this Contract on CBI Form 3 (Subcontractor/Supplier Utilization Commitment Form) listing all subcontractors and suppliers that will be providing goods or services.

MBE or WBE established Goals can only be met with the City of Charlotte registered MBEs and WBEs that have been certified as a Historically Underutilized Business by the State of North Carolina.

SBE established Goals for this project can only be met with City of Charlotte certified SBEs.

CBI Form 3 MUST be submitted at the time of bid opening. Failure to submit CBI Form 3 at the time of bid opening shall constitute grounds for rejecting the Bid. All bidders must submit their proposed goal commitment at the time of Bid.

If the Bidder does not meet the goal at the time of bid opening, they will have twenty-four (24) hours to submit a completed CBI Form 3 demonstrating that they have met or exceeded the goal. If the goal is not met then, the City will proceed with the Good Faith Efforts process.

Bidders must state the projected dollar amount for each MWSBE firm listed on their CBI Form 3 and indicate the total dollar value of participation for the contract. In the event the bidder has no MWSBE participation, the bidder is still required to indicate this on CBI Form 3 by entering the word or number zero. Blank forms will be deemed to represent zero participation. The City will only give Bidders credit towards the established Subcontracting Goal that:

a. Is listed on CBI Form 3 submitted at bid or within twenty-four (24) hours of bid opening (if goal not met at bid opening); and
b. Is listed on CBI Form 3A (when applicable); and
c. Is documented by CBI Form 4 (CBI Letter of Intent) which is submitted to the City within three (3) Business Days after the City requests it; and
d. Meets all of the requirements of the CBI Manual.

NOTE: MWSBEs listed on CBI Form 3 must be actively certified/registered with the City of Charlotte as of bid date and must be performing a Commercially Useful Function as defined in the CBI Manual.

Bids submitted that do not have the above required MWSBE information indicated on CBI Form 3 constitutes grounds for the Bid to be considered non-responsive and rejected.

The established Contract Goal will represent the total dollars to be spent with MWSBEs as a portion of the total bid amount, which includes Contingency and excludes Allowances. The MWSBE percentage will be rounded to two decimal places. As an example, if the MBE percentage is 3.571, it should be listed as 3.57%, or if it is 3.578, it should be listed as 3.58%. The percentage will not be rounded to the next “whole” number, i.e., 4%. A Bidder may round up if the third number after the decimal is a five (5) or greater.

In the event Alternates are selected by the City, the established Contract Goal for this Contract will apply to the total contract amount, including Contingency, selected Alternates, and excluding Allowances (“Total Contract Amount”). If a low Bidder would meet the established Contract Goal on the base bid amount, but would not meet the established Subcontracting Goal for the Alternates selected by the City, the Bidder will have three (3) days after the City notifies it of its low bid status to secure enough additional participation to meet the established Contract Goal calculated on the Total Contract Amount. The low Bidder will be required to utilize CBI Form 3A to meet this requirement. This in no way exempts the bidder from the CBI requirements due at bid time.

If the Bidder fails to meet the established Contract Goal, calculated on the Total Contract Amount, then the Bidder must earn the Minimum Good Faith Effort (GFE) Points and meet the Good Faith Negotiation requirements set forth in Section4 of the CBI Manual. GFE Points will be calculated, independently, for each Contract Goal that is not met. For instance, if the Bidder fails to meet the MBE, WBE, or SBE Contract Goal that was set, the bidder will have to earn the minimum GFE points for MBEs, WBEs, or SBEs.

If the Bidder fails to meet the MBE, WBE, or SBE Contract Goal on the Total Contract Amount and fails to earn the required Good Faith Efforts points, the Bid will be rejected.

The City will request CBI Form 4 Letters of Intent if you are a finalist for contract award. You must submit a separate CBI Form 4 for each MWSBE subcontractor/supplier identified on CBI Form 3 (and CBI Form 3A, if applicable) within three (3) days after bid opening or as otherwise specified by the CBI Office.

3. GOOD FAITH EFFORTS and GOOD FAITH NEGOTIATION:

If two Contract Goals are established for this Contract, then the Bidder must meet each goal. For example if a MBE Goal and WBE Goal are established, Bidder must meet the MBE Goal and WBE Goal. If you do not meet each established Contract goal, then you must earn the minimum good faith effort (GFE) points and meet the good faith negotiation requirements as set forth in Section 4 of the CBI Manual for the Contract Goal that was not met.
Detailed information of the City's Good Faith Efforts and Good Faith Negotiation requirements can be found in the CBI Manual, Section 4, . Failure to meet the Good Faith Efforts and Good Faith Negotiation requirements will constitute grounds for rejection of your Bid.

Documenting Good Faith Efforts. To demonstrate Good Faith Efforts (GFE) compliance, Bidders must complete and submit CBI Form 5: Good Faith Effort (GFE) and Statement of GFE Compliance. A minimum of fifty (50) GFE Points must be earned for each Contract Goal not met. If more than one Contract Goal is not met, then Bidders will be required to complete and submit a separate form for each unmet Contract Goal.

CBI Form 5 lists GFEs and the number of points attainable for each type of Good Faith Effort. The City will request your Good Faith Effort (GFE) / Statement of GFE Compliance if you are an apparent low Bidder for contract award who did not meet the Contract Goal. You must submit CBI Form 5 and all supporting documentation within three (3) Business Days after the City requests it.

In deciding whether to award GFEs, the City will assess whether the efforts employed by the Bidder are those that a prime contractor would reasonably be expected to take if actively and aggressively trying to meet the established Subcontracting Goal for the Contract. This assessment will be made on a case-by-case basis taking all available facts into account. The focus will be on the likely effectiveness of the steps taken. Mere pro forma efforts will not be sufficient.

The City can take into consideration the performance of the other Bidders and their achievement towards the Contract Goal when determining if a Bidder has achieved Good Faith Efforts. Additionally, the Business Inclusion Officer can take into consideration the Bidder's past performance towards meeting Contract Goals on past City contracts.

All actions necessary to earn the required GFE Points must be undertaken prior to Bid Opening. Failure to comply with the requirements set forth in this section shall constitute grounds for rejecting a bid.

Exempted Performance

A Business Enterprise, who intends to perform 100% of the work on a Contract, may submit an affidavit stating that the Bidder: (i) does not customarily Subcontract any element of work; and (ii) normally performs, has the capability to perform, and will perform all elements of work on this Contract with its own current workforces. The affidavit shall be in a form provided by the City as part of the Solicitation. After approval by the Business Inclusion Officer, the Bidder shall not be required to comply with Section 3 of the CBI Manual.

The City may reject a Bid for non-compliance if: (i) the Business Enterprise is not licensed to perform each and every type of work included in the Contract, (ii) based on past practice or other grounds, the Business Enterprise will not be performing all of the work under the Contract with its own current workforce; (iii) the request for approval is submitted more than three (3) Days of Bid Opening; (iv) insufficient documentation is received to support the request; (v) any special skill-based qualification is available to and/or possessed by MWSBEs; (vi) there is no significant increase in the cost to the Business Enterprise for an MWSBE to perform the scope of work.

4. PROJECT DOCUMENTS / PLANS AND SPECIFICATIONS:

Plans and Specifications may be viewed at for appointment.
Other Locations:

Carolinas Associated General Contractors (CAGC) 4824 Parkway Plaza Blvd. Charlotte NC 28217 704.372.1450 Documents through: **Isqft** *https://www.isqft.com/start* 800.364.2059	**Hispanic Contractors Association of the Carolinas (HCAC)** 226 Westinghouse Blvd. Ste. 604 Charlotte NC 28273 704.583.4184 *www.hcacarolinas.org*	**Dodge Data & Analytics** *https://upload.construction.com/dfmqr/login*	**Beatties Ford Road Vocational Trade Center, Inc.** 1406 Beatties Ford Road Charlotte NC 28216 980.349.4067 *http://www.beattiesfordvoccenter.com/contact.php*

5. CBI POLICY PROVISIONS APPLICABLE AFTER CONTRACT AWARD:

Should the Bidder be awarded a contract with the City, the Bidder should note Section 5 (Responsibilities After Contract Award) and Section 6 (Remedies and Liquidated Damages) of the CBI Manual

As a condition for receiving payments under this Contract, the Bidder agrees to submit any payment record into InclusionCLT, or any subsequent system designated by the City, detailing the amounts paid by the Bidders to all subcontractors and suppliers receiving payment in connection with this Contract.

6. CBI CONTRACT PROVISIONS:

The following provisions are incorporated into the contract.
The parties acknowledge and agree that:

(a) That Charlotte Business Inclusion Program Policy ("CBI Policy") and its Administrative Procedures Manual ("CBI Manual") are posted on the City's website and available in hard copy form upon request. Both the CBI Policy and CBI Manual comprise the CBI Program.

(b) The terms of the CBI Program, as revised from time-to-time, are incorporated into this Contract by reference; and

(c) A violation of the CBI Program shall constitute a material breach of this Contract and shall entitle the City to exercise any of the remedies set forth in the CBI Program, including but not limited to liquidated damages.

(d) The City will incur damages if the Contractor violates the CBI Program, including but not limited to loss of goodwill, detrimental impact on economic development, and diversion of internal staff resources. The parties further acknowledge and agree that the damages the City might reasonably be anticipated to incur as a result of such failures are difficult to ascertain due to their indefiniteness and uncertainty. Accordingly, the Contractor agrees to pay the liquidated damages assessed by the City at the rates set forth in the CBI Program for each specified violation. The Contractor further agrees that for each specified violation the agreed upon liquidated damages are reasonably proximate to the loss the City will incur as a result of such violation.

(e) Without limiting any of the other remedies the City has under the CBI Program, the City shall be entitled to withhold periodic payments and final payment due to the Contractor under this Contract until the City has received in a form satisfactory to the City all claim releases, payment affidavits and other documentation required by the CBI Program. In the event payments are withheld under this provision, the Contractor waives any right to interest that might otherwise be warranted on such withheld amount under North Carolina General Statutes Section 143-134.1.

(f) The remedies set forth in the CBI Program shall be deemed cumulative and not exclusive and may be exercised successively or concurrently, in addition to any other available remedy.

(h) The Contractor agrees to participate in any dispute resolution process specified by the City from time-to-time for the resolution of disputes arising from the CBI Program.

(i) Nothing in this Section shall be construed to relieve a Contractor from any obligation it may have under North Carolina General Statutes Section 143-134.1 regarding the payment of subcontractors.

(j) Payment Reporting. As a condition for receiving payments under this Agreement, the Contractor agrees to submit any payment record into InclusionCLT, or any subsequent system designated by the City, detailing the amounts paid by the Contractor to all subcontractors and suppliers receiving payment in connection with this Contract

Remedies for Violation of CBI Policy.

A violation of the CBI Program by a Contractor is deemed to be a material breach of the Contract. The City shall be entitled to: (i) exercise all rights and remedies at law or at equity; (ii) terminate the Contract for default; (iii) suspend the Contract for

default; (iv) withhold all payments due to the Contractor until the violation has been fully cured; (v) withhold all payments due to the Contract until a mutually agreeable resolution has been reach with the City; and/or (vi) assess any liquidated damages under Section 6.2 of the CBI Manual. The remedies set forth herein shall be deemed cumulative and not exclusive, and may be exercised successively or concurrently, in addition to any other available remedy.

Liquidated Damages. The City and the Contractor acknowledge and agree that the City will incur costs if the Contractor violates the CBI Policy and/or CBI Manual in one or more of the ways set forth below, including but not limited to loss of goodwill, detrimental impact on economic development and diversion of internal staff resources. The parties further acknowledge and agree that the damages the City might reasonably be anticipated to accrue as a result of such failures are difficult to ascertain due to their indefiniteness and uncertainty. Accordingly, the Contractor agrees to pay the liquidated damages assessed by the City at the rates set forth below for each specified violation of the CBI Policy. The Contractor further agrees that for each specified violation the agreed upon liquidated damages are reasonably proximate to the loss the City will incur as a result of such violation:

I. **Failure to Meet Contract Goal**
If a Contractor will not or did not meet a Contract Goal and such failure is not excused pursuant to Section 5.1.2 of the CBI Manual, then the City may assess the lesser of: (a) $200,000 or (b) the dollar difference between the Contract Goal and the Contractor's actual MWSBE utilization. This may be assessed only once per Contract.

II. **Use of a Conduit**
If the Contractor lists an MWSBE for a Contract Goal with knowledge that the MWSBE will be acting as a Conduit or will not be performing a Commercially Useful Function, the City may assess the lesser of: (a) $100,000 per incident; or (b) the dollar amount stated on the MWSBE's letter of intent.

III. **Wrongful Termination or Replacement of an MWSBE Subcontractor**
If the Contractor terminates or replaces an MWSBE Subcontractor in violation of Section 5.3.1 of the CBI Manual, then the City may assess the lesser of: (a) $50,000 per incident; or (b) the dollar amount of the prospective work to be performed by the MWSBE Subcontractor.

IV. **Failure to Perform Modified Good Faith Efforts**
If the Contractor fails to comply with Section 4.2 of the CBI Manual, then the City may assess the lesser of: (a) $50,000 per incident; or (b) the dollar amount of the prospective work to be performed by the MWSBE Subcontractor.

V. **False Statements and Misrepresentations**
If the Contractor makes a false statement, material misrepresentation, or material misleading omission regarding any matter, then the City may assess the lesser of: (a) $50,000 per incident; or (b) the dollar difference between the Contractor represented as payment and what was actually paid. In the event of any overlap between Section 6.2.5 of the CBI Manual and Section 6.2.2 of the CBI Manual, then the damages set forth in Section 6.2.2 of the CBI Manual shall apply.

VI. **Failure to Respond to Request for Information**
If the Contractor fails to provide any report, documentation, affidavit, certification, or written submission required under the CBI Program within the time period set forth therein, the City may assess $40 per Day until receipt of the item.

VII. **Use of An Affiliate to Meet the Contract Goal**
If the Contractor listed an MWSBE for a Contract Goal with knowledge that the MWSBE is an Affiliate and the City cannot invoke Section 5.2.2 of the CBI Manual, then the City may assess the lesser of: (a) $75,000 per incident or (b) the dollar amount paid to the MWSBE Affiliate. In the event of any overlap between Section 6.2.7 of the CBI Manual and Section 6.2.2 of the CBI Manual, then the damages set forth in Section 6.2.2 shall apply.

VIII. **Quick Pay Commitment**
If a Quick Pay Commitment is offered to any MWSBE Subcontractor in the Vendor Documents but is not subsequently honored, then the City may assess the lesser of: (a) $50,000 or (b) ten percent (10%) of the dollar amount listed on the MWSBE Subcontractor's letter of intent.

IX. **Violation of Exempt Performance Allowance**
If a Contractor submits an affidavit under Section 3.2 of the CBI Manual but Subcontracts thereafter, then the City may assess the lesser of: (a) $25,000 per incident; or (b) the dollar amount of the work performed by any and all Subcontractors.

The City shall be entitled to exercise all remedies and recover all damages set forth in Section 6 of the CBI Manual directly from each Contractor that the City enters into a Contract with, regardless of whether such remedies or damages are due to a breach by that Contractor or by a Subcontractor on the applicable project. Each Contractor on a Contract shall be responsible for taking appropriate measures to enable it to exercise all remedies and recover all damages set forth in Section 6 directly from each Subcontractor. Additionally, the City shall be a third-party beneficiary to each Contract for the purpose of seeking injunctive relief and other remedies to the extent necessary to enforce the CBI Program directly against Contractors, though the City shall have no obligation to do so.

7. CBI FORMS:

Bidders shall submit the following CBI forms within the timeframes indicated below:

CBI FORM	SUBMISSION REQUIREMENTS
CBI Form 1: Intent to Perform Contract with Own Workforce Affidavit A Bidder that intends to perform 100% of the work on a Contract with its own workforce must submit an Affidavit (CBI Form 1) stating that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of work on this Contract with its own current workforces. If the Bidder is not licensed to perform each and every type of work included in the Contract, or if the City has cause to believe based on past practice or other grounds that the Bidder will not be performing all work under the Contract with its own workforce, then the City may reject the Bidder's Bid for non-compliance with the CBI Policy.	**Due at bid opening if the Bidder intends to perform 100% of the work.** In addition to submitting a completed CBI Form 1, the Bidder must also provide, at Bid Opening sufficient supporting documentation for the City to determine that the Bidder does not customarily subcontract work on this type project.
CBI Form 2: Solicitation Form Identifies all MWSBEs the Bidder contacted and any MWSBEs that contacted the Bidder. Documentation content includes: Scope of work, MWSBE contact, date and method of contact, response status, as well as other information. Note: For each scope of work bid by a MWSBE and NOT awarded to a MWSBE, Bidder must complete CBI Form 2A documenting the reason(s) for rejecting the MWSBE's Bid.	**Not due at time of bid.** This form will only need to be submitted if the Bidder does not meet the established goal(s). If requested by the City, Bidder must submit form within three (3) Business Days from the initial request. ALL supporting documentation, reflecting the solicitation methods and content, must be submitted at the same time as CBI Form 2.
CBI Form 2A: Good Faith Negotiation Form. Bidders must submit a completed CBI Form 2A for each MWSBE who bid the project and was ultimately not selected by the Bidder to participate on the Contract.	**Not due at time of bid.** This form will only need to be submitted if the Bidder does not meet the established goal(s). If requested by the City, Bidder must submit form within three (3) Business Days from the initial request.

CBI FORM	SUBMISSION REQUIREMENTS
CBI Form 3: Subcontractor / Supplier Utilization Commitment. Identifies all MWSBE, and non-MWSBE subcontractors and suppliers to be utilized on the Contract and the dollar amounts committed to MWSBEs and non-MWSBEs.	**DUE AT BID OPENING. Must be completed and signed.**
CBI Form 3A: Subcontractor/Supplier Utilization Commitment – ALTERNATES. Identifies additional MWSBE commitments made after Bid Opening, when there are accepted alternates. This form will only be accepted when the City selects alternates.	**Not due at time of bid.** This form will be requested if the project contains alternates. If requested by the City, Bidder must submit form within three (3) Business Days from the initial request.
CBI Form 4: Letter of Intent. Bidders must submit a separate Letter of Intent executed for each MWSBE listed on CBI Form 3 and CBI Form 3A (if applicable) that the Bidder commits to utilize on the Contract.	**Not due at time of bid.** Must be submitted within three (3) Business Days after requested by the City.
CBI Form 5: Good Faith Efforts (GFE) and Statement of GFE Compliance. Identifies the minimum GFE points required for this contract, the GFE Categories, and respective GFE Points value for each GFE Category. Bidder must check each GFE Category for which it has performed the respective effort, as described in Part B Section 5.3 of the CBI Policy.	**Not due at time of bid.** This form will only need to be submitted if the Bidder does not meet the established goal(s). If requested by the City, Bidder must submit form within three (3) Business Days from the initial request.

All CBI Forms are available online at www.charlottebusinessinclusion.com

MWSBE vendors can be found on the City's InclusionCLT system: https://charlotte.diversitycompliance.com/

Unspecified Roadway and Signal Construction Services FY26A

NIGP Code	Commodity Code Description
91244	Excavation Services
91319	Construction, Curb and Gutter (Includes Maintenance, Repair, and Removal)
91345	Construction, Sewer, and Storm Drain
91347	Construction, Sidewalk and Driveway (Includes Pedestrian and Handicap Ramps)
91396	Paving/Resurfacing, Street (Major and Residential)
91430	Concrete
91455	Masonry
91458	Metal Work
91479	Structural and Reinforcement Steel
92914	Asphalt Pavers Maintenance and Repair

Unspecified Roadway and Signal Construction Services FY26A	
NIGP Code	**Commodity Code Description**
96185	Utility Services, Water
96218	Cable Construction, Installation and Maintenance (Fiber Optic, Communication, Computer, etc.)
96239	Hauling Services
96279	Sign Making Services
96861	Pavement Marking Services (Including Removal of Markings)
96884	Traffic Control Services (To Include Placement and Removal of Control Devices)
96888	Tree and Shrub Removal Services
97524	Construction Equipment (Not Otherwise Classified) Rental or Lease
98814	Erosion Control Services
98815	Fence Installation, Maintenance and Repair
98852	Landscaping (Including Design, Fertilizing, Planting, etc., But Not Grounds Maintenance or Tree Trimming Services)
99879	Pipe, Valves and Fittings, Sale of Surplus and Obsolete Items

CBI FORM 1 - INTENT TO PERFORM CONTRACT WITH OWN WORKFORCE

Affidavit of _____
(Name of Bidder)

I hereby certify that I have read Section 3.2 of the CBI Administrative Procedures Manual, and affirm that it is our intent to perform 100% of the work required for the

_____ Contract.
(Name of Project)

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

The Bidder agrees to provide any additional information or documentation requested by the City of Charlotte in support of the above statement. If additional scopes of work are added after the Bidder has been awarded the Contract, then the Bidder agrees to make a Good Faith Effort to utilize certified Minority, Women, Small Business Enterprises (MWSBEs), as applicable, where possible.

The undersigned hereby certifies that they have read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of _____ County of _____

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

Notary Public _____

My commission expires _____

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CBI FORM 2: SOLICITATION FORM

Copy this Form 2 as needed to document MWSBE contacts.

Per Section 4 of the CBI Administrative Procedures Manual, the Bidder must make the required contacts no less than ten (10) Days before Bid Opening to receive credit for this Good Faith Effort. All contacts must be verifiable with supporting documentation reflecting the methods and content of the solicitation. All documentation must be submitted with CBI Form 2. Bidder may also provide an Excel sheet with the same information listed in this Form 2 as supplemental documentation.

A Bidder must submit CBI Form 2 within the time specified in the City Solicitation Documents. If no time period is specified in the City Solicitation Documents, the Bidder must submit CBI Form 2 within three (3) Business Days after the City requests it.

If checking "No" for "Selected" below, the Bidder must document the reasons for rejecting each bid submitted by an M/W/SBE on CBI Form 2A.

Bidder Name:	
Project Name:	
Project Number:	
Number of M/W/SBEs Contacted by Bidder:	

M/W/SBE Firm (Circle one or both):				Contact Person:	
Scope of Work:				NIGP Commodity Code:	
Initial Contact:	Date:	Method:	☐ Email	☐ Fax	☐ Courier
Follow-up:	Date:	Method:	☐ Phone	☐ In-Person	
Response:	☐ No response	☐ Not bidding		☐ Is bidding $	☐ Other (explain)
Selected:	☐ Yes	☐ NO (explain)			

M/W/SBE Firm (Circle one or both):				Contact Person:	
Scope of Work:				NIGP Commodity Code:	
Initial Contact:	Date:	Method:	☐ Email	☐ Fax	☐ Courier
Follow-up:	Date:	Method:	☐ Phone	☐ In-Person	
Response:	☐ No response	☐ Not bidding		☐ Is bidding $	☐ Other (explain)
Selected:	☐ Yes	☐ NO (explain)			

M/W/SBE Firm (Circle one or both):				Contact Person:	
Scope of Work:				NIGP Commodity Code:	
Initial Contact:	Date:	Method:	☐ Email	☐ Fax	☐ Courier
Follow-up:	Date:	Method:	☐ Phone	☐ In-Person	
Response:	☐ No response	☐ Not bidding		☐ Is bidding $	☐ Other (explain)
Selected:	☐ Yes	☐ NO (explain)			

M/W/SBE Firm (Circle one or both):				Contact Person:	
Scope of Work:				NIGP Commodity Code:	
Initial Contact:	Date:	Method:	☐ Email	☐ Fax	☐ Courier
Follow-up:	Date:	Method:	☐ Phone	☐ In-Person	
Response:	☐ No response	☐ Not bidding		☐ Is bidding $	☐ Other (explain)
Selected:	☐ Yes	☐ NO (explain)			

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CBI FORM 2A: GOOD FAITH NEGOTIATION FORM

This Bidder must complete this form for each M/W/SBE who submitted a project bid but was not included on the Bid submission.

A Bidder must submit CBI Form 2A within the time specified in the City Solicitation Documents. If no time period is specified in the City Solicitation Documents, the Bidder must submit Form 2A within three (3) Business Days after the City requests it.

Per Section 4 of the CBI Administrative Procedures Manual, Bidders must provide Good Faith Negotiation documentation within the time period specified by the City. Failure to comply with this requirement shall constitute grounds for rejecting a Bid.

Bidder Name:	
Project Name:	
Contact Person Name:	

M/W/SBE INFORMATION

Firm Name	Scope of work for which a Bid was submitted	M/W/SBE Bid Amount ($)

Rationale for REJECTING M/W/SBE's SUBCONTRACTING BID:

Was the M/W/SBE's bid higher than what was proposed by the subcontractor/supplier selected by the Bidder? **Y** ☐ **N** ☐

Was the M/W/SBE's bid higher than the Bidder's cost of performing such work on its own? **Y** ☐ **N** ☐

Who were the other Bidders?	**What were the Bid Amounts?**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Is the Business Enterprise that will be performing in place of the Interested M/W/SBE more qualified than the Interested M/W/SBE, to the extent that such difference in qualification would materially impact the Bidder's Bid? **Y** ☐ **N** ☐

Explanation:

Is there a material deficiency with the Interested M/W/SBE's bid? (e.g. Bid submitted late; Bid had inaccurate information) **Y** ☐ **N** ☐

Explanation:

If the M/W/SBE was **NOT** a "Qualified M/W/SBE" (as defined in Section 2 of the CBI Administrative Procedures Manual), please state the reasons below:

Explanation:

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CBI FORM 3A: SUBCONTRACTOR/SUPPLIER UTILIZATION COMMITMENTS – ALTERNATES

Copy this CBI Form 3A as needed.

In the event Alternates are selected by the City, the established Subcontracting Goal(s) for this Contract will apply to the total contract amount, including contingency and the selected Alternates ("Total Contract Amount"). In such an instance, Bidders must identify additional M/W/SBE commitments (for all tiers) and submit CBI Form 3A showing all commitments made after Bid Opening.

Bidder is not exempt from the CBI requirements due at bid time. In order to submit CBI Form 3A showing additional M/W/SBE commitments, a Bidder MUST either (i) have submitted CBI Form 3 at Bid Opening (and/or within 24 hours of bid opening) with 100% (or more) of the established Subcontracting Goal(s) met on the Total Contract Amount, or (ii) have met the Good Faith Efforts and Good Faith Negotiation requirements set forth in Section 4 of the CBI Administrative Procedures Manual. If the Bidder fails to meet both the established Subcontracting Goal(s), and the Good Faith Efforts and Good Faith Negotiation requirements set forth in Section 4 of the CBI Administrative Procedures Manual, the Bid shall be rejected.

A Bidder must submit CBI Form 3A within three (3) Business Days after the City requests it.

Bidder Name:			
Project Name:			
MBE Goal:		**WBE Goal:**	
SBE Goal:			

List below the additional M/W/SBE commitments that you intend to use on this Contract, committed post-Bid Opening, as a result of alternates selected by the City. Scopes of work and NIGP codes listed below on Form 3A cannot have been listed on CBI Form 3, unless the amended utilization is associated with an M/W/SBE already listed on CBI Form 3.

M/W/SBE Name	Description of work / materials	NIGP Commodity Code	Total Projected Utilization ($)

Form 3A MBE Utilization $ _____

Form 3A WBE Utilization $ _____

Form 3A SBE Utilization $ _____

Initial Form 3 MBE Utilization $ _____

Initial Form 3 WBE Utilization $ _____

Initial Form 3 SBE Utilization $ _____

Cumulative MBE Utilization (Form 3 & Form 3A) $ _____

Cumulative WBE Utilization (Form 3 and Form 3A) $ _____

Cumulative SBE Utilization (Form 3 and Form 3A) $ _____

Total Contract Amount (including Contingency and alternates selected by the City) $ _____

Percent MBE Utilization (Cumulative MBE Utilization *divided by* Total Contract Amount) _____ **%**

Percent WBE Utilization (Cumulative WBE Utilization *divided* by Total Contract Amount) _____ **%**

Percent SBE Utilization (Cumulative SBE Utilization *divided* by Total Contract Amount) _____ **%**

Signature

Your signature below indicates that the undersigned Company certifies and agrees that:

(a) It has complied with all provisions of the CBI Policy; and (b) failure to properly document such compliance in the manner and within the time periods established by the CBI Policy shall constitute grounds for rejection of your bid.

Signature of Authorized Official	Printed Name	Title	Submittal Date

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CBI FORM 4: LETTER OF INTENT

Per Section 3.5 of the CBI Administrative Procedures Manual, within three (3) Business Days after receiving a request from the City (or within such longer time as may be communicated by the City in writing), a Bidder must submit a separate Letter of Intent for each M/W/SBE listed on CBI Form 3 and CBI Form 3A (if applicable).

Project Name:	

To be completed by the Bidder			
Name of Bidder:			
Address:			
Contact Person:		Email:	
Telephone:		Fax:	

If the Bidder has entered into a Quick Pay Agreement, in association with this Letter of Intent and as defined in the CBI Administrative Procedures Manual, please attach a copy of the executed Agreement with the undersigned M/W/SBE.

Identify in complete detail the scope of work to be performed or item(s) to be supplied by the M/W/SBE.

_____

Cost of work to be performed by the M/W/SBE: **$** _____

To be completed by the M/W/SBE			
Name of the M/W/SBE:			
Address:			
Contact Person:		Email:	
Telephone:		Fax:	

Upon execution of a Prime Contract with the City for the above referenced project, the Bidder certifies that it intends to utilize the M/W/SBE listed above, and that the description, cost and percentage of work to be performed by the M/W/SBE as described above is accurate. The M/W/SBE firm certifies that it has agreed to provide such work/supplies for the amount stated above.

Bidder:	_____ Signature and Title	Date:	_____
M/W/SBE Firm: (Circle one or both)	_____ Signature and Title	Date:	_____

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CBI FORM 5 - GOOD FAITH EFFORTS (GFE) AND STATEMENT OF GFE COMPLIANCE

Bidder Name:	
Project Name:	

Per Section 3 of the CBI Administrative Procedures Manual, if a Bidder has not fully met the **established Subcontracting Goal(s)** for this project, then the Bidder must document it has met the GFE requirements by completing this Form. GFE Points will be calculated, independently, for each Subcontracting Goal that is not met. For instance, if the Bidder fails to meet both the WBE Goal and the MBE Goal that was set, the Bidder will have to earn the minimum GFE points for WBEs and also the minimum GFE Points for MBEs.

Detailed information of the City's GFE requirements can be found in Section 4 of the CBI Administrative Procedures Manual. The Bidder must submit CBI Form 5 within three (3) Business Days after the City requests it, unless specified otherwise in the City Solicitation Documents. Failure to do so constitutes grounds for rejection of the Bid. Below is a list of Good Faith Efforts as defined in Section 4. To the left of each item is the number of points assigned to that item. Please place an "X" in the first column for each item you are claiming credit. Failure to achieve the minimum number of Good Faith Efforts points stated in the box below constitutes grounds for rejection of your bid.

NOTE: All actions necessary to earn GFE Points must be undertaken prior to Bid Opening.

Total Available GFE Points is: 155		**Minimum Number of GFE Points Required for this Project is: 50**
Points		**Good Faith Effort (GFE)**
☐	10	**Section 4.1.1: Contacts.** Any communication with MWSBEs must be through personal, frequent, and persistent contact and by promptly returning telephone calls, facsimiles, and emails. MWSBEs shall be contacted in a manner reasonably calculated to meet each Contract Goal established for the Contract. Factors considered may include, but are not limited, to: 4.1.1.1 The number of MWSBEs contacted in the Relevant Market; 4.1.1.2 Whether MWSBEs perform scopes of work sufficient to meet each Contract Goal; 4.1.1.3 Whether the contacts were made for the first time at least ten (10) Days before the Bid Opening; 4.1.1.4 How the contacts were made; 4.1.1.5 Whether the contacts were documented in a verifiable way (and in compliance with any forms provided by the City); 4.1.1.6 Whether the substance of the Vendor Documents was reasonably sufficient to generate a response from MWSBEs; 4.1.1.7 Whether prompt and adequate responses were provided to MWSBE inquiries; 4.1.1.8 Whether follow-up contacts were made to MWSBEs that did not respond to the initial contact; 4.1.1.9 Whether the Bidder provided the project name and Vendor Documents; and, 4.1.1.10 Whether a written or electronic correspondence log was maintained which listed the names of MWSBEs contacted, telephone or fax numbers, email addresses, dates of contact, scope of work for which each MWSBE was asked to provide a bid, and the results of that contact.
☐	10	**Section 4.1.2: Making Plans Available**. The Solicitation and Vendor Documents shall be available at least ten (10) Days before the Bid Opening for inspection by any MWSBE contacted under Section 4.1.1. MWSBEs may access the Solicitation and Vendor Documents at no cost to them either (i) through an email address or electronic document storage, (ii) on a website, (iii) at a physical address, (iv) by a mailing address, and/or (v) by a telephone/fax number.

☐	10	**Section 4.1.3: Breaking Down Work**. Any work for MWSBEs should be broken down or combined to facilitate MWSBE participation and provided to any MWSBE contacted under Section 4.1.1. The break down or combination of work may be shown through active negotiations with MWSBEs or by placing the scopes of work in the Vendor Documents and expressing a willingness to negotiate with MWSBEs about the scope of work. No points shall be awarded for simply restating the scopes of work listed in the Solicitation.
☐	10	**Section 4.1.4: Working With MWSBE Assistance Organizations.** Any outreach to an MWSBE Assistance Organization for the recruitment of MWSBEs must occur at least ten (10) Days before Bid Opening. No points shall be awarded for only posting the Vendor Documents on the website of the MWSBE Assistance Organization. Examples of working with assistance organizations include, but are not limited to, holding a project specific information session with an organization, presenting at a member meeting or holding an outreach event with the organization. **An "MWSBE Assistance Organization**" is an organization identified by the City of Charlotte and listed in the City Solicitation Documents as providing assistance in the recruitment of MBEs/SBEs.
☐	10	**Section 4.1.5: Attendance at Pre-Bid.** The name and signature of the Business Enterprise's representative must be placed on the City's sign-in sheet for any Solicitation meeting or attendance recorded by the City if the Pre-Bid meeting is held virtually.
☐	20	**Section 4.1.6: Bonding or Insurance Assistance on Construction Contract**. MWSBEs should receive significant and meaningful bonding, insurance, or an alterative to bonding and insurance requirements and any corresponding verification shall provide: (i) the MWSBE's contact information; (ii) a description of what was provided; (iii) when it was provided; and, (iv) any additional information requested by the City. No points shall be award for any assistance provided to an Affiliate.
☐	10	**Section 4.1.7: Negotiating in Good Faith with MWSBEs**. Frequent communications must demonstrate an ongoing good faith negotiation with any MWSBE about performing a scope of work. If the MWSBE is not utilized, then any corresponding verification shall provide: (i) the MWSBE's contact information; (ii) a description of the scope of work discussed during the negotiation; (iii) the price for the scope of work; (iv) when the negotiation occurred; (v) the results of the negotiation; (vi) any legitimate reason for not utilizing the MWSBE; and, (vii) the responses to the Vendor Documents from other Business Enterprises. No points shall be award for any assistance provided to an Affiliate or for reasons deemed to be illegitimate by the City.
☐	25	**Section 4.1.8: Financial Assistance.** MWSBEs should receive significant and meaningful financial assistance and any corresponding verification shall provide: (i) the MWSBE's contact information; (ii) a description of what was provided; (iii) when it was provided; and, (iv) any additional information requested by the City. No points shall be award for any assistance provided to an Affiliate.
☐	20	**Section 4.1.9: Entering Into Joint Venture.** Any Business Enterprise negotiating to create a Joint Venture shall provide the following corresponding verification: (i) the MWSBE's contact information; (ii) a description of the proposed Joint Venture; (iii) when it was offered; and, (iv) any additional information requested by the City. No points shall be award for any assistance provided to an Affiliate
☐	20	**Section 4.1.10: Quick Pay Agreements on the Construction Contract Up For Award**. A written Quick Pay Commitment must be provided to all MWSBEs contacted under Section 4.1.1 and must be provided prior to Bid Opening. No points shall be awarded if (i) no points were awarded for Section 4.1, (ii) the Quick Pay Commitment has a statement indicating that the Bidder will consider entering into a Quick Pay Commitment; or (iii) the Bidder only verbally communicated the Quick Pay Commitment to the Subcontractor.

Total GFE Points (Claimed by Bidder) _____ **Total GFE Points Earned (Assessed by City)** _____

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00 60 00 – PROJECT FORMS

CONTRACTOR'S AFFIDAVIT
RELEASE AND WAIVER OF CLAIM

STATE OF: _____ **COUNTY OF:** _____

_____, _____
(Name) (Title)
_____, being first duly sworn, deposes and says that:
(Contractor)

1. The undersigned is authorized to execute this Affidavit, Release and Waiver of Claim on behalf of the Contractor and has personal knowledge of all facts set forth herein;

2. This Affidavit, Release and Waiver of Claim is made concerning the construction of the following project:

   Project Name: Unspecified Roadway and Signal Construction Services FY26A

   Project No.: 269-2025-130

3. All payrolls, material bills, sales tax, social security tax, state and federal unemployment insurance, and all other liabilities and taxes owed by the Contractor and arising in any manner from the above-described project have been paid in full;

4. No claim or lien exists in favor of any supplier of materials or labor or in favor of any subcontractor furnishing materials or labor on the above-described project;

5. Notwithstanding the foregoing, if the City of Charlotte or property of the City of Charlotte is subject to any claim or lien which arises in any manner from the failure of the Contractor to pay any liability described above, the Contractor will indemnify and hold the City of Charlotte harmless for any amount which the City of Charlotte is required to pay to discharge such lien or settle such claim and further will pay the City of Charlotte's expenses, costs, and attorney fees incurred in connection therewith;

6. All claims, suits, and proceedings of every name, description, or nature arising out of the above project against the City of Charlotte, its officers, employees and agents have been settled;

7. The Contractor releases and waives any and all claims of every type and description which the Contractor may have against the City of Charlotte arising in any manner from the construction of the above-described project.

_____
(Contractors Signature)

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

Signature of Notary Public _____

of _____ County

State of _____

My Commission Expires: _____

STATE / COUNTY
SALES / USE
TAX STATEMENT

PROJECT: **Unspecified Roadway and Signal Construction Services FY26A**

CONTRACTOR/ SUBCONTRACTOR: _____

PERIOD COVERED: _____ **PAGE:** _____ **of** _____

Invoice No.	Invoice Date	Vendor's Name	City Vendor No.	Amount Before Taxes	NC Tax	County Tax	Total Invoice Amount	County Paid
Subtotal (Page 1)				$	$	$	$	
Plus total cost of material withdrawn from our warehouse stock								
Grand Total				$	$	$	$	

I certify that the above listed vendors were paid sales tax upon purchases of building material during the period covered by the construction estimate, and the property upon which such taxes were paid with or will be used in the performance of this contract. No tax on purchases of tangible personal property purchased by such contractors for use in performing the contract which does not annex to, affix to, or in some manner become a part of the project, building, structure or repairs included in the above list.

Signed: _____

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

Signature of Notary Public _____

of _____ County

State of _____

My Commission Expires: _____

04/2019 SPPPFORM30

INSPECTION RECORD FOR ACTIVITIES UNDER STORMWATER GENERAL PERMIT NCG010000
SELF-INSPECTION RECORD FOR LAND DISTURBING ACTIVITIES PER § 113A-54.1
RESPONSE FOR EROSION CONTROL FORM 1675

PROJECT LOCATION _____ **TIP/WBS#** _____
LEVEL II SUPERVISOR _____ **COUNTY** _____
CONTRACTOR _____

All erosion and sedimentation control measures and stormwater discharge outfalls must be inspected once per seven calendar days AND within 24 hours of a rainfall of 1.0 inch or greater per 24-hour period. Permittee must keep a record of inspections. If using on site rain gage, complete daily rainfall measurement. If using Multi Precipitation Estimator (MPE), attach rainfall data for weekly period.

Day	Date	Rain Amt (in)	Notes
M			
T			
W			
Th			
F			
Sat			
Sun			

Phase of Grading (Place a check in the box of the current project phase)	
Initial installation of erosion and sediment control measures	
Clearing and grubbing of existing ground cover	
Completion of any grading that requires groundcover	
Installation of storm drainage facilities	
Completion of all land disturbing activity	
Establishment of permanent ground cover sufficient to restrain erosion	

Has all land disturbing activity been completed? (Y/N) _____
Has the final permanent ground cover been completed and established? (Y/N) _____

Exceptions to standard monitoring requirements

Idle projects: Idle projects must be inspected once every 14 calendar days and after 1.0" of rain in a 24-hour period. Idle projects are projects that have not been completed but where no construction activity occurs for 21 calendar days or more AND the entire project has been adequately stabilized with temporary vegetation pursuant to DEMLR guidelines.

Completed projects: Completed projects are those projects where work has been completed and you're waiting for the permanent vegetation to establish (i.e. waiting for the grass to grow). Completed projects must be inspected once every 30 calendar days AND within 24 hours of a rain event 1.0 inch or greater in 24 hours. The reduced monitoring can begin once construction has been completed, and erodible slopes have been sufficiently stabilized to restrain erosion by application of permanent ground cover varieties and installation of temporary ground cover to include appropriate erosion control matting and/or other approved mulch materials.

By this signature, I certify (in accordance with Part IV, Section B, 6(d) of the NCG010000 permit) that this report is accurate and complete to the best of my knowledge:

Cert. Level II Supervisor	Cert. #
NCDOT Cert. Level II Representative	**Cert. #**

Form should not be signed until the week is complete and ALL corrective actions have been completed in the 24 hour and/or 5 day time periods.

04/2019 SPPPFORM30

Stormwater Discharge Outfalls (SDO)

(Required to list each SDO for each inspection)

Inspection Date	Station Number	Corrective Actions Needed	Priority*	Date Corrected	Visible Sedimentation and Stream Turbidity: Other Pollutants**	Sediment Deposited***	Stream Clarity****

04/2019 SPPPFORM30

Erosion & Sedimentation Control Devices
(Required to list all devices that need maintenance)

Inspection Date	Station Number	Corrective Actions Needed	Priority*	Date Corrected

04/2019 SPPPFORM30

RESPONSE FOR EROSION CONTROL - INSPECTOR'S DAILY REPORT
SUBSTITUE FORM 1675

Pay Item	Standard/Metric Unit	Quantity	Comments
Temporary Silt Fence	LF M		
Special Sediment Control Fence	TN/MTN LF/M		
Temporary Mulching	AC HA		
Seed - Temporary Seeding	LB KG		
Fertilizer - Temporary Seeding	TN MTN		
Matting for Erosion Control	SY M^2		
Coir Fiber Mat	SY M^2		
Coir Fiber Baffles	LF M		
Perm. Soil Reinforcement Mat	SY M^2		
Seeding and Mulching	AC HA		
Seed - Repair Seeding	LB KG		
Fertilizer - Repair Seeding	TN MTN		
Seed for Supplemental Seeding	LB KG		
Fertilizer Topdressing	TN MTN		
Response for Erosion Control	EA EA		
Safety/Highly Visible Fencing	LF M		

00 70 00 – STANDARD SPECIAL PROVISIONS

Section 00 10 00 (Invitation to Bid) and Section 00 20 00 (Instructions to Bidders) are hereby incorporated and made a part of Standard Special Provisions.

ARTICLE 1: NCDOT STANDARD SPECIFICATIONS

1.1 NCDOT Standard Specifications

2024 NCDOT Specifications: The January 2024 North Carolina Department of Transportation (NCDOT) Standard Specifications for Roads and Structures, herein referred to as the "NCDOT Standard Specifications," is part of the Contract Documents and incorporated herein by reference. The Contract Documents are intended to be complementary. In case of any conflict among the Contract Documents that cannot otherwise by resolved, the order of precedence shall be as set forth in Section 105-4 of the NCDOT Standard Specifications.

The NCDOT Standard Specifications are hereby modified as follows:

Section #	Modification
101-3	Modify the Definitions as provided in Section 00 20 00 Article 1 of this Project Manual.
102-1	Delete lines 31 through 32.
102-2	Delete this section in its entirety.
102-3	Delete lines 12 through 15.
102-7	Delete 3rd sentence in the second paragraph and replace it with "Contact *City of Charlotte* office"
102-8	Delete 1st sentence of the first paragraph.
102-8(A)(11)	In line 31, replace "14 calendar days" with "10 calendar days".
102-8(B)(9)	In line 32, replace "14 calendar days" with "10 calendar days".
102-9(C)	Delete lines 26 through 28. In line 42, replace "14 calendar days" with "10 calendar days".
102-9(C)(2)	Delete lines 35 through 44 and replace it with the following: "Execution of Bid, Non-Collusion Certification, Debarment Certification and Gift Ban Certification forms will be included in the proposal as part of the signature sheets. Execution of the signature sheets will constitute Execution of the Bid, Non-Collusion Certification, Debarment Certification and Gift Ban Certification."
102-10	In line 11, replace "14 calendar days" with "10 calendar days". Delete lines 42 to 43.
102-14(A) *and* 103-2 (A)(4)(a)	In addition to "*State Funded Projects*", these sections also apply to "*City Funded Projects."*
102-15 (J)	Delete this sentence in its entirety and replace with the following: "*Failure to satisfy the City's Charlotte Business Inclusion Program or failure to satisfy NCDOT's Minority, Women or Disadvantaged Business Enterprise requirements, whichever program is applicable as required in the project Bidding Documents."*
103-3(A)	Delete the reference to "*North Carolina General Statute 136-28.1*" and replace with the reference to "*North Carolina General Statute 143-129.1*"
103-3(A)(5)	Delete the "*48 hours*" notice of bid withdrawal and replace with "*72 hours*".
103-3(B) and 103-3(C)	Delete these sections in its entirety and replace applicable procedures established in North Carolina General Statutes 143-129.1.
103-3(D)	In line 25, replace "14 calendar days" with "10 calendar days".
103-7	In line 38, replace "14 calendar days" with "10 calendar days".
103-9	In line 2, replace "14 calendar days" with "10 calendar days".

104-8(A)(1)	Delete line 23 through 29 and replace with the following: When the Engineer and the Contractor agree to the prices to be paid, the agreement will set forth in a change order. The Contractor may begin work by written authorization from Engineer before executing the change order.
104-12	Modify the 3rd sentence of the 1st paragraph as follows: "This specification applies to proposals submitted by the Contractor using the Value Engineering Proposal (VEP) Submittal Form on the Department's website or equivalent."
104-12(B)	Delete following part from line 20: "the Value Management Office"
104-12(D)	Delete following part from line 2-3: "the Value Management Office at ValueManagementUnit@ncdot.gov"
104-12(E)	Delete following part from line 23: "and the State Value Management Engineer at ValueManagementUnit@ncdot.gov"
104-12(F)	Delete lines 39 through 41 and replace with the followings: "In addition to the technical review, a Design-Build VEP will be reviewed by the City for fairness of approximate savings noted by the Contractor."
104-12(G)	Delete following part from page 1-37, line 45 and page 1-38, line 45-46: "the Value Management Office at ValueManagementUnit@ncdot.gov" In line 23 of page 1-38, delete the reference of " the State Estimator" and replace with "the Engineer".
104-13	Modify the 2nd sentence of the 3rd paragraph as follows: "This proposal shall be submitted to the Engineer."
107-1	Delete lines 37 through 41 in its entirety and replace it with City's Commercial Non-Discrimination Policy of Section 00 70 00 of this Project Manual.
107-15	Delete this section in its entirety and replace with Insurance Requirements of Section 00 70 00 of this Project Manual.
108-4	Insert the following after Line 29: The Contractor's project superintendent and other individuals representing the Contractor who are knowledgeable of the Contractor's proposed progress schedule or who will be in charge of major items of the work shall attend the construction conference.
108-10(B)(5)	Delete this section in its entirety.
108-13	Delete this section in its entirety and replace with the Termination of Section 00 70 00 of this Project Manual.
109-11	Delete this section "*Interest on Final Payment*" in its entirety.

1.2 ERRATA

(1-16-24) Z-4

Revise the *2024 Standard Specifications* as follows:

Division 3

Page 3-5, Article 305-2 MATERIALS, after line 16, replace " 1032-3(A)(7)" with "1032-3" and add the item "Galvanized Corrugated Steel Pipe" with Section "1032-3".

Page 3-6, Article 310-2 MATERIALS, after line 9, add the item "Galvanized Corrugated Steel Pipe" with Section "1032-3".

Division 9

Page 9-17, Article 904-4 MEASUREMENT AND PAYMENT, prior to line 1, replace " Sign Erection, Relocate Type (Ground Mounted)" with "Sign Erection, Relocate Type ___ (Ground Mounted)".

Division 10

Page 10-51, Article 1024-4 WATER, prior to line 1, delete the "unpopulated blank row" in Table 1024-2 between "Time of set, deviation from control" and "Chloride Ion Content, Max.".

Page 10-170, Subarticle 1081-1(C) Requirements, line 4, replace "maximum" with "minimum".

Division 11

Page 11-15, Article 1160-4 MEASUREMENT AND PAYMENT, line 24, replace "Where barrier units are moved more than one" with "Where barrier units are moved more than once".

Division 15

Page 15-10, Article 1515-4 MEASUREMENT AND PAYMENT, lines 11, replace " All piping" with "All labor, the manhole, other materials, excavation, backfilling, piping".

Division 16

Page 16-14, Article 1633-5 MEASUREMENT AND PAYMENT, line 20-24 and prior to line 25, delete and replace with the following " *Flocculant* will be measured and paid in accordance with Article 1642-5 applied to the temporary rock silt checks."

Page 16-3, Article 1609-2 MATERIALS, after line 26, replace "Type 4" with "Type 4a".

Page 16-25, Article 1644-2 MATERIALS, after line 22, replace "Type 4" with "Type 4a".

ARTICLE 2: CITY STANDARD PROVISIONS

2.1 Curb and Gutter Tapers and Transitions

The Contractor shall be responsible for constructing concrete curb and gutter end tapers and concrete curb and gutter transitions as shown on the plans and in the specifications, including CLDS 10.19 curb transitions. Payment will be made at the contract unit prices of the adjacent curb and gutter for the various curb types in NCDOT Section 846, "Concrete Curb, Concrete Curb and Gutter, Concrete Gutter, Shoulder Berm Gutter, Concrete Expressway Gutter and Concrete Valley Gutter" and CLDS 10.17 "Curb and Gutter".

2.2 Pipe Culverts

Materials
All rigid pipe shall be in accordance with NCDOT section 1032-6 and NCDOT section 310.

Joint Wrap
All rigid pipe shall be installed per NCDOT section 300-6 (A) except that all pipe shall have Type 2 filtration geotextile wrapped around all pipe joints. Extend geotextile at least 12" beyond each side of the joint, overlap ends by 12" minimum. Secure geotextile against the outside of the pipe by methods approved by the Engineer. There will be no separate measurement or payment for the joint wrapping, the price of the work will be included in the price bid for the individual line item.

Joint Wiping
Interior wiping of concrete pipe joints is prohibited. Treatment, including but not limited to, application of mortar, cement, epoxy or other materials used to seal, fill, or cover internal joint gaps without the written permission from the Engineer will not be allowed. Prior to acceptance, the interior surface of the pipe including the joints, shall be 100% visible for inspection. Any material found to be obstructing the evaluation of the condition of the joint may result in pipe replacement, may require an exterior collar or may require internal joint and/or pipe lining at the contractor's expense.

Pipe Video
Pipe videos provide an opportunity to view the quality of the pipe installation and make appropriate repairs in a timely and efficient manner; view internal structural integrity of the joint, sealant and overall condition of installation that is not otherwise available through traditional inspection practices. All closed storm drainage systems will be videoed by a NASSCO certified provider by the City to evaluate the internal condition of the system. Deficiencies will be identified and provided to the Contractor for repair. Once repairs are completed, the Contractor will be responsible for the costs associated with the re-video of the repairs made, including where external repairs were performed. The City will utilize their provider for the re-video service and will deduct the invoiced amount from the final project payment.

2.3 Existing Utilities

The City has contacted and notified all involved utility owners of the effect of this Project on their respective utility. Construction plans and anticipated construction schedules have been provided to the utility owners. Each utility owner will be requested to attend the preconstruction conference to discuss potential conflicts and their schedule for relocation where required. All adjustments or relocations will be made by the utility owner unless otherwise indicated in the Contract Documents.

The owners of utilities in this Project could include:

1. Alltel / Windstream Communications
2. Duke Energy Company
3. Piedmont Natural Gas Company

4. Charlotte-Mecklenburg Utility Department
5. American Telephone & Telegraph
6. Spectrum
7. MCI Communications
8. Charlotte Department of Transportation
9. Xspedius Communications

The Contractors work shall be in accordance with NCGS 87-115, Underground Utility Safety and Damage Prevention Act" (2013-407, s 2.). To assist the Contractor and utility owners in meeting the requirements of this law, there is a service provider called "NC811." Most major utilities with underground facilities in the State subscribe to this service.

From within North Carolina, dial 811. For calls originating outside (or inside) of North Carolina, the toll free number (800) 632-4949 may be used. NC811 can also be accessed via the Internet at https://www.nc811.org/ .

The Contractor shall include the cost of any coordination and cooperation of utilities in his bid.

No additional compensation shall be allowed for delays or inconvenience sustained by the Contractor due to utility relocation or adjustments. No additional payment will be made for re-mobilization required by the utility's failure to relocate a utility at the request of the Contractor.

No additional compensation will be made for excavating near or around existing utilities, for purposes of locating or for preservation. Not all utilities (underground or above ground) will be relocated. Contractor shall consider any mechanized and/or hand digging necessary to preserve integrity of utilities in his unit bid prices.

Where changes to utility facilities are to be made solely for the convenience of the Contractor, it shall be the Contractor's responsibility to arrange for such changes, and the Contractor shall bear all costs of such changes.

2.4 CDOT Street Maintenance Division Street Cut Regulations

The CDOT Street Maintenance Division requires that any Utility Company, Contractor, Developer, or agents thereof engaged in the excavation of streets, sidewalks, and curb and gutter in City of Charlotte street rights-of-way must ensure that;

- A street cut permit is requested and available prior to the commencement of the excavation of streets, sidewalks and curb and gutter within the Right of Way.
- During excavation and restoration activities a certified company representative is present on the job site.

Excavation certification can be obtained by attending a 4-hour class to become familiar with street cut policies, procedures and requirements for excavating and restoring Charlotte right of way infrastructure.

Once these foremen/lead persons obtain certification, they are placed on an approved Street Cut Certification List maintained by SMD.

2.5 Concrete

All concrete used on City projects will be required to meet the NCDOT Standard Specifications for Roadways and Structures. In addition the following City requirements apply:

The City of Charlotte or their Independent Testing Laboratory (ITL) will perform all testing for Slump, Air Content, Temperature, and Compressive Strength for City approved/accepted concrete mix designs.

Compressive Strength Quality Assurance for Incidental Concrete:

The following Quality Assurance Specifications shall apply only to incidental concrete used in the construction of this Project. Incidental concrete shall be defined as any concrete not used in the construction of rigid pavement or any concrete that is not an integral part of a structure. The Engineer reserves the right to reject questionable material at any time in lieu of making reduced payment.

Compressive Strength:

All incidental concrete used in the construction of this Project shall be a minimum 3600 PSI strength at twenty-eight (28) days, unless otherwise specified. No adjustment will be allowed for the required use of high-early strength concrete. When the Contractor is requested to use high-early strength concrete in certain areas, he must furnish a copy of the delivery ticket to the Project Inspector prior to allowing traffic to proceed across the item in question before the required seven (7) day curing period.

Concrete will be tested and accepted with respect to compressive strength on the basis of the average test results of concrete test cylinders. The City's testing company will prepare test cylinders in accordance with ASTM C31 and take them to their laboratory for curing and testing. The Contractor is responsible for providing adequate curing boxes, blankets, burlap, if needed. If the average strength of concrete cylinder test results fail to attain the specified minimum compressive strength at twenty-eight (28) days, but meet or exceed 70% of the minimum compressive strength, the Engineer will have the option of instructing the Contractor to replace all concrete represented by those cylinders with concrete meeting specifications or of allowing the concrete to remain in place at a reduced Contract price. The Contract Unit Price for such concrete left in place shall be reduced by the following formula:

- Reduced Unit Price = Contract Unit Price x $\frac{\text{Avg. Strength of Test Cylinders at 28 Days}}{\text{Specified Minimum Compressive Strength}}$

In the event that concrete cylinder tests fail to meet minimum compressive strengths at twenty-eight (28) days, the Contractor will have the option of taking cores from the concrete in question at the Contractor's expense. Cores must be taken and tested in accordance with ASTM C42. Cores must be taken thirty-one (31) days after placement of concrete. Cores must be taken and tested by a qualified independent testing laboratory approved by the Engineer. A minimum of three (3) cores shall be taken from questionable concrete, unless otherwise specified by the Engineer. Cores shall be taken from locations selected by the Engineer.

If the average strength of the concrete test results (cylinders and cores) fail to attain seventy percent (70%) of the specified minimum compressive strength at twenty-eight (28) days, all applicable concrete shall be rejected. The Contractor, at no additional cost to the City, shall remove the rejected concrete and replace it with concrete that meets specifications.

The Contractor must submit a Process Control plan for review by the City of Charlotte, including the name of the field person in charge for the contractor during concrete placement per the NCDOT Standard Specifications. This person must be concrete certified per ACI and NCDOT Field Level 1 Concrete.

2.6 Reclamation of Waste or Borrow Sources

All removal, disposal, and storage of waste and borrow material for this project will be required to meet the NCDOT Standard Specifications for Roadways and Structures. In addition the following City requirements apply. If any borrow or waste areas are to be utilized, it shall be the responsibility of the Contractor to notify the property owner that the property owner is responsible for any damage occurring at the site, either as part of the agreement

with the Contractor, or on his own. The cost of all work of securing the borrow site, sediment control, re-grading and seeding shall be the responsibility of the property owner or contractor per their separate agreement.

The City will not participate in the cost of this reclamation work on the waste or borrow areas. Prior to final payment being made, the Contractor shall obtain a release from the property owner of the borrow or waste site utilized for the Project.

2.7 Hazardous Materials

If the Contractor encounters any materials considered or suspected of being hazardous, he shall immediately secure the area, discontinue operations, and contact the Charlotte-Mecklenburg Hazardous Materials Coordinator, telephone 704-336-2461 for further instructions. All activities shall be required to meet the NCDOT Standard Specifications for Roadways and Structures – Section 107-25.

2.8 Sedimentation Pollution Control Act

Certification Requirement

For projects that disturb one or more acres of land and thus require an NPDES General Stormwater Permit for Construction Activities, the prime contractor must provide an employee who has current certification in one or more of the following:

1) Charlotte-Mecklenburg Certified Site Inspector
2) NCDOT/NCSU's Level 2 Erosion and Sediment Control/Stormwater Certification
3) Certified Professional in Erosion and Sediment Control (EnviroCert International)
4) Professional Engineer

Documentation of certification shall be submitted at the contract Pre-construction Conference and prior to Notice to Proceed.

The person designated as the certified employee will be responsible for doing the following as it relates to the project:

- Complete erosion control inspection records as specified in the NDPES General Stormwater Permit for Construction Activities and provide copies of records to the City.
- Coordinate the performance of corrective maintenance to erosion and sediment control measures that are found to not be functioning as intended to minimize sediment loss. Discuss corrective actions deemed necessary with the City's Construction Inspector prior to conducting the work.
- Immediately notify the City's Construction Inspector of visible sediment deposition from the project site into any water body or wetland. Such discharges must be reported to the NC Department of Environmental Quality within 24 hours of discovery.

Financial Responsibility

If this project is subject to the "North Carolina Department of Environmental Quality Sediment Pollution Control Act", the City has already acquired the permit. The Contractor, upon recommendation of award shall complete Part B of the Financial Responsibility/Ownership form provided by the City. The City will then transfer financial responsibility of the erosion control permit to the Contractor. The City of Charlotte will pay the cost of the application fees. The Contractor will be responsible for any fines levied for violation of the approved erosion control plan.

2.9 Construction Stakes, Lines, and Grades

Construction stakes, lines and grades will be provided by the City in accordance with Section 105-9 of the NCDOT Standard Specifications. Surveying will be provided by the City in accordance with the current "Surveying Field Procedures Manual" of the General Services Department.

The Contractor shall request all staking at least FORTY-EIGHT (48) hours in advance of the time that the staking will be required. The Contractor shall be held responsible for the preservation of all stakes and marks, and, if any of the construction stakes or marks have been carelessly or willfully destroyed or disturbed by the Contractor, the cost of replacing them ($100.00 per hour) will be charged against him and will be deducted from the payment for the work. See additional requirements for Construction Stakes, Lines and Grades under the "Traffic Control" Special Provision.

2.10 Maintenance of the Project

Maintenance of the Project shall be in accordance with Section 104-10 of the NCDOT Standard Specifications.

The Contractor shall furnish and erect, at no additional cost to the City, whatever sidewalks, bridges, culverts, or other works as may be necessary for the protection of the public, including, but not limited to, barricades, fences, etc. and for the safe and proper execution of other public utility lines so as not to interfere therewith or damage or cause damage thereto. The Contractor shall be responsible for all damages to persons or property that occur as a result of his fault, omission, or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all work performed hereunder until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the City.

2.11 Storage of Materials and Equipment

The Contractor shall be responsible for locating and providing storage areas for construction materials and equipment. The material and equipment storage shall comply with all local and state ordinances throughout the construction period. The Contractor shall restore the storage area to its original condition upon completion of the Project or upon such time as directed by the Engineer. Such restoration shall be at no additional cost to the City.

The Contractor shall be responsible for the safeguarding of materials and equipment against fire, theft and vandalism and shall not hold the City responsible in any way for the occurrences of same. The Contractor shall furnish and erect, at no additional cost, whatever works may be necessary for the protection of the public, including but not limited to barricades, fences, etc. Prior to final payment being made, the Contractor shall obtain a release from the property owner of the storage area utilized for the Project.

2.12 Subletting

The Engineer reserves the right to waive the subcontracting limits set forth in Section 108-6 of the NCDOT Standard Specifications whenever it is deemed to be in the best interest of the City. The limits can be waived only upon written approval from the Engineer.

2.13 Quantity Tickets

All quantity tickets for items shall be submitted to the project inspector at the time of delivery of the materials on the job. Each ticket shall indicate the date, contractor, job location and name, type of material, quantity of material, truck number and signature of the Contractor or his authorized representative.

No tickets will be accepted after the time of delivery.

2.14 Periodic Payments

The City will make partial payments based on the work progress estimates prepared by the Engineer and on the payment requests submitted by the Contractor on a monthly schedule established by the Engineer. Partial payments will be made within thirty (30) calendar days after receipt of a complete and accurate payment request. Partial payments will be approximate only and will be subject to correction in the final estimate and payment.

The Contractor shall submit the following required documents with each payment request:

1. NCDOT Erosion Control Form SPPPFORM30;

2. Payment Reporting on InclusionCLT; and
3. Sales/Use Tax Statement (provided by the City).

The Contractor shall submit an updated project schedule with every partial payment request. The schedule shall detail the entire project and incorporate a Critical Path Method (CPM) analysis that adheres to the Traffic Control Plan, or be in a format that reflects the Work Area Traffic Control Handbook and meets the approval of the Engineer. Partial payment requests that do not include an updated project schedule will be deemed incomplete and the payment request will not be processed until the updated schedule is received. In the event the Contractor fails to submit an updated schedule for a period in excess of thirty (30) days of the scheduled submission date, the surety will be notified of the pending breach and requested to provide assistance in obtaining the schedule to avoid a declaration of default under the terms of the Contract.

For contracts less than $50,000.00, partial payments may be made twice each month if, in the judgment of the Engineer, the amount of work performed is sufficient to warrant such payment. No partial payment will be made when the total value of the work performed since the last partial payment, excluding mobilization, is less than $1,000.00.

Payment requests, Erosion Control Logs, Payment Reporting on InclusionCLT and Sales/Use Tax Statement shall be submitted on the forms provided by the City.

The Contractor shall have a copy of his current payment request on the job site and it may be viewed by subcontractors upon request.

In accordance with N.C. General Statutes 143-134.1, retainage on periodic payments will be an amount equal to five percent (5%) of the total amount due on payment requests.

2.15 Final Payment

Final Payment will be made in accordance with Section 109-9 and 109-10 of the NCDOT Standard Specifications.

The Contractor shall provide the following documents with the final pay request:

1. Contractor's Affidavit Release and Waive of Claim (form provided by the City);
2. Payment Reporting on InclusionCLT;
3. State/County Sales/Use Tax Statement (form provided by the City); and
4. Consent of Surety to Final Payment (AIA Document G707).

No final payment will be authorized until these documents have been properly completed and submitted by the Contractor.

2.16 Payment Reporting

To determine whether disparities exist in City contracting based on race, gender or other factors, and also to measure the effectiveness of the City's Charlotte Business INClusion ("CBI") Program, the City tracks the utilization of subcontractors and suppliers on certain City contracts based on race, gender, small business status, and other factors. For analysis purposes, it is important that the City obtain this data not only for minority-owned, women-owned, and small business suppliers and subcontractors, but also for other subcontractors and suppliers. As a condition for receiving payments under this Contract, the Contractor agrees to submit any payment record into InclusionCLT, or any subsequent system designated by the City, detailing the amounts paid by the Contractor to all subcontractors and suppliers receiving payment in connection with this Contract

Failure to provide payment reporting required by this Section shall constitute a default under this Contract, and shall entitle the City to: (a) withhold payment of any amounts due the Contractor (whether under this Contract or

otherwise), or (b) exercise any other remedies legally available for breach of this Contract, or (c) impose any other sanctions permitted under the City's Charlotte Business INClusion Program. In order to submit payment record into InclusionCLT properly, each prime contractor and all subcontractors identified must be registered in the City's Vendor Registration System. The City may request on a case-by-case basis that the Contractor require certain suppliers to be registered in the City's Vendor Registration System, and may withhold payment of any amounts due the Contractor in the event the Contractor fails to comply with such request.

2.17 Sales and Use Tax

The City is NOT exempt from applicable sales or use taxes assessed by North Carolina or other states. However, the North Carolina Department of Revenue does reimburse the City for the North Carolina sales or use taxes the City pays for certain construction related goods. Therefore, the City utilizes the below procedures for such sales tax. The Contractor agrees to follow the procedures set forth below for all sales or use taxes related to the Work and any other work performed pursuant to this contract.

"Eligible Taxes" are defined as North Carolina sales or use taxes paid by the Contractor for *buildings, materials, supplies, fixtures and equipment that become a part of or annexed to any building or structure that is owned or leased by the City and is being erected, altered or repaired by the City* (North Carolina GS 105-164-14(c)).

"Non-Eligible Taxes" are defined as all other sales or use taxes including those paid to states other than North Carolina, or sales or use taxes paid to North Carolina on purchases or rental of tools, equipment, and disposable supplies, including fuel, used in the Work.

Non-Eligible Taxes
Non-Eligible Taxes shall be included in the Bid and will be included in the Contract Amount.

The Contract Amount as shown in Section 00 50 00 includes full and complete compensation for the Contractor for any and all Non-Eligible Taxes paid by the Contractor in the prosecution of the Work and any other work performed pursuant to this Contract.

Eligible Taxes
Eligible Taxes **shall not** be included in the Bid and will **not** be included in the Contract Amount. Eligible Taxes will be reimbursed separately pursuant to the procedures below.

Prior to award of the Contract, the Contractor shall provide the City with the estimated amount of total Eligible Taxes for the Contract. This estimated amount of total Eligible Taxes will be used solely for the purpose of the City's budget planning for the Project and will **not** be included in the Contract Amount.

The Contract Amount as shown in Section 00 50 00 excludes Eligible Taxes. The Contractor shall invoice the City for Eligible Taxes as set forth below and the City will reimburse the Contractor for those Eligible Taxes pursuant to the procedures below.

In the event the Contractor fails to materially follow the procedures set forth by this Article, and/or fails to properly document its payment of Eligible Taxes, the City will not be liable to the Contractor in any way for the payment of such Eligible Taxes.

In order to receive the reimbursement for Eligible Taxes, the Contractor shall provide a detailed listing of Eligible Taxes on the Sales/Use Tax Statement ("Tax Statement") provided in the Contract Documents. Tax Statements must be submitted with each payment request and shall include invoices documenting the Eligible Taxes and the underlying purchases made by the Contractor or by the Contractor's subcontractor.

Tax Statements must indicate whether such Eligible Taxes was paid by the Contractor or by the Contractor's subcontractor.

If no Eligible Taxes have been paid for the period in which a payment request is being submitted by the Contractor, then the Contractor shall indicate "No Eligible Taxes paid this period" and submit the Tax Statement accordingly. Tax Statements must be completed and signed by the Contractor/subcontractor's company officer submitting the statement and certified by a Notary Public.

Tax Statement must list in detail the Eligible Taxes paid for each individual invoice paid by the Contractor/subcontractor. No lump sum, running total, or copies of previously reported statements will be accepted.

Tax Statements must show separately the portion of Eligible Taxes that are paid to the State of North Carolina and the applicable North Carolina county, identifying the county accordingly.

Tax Statements will be reviewed and approved by the City prior to paying the Eligible Taxes reimbursement. Such approval will not be unreasonably withheld.

2.18 Allowances

Any Allowance included as a line item on the Itemized Proposal, including but not limited to Contingency Allowances, may only be used by the Contractor upon written instructions from the Engineer. Any portion of any Allowance remaining at the end of the Contract shall revert to the City. The City reserves the right to change any Allowance amount prior to award of the Contract.

2.19 Commercial Non-Discrimination Policy

As a condition of entering into this agreement, the Company represents and warrants that it will fully comply with the City's commercial non-discrimination policy, as described in Section 2, Article V of the Charlotte City Code, and consents to be bound by the award of any arbitration conducted thereunder. As part of such compliance, the Company shall not discriminate on the basis of a Protected Class in the solicitation, selection, hiring, or treatment of subcontractors, vendors, suppliers, or commercial customers in connection with a City contract or contract solicitation process, nor shall the Company retaliate against any person or entity for reporting instances of such discrimination. The Company shall provide equal opportunity for subcontractors, vendors and suppliers to participate in all of its subcontracting and supply opportunities on City contracts, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that has occurred or is occurring in the marketplace.

As a condition of entering into this agreement, the Company agrees to:

(a) Promptly provide to the City all information and documentation that may be requested by the City from time to time regarding the solicitation, selection, treatment and payment of subcontractors in connection with this agreement; and

(b) If requested, provide to the City within sixty days after the request a truthful and complete list of the names of all subcontractors, vendors, and suppliers that company has used on City contracts in the past five years, including the total dollar amount paid by contractor on each subcontract or supply contract. The Company further agrees to fully cooperate in any investigation conducted by the City pursuant to the City's commercial non-discrimination policy as set forth in Section 2, Article V of the Charlotte City Code, to provide any documents relevant to such investigation that are requested by the City, and to be bound by the award of any arbitration conducted under such policy. The Company understands and agrees that violation of this clause shall be considered a material breach of this agreement and may result in contract termination, disqualification of the Company from participating in City contracts and other sanctions.

The Company understands and agrees that a violation of this clause shall be considered a material breach of this agreement and may result in termination of this agreement, disqualification of the company from participating in City contracts or other sanctions.

For purposes of this section, “Protected Class” means a person's race, color, gender, religion, national origin, ethnicity, age, familial status, sex (including sexual orientation, gender identity and gender expression), veteran status, pregnancy, natural hairstyle or disability, as those terms are further defined in Section 2, Article V of the Charlotte City Code.

2.20 E-Verify

Contractor shall comply with the E-Verify requirements of Article 2 of Chapter 64 of the North Carolina General Statues, and shall require each of his subcontractors to do so as well.

2.21 Iran / Israel

NC prohibition on contracts with companies that invest in Iran or boycott Israel. Company certifies that: (i) it is not identified on the Final Divestment List or any other list of prohibited investments created by the NC State Treasurer pursuant to N.C.G.S. 147-86.58 (collectively, the “Treasurer’s IDA List”); (ii) it has not been designated by the NC State Treasurer pursuant to N.C.G.S. 147-86.81 as a company engaged in the boycott of Israel (such designation being referred to as the “Treasurer’s IB List”); and (iii) it will not take any action causing it to appear on the Treasurer’s IDA List or the Treasurer’s IB List during the term of this Contract. In signing this Contract Company further agrees, as an independent obligation, separate and apart from this Contract, to reimburse the City for any and all damages, costs and attorneys’ fees incurred by the City in connection with any claim that this Contract or any part thereof is void due to Company appearing on the Treasurer’s IDA List or the Treasurer’s IB List at any time before or during the term of this Contract.

2.22 Indemnification

To the fullest extent permitted by law, the Company shall indemnify, defend, and hold harmless each of the “Indemnitees” (as defined below) from and against any and all “Charges” (as defined below) proximately caused by the Company’s breach of contract, or negligent, reckless or intentional acts or omissions constituting a tort under applicable statues or common law, or violations of applicable statues or regulations, unless the Charges are proximately caused by or resulting from, in whole or in part, the negligence of an Indemnitee. For Purposes of this Section, (a) the term ''Indemnitees'' shall mean the City and each of the City's officers, officials, employees, agents and independent contractors (excluding the Company) and (b) the term “Charges” shall mean claims, losses, damages, fines, penalties, royalties, obligations, liabilities, and expenses, including but not limited to reasonable attorneys' fees.

In any case in which the Company provides a defense to the City or other Indemnitee pursuant to this indemnity, the defense will be provided by attorneys reasonably acceptable to the City. The provisions of this Contract regarding indemnity will survive the expiration or termination of this Contract.

If this Contract is funded in full or in part by federal funds, the indemnity rights granted to the City in this Contract shall also extend to the U.S. Government agency that extends such funding, and to the agency’s officers, officials, employees, agents, and independent contractors (excluding the Company).

2.23 Guarantee

The Contractor shall guarantee all materials and workmanship for a period of one (1) year from the date of acceptance by the City and shall replace any portions that fail because of faulty materials or workmanship at no additional cost to the City. A six (6) month and eleven (11) month inspection will be held during the warranty period. The Contractor shall immediately repair all defective items upon notification. Items repaired under the provisions shall have an extended warranty period of twelve (12) months from the date of repair of the item.

Areas and/or other work disturbed while accessing and/or repairing/replacing warranty covered items shall be stabilized and repaired at no additional cost to the City.

2.24 Insurance Requirements

Contractor's Liability and Other Insurance: The Contractor shall purchase and maintain with a company acceptable to the City and authorized to do business in the State of North Carolina, such insurance as will protect him from claims under workers' compensation laws, disability benefit laws or other similar employee benefit laws; from claims of damages because of bodily injury, occupational sickness or disease, or death of his employees; from claims for damages because of bodily injury and personal injury; and from claims for damage and destruction of tangible property, including loss of use resulting there-from – any or all of which may arise out of or result from the Contractor's operations under the Contract Documents, whether such operations be by himself or any subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be legally liable.

The insurance shall be written for not less than the limits of liability specified below.

Automobile: Bodily injury and property liability covering all owned, non-owned and hired automobiles for limits of not less than $1,000,000.00 bodily injury each person, each accident and $1,000,000.00 property damage, or $1,000,000.00 combined single limit – bodily injury and property damage combined.

Commercial General Liability: Bodily injury and property damage liability as shall protect the Contractor and any subcontractor performing work under this Contract from claims of bodily injury or property damage which arise from operations of this Contracts, whether such operations are performed by the Contractor, any subcontractor, or anyone directly or indirectly employed by either. The amounts of such insurance shall not be less than $1,000,000.00 bodily injury each occurrence/aggregate and $1,000,000.00 property damage each occurrence/aggregate or $1,000,000.00 bodily injury and property damage combined single limits each occurrence/aggregate. This insurance shall include coverage for products/completed operations, personal injury liability and contractual liability assumed under the indemnity provision of this Contract and broad form property damage, explosion, collapse and underground property damage (XC&U). The coverage shall be on an occurrence basis.

Workers' Compensation and Employers' Liability: Shall meet the statutory requirement of the State of North Carolina, in an amount of $100,000.00 each accident and disease – each employee and $500,000.00 disease policy limit providing coverage for employees and owners.

The City shall be named as an additional insured under the commercial liability insurance for operations or services rendered under this Contract.

At the time of execution of the Contract, the Contractor shall provide the City with insurance certificates certifying that the foregoing insurance is in force; and such insurance certificates shall include provisions that the insurance shall not be cancelled, allowed to expire, or be materially changed without giving the City thirty (30) days advance written notice by mail.

The insurance certificate **must** include the following language in the "Description of Operations/Locations/Vehicles" box of the insurance form next to the project name: "**City of Charlotte is listed as an additional insured on the general liability policy.**" Failure to provide this specific language will delay the execution of this contract.

The Contractor is advised that if any part of the work under this Contract is sublet, he shall require the subcontractor(s) to carry insurance as required above. However, this will in no way relieve the Contractor from providing full insurance coverage on all phases of the Project, including any that are sublet.

When certain work is performed inside rights-of-way owned by railroads, North Carolina Department of Transportation or other agencies, both the Contractor and any subcontractors may be required to furnish individual insurance certificates made in favor by the controlling agency, with limits established by that agency.

2.25 Holiday Work Restrictions

No work shall be performed on the Project which is subject to measurement or payment when City offices are closed for observed City Holidays. For observed City Holidays that occur on a Monday or Friday, no work shall be performed during the Holiday weekend prior to or following the City Holiday, respectively (Saturday and Sunday). This restriction does not relieve the Contractor from the responsibility of ensuring the safety and well-being of pedestrian and vehicular traffic, and for the protection of public and private property.

Additional Holiday restrictions may apply.

In emergencies and certain other conditions deemed necessary by the Engineer, the Contractor may be directed to work on weekends or holidays. There will be no separate measurement or payment for work done under these directives other than those established in the Contract.

2.26 Drainage Structures

The Contractor shall build inverts in all drainage structures in accordance with City Standards. There will be no separate measurement or payment for this work.

2.27 Termination

TERMINATION BY THE CITY FOR CAUSE

1. The City may terminate the Contract if the Contractor:
   a. Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
   b. Fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the subcontractors;
   c. Persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
   d. Otherwise is guilty of substantial breach of a provision of the Contract Documents.

2. When any of the above reasons exist, the City, upon certification by the Engineer that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the City and after giving the Contractor and the Contractor's surety, if any, seven days written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
   a. Take possession of the site and all materials, equipment, tools and construction equipment and machinery thereon owned by the Contractor;
   b. Accept assignment of subcontracts; and
   c. Finish the work by whatever reasonable method the City may deem expedient. Upon request of the Contractor, the City shall furnish the Contractor a detailed accounting of the costs incurred by the Owner in finishing the work.

3. When the City terminates the Contract for one of the reasons stated above, the Contractor shall not be entitled to receive further payment until the work is finished.

   The City Engineer shall have authority to terminate the Contract without additional authorization by City Council.

4. If the unpaid balance of the Contract Sum exceeds the costs of finishing the work, including compensation for the Engineer's services and expenses made necessary thereby, and other damages incurred by the City

and not expressly waived, such expenses shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the City. The amount paid to the Contractor or the City, as the case may be, shall be certified by the Engineer, upon application, and this obligation for payment shall survive the termination of the Contract.

TERMINATION BY THE CITY FOR CONVENIENCE

1. The City may, at any time, terminate the Contract for the City's convenience and without cause. Upon written notice from the City of such termination for the City's convenience, the Contractor shall:
   a. Cease operations as directed by the City in the notice;
   b. Take actions necessary, or that the City may direct, for the protection and preservation of the work; and
   c. Except for the work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

2. The City Engineer shall have authority to terminate the Contract without additional authorization by City Council.

3. In case of such termination for the City's convenience, the Contractor shall be entitled to receive payment for work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit for the completed work.

2.28 Dispute Resolution

It is understood and agreed that projects subject to NCGS 143-128(g) requires that disputes arising under a Contract subject to a dispute resolution process specified by the Owner (i.e., the City). In compliance with this statutory provision, the City specifies this Article as the dispute resolution process to be used on this Project, regardless if the Project is or is not subject to NCGS 143-128(g). It is further understood and agreed that this dispute resolution process is based on non-binding mediation and will only be effective to the extent that the Parties to any mediated dispute participate in the mediation in good faith. It is also understood and agreed that the City is under no obligation under any circumstance to secure or enforce the participation of any other Party in the mediation of any dispute subject to this Article and NCGS 143-128(g).

A. Any dispute arising between or among the Parties listed in Section C of this Article that arises from an agreement to perform services in conjunction with the Project, including without limitation a breach of such agreement, shall be subject to non-binding mediation administered by the American Arbitration Association under the industry appropriate Mediation Rules ("Rules"). To the extent any provision of the Rules is inconsistent with the provisions of this Article, the provisions of this Article shall control. The mediation provided in this Article shall be used pursuant to this Contract and NCGS 143-128(g) and is in lieu of any dispute resolution process adopted by any other government entity, which process shall not apply to this Project.

B. For purposes of this Article the following definitions shall apply:
   i) Party or Parties refers to the parties listed in Section C of this Article.
   ii) Project means project pursuant to this Contract.

C. The City and any Party contracting with the City or with any first-tier or lower-tier subcontractor for the performance of the Project agree to participate in good faith in any mediation of a dispute subject to this Article and NCGS 143-128(g), including without limitation the following Parties (if any): Contractor, independent contractor(s) of the City, surety(ies), subcontractor(s), and supplier(s).

D. The Contractor and all other Parties shall include this Article in every agreement to which it (any of them) is a Party in performing the Services of the Project without variation or exception. Failure to do so will constitute a breach of this Contract, and the Contractor or other Party failing to include this Article in any agreement required by this Article shall indemnify and hold harmless the remaining Parties from and against any and all claims, including without limitation reasonable attorney fees and other costs of litigation, arising in any manner from such breach. Notwithstanding the foregoing provisions of this Section, it is expressly understood and agreed that the Parties are intended to be and shall be third-party beneficiaries of the provisions of this Article and can enforce the provisions hereof.

E. The following disputes are not subject to mediation: (i) a dispute seeking a non-monetary recovery; and (ii) a dispute seeking a monetary recovery of $15,000 or less.

F. A dispute seeking the extension of any time limit set forth in an agreement to perform the Services for the Project shall be subject to mediation pursuant to this Article and NCGS 143-128(g), but only if the damages which would be suffered by the Party seeking the extension would exceed $15,000 if the disputed extension is denied. To the extent that liquidated damages are set forth in such agreement as the measurement of damages for failure by such Party to meet such time limit, such liquidated damages shall be the exclusive standard for determining the amount of damages associated with such dispute.

G. For purposes of this Article, a dispute is limited to the recovery of monetary damages from the same transaction or occurrence against a single Party or two or more Parties alleged to be liable jointly, severally or in the alternative. Two or more disputes may not be consolidated or otherwise combined without the consent of all Parties to such disputes.

H. In addition to such matters as are required by the Rules, a request for mediation shall include the amount of the monetary relief requested.

I. Prior to requesting mediation, a Party must form a good faith belief that it is entitled under applicable law to recover the monetary amount to be included in the request from one or more of the remaining Parties. Such belief must be based on a reasonable and prudent investigation into the dispute that is the subject of the request. The request for mediation must be based on such investigation and may not include any amount or the name of any remaining Party, unless supported by such investigation and good faith belief by the Party requesting the mediation.

J. If a Party breaches any provision of Section I of this Article, it shall indemnify and hold harmless all other Parties from any costs, including reasonable attorney fees and other costs of litigation, and damages incurred by such other Parties that arise from such breach.

K. All expenses incurred by a Party to a dispute in preparing and presenting any claim or defense at the mediation shall be paid by the Party. Such expenses include without limitation preparation and production of witnesses and exhibits and attorney fees. All other expenses of the mediation, including filing fees and required traveling and other expenses of the mediator, shall be borne as follows: one half by the Party requesting the mediation, with the remaining parties paying equal shares of the remaining expenses and costs; provided that, if the City is named as a party to the mediation, the City shall pay at least one-third of the mediation expenses and costs divided among the Parties. If more than one Party to a dispute requests a mediation, the mediation expenses and costs to be divided among the Parties shall be borne equally by the Parties to the dispute; provided that, if the City is named as a Party to the mediation, the City shall pay at least one-third of the mediation expenses and costs divided among the Parties.

L. The mediation shall be held at a location agreeable to the mediator and all of the Parties; provided that, if no agreement can be reached, the mediation will be held at such location in Mecklenburg County as the mediator shall determine.

M. The provisions of this Article are subject to any other provision of this Contract concerning the submission, documentation and/or proof of any claim or dispute. Such other provisions shall apply in full force and shall be satisfied as a condition precedent to mediation pursuant to this Article.

N. The Parties understand and agree that mediation in accordance with this Article shall be a condition precedent to institution of any legal or equitable proceeding seeking monetary recovery based on any dispute that is subject to mediation pursuant to this Article.

2.29 Surface Water Quality Protection

All projects must comply with local, state and federal laws including the City of Charlotte's Storm Water Pollution Control Ordinance which prohibits the discharge of non-stormwater, either directly or indirectly, to the stormwater system or waters of the State. Non-stormwater includes, but is not limited to, sediment, concrete, trash, and fuel.

Concrete Wash Water: The Contractor shall properly contain, collect, and dispose of concrete materials and concrete wash water so that it does not enter the street, stormwater drainage system, or water bodies. This may include the creation and maintenance of a concrete washout area on-site and/or use of a portable washout container to haul material off site.

Spill Response: The Contractor shall have spill response materials and an employee who is knowledgeable about using them for to respond to and clean up spills of oil and gas on–site at all times. Spills include any amount of oil or fuel coming off trucks or equipment. They may include, but are not limited to, those that occur during refueling, from equipment or vehicles, or from containers on site. Proper spill response is required for spills that occur on soil or the road. Spill response materials shall include clay absorbent material, spill response pads and booms, shovels and brooms. Spill cleanup materials are subject to inspection by the City and/or their representative(s) at any time. If a spill/leak occurs, all work must be suspended until the spill/leak is contained and cleaned up and/or the truck/equipment is towed off site. If the spill/leak is more than one gallon and/or enters a storm drain or water body, the contractor must notify the City's Construction Inspector within one (1) hour of spill/leak discovery. Spill/leak containment, towing, and cleanup and shall be completed within 24 hours of the occurrence at no additional cost to the City.

Washing Streets: The Contractor shall properly collect and dispose of stormwater pollutants generated during the project, from streets within the project area, to the maximum extent practicable, before washing the streets with potable water. This may include, but is not limited to, hand sweeping, shoveling, vacuuming, and mechanized street sweeping or scrubbing. These best management practices shall be performed at no additional cost to the City and are intended to collect materials for proper disposal rather than wash them into the storm drainage system or waters of the state. They do not replace the need for preventing pollutants from entering the street, but rather, are intended to supplement them.

Fueling Operations: The Contractor shall make its own determination of on-site fuel storage needs. If on-site fuel storage is utilized, the Contractor shall submit a Refueling Operations Plan (The Plan) ten (10) days prior to the start of any project work. The Plan shall include procedures for fuel handling, spill/leak containment, disposal of fuel/leak contaminated material, the location of a fuel tank(s) a minimum of 50' from any storm drain or water body, and a written agreement with the land owner to store fuel on the property. The Plan shall also list emergency contacts and cell phone numbers including the on-site construction supervisor and the designated

contractor representative who is responsible for overseeing implementation of The Plan. If a mobile fueling unit is utilized, all storm drains that have the potential to receive a fuel spill during refueling must be protected.

2.30 Prohibition of Use of High PAH Pavement Products

No Person shall use, or permit to be used, a high PAH pavement product within the City. For the purposes of this subsection, the term "high PAH pavement product" means a product, material or substance that contains greater than 0.1% (1000 ppm) polycyclic aromatic hydrocarbons (PAH) by weight, and, is intended for use on an asphalt or concrete surface, including but not limited to, a driveway, playground, parking area, sidewalk, pathway, or roadway. High PAH pavement product may contain coal tar, coal tar pitch volatiles, RT-12, refined tar, steam-cracked petroleum residues, heavy pyrolysis oil, steam-cracked asphalt, pyrolysis fuel oil, heavy fuel oil, ethylene tar, ethylene cracker residue, or a variation of those substances assigned the chemical abstracts service (CAS) numbers 65996-92-1, 65996-93-2, 65996-89-6, 8007-45-2, 64742-90-1, or 69013-21-4.

2.31 Billing Records

During the term of this Contract and for three (3) years after it terminates, Contractor will keep documentation sufficient to verify the amounts billed to the City. The City has the right to audit Contractor's time cards, invoices, reports and other documents relating to amounts charged under this Contract, and will not be required to pay for: (a) any time billed that was excessive in light of the result achieved, or (b) any Services that did not meet the standards and requirements referenced in this Contract. Contractor agrees to make such documents available for inspection and copying by the City in Charlotte, North Carolina between the hours of 9:00 a.m. to 5:00 p.m. Monday through Friday, within ten (10) days after the City requests them. The City shall pay its own expenses relating to such audits, but shall not have to pay any expenses or additional costs of the Company. However, if non-compliance is found that would have cost the City in excess of $10,000 but for the audit, then the Company shall be required to reimburse the City for the cost of the audit.

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00 75 00 – PROJECT SPECIAL PROVISIONS

ARTICLE 1: GENERAL REQUIREMENTS

1.1 Contract Time

The Contract Time will begin upon the issuance of the Notice to Proceed and will extend 740 calendar days thereafter.

1.2 Contract Liquidated Damages

There will be no liquidated damages for failure to complete the Contract in the contract time. Liquidated damages may be assessed for failure to complete a given project within the project period (see the Project Liquidated Damage specifications, and Project Period, section 1.4 and 1.6, respectively.

1.3 Project

A Project shall be defined as the work order or construction to be performed at a specific location, as defined in a written Work order issued to the Contractor.

City reserves the right to remove or add locations during the Contract Period.

1.4 Project Liquidated Damages

Project liquidated damages will be assessed at the rate of **$1,500.00** per calendar day for failure to complete a project within the Project Period defined in Section 1.5 below, and or failure to mobilize and start work as specified in the Notice to Proceed.

1.5 Project Notice to Proceed

A written Project Notice to Proceed will be issued to the Contractor for each Project. Issuance of the Project Notice to Proceed will begin the Project Period. The Notice to Proceed shall state the date to begin construction of the Project and shall be determined at the Pre-Construction Conference. The contractor shall be mobilized and prepared to start work within 14 days of the Notice to Proceed.

1.6 Project Period

The project period shall be defined as the number of calendar days established by the Engineer in consultation with the Contractor to complete a Project. The Project Period shall begin with a written Project Notice to Proceed and end as the designated Completion Date.

The Completion date is that date established as set forth in the contract or as revised by authorized time extensions, by which it is required, that work set forth in the Project Work Order be satisfactorily complete. Work shall be field verified and/or measured prior to acceptance as satisfactorily complete.

The Project Period shall be established at the Project Pre-Construction Conference.

1.7 Price Adjustments – Asphalt Cement for Plant Mix

"Asphalt Binder for Plant Mix" will be in accordance with Section 620 of the NCDOT Standard Specifications.
The Bidder shall consider that the City will make adjustments in payments due the Contractor where it has been determined that the average terminal F.O.B selling price of asphalt cement has fluctuated.

The Base Price Index for Asphalt Cement for this project is set at **$563.13** per ton.

This Base Price Index represents an average F.O.B. selling price of asphalt cement at supplier's terminals on June, 2025 as determined by the North Carolina Department of Transportation from a survey of terminals located in North Carolina and adjacent states.

https://connect.ncdot.gov/projects/construction/Pages/Pavement-Construction-Prices.aspx

Payment will be made under:

ASPHALT BINDER FOR PLANT MIX.....TN

1.8 Bituminous Plant Mix Pavements - Recycled

Work in this provision consists of all work covered in Section 1012, "Aggregate for Asphalt Pavements and Surface Treatments" in the NCDOT Standard Specifications, except that the provisions of this section pertaining to compensation shall not apply.

The Engineer will determine acceptability of materials and construction in accordance with the applicable sections of these specifications. Following the application of the appropriate acceptance plan, the decision of the Engineer shall be final as to the acceptance, rejection, or acceptance at an adjusted payment of the material.

Nonconforming materials, projects, items of construction, or complete construction that are not adaptable to correction by reworking shall be removed and replaced, accepted without payment, or accepted at an adjusted payment as stated in these specifications, or if not stated, as directed by the Engineer.

DESIGN MIX FORMULA

The Contractor shall submit for the Engineer's approval, a job mix formula approved by the NCDOT or a job mix formula within the limits of the NCDOT Standard Specifications accompanied by the recommendation of an independent testing laboratory. The formula shall include aggregate graduation, bitumen content, stability, theoretical specific gravity, laboratory specific gravity, percent of voids, and unit weight. The Engineer has the right to reject a state approved mix based on the content of Rap material. For this Contract, RAP (reclaimed asphalt pavement), shall not constitute more than 30% of the total material used in recycled mixtures - with no allowance for RAS (reclaimed asphalt shingles – maximum 0%).

INTENT OF SPECIFICATIONS

It is the intent of these specifications to provide an equitable means of accepting materials and work that may vary slightly from the specification range stated in the NCDOT Standard Specifications in lieu of total rejection, removal, repair or nonpayment.

When materials or construction are not within the limits of the specification, an adjusted payment maybe allowed as delineated in these specifications, except where the level and variability of test results indicate a degree of nonconformance with requirements so great as to make the material or construction unacceptable. Unacceptable material and construction shall be either reworked or replaced at no cost to the City. The Engineer reserves the right to reject questionable material at any time in lieu of making reduced payment.

COMPENSATION:

Payment at the contract unit prices for the various items covered by Section 610 will be full compensation for all work covered by this section except as provided below.

There will be no separate payment for furnishing non-strip additive. The cost of non-strip additive shall be included in the contract unit price per ton for "Asphalt Concrete Surface Course, S 9.5 B, SF 9.5 A and S 9.5 C".

Where samples of reclaimed asphalt pavement are obtained by milling, removal of the milled pavement will be paid for as provided in Section 607. The plant mix used for replacing the milled pavement will be paid for as provided by the section of the Specifications covering the type of plant mix used.

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ARTICLE 2: SPECIAL PROVISIONS (SP)

SP-01, PROJECT MOBILIZATION PER PROJECT LOCATION

1.0 DESCRIPTION

Work covered by this special provision consists of preparatory work and operations including but not limited to those necessary for the movement of personnel, equipment, supplies, and incidentals to individual project sites necessary for work on the project; removal and disbandment of those personnel, equipment, supplies, and incidentals that were established for the prosecution of the work on the project; and for all other work and operations which must be performed for costs incurred prior to beginning work on the items on various projects.

2.0 MATERIALS

Not more than one (1) "Mobilization per project location" will be paid for each project location. A project location will be considered all work that is within a one (1) mile radius assigned together as one project.

3.0 MEASUREMENT AND PAYMENT

All work covered by this special provision will be paid for at the contract unit price per each for Project Mobilization. This price has been set by the City at a minimum of $2500.00 per Project Location or 5% of the total project location cost, whichever is more.

Payment will be made under:

Project Mobilization ($2,500) ……EA

SP-02R, EARTHWORK, EXCAVATION, UNSUITABLE MATERIALS, AND BACKFILL MATERIALS

Version Date: 1/10/2020 Revision Date: 08/27/2024 by TBJ

1.0 DESCRIPTION

Earthwork shall be performed to the lines and grades indicated on the plans. The work shall include excavation, furnishing, placement, compaction, and satisfactory disposal of all materials encountered within the limits of the Work necessary for the construction of the Project.

All excavated materials that are not required for the Project or are unsuitable for fills shall be considered as waste and shall be hauled off the site at the Contractor's expense.

2.0 MATERIALS

Provide bedding material in accordance with Article 1016-3 for Class II, Type 1 or Class III, Type 1 or Type 2 select material.

Provide backfill material in accordance with Article 1016-3 for Class II, (Type 1 for flexible pipe) or Class III select material.

Provide foundation conditioning material in accordance with Article 1016-3 for Class V or VI select material.

Provide foundation conditioning geotextile in accordance with Article 1056-2 for Type 2 geotextile.

Provide borrow material in accordance with Article 1018.

3.0 MEASUREMENT AND PAYMENT

There will be no direct payment for earthwork, excavation, unsuitable materials, and backfill materials described in this special provision. Payment will be made at the contract unit prices for the various items covered by sections 225 Roadway Excavation, 226 Undercut Excavation, 300 Pipe Installation, 305 Drainage Pipe, 310 Pipe Culverts, SP-03 Select Material, and 230 Borrow Excavation.

Unsuitable Material

Unsuitable material shall be defined as any and all unsuitable materials regardless of its nature. Unsuitable Material not incorporated into the Project shall be removed, hauled, and disposed by the Contractor only as authorized by the Engineer. Stockpiled Unsuitable Material shall be disposed of no less than once per week.

Proposed Project Subgrade, other than Pipe Culvert Trench Subgrade:

Unsuitable material below the proposed project sub-grade, including but not limited to below the invert of an open channel or bottom of detention facilities, shall be removed, measured, hauled, disposed of, replaced, and paid for under NCDOT Section 226, Undercut Excavation.

Unsuitable material above the proposed project sub-grade shall be removed, hauled, and disposed of at no additional cost to the City.

Proposed Pipe Culvert Trench Subgrade:

Unsuitable material below the proposed project pipe culvert trench subgrade within the approved trench excavation limits for storm drainage pipe and storm drainage culvert (including but not limited to box culverts, oval pipe culverts and three-sided culverts/bridges) shall be removed, measured, hauled, disposed of, replaced, and paid for in accordance with Section 300-9 (B) Foundation Conditioning Material and Section 300-9 (C) Foundation Conditioning Geotextile.

Unsuitable material above the proposed pipe culvert trench sub-grade shall be removed, hauled, disposed of at no additional cost to the City.

Bedding and Backfill

Pipe (including round, elliptical, etc.)

There will be no separate measurement or payment for select bedding and select backfill material required in the installation of pipe as illustrated in NCDOT 300.01. All bedding and select backfill material will be included in cost of the installed pipe.

Culvert (Box Culverts/Bends/Bottomless Culverts):

There will be no separate measurement or payment for bedding required in the installation of culverts as illustrated in Figure 2.1 of the Precast Reinforced Concrete Culvert Special Provision or as shown on the plans. All bedding material will be included in cost of the installed pipe or culvert.

Material needed for buried culvert inverts and channel inverts inside three-sided bridge/culverts shall be incidental to the cost of the culvert unless otherwise directed by the Engineer.

When local material meeting the requirements for the select bedding and backfill is approved for use by the Engineer, no deductions in the cost of pipe culvert will be made. Local material is defined as material generated on the project site or within the project limits.

Within the Existing or Proposed Roadway:

Pipe (including round, elliptical, etc.) Culvert

For pipe located within the existing or proposed roadway, including beneath the proposed curb and gutter or between road ditch lines, the Contractor shall use suitable material from the elevation of the select backfill material included in the cost of the installed pipe to the subgrade.

Box Culverts/Bends/Bottomless Culverts

For culverts located within the existing or proposed roadway, including beneath the proposed curb and gutter or between road ditch lines, the Contractor shall use suitable material from the elevation of the bedding included in the cost of the installed culvert to the subgrade.

When local material meeting the requirements for suitable material is approved for use by the Engineer, there will be no separate measurement or payment for the material incorporated into the completed and accepted Project.

For NCDOT maintained streets, suitable material shall be defined as meeting NCDOT 1018.

For City maintained streets, suitable material shall be defined as material meeting both:

Unified Soil Classification System (USCS) designation of GW, GP, GM, GC, SW, SP, SM, or SC and

American Association State Highway Transportation Official (AASHTO) Soil Classification System designation of A-1, A-3, A-2-4, or A-2-5.

When local suitable material is not available to complete the backfill of the trench, the Contractor shall use select material in accordance with SP-03 Select Material.

Do not use Select Material until all local suitable material has been incorporated into the Project. There shall be no measurement or payment made for Select Material brought to the site at the Contractor's convenience.

Outside of the Proposed or Existing Roadway:

Pipe (including round, elliptical, etc.)

For pipe located outside the existing or proposed roadway, the Contractor shall use local suitable material from the elevation of the select backfill material included in the cost of the installed pipe to the finished grade or subgrade.

Culvert (Box Culverts/Bends/Bottomless Culverts)

For culverts located outside the existing or proposed roadway, the Contractor shall use local suitable material from the elevation of the bedding included in the cost of the installed culvert to the finished grade or subgrade.

When local suitable material is not available to complete the backfill of the trench, the Contractor shall use borrow material in accordance with 230 Borrow Excavation.

Do not use Borrow Excavation material until all local suitable material has been incorporated into the Project. There shall be no measurement or payment made for borrow excavation material brought to the site at the Contractor's convenience.

SP-03R, SELECT MATERIAL

Version Date: 3/21/2016 Revision Date: 04/21/2022 by RLC

1.0 DESCRIPTION

Work covered in this special provision consists of furnishing, placing, and compacting select material as shown on the plans or as directed.

Select material shall be placed in pipe culvert excavations within the existing or proposed roadway, including beneath the proposed curb and gutter, or as directed. The Engineer will determine the amount and location of select material to be used on the project. The Contractor shall not remove material from the project without approval from the Engineer.

2.0 MATERIALS

Select material shall meet the requirements of NCDOT Standard Specifications for Roads and Structures, Select Material, Class III, Type 2 (Section 1016-3), or other approved classes or materials as directed.

With written approval and without additional compensation, a higher class of material may be substituted than stated in the Contract Documents.

3.0 MEASUREMENT AND PAYMENT

There will be no separate measurement or payment for select bedding and select backfill material required in the installation of pipe as illustrated in NCDOT 300.01. All bedding and select backfill material required in the installation of the pipe as illustrated in NCDOT 300.01 will be included in cost of the installed pipe.

When local material meeting the requirements for suitable materials as defined in the Earthwork, Excavation, Unsuitable Materials, and Backfill Materials Special Provision is approved for use by the

Engineer, there will be no separate measurement or payment for the local suitable material incorporated into the completed and accepted project.

When other than local material meeting the requirement for select material is used, the quantity of select material for backfill shall be measured by weighing material in trucks in accordance with section 106-7 Scales and Public Weighmaster, as determined by the Engineer. At the Engineer's discretion, truck measurement in accordance with Article 230-5 (B) may be used instead of weighing material in trucks A sample derived unit weight shall be used to convert the material into tons. The sample shall be tested by a third-party material testing and inspection company.

The contract unit prices for Select Material as described above will be full compensation for furnishing, transporting, handling, placing, compacting, and maintaining select material. Unless otherwise directed by the Engineer, there will be no separate payment for select material above the select bedding and backfill materials included in the cost of the installed pipe culvert, which exceeds the following extents:

Storm Drainage:

Pipe:

Horizontally – the outer diameter of the pipe plus three feet;

Vertically – from the top of the select backfill material to the ground line, as illustrated in NCDOT 300.01

Box Culverts/Bends/Bottomless Culverts:

Horizontally – outer width of culvert or footer plus six feet (three feet each side);

Vertically – from the top of the bedding material or bottom of the structure to the ground line, as illustrated in Figure 2.1 of the Precast Reinforced Concrete Culvert Special Provision;

Structures:

(Includes but not limited to: headwalls, drainage structures (catch basins, drop inlets, risers, etc.), flared end sections, retaining walls, etc.)

Vertically – to the ground line elevation as shown on the plans or details;

Horizontally – two (2) feet from each exterior surface (outer wall of the structure or footer whichever is further)

Material used for the Contractor's means and methods outside of these trench limits shall meet the material requirement and will be at the Contractor's expense.

Do not use Select Material until all local material meeting the requirements of suitable material as defined in the Earthwork, Excavation, Unsuitable Materials, and Backfill Materials Special Provision has been incorporated into the Project. If the Contractor brings select material onto the Project for its own convenience, that material will not be measured or paid for as Select Material.

Payment will be made under:

SELECT MATERIAL…….TN

SP-04, PROJECT CLEARING AND GRUBBING

1.0 DESCRIPTION

The work covered by this special provision shall be in accordance with the NCDOT Standard Specifications for Roads and Structures, Section 200, Clearing and Grubbing, unless noted otherwise on the plans or in this special provision. Reference Section 200-1 for the definitions of "Clearing" versus "Grubbing" and for a description of the work.

2.0 MATERIALS AND METHODS

All materials shall be in accordance with NCDOT 2024 Standard Specifications Section 200–2.

All methods of tree removal, pruning, trimming, shrub removal, or any other plant material removal and disposal shall be in accordance with the City of Charlotte Landscape Construction Manual and 2024 NCDOT Standard Specifications Section 200-3 through 200-7.

3.0 MEASUREMENT

A lump sum measurement and payment will encompass all clearing and grubbing as defined in section 200-04 through 200-7 of the 2024 NCDOT Standards and Specifications. Clearing shall be performed from easement to easement unless the tree/shrub/growth is marked to be protected on the plans or as directed by the engineer.

A minimum of $500 per project will be used. each project is subject to negotiation of the clearing and grubbing lump sum price. negotiations will be based upon the NUMBER of trees to clear, size of trees to clear, undergrowth area to be removed, access and limitations of the removal, and other various factors.

Any trees or overgrowth to be removed outside of the project limits or easements that are deemed to be removed after the original negotiation and not due to the contractor's gross neglect or means and methods shall be measured in accordance with 2024 NCDOT Standard Specifications Section 200-7, "Select Tree Removal".

All mowing shall be measured in accordance with 2024 NCDOT Standard Specifications Section 1660-8, except for measurement shall not be measured in place, measurement shall be by Each. Each shall be represented by project area not to exceed 1 mile in length. Projects exceeding 1 mile in length shall have multiple each payments per mowing operation for each mile beyond 1 mile of the project.

4.0 PAYMENT

All payments to be lump sum and meet minimum ($500) amount but paid by "Each" for each project, if project negotiations are required as stated above all negotiations must be completed before contractor may begin any work.

All Payments for Select Tree Removal shall be in accordance with 2024 NCDOT Standard Specifications Section 200-8.

All prices above the minimum shall require the contractor to submit an estimate to self-perform the clearing and grubbing or a quote from their subcontractor with appropriate markup to perform the

clearing and grubbing. The City shall review and approve the project amount and reserve the right to complete clearing operations prior to the project start.

Mowing shall be paid in accordance with 2024 NCDOT Standard Specifications Section 1660-8, except for the payment shall be in each and all specialized hand mowing shall be deemed incidental to the mowing operations.

All payments will be made as:

Clearing and Grubbing ($500.00)……Each (EA)

Select Tree Removal……...Each (EA)

Mowing……...Each (EA)

SP-05, REMOVAL OF EXISTING PAVEMENT AND CURB & GUTTER

1.0 DESCRIPTION

The work covered by this special provision shall be in accordance with NCDOT Standard Specifications for Roads and Structures, Section 250, Removal of Existing Pavement, except for the following. The work covered by this section shall also include the removal and disposal of sidewalks, driveways, curb and gutter, traffic islands, and parking areas, or any other incidental paved structures which are identified to be removed by the plans or as directed by the engineer.

2.0 MATERIALS AND METHODS

All work covered in this special provision shall be in accordance with NCDOT Standard Specifications for Roads and Structures, Section 250. The Contractor will be required to sawcut existing concrete pavement, sidewalks, driveways, curb and gutter, traffic islands and parking areas, or any other incidental paved structures from the existing edge to the closest full joint, in order to achieve a full section, or as directed by the engineer.

In locations where asphalt pavement is contiguous to proposed concrete flat work, the contractor will be required to sawcut and remove a 1' wide section of the asphalt along the entire bordering length to a depth of 9 ½" below finished grade for arterial streets and 6 ½" elsewhere.

3.0 MEASUREMENT

The quantity of removal of existing pavement, sidewalk, driveway, or islands to be paid for will be the area of square yards of existing flatwork actually removed and disposed of in accordance with the requirements of this specification. The quantity will be determined by actual surface measurement of the item to be removed, prior to removal.

The quantity of curb & gutter will be determined by actual linear measurement of the curb & gutter prior to its removal.

All vertical curb attached to a walking surface and not fixed to the roadway shall be accounted for in the SY removal measurement of "Removal of Existing Pavement, Drives, & Sidewalks". (Examples:

Wheelchair ramps, landing pads attached to the back of a sidewalk, shared-use-path, pedestrian refuges, or other concrete pedestrian walk area.)

All vertical curb embedded in the roadway or drive entrances shall be accounted for in the lineal foot measured for "Removal of Existing Curb and Gutter."

4.0 PAYMENT

The quantity of removal of existing pavement, measured as provided above, will be paid for at the contract unit price per square yard for "Removal of Existing Pavement, Drives & Sidewalks" and per linear foot for "Removal of Existing Curb & Gutter". Such payment will be full compensation for all work covered in this special provision, including but not limited to the satisfactory saw cutting, breaking up, removal, and proper disposal of the asphalt and concrete pavement, sidewalks, driveways, curb & gutter, traffic islands and parking area, or any other incidental paved structures.

Payment will be made under:

Removal of Existing Pavement, Drives, & Sidewalks……SY

Removal of Existing Curb and Gutter……..LF

SP-06, 6" SHARED USE PATH

1.0 DESCRIPTION

The work covered by this special provision includes the construction of 6" Concrete shared-use path (SUP) in accordance with Charlotte Land Development Standard 10.42, as shown in the plans and as covered in Section 848 of the 2024 NCDOT Standard Specifications "Concrete Sidewalks, Driveways and Curb Ramps."

2.0 MATERIALS

Unless otherwise noted in the plans, concrete shall be at least 3600 PSI compressive strength and all materials shall be in accordance with Charlotte Land Development Standard 10.42 and section 848 of the 2024 NCDOT Standard Specifications.

3.0 MEASUREMENT

The quantity of 6" Concrete SUP to be paid for will be the actual number of square yards of 6" concrete shared-use path, measured along the surface of the walk that has been constructed and accepted. Where concrete driveways and multi-use paths intersect, the area shall be paid for as 6" Concrete Driveways and from expansion joint to expansion joint.

4.0 PAYMENT

Payment for 6" Concrete SUP, measured as stated above, will be paid for at the contract unit price for "6" CONCRETE SHARED-USE PATH (SUP)." There will be no separate payment for materials, labor, equipment, and other incidentals necessary to complete the work including sawcut joints and sealing joints. Such payment will be full compensation for all work covered by this special provision and includes

all labor, equipment, and materials necessary to complete the work as specified. If aggregate base course is needed per CLDS 10.42, this will be paid for separately.

Payment will be made under:

6" Concrete Shared-Use Path (SUP) .....SY

SP-07, 6" REINFORCED CONCRETE SIDEWALKS (BRIDGING TREE ROOTS, CLDS 40.11)
Version Date: 08/05/2024

1.0 DESCRIPTION

The work covered by this special provision includes all elements of work covered by section 848, "Concrete Sidewalks, Driveways and Wheelchair Ramps" of the Standard Specifications. 6" Reinforced Concrete Sidewalk shall be constructed and conform to Charlotte Land Development Standard (CLDS) 40.11 "Reinforced Concrete Sidewalk (Bridging Tree Roots)". All methods of installation are to conform with the Charlotte Landscape Constructions Standards Section 01000 Part 03-EXECUTION - L - ROOT PRUNING.

2.0 MATERIALS

All materials shall be in accordance with section 848 of the NCDOT Standard Specifications and CLDS 40.11 Bridging Tree Roots.

3.0 MEASUREMENT

The quantity of 6" Reinforced Concrete Sidewalk to be paid for will be the actual number of square yards of reinforced sidewalk, measured along the surface of the walk that has been constructed and accepted. There will be no separate measurement of, Wooden Forms, #57 Stone, #4 Rebar (reinforcing steel), Rebar Chairs, Groove Joints, Expansion Joints, Expansion Material, Tree Root Cutting, or other work shown on CLDS 40.11.

4.0 PAYMENT

Payment for 6" Reinforced Concrete Sidewalk, as measured above, will be paid for at the contract unit price for "6" Reinforced Concrete Sidewalk (Bridging Tree Roots, CLDS 40.11)" . There will be no separate payment for, Wooden Forms, #57 Stone, #4 Rebar (reinforcing steel), Groove Joints, Expansion Joints, Expansion Material, Tree Root Cutting, or other work shown on CLDS 40.11. Such payment will be full compensation for all work covered by this special provision and includes all labor, equipment, and materials necessary to complete the work as shown on the plans or directed by the engineer.

Payment will be made under:

6" Reinforced Concrete Sidewalk, (Bridging Tree Roots, CLDS 40.11)……SY

SP-08, 6" CONCRETE WHEELCHAIR RAMPS
Version Date: 11/30/2018

1.0 DESCRIPTION

The work covered by this special provision includes all work covered in Section 848 of the NCDOT Standard Specifications "Concrete Sidewalks and Driveways and Wheelchair Ramps". The concrete wheelchair ramps shall be constructed in accordance with the detail drawings and specifications, at locations indicated in the plans. Truncated domes shall be included and installed per NCDOT Std No. 848.05. Proposed wheelchair ramps may vary from details in order to conform to existing conditions but must meet American with Disabilities Act (ADA) and Public Right-of-Way Accessibility Guidelines (PROWAG) requirements.

2.0 MATERIALS

All materials shall be in accordance with section 848 of the NCDOT Standard Specifications and detail 848.06 of the NCDOT Roadway Standard Drawings.

3.0 MEASUREMENT

The quantity of wheelchair ramps to be paid for will be the actual number of square yards of wheelchair ramps, measured along the surface of the completed work which has been completed and accepted. There will be no separate measurement for truncated domes. The vertical curb associated with the ramps will be included in the square yard measurement.

4.0 PAYMENT

The quantity of wheelchair ramps, measured as provided above, will be paid for at the contract unit price per square yard for "6" Concrete Wheelchair Ramps". There will be no other pay items in this provision. All costs for labor, equipment, and materials necessary to complete this provision (including truncated domes) will be included in the price bid for 6" Concrete Wheelchair Ramps. Payment will be made separately at the contract unit prices for the curb and gutter adjacent to the roadway pavement for the various curb types in NCDOT Section 846.

Payment will be made under:

6" Concrete Wheelchair Ramps……SY

SP-09, PEDESTRIAN REFUGE ISLAND (PASS-THRU)
Version Date: 12/11/2015

1.0 DESCRIPTION

The work covered by this special provision includes all elements of work covered by section 848, "Concrete Sidewalks, Driveways and Wheelchair Ramps" of the NCDOT Standard Specifications and the detail for the Pedestrian Refuge Island (Pass-Thru) CLDSM 10.41 A, B, or C, or as shown on the plans. Truncated domes shall be included and installed per NCDOT Std No. 848.06.

2.0 MATERIALS

All materials shall be in accordance with section 848 of the NCDOT Standard Specifications and detail 848.06 of the NCDOT Roadway Standard Drawings.

3.0 MEASUREMENT

The quantity of Pedestrian Refuge Island (Pass-Thru) to be paid for will be the actual number of square yards completed and accepted. There will be no separate measurement of wheelchair ramps or truncated domes. Any concrete slope tie-ins between the pedestrian island cap, monolithic concrete, or planting mix and the pass thru will be paid for under this item and measured in square yards. Any curb required adjacent to the pedestrian refuge island (pass-thru) will be measured by the appropriate curb line item in the contract.

4.0 PAYMENT

Payment for the Pedestrian Refuge Island (Pass-Thru) as measured above shall be paid for at the contract unit price for "Pedestrian Refuge Island (Pass-Thru)". Such payment shall include all labor, equipment and materials required to construct the pass-thru necessary to complete this provision, including truncated domes will be included in the price bid for Pedestrian Refuge Island (Pass thru). Any curb required adjacent to the pedestrian refuge island (pass-thru) will be paid by the appropriate curb line item in the contract.

Payment will be made under:

Pedestrian Refuge Island (Pass-Thru)……SY

SP-10, CONCRETE BICYCLE RAMPS

1.0 DESCRIPTION

The work covered by this special provision includes the construction of portland cement concrete bicycle ramps as shown in the plans and in accordance with the contract.

2.0 MATERIALS

Concrete shall be at least 3600 PSI compressive strength and all materials shall be in accordance with section 848 of the NCDOT Standard Specifications.

3.0 CONSTRUCTION METHODS

Where it is necessary to remove a portion of existing curb and gutter, sidewalks, or driveways, saw a neat edge along the pavement to be retained approximately 2 inches deep with a concrete saw before breaking the adjacent pavement away.

Construct concrete in accordance with Section 825 and give a sidewalk finish, except as otherwise provided herein.

Broom the concrete surface in a transverse direction to traffic. Make joint spacing no less than 5 feet. Where work abuts existing sidewalks, line up new transverse joints with existing joints in the adjacent sidewalk. Seal expansion joints where work is placed adjacent to concrete curb and/or gutter. Do not

seal grooved joints. Do not place backfill adjacent to the sidewalk, driveway, or curb ramp until at least 3 curing days, as defined in Article 825-9 of the NCDOT Standard Specifications, have elapsed unless otherwise approved. Compact backfill to a degree comparable to the adjacent undisturbed material.

Place Tactile Guidance Strip in accordance with manufacturer's recommendations and the contract.

Place Pavement Markings in accordance with Section 1087 of the NCDOT Standard Specifications.

4.0 MEASUREMENT AND PAYMENT

Concrete Bicycle Ramps will be measured and paid in square yards. Such price includes, but is not limited to, excavating and backfilling, sawing the existing curb and gutter, sidewalk, or driveway, furnishing and placing concrete, constructing and sealing joints, and installing embedded objects. All tactile guidance strips associated with the bicycle ramp will be considered incidental to this pay item. All pavement markings shall be measured and paid in accordance with NCDOT Section 1205.

Payment will be made under:

Concrete Bicycle Ramps.....SY

SP-11, WALL, PRECAST MODULAR BLOCK RETAINING

Version Date: 9/13/2019 Revision Date: 08/27/2024 by TBJ

1.0 DESCRIPTION

The work covered by this special provision includes furnishing and constructing a modular concrete block retaining wall system comprised of a mortar-less, interlocking masonry concrete unit designed with an engineering reinforcement material (where required). The system should allow for curves, straight walls, terraces, near vertical or battered wall face, and/or 90-degree bends. The retaining walls shall be in accordance with the manufacturer’s specifications, and the provisions of these specifications.

2.0 MATERIALS

Precast Modular Block Retaining Wall shall consist of:

Concrete Unit Compressive Strength - min. 3000 psi (28-day)

Concrete Unit Absorption - max. 8%

All concrete units, reinforcing material, and any other necessary materials shall be installed in accordance with the manufacture's specifications and the submitted shop drawings.

3.0 SUBMITTALS

The Contractor shall submit a sample block representing style, color, and appearance for review by The City of Charlotte.

Prior to fabrication, the Contractor shall submit shop drawings for the Precast Modular Block Retaining Wall, including information necessary for installation. The shop drawings must show the proposed load calculations and any proposed fabric reinforcing.

The shop drawings must be signed and sealed by a Professional Engineer registered in the State of North Carolina if required by Mecklenburg County Building Codes or required by the City.

The Contractor will also submit the manufacturer's certification for the Precast Modular Block Retaining Wall units and those products to be used in the installation.

4.0 CONSTRUCTION METHODS

The modular block wall shall be constructed per manufacture's specifications and in accordance with the plans and details.

5.0 MEASUREMENT

The quantity of precast modular block retaining walls to be paid for will be the actual square footage of wall, measured along the front surface of the wall from the top of the leveling stone/pad or footer (if required by engineer/manufacturer) to the top of the wall cap, which has been installed and accepted.

If the lower courses must be backfilled before the wall can be completed, the contractor shall coordinate with the City's inspector to measure and record this quantity for payment before backfilling.

There will be no measurement of leveling stone/pad, backfill, footer (if required by engineer/manufacturer) or engineering reinforcing material, or other items needed for wall construction.

6.0 PAYMENT

The quantity of Precast Modular Block Retaining Wall, measured as provided above, will be paid for at the contract unit price per square foot for "Wall, Precast Modular Block Retaining". Such payment will be full compensation for all work covered by this special provision including but not limited to excavating, backfill, constructing foundation (leveling stone/pad or footer), furnishing and constructing modular block retaining wall including pins and reinforcing material if required by the manufacturer; drainage system and any incidental items necessary to construct the work as shown on the plans, the manufacturers specifications, and the provisions of these specifications.

Payment will be made under:

Wall, Precast Modular Block Retaining……SF

SP-12, SAFETY RAIL, METAL CLDS 50.04

Version Date: 12/11/2015 Revision Date: 08/27/2024 by TBJ

1.0 DESCRIPTION

The work covered by this special provision includes furnishing all materials, labor, equipment, and incidentals necessary to install painted metal handrails in accordance with these provisions, Charlotte Land Development Standard (CLDS) 50.04 detail drawings, and the plans at locations identified in the plans and as directed by the Engineer.

2.0 MATERIALS

All materials for the safety rail shall comply with CLDS 50.04.

All paint shall be black all-weather enamel unless otherwise directed by the plans or engineer.

3.0 MEASUREMENT

The quantity of metal safety rail to be paid for will be the actual number of linear feet of safety rail, measured along the top bar of the rail, which has been installed and accepted.

4.0 PAYMENT

Metal handrail will be paid for at the contract unit price per linear foot for "Safety Rail, Metal CLDS 50.04". Such payment will be full compensation for all work covered by this special provision, including but not limited to fabricating, furnishing, delivering, and installing the handrail; furnishing paint and painting the handrail; all excavation and backfilling, and furnishing and placing concrete footings; all materials, labor, and equipment necessary to complete the work.

Payment will be made under:

Safety Rail, Metal CLDS 50.04……..LF

SP-13, GREEN THERMOPLASTIC
Version Date: 12/14/2018

1.0 DESCRIPTION:

Description is as set out in NCDOT Standard Specification 1205.

2.0 MATERIALS:

Materials are as set out in NCDOT Standard Specification 1205 with the addition of:

Daytime chromaticity coordinates for the color used for green colored pavement markings shall be as follows:

1		2		3		4	
x	y	x	y	x	y	x	y
0.230	0.754	0.266	0.500	0.367	0.500	0.444	0.555

The daytime luminance factor (Y) shall be at least 7, but no more than 35.

The nighttime chromaticity coordinates for the color used for green colored pavement markings shall be as follows:

1		2		3		4	
x	y	x	y	x	y	x	y
0.230	0.754	0.366	0.540	0.450	0.500	0.479	0.520

Green colored pavement markings should be retroreflective.

Materials shall not contain lead or hexavalent chromium. The contractor shall provide a manufacturer's certification to this effect to the Engineer prior to installation.

After installation, the material shall provide a surface skid resistance greater than or equal to 60 British Pendulum Number (BPN) using ASTM E303 testing method. Lab testing of typical product installation is acceptable. The contractor shall provide a manufacturer's certification to this effect to the Engineer prior to installation.

3.0 CONSTRUCTION METHODS

Construction methods are as set out in NCDOT Standard Specification 1205.

4.0 MEASUREMENT

Green Thermoplastic will be measured and paid as the actual area in square feet of pavement markings satisfactorily placed and accepted by the engineer.

5.0 PAYMENT

Payment will be made under:

Green Thermoplastic, 90 Mils ……SF

SP-14, REFLECTIVE PADDLES

1.0 DESCRIPTION

Work covered in this special provision consists of furnishing and installing reflective paddles as shown on the plans or as directed by the engineer. Sample of paddle is shown below for reference.

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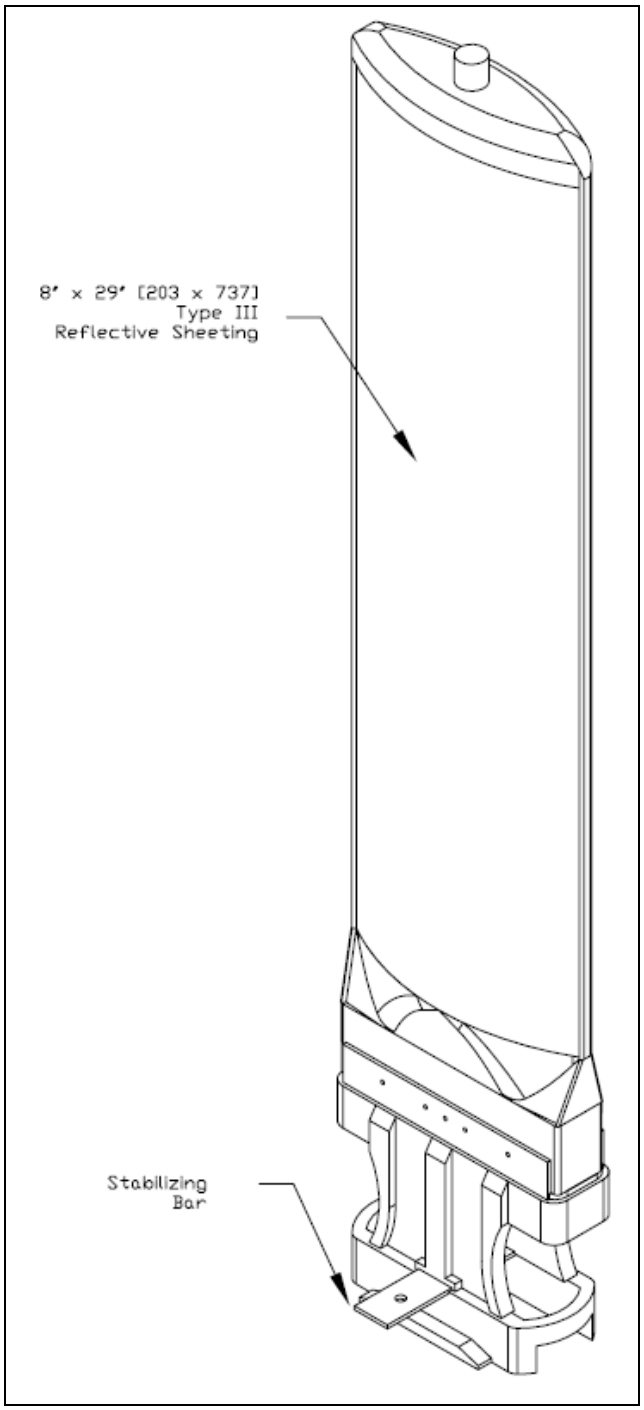

2.0 MATERIALS

Reflective Paddles shall be plastic with approximately 8”x29” Type III Reflective Sheeting on both sides.

3.0 MEASUREMENT

The quantity of Reflective Paddles to be paid for will be the actual quantity per each which has been installed and accepted.

4.0 PAYMENT

The quantity of Reflective Paddles, measured as provided above, will be paid for at the contract unit price per each for Reflective Paddles. Such payment will be full compensation for all work covered by this special provision including but not limited to furnishing, installing, and any incidental items necessary to construct the work as shown on the plans, the manufacturers specifications, and the provisions of these specifications.

Payment will be made under:

Reflective Paddles…..EA

SP-15, 6” YELLOW TACTILE GUIDE STRIP

1.0 DESCRIPTION

Work covered by this special provision consists of furnishing and installing tactile guide strip along the edge of paved bicycle and walk areas or as shown on the plans or directed by the engineer.

2.0 MATERIALS AND CONSTRUCTION METHODS

The tactile guide strip shall be 6 inches wide and 0.75 inch deep with longitudinal tactile strips on the surface. The tactile strip shall comply with the Americans with Disabilities Act Title III Regulations, 28 CFR Part 36 ADA Standards for Accessible Design, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. Slip resistance of tile in accordance with ASTM C 1028 must have a combined wet and dry static coefficient of friction not to be less than 0.80 on top of domes and field area. The color of the tactile guide strip shall be Federal Yellow (#33538) unless otherwise noted on the plans.

The detectable/tactile directional tile shall embed 0.75 inch into the concrete sidewalk or asphalt pavement so that the main surface is flush with the sidewalk and the tactile strips extrude above the surface of the pavement. Refer to additional manufacturer specifications for material and installation.

3.0 MEASUREMENT

Tactile guide strip shall be measured in linear feet to the nearest one (1) foot of installed and accepted tactile guide strips along a paved bike path or walk area . Fractions of a foot shall be rounded up to the next whole foot. No measurement will be made for tactile guide strips installed for SP-10 Bicycle Ramps, all tactile guide shall be incidental to SP-10 Bicycle Ramps.

4.0 PAYMENT

The quantity of the tactile guide strip, measured as provided above, will be paid for at the contract unit price per linear foot of "Tactile Guide Strip". Such payment will be full compensation for all work

covered by this special provision including but not limited to provision of detectable/tactile directional tile and installation in sidewalk.

Payment will be made under:

6" Yellow Tactile Guide Strip……..LF

SP-16, TREE PROTECTION FENCE

1.0 DESCRIPTION

Work covered by this special provision consists of furnishing and erecting tree protection fence at locations shown on the plans and as directed by the Engineer.

2.0 MATERIALS

Materials shall be as specified in Charlotte Landscape Construction Standards Tree Preservation and Protection Section 01000.

3.0 CONSTRUCTION METHODS

The tree protection fence shall be constructed in accordance with Charlotte Landscape Construction Standards Tree Preservation and Protection Section 01000. Tree protection fence shall be maintained in its originally installed condition throughout the project duration. Payment will not be made for any tree protection fence which is not properly maintained.

4.0 MEASUREMENT AND PAYMENT

The quantity of tree protection fence will be measured and paid for as the actual number of linear feet of tree protection fence, measured along the fence, which has been erected and accepted. Such payment will be full compensation for all work covered by this special provision, including but not limited to furnishing and erecting fence material, posts, and all incidentals.

Payment will be made under:

Tree Protection Fence..... LF

SP-17, PERMANENT SEEDING AND MULCHING

1.0 DESCRIPTION

The work covered by this special provision shall consist of all seeding and mulching necessary to complete Permanent Seed/Planter Beds as included on the plans but not limited to seed bed prep, proper soil testing, and all incidentals to complete the work in accordance with the City of Charlotte Landscape Construction Manual.

2.0 MATERIALS AND METHODS

All materials for seed, straw, mulch, fertilizer, etc. shall be in accordance with Charlotte Landscape Construction Manual – Sections 02000, 02100, and 04200.

All methods of soil testing, seedbed prep, and seed installation shall be in accordance with 02000, 02100, and 04200 sections of the Charlotte Landscape Construction Manual.

3.0 MEASUREMENT

The measurement shall be in SY, of all properly prepped, seeded, and secured permanent, temporary, or repair seeding as shown on plans, directed by engineer, and within the easement area. All additional seeding outside of the easement, deemed incidental per the operations of another pay item, determine to be due to gross neglect of the contractor, or faulty construction methods shall be incidental to this pay item and will not garner any compensation from the City of Charlotte. The measurement shall be measured by using appropriate formulas for the geometry of the areas seeded.

4.0 PAYMENT

All payments shall cover all work covered in this special provision, as stated on the plans, and any incidentals required to complete the work. All payment shall be made at the time of proper application per application area. Permanent Seeding and Mulching will be paid one time for the selected area.

Temporary Seeding and Mulching will be paid as needed for Erosion Control/Stabilization requirements.

Repair Seeding and Mulching shall be paid as needed per repair location.

All payments will be made as:

Permanent Seeding and Mulching……SY

Temporary Seeding and Mulching……SY

Repair Seeding and Mulching……..SY

SP-18, INLET PROTECTION FILTER BAG

1.0 DESCRIPTION

The work covered by this section consists of furnishing, placing, maintaining, and removing inlet protection filter bag sediment control devices as directed by the plans and the Engineer. The filter bag sediment control device shall be used to filter surface runoff water during construction. The quantity of filter bags may be increased, decreased, or eliminated entirely at the direction of the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

2.0 MATERIALS

The filter bags shall be manufactured to fit the opening of the catch basin or drop inlet and shall have the following features: (1) dump straps attached at the bottom to facilitate emptying of the bag; (2) lifting loops on two sides with 1” rebar inserted as an integral part of the system to be used to lift the bag from the basin; (3) a curb deflector when used on existing maintained streets; and (4) a restraint cord approximately halfway up the bag to keep the sides away from the catch basin walls. The bag shall be manufactured from a woven polypropylene geotextile and sewn by a double needle machine, using a

high strength nylon thread. The geotextile fabric shall meet the requirements described in Section 1056 Geosynthetics for Type 2 Fabric of the NCDOT Standard Specifications.

3.0 METHODS

Filter bags are subject to the following:

Installation: Install by removing the grate, clearing debris from the edge of the opening, and placing bag in opening. Hold approximately six inches of the bag outside the perimeter of the frame. Replace the grate to hold the bag in place. After replacing grate, insert 1" rebar into lifting loops to provide an additional measure for keeping filter bag in place.

Inspection: Regularly inspect bags, and at a minimum after every rain event.

Maintenance: Remove and empty collected contents when bags are half full of sediment. Filter bags shall be removed by lifting loops or other acceptable means. Replace bags when the structural integrity of the bag has been compromised, or at the direction of the Engineer.

Removal: Filter bags shall be removed from catch basins and drop inlets prior to project closeout, or at the direction of the Engineer.

4.0 MEASUREMENT

The quantity of filter bags to be measured will be the actual number of sediment filter bags used during construction as specified and accepted by the Engineer. No measurement will be made for disposal of collected sediment or for when filter bag is reused after cleaning.

5.0 PAYMENT

The quantity of filter bags as measured above will be paid for at the contract unit price per each for "Catch Basin or Drop Inlet Protection – Filter Bag". Such price and payment will be full compensation for work covered by this provision, related to furnishing all materials, placing, and installing filter bags, lifting loop rebar, maintaining the sediment filter bags, and removal and disposal of silt accumulations and bag. No payment will be made for filter bag reuse.

Payment will be made under:

Catch Basin or Drop Inlet Protection - Filter Bag.....EA

SP-19R, TRAFFIC CONTROL

Version Date: 1/7/2022 Revision Date: 03/30/2022 by RLC

1.0 DESCRIPTION

Protection for Construction Staking: The Contractor is responsible for providing, placing, maintaining and removing upon completion, all traffic control devices necessary for the protection of survey crews performing construction staking requested by the Contractor for construction of this project when any offset, reference points, benchmark or any other control point is within the travel lane of any roadway, drive, parking lot or other area where vehicles could endanger or obstruct the survey crew.

Beginning Work and Street Closings: The Contractor is responsible for notifying the Implementation Section Manager of the Charlotte Department of Transportation (CDOT), or their designee at 704-336-4119 in accordance with Sections “Approval and Notification Requirements for Work in the Public Right-Of-Way” and “Notifications for complete Roadway Closure” of the Work Area Traffic Control Handbook (WATCH) of any work where the number of travel lanes is reduced from normal conditions.

The Contractor shall install advance warning signs for the Project. These signs shall be in place for 7 calendar days before construction activity begins. The Contractor shall begin construction activity on a street on the scheduled date for the closing of the travel lane.

During daily construction work hours, the Contractor will maintain at least one lane of traffic. During periods of construction inactivity, all lanes of traffic will be open unless otherwise shown on the plans or noted in the specifications.

Right-of-Way Use Permit: The Contractor will not be responsible for obtaining the Right-of-Way Use Permit(s) from CDOT for approval to work in the streets rights-of-way in Charlotte. The permit(s) will be obtained by the City’s Engineering and Property Management department.

Traffic Control Plan: Traffic control will be performed by the Contractor based upon the Traffic Control Special Provisions. The Traffic Control Special Provisions may refer to plan sheets for major work items or details in the WATCH, or both.

The Contractor shall be thoroughly familiar with the current edition of the WATCH. All traffic control devices and procedures shall conform to the requirements of the WATCH, the current edition of the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), the current edition of the North Carolina Department of Transportation (NCDOT) Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways, the NCDOT Roadway Standard Drawings and the current edition of the NCDOT Standard Specifications for Roads and Structures.

Under no circumstances shall the WATCH requirements be less restrictive than what is required by the MUTCD or NCDOT Supplement to the MUTCD. Any requirements prescribed by the MUTCD or amendments by the NCDOT Supplement to the MUTCD will supersede the requirements of the WATCH should conflict arise.

The Contractor shall maintain the traffic control as described herein unless the Contractor submits an alternate traffic control plan to the Engineer and it is approved by the Engineer. The Engineer may direct the Contractor to modify the traffic control if, in the Engineer’s opinion, traffic is not moving safely or efficiently.

Traffic Control Phasing for this project shall be in accordance with the Traffic Control Plans and the reference diagrams from the WATCH. The contractor shall adhere rigidly to these plans and diagrams. If these diagrams are not typical for field conditions, the diagrams may be combined or altered upon approval of the Engineer. The standards and diagrams are the minimum required. Additional signs, cones, drums, barricades and warning devices may be used, but at no time will less than what is specified on the plans, in the standards, and on diagrams be acceptable.

Maintenance of Traffic: The Contractor shall maintain all travel lanes in accordance with the Traffic Control Plan sheets, and the WATCH diagrams referenced in the Traffic Control Phasing.

Construction or maintenance work that involves closure of a lane of traffic will not be allowed during the peak flow hours as described in Section “Peak Flow Hours” of the WATCH, unless otherwise specified in the Contract Documents.

The Contractor shall use flagger control in accordance with the WATCH diagrams referenced in the Traffic Control Phasing and with Sections “Flagging Procedures”, “Duration of Work”, and Temporary Traffic Control Zone Devices” of the WATCH.

In areas of drop-offs and low shoulders, the Contractor shall backfill up to the edge and elevation of the existing pavement in accordance with Section “Miscellaneous Considerations, DROP-OFFS AND LOW SHOULDERS” of the WATCH.

The Contractor will be required to maintain ingress and egress to all businesses and dwellings, and easy access to fire hydrants in accordance with Section “Miscellaneous Considerations, INGRESS AND EGRESS” of the WATCH.

The Contractor shall not work on both sides of the road simultaneously within the same area.

The Contractor shall provide adequate drainage under driveways and within the Project area for the duration of the Project.

The Contractor shall mark all hazards within the Project limits with well-maintained signs, barricades, warning and/or channelizing devices.

Traffic Control Devices: The Contractor shall furnish, install, operate, relocate, maintain and remove all temporary traffic control devices necessary for controlling traffic in accordance with the WATCH. The Contractor shall notify CDOT regarding conflicting permanent signs. Only CDOT forces shall install, remove or relocate any permanent signs within the right-of-way. All construction signs and barricades shall remain in place until the appropriate permanent signs and pavement markings are installed.

Pedestrian Considerations: The Contractor shall accommodate the needs of all pedestrians in accordance with Section “Pedestrian Considerations” of the WATCH.

Equipment and Material Storage: During periods of construction inactivity, all construction materials and equipment shall be stored by the Contractor as specified in Section “Miscellaneous Considerations, STORAGE OF EQUIPMENT AND MATERIALS” of the WATCH.

Traffic Signals: CDOT will furnish, erect, operate, maintain, relocate and remove all traffic signal equipment on the Project as necessary in accordance with the Project plans and specifications. The Contractor shall notify the Implementation Section Manager of CDOT at least 30 days prior to the installation, relocation or removal of traffic signal equipment on the Project. The Contractor shall not disturb any traffic signal equipment unless otherwise noted on the traffic control plans or directed to do so by the Engineer.

Excavation and Trenches: Excavations and trenches that cannot be properly backfilled and patched prior to the end of the workday shall be secured as specified in Section “Excavations and Trenches” of the WATCH.

2.0 MEASUREMENT

There will be no separate measurement made for Traffic Control.

3.0 PAYMENT

Traffic Control will be paid at the each price for "Traffic Control" for each project. This payment will be full compensation for all elements of work required to complete the Project as specified. All traffic control devices are included in this pay item such as arrow boards or truck mounted attenuators as required by the traffic control plans for each individual project. Only one traffic control will be paid per project based on the highest street classification of all streets included in the project as noted on Charlotte Explorer (explore.charlottenc.gov).

Examples of each street classification that may be included in this contract include (but are not limited to) the following:

NCDOT maintained Major or Minor Thoroughfare: Monroe Road, West Blvd, Steele Creek Road

City maintained Major or Minor Thoroughfare: 4th Street, Park Road, Sharon Amity Road, Rocky River Road

Collector: Seneca Place

Local: Spencer Street, Dotger Avenue, Auten Street, Hastings Drive

Payment will be made under:

TRAFFIC CONTROL (NCDOT Major or Minor Thoroughfare)……EA

TRAFFIC CONTROL (City Major or Minor Thoroughfare)……EA

TRAFFIC CONTROL (Collector)……EA

TRAFFIC CONTROL (Local)……EA

SP-20, CONCRETE FOUNDATION FOR PEDESTRIAN SIGNALS

1.0 DESCRIPTION

The Contractor shall supply concrete, anchor bolts and forms necessary for constructing pedestrian pole bases.

2.0 MATERIALS

All materials shall conform with the Standard Pedestrian Pole and Pole Foundation Detail below:

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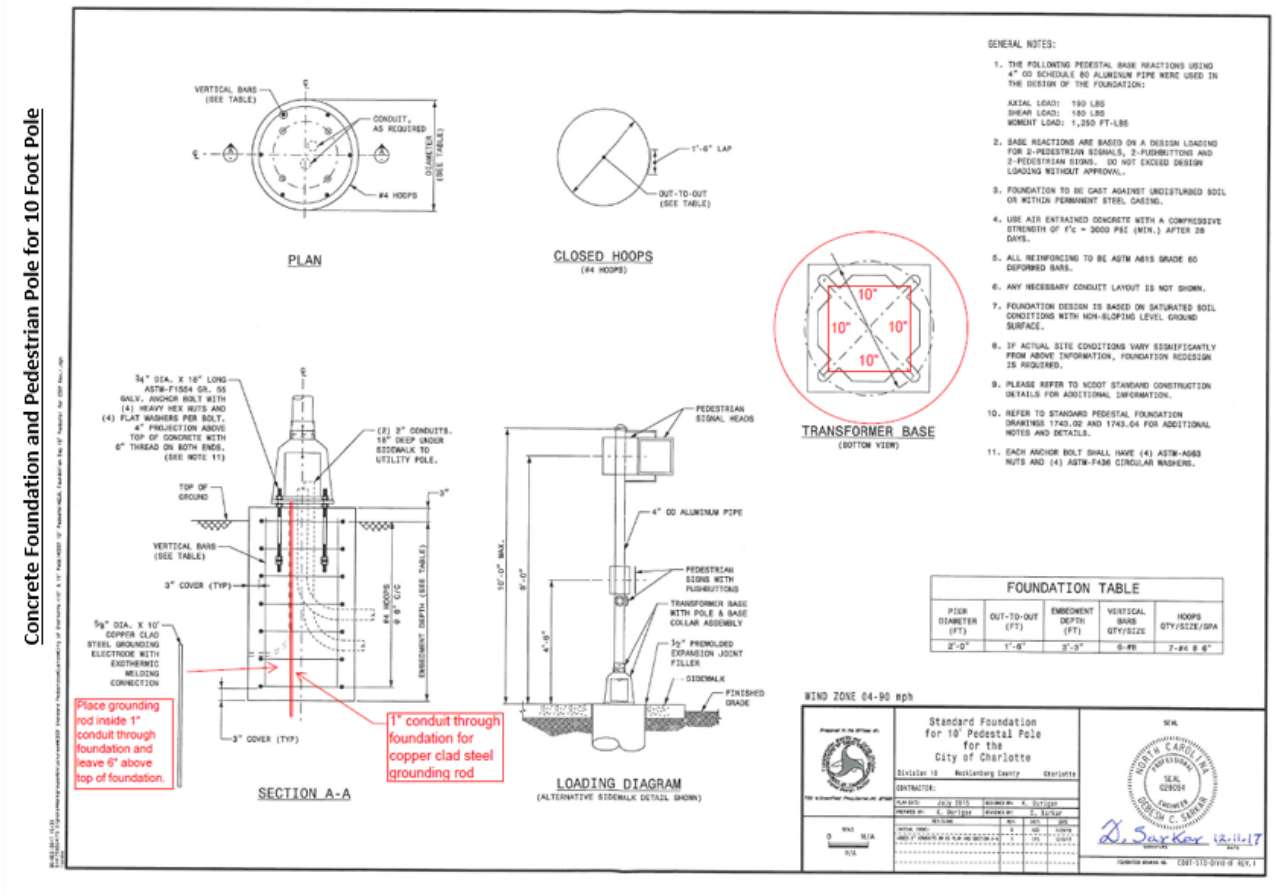
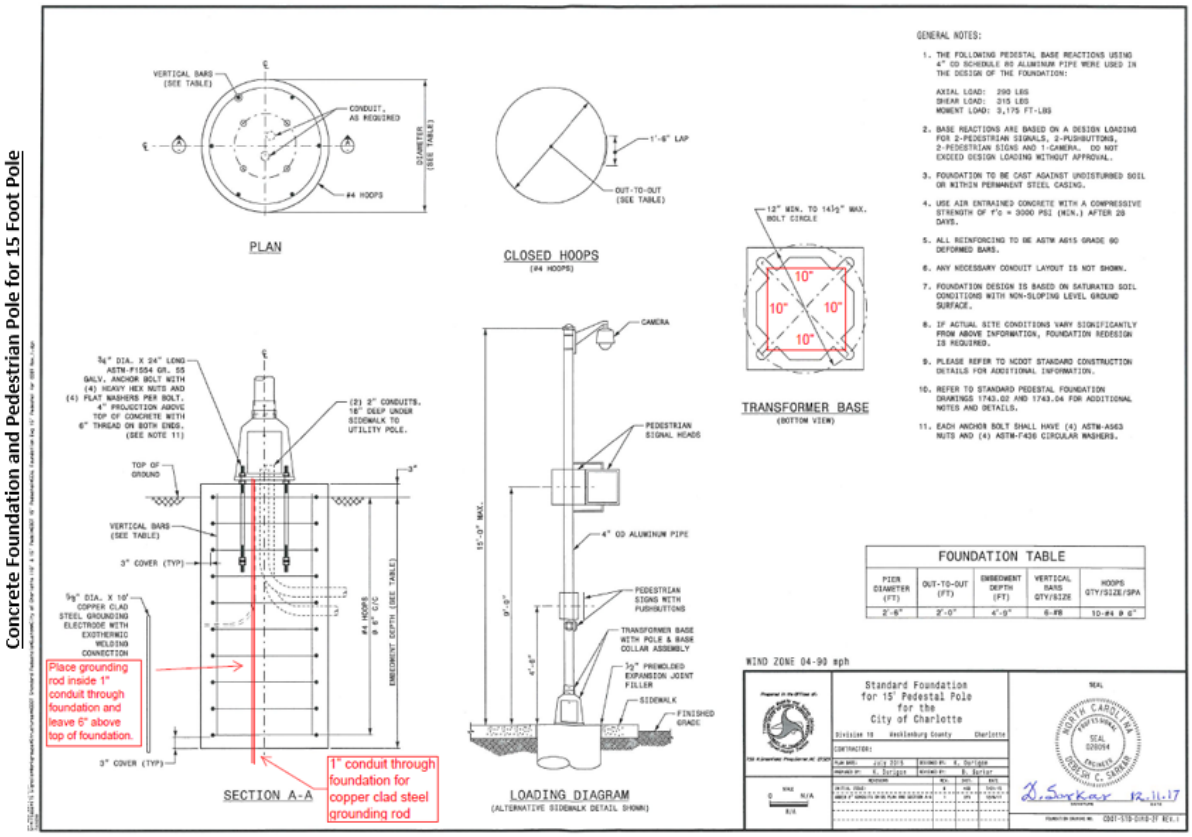
Concrete Foundation and Pedestrian Pole for 10 Foot Pole





3.0 MEASUREMENT & PAYMENT

Concrete Foundations for Pedestrian Signals will be measured and paid as the actual number of each type listed below furnished, installed, and accepted.

Payment will be made under:

Concrete Foundation for 10-foot Metal Base/Pole/Cap for Pedestrian Signal……EA

10 ft. Metal Base/Pole/Cap for Pedestrian Signal……EA

Concrete Foundation for 15-foot Metal Base/Pole/Cap for Pedestrian Signal……EA

15 ft. Metal Base/Pole/Cap for Pedestrian Signal……EA

SP-21, CONCRETE BASE FOR CONTROLLER CABINET

1.0 DESCRIPTION

The work in this special provision consists of all labor and material necessary to excavate, form, pour concrete, insert and join conduits to construct a foundation for a signal controller cabinet. This unit also

includes all labor and material required in the repair and/or replacement of streets, sidewalks, roads, drives, fences, lawns, shrubbery, water mains, pipes, pipelines and contents, underground power and telecommunications facilities, buried sewage and drainage facilities, and any other property damaged during the unit installation. The Contractor shall install a concrete foundation for mounting the traffic signal controller cabinet. This cabinet foundation should be dimensioned to accept the correct sized signal cabinet as directed by the engineer.

See CDOT Supplemental Drawings:

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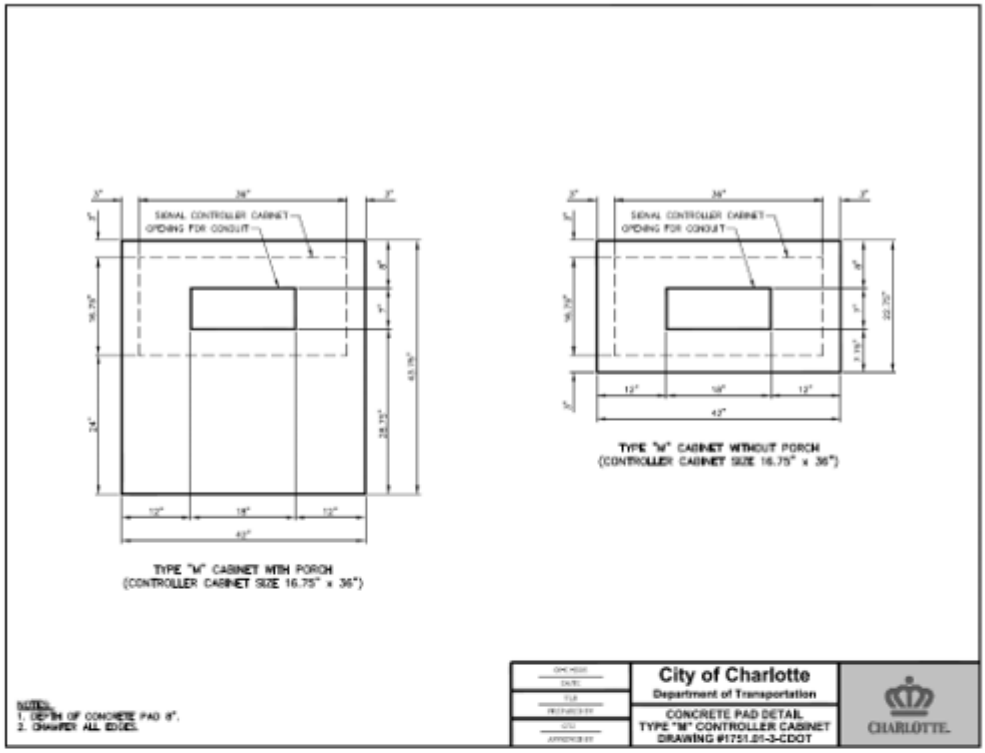

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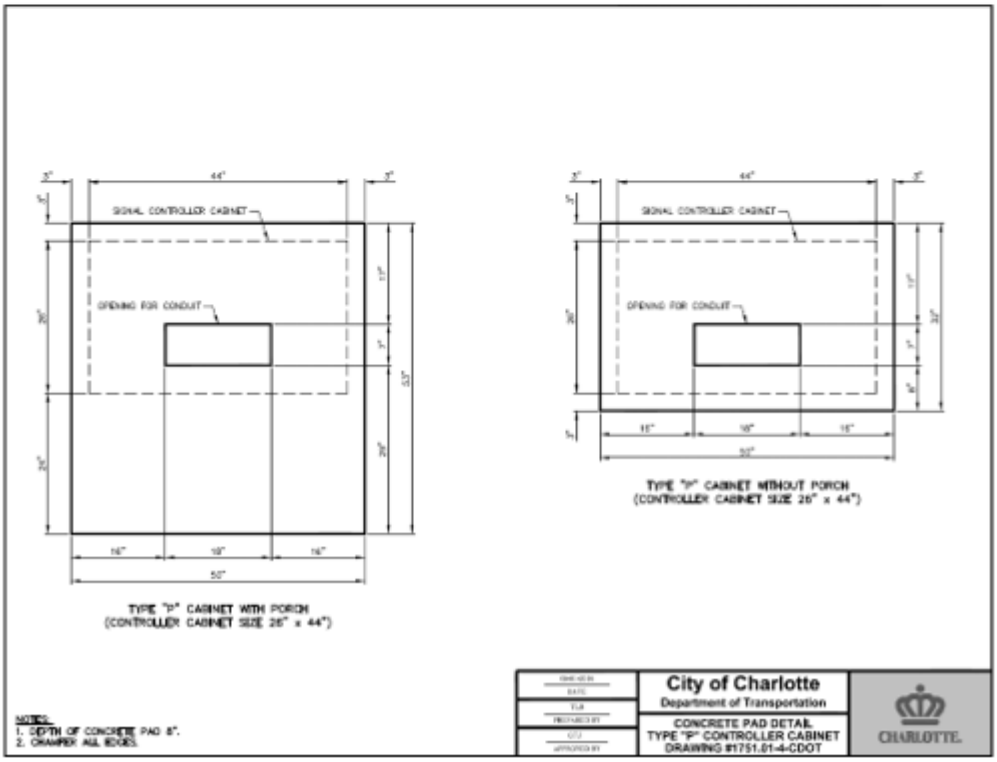


Do not install foundations over uncompacted fill or muck, and ensure ground is level. Concrete shall be poured a minimum of 4" above and 4" below finish grade. Give cabinet foundation a broom finish. Conduits turned up in the slab shall be inside the "conduit window". All 90-degree elbows shall be a sweeping radius not standard 90. Conduits shall be stubbed 4 inches above the ground or slab, turned up flush with and follow the vertical alignment of utility poles, capped without glue prior to placing concrete near them, and all joints cleaned and glued. Use 3600 psi concrete with standard gravel and 2% maximum calcium chloride.

2.0 MEASUREMENT

Installed Controller Cabinet Concrete Base will be measured and paid as the actual number of cabinet bases installed and accepted.

3.0 PAYMENT

Payment will be made under:

**Concrete Base for Controller Cabinet……..……..……..

the NEMA Standard Publication TS 2 - 1992, as specified by the plans. The vehicle detector rack shall be Configuration #2 as defined by TS 2 of the NEMA Standard Publication TS 2 – 1992.

	Size of Cabinet	Backpanel Configuration – Size of Load Bay	Detector Rack Size
	Base Mount – Size 6 (55”H x 44”W x 26”D)	Type 1 Configuration # 4 16-position (1-8 vehicle, 9-12 ped, 13-16 overlap) load bay with two BIU rack positions	Configuration #2 with 8-position 4-channel and two BIU rack positions

1.2.3 Vertical shelf support channels shall be provided to permit adjustment of shelf location in the field. The channels shall have a single continuous slot to allow shelves to be placed at any height within the cabinet. Channels with **fixed notches** or **holes** are **not acceptable**.

1.2.4 Each cabinet shall be equipped with an extra set of unistrut channels on either side of the front section of the cabinet to permit the purchaser to mount additional equipment as necessary.

1.2.5 Shelves shall be at least 330 mm deep and be located in the cabinet to provide a minimum 25 mm clearance between the back of the shelf and the back of the cabinet. A 38 mm minimum height drawer shall be provided in the cabinet, mounted directly beneath the bottom shelf. The top shelf shall be vented with slots so that air can pass through this shelf. The drawer shall have a hinged top cover and shall be capable of storing documents and miscellaneous equipment. This drawer shall support to 22.5 kg in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 600 mm. Drawer must positioned so that it does not hinder the ability to work on, remove or access any other component in the cabinet.

1.2.6 Two shelves shall be provided in the cabinet and shall be at minimum 305 mm apart in height. There shall be sufficient shelf space to accommodate a controller unit 330 mm high, an MMU, one 8-position card rack and external power supply. An additional space at least 305 mm high, 325 mm wide, and 305 mm deep shall be provided. The shelves shall be placed in such a manner that sufficient ventilation is provided to all electrical components and full access is provided for installation, removal, and maintenance of all internal components from both front door and back door.

1.2.7 The cabinet shall be vented and cooled by **two** thermostatically controlled fans. The fans shall be a commercially available model with a capacity of at least 2.7 m^3/min. The thermostats shall have a minimum adjustable range of 70°F to 110°F and shall be preset to turn on at 95°F.

1.2.8 The cabinet shall be provided with a unique serial number with date of manufacture that shall be stamped directly on the cabinet or engraved on a metal or metalized mylar plate epoxied to the cabinet. The digits shall be at least 5 mm in height and located on the upper right sidewall of the cabinet near the front.

1.2.9 All labeling inside of the cabinet shall be black and shall not be blocked by wiring or internal components.

1.3 Cabinet Door

1.3.1 The cabinet shall be provided with one door in front that will provide access to the cabinet. The door shall be provided with a full-length piano hinge with stainless steel pins spot welded at the top of the hinge. The hinges shall be mounted so that it is not possible to remove them from the door or cabinet without first opening the door. The bottom of the door opening shall extend at least to the bottom level of the back panel. The door and hinges shall be braced to withstand a 74 kg per vertical meter of door height load applied to the outer edge of the door standing open. There shall be no permanent deformation or impairment of any of the door or the cabinet body when the load is removed.

An additional back door shall be provided with all base-mounted cabinets. The front door specification shall apply to all back door applications with the exception of an auxiliary police door.

1.3.2 The cabinet door shall be fitted with a Number 2 Corbin lock and a stainless steel handle with a 16 mm (minimum) diameter shaft (or equivalent cross-sectional area for a square shaft) and a three-point latch. The lock and latch design shall be such that the handle cannot be released until the lock is released. Two keys shall be provided for each cabinet. A gasket shall be provided to act as a permanent dust and weather resistant seal at the controller cabinet door facing. The gasket material shall be of a nonabsorbent material and shall maintain its resiliency after long-term exposure to the outdoor environment. The gasket shall have a minimum thickness of 6.25 mm. The gasket shall be located in a channel provided on the cabinet or on the door(s). An “L” bracket is acceptable in lieu of this channel if the gasket is fitted snugly against the bracket to insure a uniform dust and weather resistant seal around the entire door facing. Any other method is subject to purchaser approval during inspection of an order.

1.3.3 A locking auxiliary police door shall be provided in the door of the cabinet to provide access to a panel that shall contain a signal shutdown switch, a signal flash switch, a manual-automatic switch, and a manual advance push-button switch on a six foot plugable/removable, retractable cord. Manual control of the controller unit from the police door shall override any external control (external logic, etc.) in effect when the Manual-Automatic switch is in the manual position. Each actuation of the manual advance push-button switch shall advance the controller to the next interval. Manual control shall not override any calls for preemption. The police door shall be gasketed to prevent entry of moisture or dust and the lock shall be provided with one brass key. Switches shall be labeled for each operation.

1.3.4 The intake for the vent system shall be filtered with a permanent air filter. The filter should consist of a removable metal frame, 14x20x1 inch thick with replaceable fiberglass mesh filter. The filter shall be securely mounted so that any air entering the cabinet must pass through the filter. The cabinet opening for intake of air shall be large enough to use the entire filter. The air intake and exhaust vent shall be screened to prevent entry of insects. The screen shall have opening no larger than 8.1 mm^2. The total free air opening of the exhaust vent shall be large enough to prevent excessive backpressure on the fan.

1.4 Wiring

1.4.1 All wiring within the cabinet shall be neat and routed such that opening and closing the door or raising or lowering the back panel will not twist or crimp the wiring. All wiring harnesses shall be either sheathed in nylon mesh sleeving or jacketed with PVC or polyethylene insulation. Wiring leading to the cabinet door shall be sheathed in nylon mesh sleeving or be PVC jacketed cable only. All SDLC cabling shall be Belden #7203A or equivalent.

1.4.2 Size

A. All conductors between the main power circuit breakers and the signal power bus shall be a minimum size 10 AWG stranded copper. All conductors carrying individual signal lamp current shall be a minimum size 16 AWG stranded copper. All AC service lines shall be of sufficient size to carry the maximum current of the circuit or circuits they are provided for. Minimum cabinet conductor wire size shall be 22 AWG stranded copper. All wiring and insulation shall be rated for 600 V or greater.

Conductors for AC common shall be white. Conductors for equipment grounding shall be green. All other conductors shall be a color different than the foregoing.

No P.C. boards will be allowed on the back panel of the cabinet. All wiring must be done from the BIUs to the Load Switches using standard 19-gauge wiring.

Conflict monitor wires shall be colored as to correspond with the output being monitored (example: green wire for green output, yellow wire for yellow output, and red wire for red output) or labeled to identify the output that is being monitored.

1.4.3 A barrier terminal block with a minimum of three compression fitting terminals designed to accept up to a #4 AWG stranded wire shall be provided for connection of the AC power lines. The block shall be rated at 50 Amperes.

1.4.4 All terminals shall be permanently identified in accordance with the cabinet wiring diagram using an anodized silk screening process on the aluminum panel. Where through-panel solder lugs or other suitable connectors are used, both sides of the panel shall have the terminals properly identified. Identification shall be placed as close to the terminal strip as possible.

A. Each controller input and output function shall be distinctly identified with no obstructions, at each terminal point in the cabinet, with both a number and the function designation. The same identification must be used consistently on the cabinet wiring diagrams.

B. Each load switch socket shall be identified by phase number, overlap number, and pedestrian phase number as applicable. No cabinet equipment, including the load switches themselves, may obstruct these identifications.

C. Each flash transfer base and power relay base shall be properly identified with no possible obstructions.

D. Each harness within the cabinet shall be distinctly identified by function on the connector end.

E. The flasher socket shall be distinctly identified with no possible obstruction.

F. All other sockets needed within the cabinet to fulfill the minimum requirements of the Invitation to Bid, or attachments thereof, shall be distinctly identified.

1.4.5 The ten-pin controller unit harness (A plug Type 1) shall be long enough to reach any point 600 mm above the controller shelf. The A plug Type 1 and the SDLC cable for the controller shall come from the back of the shelf for use with 2070 controller. The A plug and SDLC cable shall be placed in such a way that the 2070 controller will be on the top shelf. The conflict monitor harness and any required auxiliary harness shall reach 600 mm from the conflict monitor shelf.

The conflict monitor harness and SDLC cable shall be placed in such a way that the conflict monitor will be on the top shelf.

1.4.6 {Intentionally left blank}

1.4.7 Copper bus bars shall be provided for both the power supply neutral (common) and chassis ground. Each bus bar must provide a minimum of ten unused terminals with 8-32 X 5/16" or larger screws. All copper bus bar screw heads shall be accessible with a screw driver. Wires shall enter the bus bars from the bottom and the screw heads shall be accessed horizontally.

Copper bus bars shall be located at the bottom of the detector panel, below the loadbay, and near the barrier terminal block mentioned in section 1.4.3 for chassis ground . Tie all ground bar connections in a single loop with #6 AWG wire. Bond detector racks and any panels mounted with uni-struts to the grounding loop. Uni-struts are not acceptable as ground conductors.

Copper bus bars shall be located below the loadbay for AC neutral. The AC neutral and chassis ground buses shall be tied together with a removable jumper that is a minimum #10 AWG wire.

1.4.8 A 20 Ampere and a 50 Ampere thermal type circuit breaker shall be mounted and wired in the cabinet. The 20 ampere breaker shall protect the base light, trouble light, GFCI receptacle, modem duplex receptacles, and fans. The 20 Ampere breaker shall be powered from the 50 Ampere breaker. The 50 ampere breaker shall protect the signal load circuits, controller circuits, conflict monitor, flasher, and card rack detector power supply.

1.4.9 The circuit breakers shall be equipped with solderless connectors and installed on the right side wall (facing the cabinet) or lower right hand side of the back panel inside the cabinet. The breakers shall be easily accessible. The breakers shall be positioned so that the rating markings are visible.

1.4.10 A Ground Fault Circuit Interruption (GFCI) type duplex receptacle shall be mounted and wired in the lower right side wall of the cabinet. Four additional duplex receptacles (for use with communications modems) shall be mounted and wired; two in the upper left side of the cabinet and two in the upper right. These receptacles shall be wired on the load side of the 20 Amp circuit breaker. These receptacles shall be easily accessible and unobstructed by any other components.

1.4.11 {Intentionally left blank}

1.4.12 The load side of the main circuit breaker shall be protected by a primary and secondary surge suppressor, the Atlantic Scientific Zone Defender Pro (#16700) and Atlantic Scientific Zone Guardian TS (#41003), or engineer approved equivalent.

1.4.13 {Intentionally left blank}

1.4.14 The suppresser shall be connected to the line filter as recommended by the manufacturer. Number 10 AWG or larger wire shall be used for connections to the suppressor, line filter and load switch bus.

1.4.15 An LED light and door switch shall be installed in the cabinet and placed in such a way that it illuminates the entire cabinet. This light shall be turned on when the cabinet door is opened, and turn off when the cabinet door is closed. A metal oxide varistor (MOV) or other such transient suppression device shall be placed across the AC power input to the light.

1.4.16 A radio frequency interference (RFI) suppresser (line filter) shall be provided and installed on the load side of the signal circuit breaker and shall be protected by the surge protector. This filter shall be rated at 50 amperes and shall provide a minimum attenuation of 50 decibels over the frequency range of 200 Kilohertz to 75 Megahertz.

1.4.17 Transient suppression devices shall be placed on the coil side of all relays in the cabinet. DC relay coils shall have, as a minimum, a reversed biased diode across the coil. AC relays shall have MOV's or equivalent suppression across their coils. RC networks are acceptable. One suppression device shall be supplied for each relay.

1.4.18 Except where soldered, all wires shall be provided with lugs or other approved terminal fittings for attachment to binding posts. Insulation parts and wire insulation shall be insulated for a minimum of 600 volts.

1.4.19 The outgoing traffic control signal circuits shall be of the same polarity as the line side of the power source.

1.4.20 Two switches shall be provided on the inside face of the cabinet door that shall be labeled Test Normal-Flash and Controller On-Off. When the Test switch is in the Flash position, call for flashing operation shall transfer the traffic signal circuits from the outputs of the load switch to the output(s) of a flasher relay. When the Test switch is in the Normal position, the call for flashing operation shall permit the controller unit to continue to run so that its normal operation can be observed. The Controller On-Off switch (located near the Test Normal-Flash switch) will cause the controller unit and any auxiliary equipment to be deactivated. The Test and Controller switches should have some type of guard to

protect against accidental activation. There should be ample clearance provided between switch guard and controller face when door is closed.

1.4.21 {Intentionally left blank)

1.4.22 The cabinet shall be wired so that activation of the conflict monitor will cause the controller unit, and any auxiliary equipment, to stop timing.

1.4.23 Conflict and manual flash for vehicle and overlap phases shall be prewired for all red.

1.4.24 The cabinet shall be designed and equipped with eight transfer relay positions for the 16-position cabinet and six transfer relays for the 12-position cabinet. The purchaser should be able to change flash color using simple tools to move the wires. Wires for the flash circuit shall be color coded for each output of the corresponding channel (example: green for green output, yellow for yellow output, and red for red output). Between the back plane and loadbay terminals, flash circuit wires and conflict monitor wires for each channel will be isolated by channel and not bundled or tie wrapped with any other wires. The flash circuit shall be easy to change without having to remove any components (example: load switch or transfer relay). Flash circuit shall be easily accessible and free of any obstructions.

1.4.25 Transfer relays shall be the plug-in type manufactured by Reno A&E (Part No. TR-200) or Struthers-Dunn (Part No. 21XBXPL), or equivalent with LED indication. The relays shall have contacts a minimum of 3/8" diameter in size and shall be rated at a minimum of 30 Amps 102/240 VAC, 20 Amps 28 VDC.

1.4.26 A 75 Amp, solid-state relay shall be wired between the RFI filter output and the load switch power bus. The relay shall be controlled by the signal shutdown switch and the flash switch. The relay shall be mounted to a heat sink designed to allow maximum current flow at 74 C without damaging the relay.

1.4.27 All exposed AC wiring points, including the RFI filter, surge suppresser, and solid state relay shall be covered with a clear non-conductive plastic cover mounted to prevent accidental contact. Unless otherwise noted in this specification, wiring at terminal strips is exempt from this requirement.

1.4.28 The load switch outputs shall be brought out to posted 10-32 X 5/16" binder head screw terminals. An MOV or approved equivalent suppression device shall be installed on each load switch output. These devices shall be located on the front side of the load bay for easy access and replacement. Field wiring for the signal heads shall be connected at this terminal strip. Compression connections are not acceptable. All terminal strips for PEDs, overlaps, and vehicle phases shall all be placed on the same plane, horizontally at the bottom of the loadbay.

1.4.29 An SDLC Hub Assembly shall include a minimum of eight D-Subminiature Female 15 pin (DB15) connectors that are wired in series. Provide one (1) extra SDLC cable capable of reaching both shelves.

2.0 DETECTOR PANEL AND CARD RACK

The cabinet shall have a loop detector panel mounted on the left side of the cabinet. This panel shall provide for all connections between loops at the street and the detector cards as described in the following sections.

2.2 Detector Card Rack

The vehicle detector card rack for the Size 5 Modified (12-position backpanel) cabinets shall be TS 2 detector rack Configuration #1 and shall accommodate a minimum of eight 2-channel or four 4-channel TS 2 detector units, one BIU and two additional slots for rack mount optical preemption wired 4-channel dominate. The vehicle detector card rack the Size 6 (16-position backpanel) cabinet shall be TS 2 detector rack Configuration #2 and shall accommodate a minimum of eight 4-channel TS 2 detector units, two BIUs and two additional slots for rack mount optical preemption wired 4-channel dominate. Bond detector rack to the grounding loop.

2.2.2 The detector card rack shall have a rigid frame with labels and shall be fabricated from aluminum and shall have slots set in a modular fashion such that the detector card edge connectors shall plug into a socket while sliding between top and bottom card guides for each module. Mounting flanges shall be provided and be turned outward for ease of access. The detector card rack shall be bolted to a cabinet shelf. It shall be possible to unbolt the rack using simple tools. Wiring harnesses to the detector rack shall have connections that are pluggable and do not require any soldering or de-soldering to change out the detector rack.

2.2.3 All wiring to the rack shall be labeled and neatly run to other parts of the cabinet and detector termination panel.

2.2.4 The slots shall be numbered 1 to 8, left to right when viewed from the front of the rack. A flange shall be provided on the top and the bottom of the rack to label each individual channel.

2.2.5 The detector DC supply shall be bussed to a common point and wired to the detector panel.

2.2.6 The chassis ground shall be bussed to a common point and wired to the detector panel.

2.2.7 The logic ground shall be bussed to a common point and wired to the detector panel.

2.2.8 The data address for the detector BIUs shall be according to TS 2.

2.3 Detector Panel

2.3.1 The Detector Panel shall provide all connections between the detector loops and the detector cards. All detector loop input connections shall be easily accessible and free of any obstructions.

2.3.2 The panel shall be constructed of 3.2 mm aluminum.

2.3.3 The panel shall contain a 76 mm horizontal slot in each corner to accommodate 6.3 mm mounting bolts.

2.3.4 All inputs from the loops shall be brought through posted 10-32 X 5/16” binder screw terminals or 8-32 X 5/16” binder screw terminals.

2.3.5 Each loop pair shall be protected by lightning surge suppresser. The suppressers must be easily accessible and mounted so that they can be replaced without removing the detector panel. Suppressers shall not obstruct terminal strips making it difficult to connect loops.

Each detector will have a test switch such that when the switch is closed, a call is placed upon that detector input. The test switch will have three positions; no effect, permanently on, and momentarily on.

2.3.7 The detector panel for cabinet Configurations #1, #2 and #3 (12-position) shall provide the following connection points as a minimum for sixteen (16) detectors:

CONNECTION POINT	**NO. OF CONNECTION POINTS**
EXTERNAL 24V POWER SUPPLY	1
LOOP INPUTS	16
LOGIC GROUND	1
SPARES	6
CHASSIS GROUND BUS	1 BUS

The detector panel for cabinet Configuration #4 (16-position) shall provide the following connection points as a minimum for thirty-two (32) detectors:

CONNECTION POINT	**NO. OF CONNECTION POINTS**
EXTERNAL 24V POWER SUPPLY	1
LOOP INPUTS	32
LOGIC GROUND	1
SPARES	6
CHASSIS GROUND BUS	1 BUS

2.3.8 A chassis ground bus bar shall be provided on the panel and connected to the cabinet by a copper ground strap. The strap shall be bonded to the grounding loop.

2.3.9 The cabinet shall be wired and labeled for eight (8) pedestrian pushbutton inputs. The detector panel shall have all eight (8) pedestrian test pushbutton inputs.

2.3.10 Cabinet shall have replaceable pedestrian pushbutton isolator PCB that isolates all eight inputs. These shall be able to be replaced without removal of existing equipment and without putting the intersection into FLASH.

3.0 PREEMPT PANEL

3.1 A preempt panel shall be provided that contains all interface circuits and wiring for preemption and communication functions. The panel shall be located on the left side of the cabinet interior. Bond panel to grounding loop.

3.2 Three momentary test switches, one for each preempt circuit, shall be provided on the preempt panel. The operator shall not be exposed to hazardous voltages during operation of the test switches.

3.3 All necessary interconnection cables, relays and mounting hardware shall be provided.

3.4 There shall be a switch on the preempt/communication panel, which shall release the local controller to operate in an isolated, full-actuated manner, when necessary for maintenance purposes. The switch positions shall be labeled “SYSTEM” and “FREE”.

3.5 {Intentionally left blank}

3.6 Preempt panel shall have a 12-volt AC relay prewired for preempt input 1.

3.7 All inputs and terminals shall be labeled.

4.0 POWER SUPPLY

4.1 The power supply shall be a shelf mounted, enclosed, 24 VDC power supply in accordance to Clause 5.3.5 of the NEMA Standards Publication TS 2-1992.

4.2 One power supply cable per power supply shall be furnished and installed in each cabinet. The wires shall be terminated to bus bars, terminals on the front of the backpanel, detector panels, or connector as appropriate. The connections shall be with forked spade lugs or otherwise as needed. Each individual wire shall be cut to the length required to reach the point at which it is to be connected.

5.0 TWO CIRCUIT SOLID STATE FLASHER

5.1 The solid state, two-circuit flasher shall meet the electrical and physical characteristics described in Clause 6.3 of the NEMA Standards Publication TS 2-1992. The flasher shall be Type III (dual circuit rated at 15 Amps per circuit) unit and so constructed that each component may be readily replaced if needed.

5.2 The two-circuit flasher shall be of solid-state design with LED indicator lights for each circuit and shall contain no electro-mechanical devices.

6.0 LOAD SWITCHES

6.1 The solid-state load switches shall meet the requirements set forth in Clause 6.2 of the NEMA Standards Publication TS 2-1992, and shall be "Triple-Signal Load Switch" type. Load switches shall be PDC model SSS-86 I/O load switch with LED on front, or equivalent.

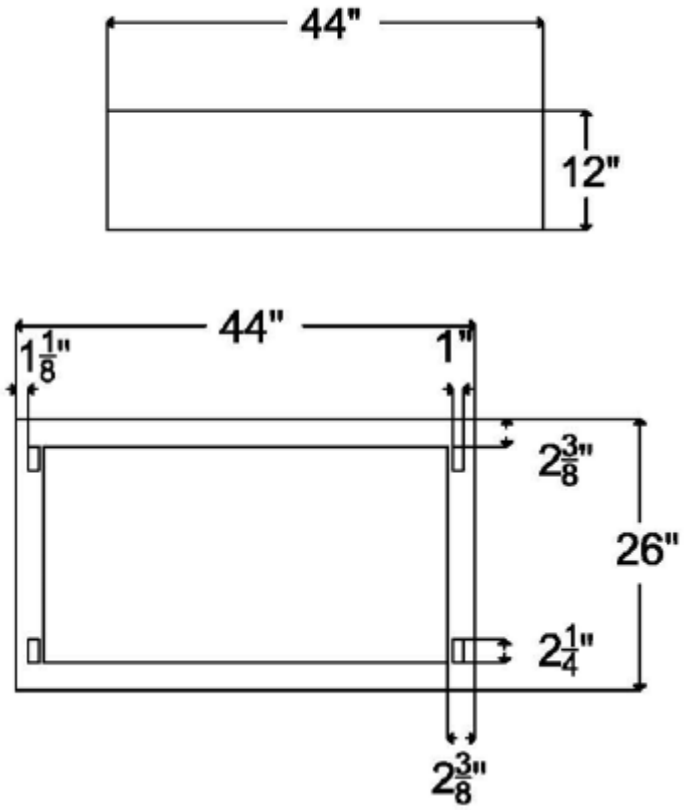
6.2 An indicator light for each circuit shall be provided in each load switch. The indicator light shall be on when a "Low Voltage Active" input to the load switch is present as well as high voltage output.

7.0 GENERATOR TRANSFER SWITCH

7.1 The base mount cabinets shall contain an internal generator plug accessible from the outside by locking auxiliary door. The auxiliary door shall be gasketed to prevent entry of moisture or dust. The switch must be equipped with a Cooper CWL530P male generator plug. During a power outage, the transfer switch will isolate the emergency circuits from the utility line allowing for efficient operation of the cabinet and generator without back feeding onto the utility. The generator plug and transfer switch shall be mounted below the lowest shelf so as not to block usable space on shelves or block access to any equipment in the cabinet including copper bus bars.

8.0 CABINET RISER

8.1 Cabinet riser is for a Type-P Size 6 base mount cabinet. Riser is to be constructed of .125” thick 5052 H-32 aluminum. Riser is to be constructed using continuously welded seams. Riser is 12’ in height.



The contractor shall supply all necessary cabinet hardware for configuration and testing (“burn-in”) to the Electronics Lab facility at 537 Spratt Street at least 14 days prior to requiring the cabinet be available for field installation – including, but not limited to: cabinet, controller, conflict monitor, jumper card & detection cards. Supplied equipment should meet all current CDOT standards and requirements. The City will perform all testing of the cabinet, controller, conflict monitor and permissive jumper card. The controller cabinet shall be picked up at the CDOT Traffic Signals facility at 537 Spratt Street. The Contractor shall notify either Travis Stewart or Steve Phifer at (704) 336-3919 at least 48 hours in advance of picking up any materials.

The Contractor shall install the controller cabinet on a concrete foundation. Use a minimum of four 3/8” diameter expanding type anchor bolts to secure cabinet to foundation. Unless otherwise specified, install the cabinet using a 12” riser at its base. Seal space between cabinet and foundation with permanent, flexible, waterproof sealing material.

Termination of field wires will be performed by the contractor and will be attached to the load bay using uninsulated fork wire connectors. Termination of low voltage field wires will be performed by the contractor and attached appropriately within the cabinet using insulated fork wire connectors.

The contractor should assume that it will take up to 10 days for a State Electrical Inspector to arrive on site to inspect a new service, and 7 days for a power company to install a new electrical service. Additional days will NOT be granted if these time periods are shorter.

Activation of New Traffic Signals*:

When the Contractor is ready to activate the traffic signals necessary for the traffic control phase they shall contact CDOT Traffic Signals (Travis Stewart or Steve Phifer, 704-336-3919) to schedule activating the new signal equipment. A minimum of 48 hours advanced notice is required.

Any new traffic signals must flash before being put into full operation. Signals shall flash for a period of 7 days before being activated, unless otherwise approved by The Engineer. Signals shall not be activated on Friday. Signals should be flashed a minimum of three (3) working days and shall not flash for longer than 10 days.

The Contractor shall uncover the new signals and shall remain at the site until installation is complete, the new signals are activated and a CDOT Traffic Signals representative has determined that they are functioning as designed.

The contractor shall remove any existing STOP signs at the project location immediately following full activation of a full traffic signal, upon the direction of The Engineer, and their associated supports.

**Pedestrian Hybrid Beacons are exempt from a flashing period as they rest in dark.*

2.0 MEASUREMENT

Installed Controller Cabinets will be measured and paid as the actual number of cabinets that are supplied, installed, activated, and accepted.

3.0 PAYMENT

Payment shall include but not be limited to all labor, equipment, materials, and incidentals required to supply, install, and activate a Controller Cabinet as specified in this provision, on the plans, or as directed by the engineer.

Payment will be made under:

Supply, Install, & Activate Controller Cabinet……EA

SP-23 2070LX CONTROLLER w/ 1C CPU, MODULES AND ACCESSORIES

1.0 DESCRIPTION

This specification sets forth the minimum requirements for a 2070-1C CPU designed according to the Caltrans TEES 2009 specification and the ATC Standard V. 6.25. The 2070-1C module consists of an ATC Engine Board paired with a 2070-1C Host Board.

2.0 MATERIALS AND METHODS

ATC Engine Board

The Engine Board shall meet the following requirements:

The board shall be fully compliant with the ATC Standard version 6.25.

Microprocessor - The board shall include a Freescale MPC83XX PowerPC processor with QUICC engine. DRAM Memory (DDR2) - The board shall contain a 128Mbytes of DDR2 DRAM memory for application and OS program execution.

Flash Memory - The board shall contain 64 Mbytes of NOR type FLASH for storage of OS Software and user applications.

Static RAM (SRAM) - The board shall contain 2MB of SRAM memory for non-volatile parameter storage. Standby Power - The board shall provide the Standby Power (VSTANDBY) required for supporting the SRAM and RTC.

Real-Time Clock (RTC) - The board shall be provided with a software settable, hardware RTC that meets the requirements of the ATC Standard except that in the absence of VPRIMARY, the RTC shall operate from VSTANDBY.

CPU Reset - A software-driven CPU Reset Signal (Active Low) shall be provided to reset other system devices and shall be accessible by application programs as well as by the command line as “cpureset”. CPU Reset shall be executed when the Controller starts up or is rebooted using the reboot command. USB - The board shall provide one USB 2.0 compliant port and provide hot-plug auto-mount.

Ethernet- The board shall provide three 10/100 auto-negotiating Ethernet ports.

2070-1C Host Board

The Host Board shall be a single board module meeting Caltrans 2X WIDE board requirements. It shall provide two DIN sockets and mounting standoffs for the connection of the 2070-1C Engine Board, a 96-Pin DIN connector for interfacing with the 2070 Serial Mother Board and all required EIA-485 interface circuitry. Additionally:

Ethernet Switches- The board shall provide two Ethernet switches used to route the ENET1 and ENET2 signals from the Engine Board to the front panel RJ-45 connectors and Serial Motherboard connector. The switches shall be managed and provide packet Broadcast Storm protection.

Datakey Receptacle- The board shall provide a single Datakey Receptacle capable of hosting 3.3VDC Datakeys.

USB- The board shall route the USB signals from the Engine Board to a three port USB hub chip.

SD Card Support - The board shall be provided with an industry standard SD Card socket mounted to the host board. The SD Card socket shall be supported by the USB hub. The SD Card socket shall not be accessible from the front panel.

Front Panel

The front of the 2070-1C CPU Module shall consist of a panel with a USB port, three Ethernet ports with integrated LEDs, a Datakey receptacle, and a 25 pin C13S connector with TX/RX LEDS. It shall only be necessary to remove the module during maintenance of the electronics or for accessing the SD Card.

USB Port - The TYPE 2070-1C CPU Module shall include a USB port compliant to the ATC Standard 6.25 with the exception that USB shall conform to the appropriate sections of the USB v2.0 specification for both hardware and software operations. The USB shall be brought out from the Host Board USB hub to the front panel USB connector.

Ethernet Ports - Three ETHERNET ports from the Ethernet switches on the Host Board shall be brought out on RJ-45 connectors mounted on the 2070-1C front panel. These Ethernet ports shall support ENET1 and ENET 2 from the Engine Board.

Datakey - A Datakey Keyceptacle™ shall be mounted on the CPU module front panel. The controller shall be supplied with an 8MB Memory Size Datakey with each 1C CPU module unless specified otherwise. The Datakey shall be temperature rated for –40 °C to +85 °C (–40°F to 185 °F) operation, shall be blue in color. The datakey shall operate on 3.3 VDC. Power shall not be applied to the receptacle if the key is not present. The CPU shall support from a 2 through 32MB Datakey.

C13S Port – The front panel shall provide a DB-25 connector that supports the SP8 circuitry on the Host Module.

Operating System:

The 2070-1C CPU Module shall be supplied with Linux 3.12.x or later kernel and Board Support Package (BSP).

Linux Drivers - All Linux Drivers provided in the Model 2070-1C CPU shall be compliant to ATC Standard V.

6.25 Annex B specifications.

Startup Procedure - The Linux boot image shall startup as described in the ATC Standard V. 6.25 Section

5.3.5.1. The boot up process shall be completed within 4.5 seconds. Linux startup shall be configured to auto run scripts or execute Linux binaries residing in the USB Memory upon power up or during normal operation with USB Memory inserted.

ATC API – Provide compiled libraries and applications for the 5401 Standard for Applications Programming Interface with Reference Implementation (APIRI).

Electronics:

All printed circuit boards shall meet the requirements of the NEMA Standard plus the following requirements to enhance reliability:

All plated-through holes and exposed circuit traces shall be plated with solder. Both sides of the printed circuit board shall be covered with a solder mask material.

The circuit reference designation for all components and the polarity of all capacitors and diodes shall be clearly marked adjacent to the component. Pin 1 for all integrated circuit packages shall be designated on both sides of all printed circuit boards.

All printed circuit board assemblies shall be coated on both sides with a clear moisture-proof and fungus proof sealant.

The controller shall include an option that allows updating software using a Windows based computer or USB memory stick. This option shall allow updating the controller software via Ethernet port or USB port. The controller shall include an option that supports remotely updating the controller software from the Central Server while keeping the intersection in an all-red condition.

3.0 MEASUREMENT

2070LX Controller w/ 1C CPU, Modules, and Accessories will be measured as each of the actual number of controllers that are supplied, installed, activated, and accepted.

4.0 PAYMENT

Payment for 2070 LX Controller w/1C CPU, Modules, and Accessories will be paid as each and will be full compensation for all labor, materials, equipment, and incidentals required to supply, install, and activate the item as covered in this special provision, on the plans, or as directed by the engineer.

Payment will be made under:

2070LX Controller w/ 1C CPU, Modules, and Accessories……EA

SP-24 APS PEDESTRIAN PUSHBUTTON DETECTOR, SIGN & 3-WIRE CONTROL BOARD

1.0 DESCRIPTION

This item includes the labor, equipment, and any necessary hardware to supply and install one APS Pedestrian Pushbutton Detector & Sign and 3-wire control board.

2.0 CONSTRUCTION METHODS

Installation should be in compliance with Section 1705-3 (C) of the NCDOT Standard Specifications.

3.0 MEASUREMENT

APS Pedestrian Pushbutton Detector & Sign and 3-wire control board will be measured and paid as the actual number of APS Detectors & Signs and control boards installed and accepted. A Sign, control board and corresponding detector shall be considered one unit.

4.0 PAYMENT

Payment will be made under:

Supply/Install APS Pedestrian Pushbutton Detector, Sign & 3-Wire Control Board……EA

SP-25 CORE DRILL CONCRETE CABINET FOUNDATIONS

1.0 DESCRIPTION

Where approved by the Engineer, install conduit entrances into existing foundations in accordance with the plans and specifications.

2.0 MATERIALS

Comply with the NCDOT Standard Specifications in section 1750.

3.0 CONSTRUCTION METHODS

Install Conduit Entrances into existing cabinet foundations by core drilling foundations to install additional conduit.

Maintain a minimum of 3 inches of horizontal clearance between new conduit and edge of foundation. Maintain minimum clearances of 1 inch from the flange of the base adapter and 2 inches from existing conduits. Avoid damaging existing conduit, conductors, and anchor bolts. Repair all such damages. When possible, maintain traffic signal operations while drilling is performed.

After installation of conduit, place grout to seal around conduit, and return the foundation to normal appearance.

4.0 MEASUREMENT AND PAYMENT

The measurement of Core Drill Concrete Cabinet Foundation shall be measured as each entrance drilled and accepted. Each payment will be considered as full compensation for all labor, materials, equipment, and incidentals required to complete the work as describe in this special provision, on the plans, or as directed by the engineer.

Payment will be made under:

Core Drill Concrete Cabinet Foundation……..EA

SP- 26 GREEN UNINTERRUPTIBLE POWER SUPPLY

1.0 DESCRIPTION & MATERIALS

This specification defines the requirements of a green uninterruptible power supply (UPS) battery backup system.

DEFINITIONS:

UPS – Uninterruptible Power Supply

GUI – Graphical User Interface

NiZn - Nickel-Zinc

SNMP - Simple Network Management Protocol

SMTP - Simple Mail Transfer Protocol

TCP/IP - Transmission Control Protocol/Internet Protocol

REQUIREMENTS:

Compatibility

The UPS shall be compatible with the agency's current traffic controller cabinet, controller and cabinet components, including the safety monitor, for full time operation. The UPS shall include all necessary cables to connect the UPS and batteries.

Run-time

The UPS shall be configured with batteries to provide a 2-amp cabinet load a to support a range of run time from a minimum of four (4) hours to a maximum of ninety (90) hours of operation at ambient temperature of 25°C.

Output Capacity

UPS must provide a range of continuous active output capacity from a minimum of 1000W to 1500W, with a 90% typical inverter efficiency while running in battery backup mode. The UPS must have surge output capability of 2000W.

Output Voltage

When under battery power, the UPS output voltage shall be 120 VAC, ±3%, pure sine wave output, with <2% total harmonic distortion (THD), and frequency of 60 Hz ±0.5%.

Transfer Time

The maximum transfer time allowed, from disruption of utility line voltage to stabilized inverter line voltage from batteries shall be thirty- three (33) milliseconds max. The maximum transfer time when switching from inverter line voltage to utility line voltage after the line-qualifying period shall be thirty-three (33) milliseconds max. The UPS shall be capable of allowing the user to program the line qualifying period as three (3), ten (10) or thirty (30) seconds.

Operating Environment

Operating temperature for the UPS and Power Interface Module (PIM) shall be -35°F to +165°F (-37° to +74°C).

Certifications

The UPS battery cells shall be recognized UL-2054, CSA 22.2 No. 60950-1.

1.2.1 Power & Control Connections

Power Interface Module (PIM)

The UPS shall utilize a Power Interface Module (PIM) to connect utility AC input to the UPS and batteries as well as routing UPS output power to the cabinet load.

AC Connection

The AC input and output shall be separate panel mounted plug/receptacles that allow no possibility of accidental exposure to dangerous voltages.

Battery Connections

The batteries shall have digital battery bus connections to the UPS with locking connectors with provision for six battery ports. There shall be AC power connections from the Power Interface Module to the batteries that are separate from the digital battery bus connections.

The UPS must offer six (6) battery ports that can accommodate a mix of any form-factor NiZn batteries compatible with the UPS system.

The UPS must be capable of accepting batteries of different capacities at once, giving the user the ability to utilize different battery sizes to achieve required run-times.

The UPS must allow the user to 'Hot Swap' any of the battery form-factors while on utility power and/or battery backup power.

Battery

The standard and extended run time (XRT) UPS batteries must utilize a Sealed Nickel-Zinc (NiZn) battery technology. Lead-Acid or Lithium battery technologies will not be accepted.

The standard run-time battery panel(s) must incorporate a bendable design, which allows the battery panel(s) to flex or bend for installation between the 19" EIA rack and the sidewall of the 33X cabinet .

The standard run-time module(s) must have the capability of being installed on/under a shelf or be rack mountable within the 19" EIA rack.

XRT battery solutions shall come with an intelligent management system that consolidates all battery connections to the UPS and manages the battery string.

The charging/battery monitoring circuitry shall be incorporated within the panel, module or extended run time battery solutions.

Charge

The UPS must be able to recharge standard panel and module batteries from 0% to 100% state of charge (full capacity) within four and one half (4.5) hours of complete discharge at 25°C when AC utility line voltage is available. Extended run time batteries shall be able to recharge batteries from 0% to 100% state of charge (full capacity) within ten (9) hours of complete discharge at 25°C when AC utility line voltage is available. The number of batteries connected to the UPS shall have NO effect on the recharge time. The batteries must be able to charge at up to 50°C ambient temperature. The UPS must not require trickle/float charging.

Wall Charging - The UPS panel, module and extended run time batteries shall be able to be charged using a 120VAC, 15A wall outlet (20A for extended run time) without need of a UPS inverter/controller, battery charger or battery tender.

Unit failure

The UPS must have a fail-safe utility tie feature (bypass mode) with a visual indicator that automatically cuts back to the utility line in the event of a UPS or battery failure, or complete battery discharge.

Operating Modes

The UPS shall have intelligent two-stage operation defined as:

Stage One: Line Attenuator, Waveform Monitoring and Switchover to Battery Backup

Stage Two: Waveform Monitoring, Return to AC Power

Oscilloscope Function

The UPS shall have an oscilloscope function continuously monitoring the incoming utility AC waveform. The oscilloscope function shall continuously evaluate three (3) measures of the incoming utility AC waveform:

Voltage: A continuous RMS measurement with user programmable AC voltage thresholds.

Waveform Anomalies: Oscilloscope enhanced sensitivity mode compares incoming utility waveform to a mathematically pure sine wave reference waveform.

Frequency: Continuously measured with frequency deviation detected as quickly as 1 cycle and a default threshold of 60Hz +6Hz.

Functionality and Operational Requirements:

LCD Display

The UPS shall have a 64 x 128 Pixels LCD display with white LED backlight. From the main screen, the LCD display shall provide the following information;

Utility line voltage

UPS status

Cabinet consumption in watts

Most recent AC power outage duration

Battery capacity State of Charge percentage

LCD Display Menu

The LCD Display Menu shall provide the user the ability to program and monitor all UPS parameters;

Local User Interface

The UPS shall include a navigational dial to allow users the ability to navigate the menu to setup the UPS.

Voltage Thresholds

The UPS shall allow the user to set high and low AC line voltage thresholds to determine parameters to transfer from utility line power to battery backup power.

The UPS shall bypass utility line power if the utility line voltage is outside of the set high and low voltage parameters.

The UPS shall have a programmable utility AC qualification time after restoration of utility AC power to within specified voltage thresholds with choices of 3, 10 or 30 seconds.

Notifications

All alarm functions shall be available on SNMP, SMTP and Programmable Relay.

Programmable Relays

The UPS Inverter/Controller shall include eight (8) Class 2 programmable relays, which can be triggered by power line conditions, and user selected settings of the UPS. Each relay shall have the ability to trigger by multiple conditions simultaneously. The programming options are as follows;

Power Fail without delay / Power fail with delay

Time of Day

Battery Capacity

System Fault

Event Log

The UPS shall provide an event log with a 1000 event capacity, which will allow the user to view the event type, date, time and duration of a given event. UPS configuration changes shall also be defined as an event and captured in the event log. The data shall be recorded in a FIFO format, so the oldest event is purged as the newest is entered.

Automatic Bypass Switch

The UPS shall have an automatic bypass function with a visual indicator to bypass the UPS and allow the utility line voltage through to the cabinet.

Circuit Breakers

The UPS system shall include a Power Interface Module (PIM) equipped with a 20A circuit breaker and automatic bypass capability.

Cold Start

The UPS shall be equipped with “Cold Start” capabilities, which provides the user the ability to turn the UPS on and supply battery backup power when no utility line voltage is available. This allows the user the ability to install a UPS and provide backup AC power at an intersection that has no utility line voltage available.

Audible Indicators

The UPS shall have audible indicators for the following parameters:

System Startup

Cold Start

Inverter On/Off

Inverter Output Over Current

AC Mis-wire

Rotating Navigation Dial with Press to Select and Back Button use

UPS Fault

Maintenance

There shall be no battery maintenance requirements for the life of the batteries including no battery rotation, maintenance discharge or cell balancing.

Visual Indicators

The UPS shall have visual indicators on its front panel for the following:

Red indicator - UPS Fault

Solid Green indicator - Backup Mode On

Flashing Green indicator - Batteries are below 10% capacity

Yellow - Relay Triggered

The batteries shall have the following visual indicators through a multi-color LED providing battery status and alarms

Green = Backup Mode

Blue = Charging Mode

Red = Battery Fault

White Blinking = Charged, battery at rest

Communication:

The UPS must have the capability to provide Ethernet and IP addressing communications with the capability for remote monitoring and programming as well as remote firmware updating capability. This capability must be provided through embedded webserver software within the UPS.

The UPS shall be equipped with an Ethernet port. The Ethernet port shall be an RJ45, EIA 568B pin out type connector. The Ethernet port shall be 10/100Mbps, TCP/IP capable.

Graphical User Interface:

The embedded webserver will provide a Graphical User Interface (GUI) that shall be password protected and require a user ID, password and the UPS IP address to access.

The GUI shall have a status area that details the UPS status, location, available AC line voltage status and real-time cabinet power consumption. When in backup mode, the GUI shall display the most recent power failure duration. The status area must be displayed on every page.

The GUI shall have a Home screen with clickable icons and tabs, which will allow the user to navigate the GUI with ease. The home screen shall allow the user to view real-time graphical charts of the cabinet power consumption and AC line voltage status. The home screen must allow the user the ability to view a live waveform from the AC utility line in the cabinet.

The GUI shall have an Event Log page to allow the user to view the event type, date, time and duration of a given event. The GUI must provide the user the capability of viewing the waveform of the given event.

The GUI shall have a relay Configuration page to allow the user to program the relay contacts.

The GUI shall have a System Configuration page that allows the user to configure all the setup parameters of the UPS.

The GUI shall communicate notification and alerts through SNMP and SMTP protocols.

Warranty:

The UPS, as a complete system including batteries, must be warranted to be free from defects in material and workmanship for a minimum of 5 years for the battery cells and 2 years for the electronics from the date of shipment.

2.0 MEASUREMENT

Green Uninterruptible Power Supply (UPS) will be measured as each for the actual number of UPS that are supplied, installed, activated, and accepted.

3.0 PAYMENT

Payment for each Green Uninterruptible Power Supply (UPS) shall include but not be limited to all labor, equipment, materials, and incidentals to supply, install, and activate the UPS as described in this provision, on the plans, or as directed by the engineer.

Payment will be made under:

Green Uninterruptible Power Supply (UPS)……EA

SP - 27 PEDESTRIAN SIGNAL HEADS

1.0 DESCRIPTION AND MATERIALS

Furnish and install pedestrian LED signal heads, visors, interconnecting brackets, wire entrance fittings, mounting assemblies, signal cable, lashing wire, pedestrian signal signs, grounding systems and all necessary hardware.

Bag new pedestrian signal heads with burlap bags or bags made of non-ripping material specifically designed for covering signal heads until signal heads are placed in operation. Do not use trash bags of any type.

When new signal heads are placed into operation, immediately bag and remove signals heads that are not to be reused.

Adjust each signal head vertically and horizontally so that light output will be of maximum effectiveness for traffic and pedestrians. Do not tilt signal heads forward. Reposition signal heads as required for various construction phases.

All LED pedestrian signal head modules must be 16” x 18” LED module with full display man and hand with count down. All LED pedestrian signal heads must have 16” X 18” cast aluminum housing, powder---coated federal yellow, cast aluminum door, painted flat black with visor type (z--crate, waffle, mesh, vantage) (See picture 1). Door shall have stainless steel hinge pins that are removable without using tools (See picture 2 & 3). All hardware shall be stainless steel. Housing shall be drilled on one side for clamshell mounting hardware (see picture 4). 3 Position terminal block mounted in housing (see picture5). Front door 16” hinged top or bottom. The door is attached with stainless steel clevis or roll pins and eye bolt/wing nut assemblies. Two equally spaced mounting lugs, integrally cast into the top and bottom of the 16” and the sides of the 12”, allow the doors to hinge from either direction. All interior mounting locations on the 16” housing are symmetrically positioned, allowing the rotation of components when using the clamshell bracket to mount to the right or left side. Clamshell mounting bracket should NOT BE MOUNTED to housing. They are to be boxed separately with closure bolt and 2---part mounting assembly symmetrical mounting holes allow for left or right mount neoprene gasket provides a weather tight seal 3--position, 2--row terminal block mounted in the upper half of the signal mounted portion; one side with fast--on terminals, the other side with screw terminals 28” wire leads (3) provided to wire clamshell terminal block to pedestrian signal terminal block field wiring is terminated on clamshell terminal block flathead 3/16” hex socket closure bolt.

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Picture 1 – Cast Aluminum housing, powder-coated Federal Yellow, cast aluminum door painted flat black with visor type (Z-crate, waffle, mesh, vantage).

Picture 2 – Door shall have stainless steel hinge pins that are removable without using tools.

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Picture 3 - Door shall have stainless steel eyebolts with wing nuts, and hinge pins that are removable without using tools.

Picture 4 – Housing shall be drilled on one side for clamshell mounting hardware. **Clamshell not to be installed on pedestrian housing.**

Picture 5 – 3 Position terminal block mounted in pedestrian housing with 1 white, 1 blue, and 1 orange wire. Each wire shall have insulated fork connectors on each end.

Picture 1 - clamshell mounting bracket with **tapped** wire entrance hole for wood pole mounting

Picture 2 – clamshell mounting bracket with **tapped and capped** wire entrance hole for wood pole mounting

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Picture 3 – clamshell mount bracket with flat head 3/16" hex socket closure bolt

Picture 4 – clamshell with 3 position terminal

2.0 MEASUREMENT

Pedestrian Signal Heads will be measured and paid as the actual number of 16" pedestrian signal heads of each type furnished, installed, and accepted.

3.0 PAYMENT

Payment by each for 16" Pedestrian Signal Head shall include but not be limited to all labor, materials, equipment, and incidentals to install the signal heads as stated in this special provision, as shown on the plans, or as directed by the engineer.

Payment will be made under:

16" Pedestrian Signal Head…….EA

SP-28 VEHICLE SIGNAL HEADS (1705 MODIFIED)

1.0 DESCRIPTION

Description is as set out in **NCDOT Standard Specification 1705.**

2.0 MATERIAL

Materials are as set out in **NCDOT Standard Specification 1705** with the addition of:

All vehicle LED signal heads must have yellow polycarbonate housings, black polycarbonate hoods and internal hinges for access doors.

3.0 CONSTRUCTION METHODS

Construction methods are as set out in **NCDOT Standard Specification 1705.**

4.0 MEASUREMENT AND PAYMENT

Measurement and payment are as set out in **NCDOT Standard Specification 1705.**

SP-29 LEAD-IN CABLE (1726 MODIFIED)

1.0 DESCRIPTION

Description is as set out in **NCDOT Standard Specification 1726.**

2.0 MATERIAL

Materials are as set out in **NCDOT Standard Specification 1726** with the exception that all lead-in cable must consist of four 18AWG conductors in two pairs of two conductors.

3.0 CONSTRUCTION METHODS

Construction methods are as set out in **NCDOT Standard Specification 1726.**

4.0 MEASUREMENT AND PAYMENT

Measurement and payment are as set out in **NCDOT Standard Specification 1726.**

SP-30 STANDOFF BRACKET ASSEMBLY

1.0 DESCRIPTION

Provide Aluminum 24” H-Bar, 1/2” 4-way bar, Conduit Standoff Bracket and T-Slot, to mount 2” conduits with adjustability. Pole mounting hardware must mount on 3 5/8" centers using 5/8" through bolts and 1/2" lag bolts. Conduit Straps must include T-Slot shapes to secure conduit to standoff bracket with two 1/2" x 1 1/4" hex head bolts, lock washers and hex nuts. The standoff bracket H-bar shall hold the conduits a minimum of 6” from the pole and shall be able to hold up to six 2” Schedule 80 PVC risers, four in front and two in back of the bracket for ITS and signal cables. There should be two standoff brackets for each 10’ section of riser. Standoff brackets must be installed at 3’from the ground and at 5’ intervals to the top of the riser (four brackets required for 20’ riser).

Example: Hubbell Power Systems, Inc. Part #BASOCL6-24FW and part #CSTK2

2.0 MEASUREMENT

The standoff brackets will be measured and paid as the actual number of standoff bracket assemblies furnished, installed and accepted. Schedule 80 PVC Risers will be paid separately under the Riser Assembly Unit. No measurement will be made of pole attachment fittings as these will be incidental to furnishing and installing standoff brackets.

3.0 PAYMENT

Payment will be made under:

STAND OFF BRACKET ASSEMBLY……EA

SP-31 LED BLANKOUT SIGN (1747 MODIFIED)

1.0 DESCRIPTION

Furnish and install Light Emitting Diode (LED) blankout signs with all necessary hardware as set forth in the plans and specifications. Fabricate the signs with the ability to display messages as detailed in the plans. Fabricate the sign to be 28 inches wide, 38 inches high and approximately 8 inches deep.

Blankout signs shall feature:

Black external housing

A hot-swappable modular controller

A one-piece, self-contained display face and door module that can be removed from the housing in less than thirty minutes

A photosensor capable of automatically reducing the light intensity on each display by 25% based on ambient light

Manual dimming control capable of manually dimming the display to 25%

The ability to simultaneously dim the display via the manual control and automatic photosensor

Up to two display messages each. They shall be capable of displaying [OFF], [SIGN 1], [SIGN 2] as shown in the plans.

For dual-message blankout signs shown in the plans as “NO TURN ON RED” AND “RIGHT TURN [YIELD SYMBOL] TO [PEDESTRIAN SYMBOL]”, configure the displays as shown below.

Pictures 1 & 2- Dual message blankout sign with hood

Example:

Blankout signs manufactured by Orange Traffic meet these specifications.

2.0 MATERIAL

Materials are as set out in **NCDOT Standard Specification 1747.**

3.0 CONSTRUCTION METHODS

Construction methods are as set out in **NCDOT Standard Specification 1747.**

4.0 MEASUREMENT AND PAYMENT

Measurement and payment are as set out in **NCDOT Standard Specification 1747.**

SP-32 SIGNAL HEAD COVERS

1.0 DESCRIPTION

The Contractor shall supply and install signal head covers for each signal, until the signals are activated. The signal head covers shall be black in color with the words "OUT OF SERVICE" on the face of the cover. Covers shall be made out of outdoor fabric, solution dyed with urethane finish. The fabric must be weather resistant and treated to withstand mildew. The color shall also be fade resistant. The face of the cover besides the main fabric must consist of a strip in the middle made from see through material

only visible when the signal head/pedestrian signal is on for testing. This part must also be made from weather and mildew resistant material. The front facing portion material of the cover shall be doubled. Extra inner layer must be added in black for two purposes: Not to let light through, but only through the perforated portion and to make the cover thicker and firmer. The siding shall have the same color fabric attached all around the "facing" which shall cover the height of all visors with the cord-elastic inserted at the open end to attach around all visors to create more stability and fitness. Siding is not required to have the inner layer. The elastic cord used around the side of the cover must help it stay on more secure and stable. The cord must be made sturdy and strong for industrial purposes. The cord elastic shall not be exposed but placed inside the cover. Straps shall be used for more stabilizing of the covers on the signal heads against unexpected weather. The one-inch wide straps shall be placed on both sides of the covers such that they could be fastened by one-inch buckles around the back of the signal heads. The strap material shall be weather, mildew and fade resistant. The number of straps to be used per signal head: 2-3 Section Head -2 sets (each set consist of two pieces) 1-Section Head -1 set. The signal covers shall be removed once the signal is activated and shall be turned over to the City as City property.

2.0 MEASUREMENT

Signal Head Covers will be measured and paid as the actual number of signal head covers of each type listed below furnished, installed, removed and returned to the city:

3 SECTION 12" SIGNAL HEAD COVER

4 SECTION 12" SIGNAL HEAD COVER

5 SECTION 12" SIGNAL HEAD COVER

PEDESTRIAN SIGNAL COVER

3.0 PAYMENT

Payment will be made under:

3 SECTION 12" SIGNAL HEAD COVER……..EA

4 SECTION 12" SIGNAL HEAD COVER……EA

5 SECTION 12" SIGNAL HEAD COVER……EA

PEDESTRIAN SIGNAL COVER……..EA

SP-33 ADJUST/RELOCATE CDOT PULL BOXES/VAULTS

1.0 DESCRIPTION

Work covered by this special provision includes adjusting and relocating existing CDOT Traffic Signal Pull Boxes and vaults in accordance with the current edition of the North Carolina Department of Transportation Traffic Signal Specifications and the provisions of these specifications.

2.0 MATERIALS

Adjustment and relocating of existing pull boxes. All additional conduit shall be paid by SP-34.

3.0 MEASUREMENT

The quantity of pull boxes to be paid for will be the actual number of pull boxes and/or vaults adjusted and accepted for payment per each.

4.0 PAYMENT

The quantity of adjusted and relocated pull boxes, measured as provided above, will be paid for at the contract unit price per each for:13” x 24” x 12”, 17” x 30” x 24”, 24” x 36” x 24” CDOT Pull Boxes and 36” x 36” x 12” CDOT vaults. Payment will be full compensation for all work covered by this special provision, including but not limited to adjusting pull boxes, excavation, backfill, compaction; and stone bedding.

Payment will be made under:

Adjust Existing 13” x 24”x 12“ CDOT PULL BOX……..EA

Adjust Existing 17”x 30”x 24" CDOT PULL BOX……EA

Adjust Existing 24”x 36"x 24” CDOT PULL BOX.……EA

Adjust Existing 36”x 36"x 12” CDOT VAULT……EA

Relocate Existing CDOT PULL BOX……EA

SP-34 RELOCATE/ADJUST CONDUIT TO EXISTING PULLBOX

1.0 DESCRIPTION

The work covered by this special provision consists of all labor and equipment necessary to install new conduit and/or cable into an existing hand-hole or pull-box in accordance with the manufacturer’s specifications and the Charlotte Department of Transportation Traffic Signal Manual. Installation should be in compliance with NCDOT Standard Specifications.

2.0 MATERIAL

No new material for this item unless the CONTRACTOR damages the existing pull-box or conduit while performing this work. Any new material required, such as conduit or pull box, should be paid under section 1715 or 1716.

3.0 CONSTRUCTION METHODS

Construction methods are as set out in **NCDOT Standard Specifications**

4.0 MEASUREMENT AND PAYMENT

This work shall be measured by each new conduit that a CONTRACTOR installs per NCDOT Standards into an existing pullbox.

Payment will be made under:

Relocate/Adjust Conduit to Existing Pullbox……..EA

SP-35 VIDEO DETECTION CAMERA AND COMM MANAGER

1.0 DESCRIPTION

This specification sets forth the minimum requirements for a video detection system that detects vehicles, bicycles, and motorcycles on a roadway by processing video images and that provides vehicle presence, traffic flow data, event alarms, and full-motion video for real-time traffic control and management systems.

1. System Hardware

The video detection system shall be comprised of two major hardware components: a video sensor and a communications interface panel. An optional wired input/output card shall be available for certain cabinet types.

1.1. Video Sensor

The video detection system shall include a video sensor that integrates a high-definition (HD) camera with an embedded processor for analyzing the video and performing detection.

1.1.1. Camera and Processor

1.1.1.1. The camera shall be a color CMOS imaging array.

1.1.1.2. The camera shall have HD resolution of at least 720p (1280x720 pixels).

1.1.1.3. The camera shall include a minimum 10X optical zoom.

1.1.1.3.1. It shall be possible to zoom the lens as required to satisfy across-the-intersection detection objectives, including stop line and advance detection.

1.1.1.3.2. It shall be possible to zoom the lens remotely from the TMC for temporary traffic surveillance operations or to inspect the cleanliness of the faceplate.

1.1.1.4. The camera shall have direct, real-time iris and shutter speed control by the integrated processor.

1.1.1.5. The processor shall support H.264 video compression for streaming output.

1.1.2. Video Sensor Enclosure Assembly

1.1.2.1. The camera and processor shall be housed in a sealed IP-67 enclosure.

1.1.2.1.1. The faceplate of the enclosure shall be glass and shall have hydrophilic coating on the exterior surface to reduce debris accumulation and maintenance.

1.1.2.1.2. The faceplate shall have a thermostatically-controlled indium tin oxide (ITO) heater applied directly on the interior surface to keep the faceplate clear of condensation, snow, ice and frost.

1.1.2.2. An adjustable aluminum visor shall shield the faceplate from the sun and extraneous light sources.

1.1.2.3. An integral aiming sight shall assist in aiming the camera for the detection objectives.

1.1.2.4. A removable rear cap and cable strain relief shall seal the power connection.

1.1.2.4.1. The rear cap shall be tethered to the enclosure to avoid dropping the cap during installation.

1.1.2.4.2. The rear cap shall be fastened to the body of the video sensor with a single, captive bolt.

1.1.2.5. The rear cap and enclosure shall include Gore breathers to equalize internal and external pressure.

1.1.2.6. The sensor shall be self-supporting on manufacturer's mounting brackets for easier fastening during installation.

1.1.2.6.1. It shall be possible to rotate the field-of-view 360° without changing the angle of the visor.

1.1.3. Power and Communications

1.1.3.1. Power and communications for the video sensor shall be carried over a single three-conductor cable.

1.1.3.1.1. Termination of the three-conductor cable shall be inside the rear cap of the enclosure on a three-position, removable Phoenix terminal block. Each conductor shall be attached to the Phoenix plug via a screw connection.

1.1.3.2. The video sensor shall operate normally over an input voltage range of 89 to 265 VAC at 50 or 60 Hz.

1.1.3.3. Power consumption shall be no more than 16 watts typical.

1.1.3.4. No supplemental surge suppression shall be required outside the cabinet.

1.1.3.5. All communications to the video sensor shall be broadband-over-power via the same three-conductor cable that powers the unit. Coaxial cable shall not be required.

1.2. Communications Interface Panel

The video detection system shall include an interface panel in the traffic cabinet that manages communications between the video sensors, the traffic management center, a maintenance technician, and the traffic cabinet itself.

1.2.1. Video Sensor Connection

1.2.1.1. The communications interface panel shall provide connection points for four video sensors.

1.2.1.1.1. Each sensor connection shall be a 3-pole terminal block, which supplies power and broadband-over-power communications to the sensor.

1.2.1.1.2. The broadband-over-power communications shall provide a throughput of 70 to 90 Mbps.

1.2.1.1.3. The broadband-over-power connection shall support at least 1,000 feet of cabling to the video sensor.

1.2.1.1.4. Each video sensor connection shall include a power switch.

1.2.1.1.5. There shall be an LED for each video sensor to indicate the state of the power to the sensor and an LED for each video sensor to indicate the status of communications.

1.2.1.1.6. Each video sensor connection shall contain a resettable fuse.

1.2.1.1.7. Each video sensor connection shall provide high-energy transient protection.

1.2.2. Traffic Management Center (TMC) Communications

1.2.2.1. An Ethernet port shall be provided to connect to a remote Traffic Management Center (TMC).

1.2.2.1.1. The TMC connection shall support 10/100/1000 Mbps Ethernet communication.

1.2.2.1.2. The communications interface panel shall proxy all network requests that arrive on the TMC connection to avoid unwanted network traffic from reaching the broadband-over-power network between the communications interface panel and the video sensors.

1.2.2.1.3. All communications to the video detection system through the TMC connection shall be to a single IP address.

1.2.3. Local User Communications

1.2.3.1. A wired Ethernet port shall be provided to connect the technician at the cabinet to the video detection system for setup and maintenance purposes.

1.2.3.1.1. The maintenance port shall support 10/100/1000 Mbps Ethernet communication.

1.2.3.1.2. All communications to the video detection system through the maintenance port shall be to a single IP address.

1.2.3.1.3. The maintenance port shall support DHCP to automatically assign an IP address to the user's computer, if desired.

1.2.3.2. An 802.11g Wi-Fi access point shall allow wireless connection to the video detection system at the cabinet for setup and maintenance purposes.

1.2.3.2.1. All communications to the video detection system through the Wi-Fi access point shall be to a single IP Address.

1.2.3.2.2. The Wi-Fi access point shall support DHCP to automatically assign an IP Address to the user's computer.

1.2.3.2.3. The Wi-Fi access point shall include a dipole, omnidirectional antenna.

1.2.3.2.4. A momentary pushbutton shall allow the user to turn the Wi-Fi access point on or off.

1.2.3.2.5. The Wi-Fi access point shall turn itself off automatically after a period of inactivity from connected devices.

1.2.3.2.6. An LED shall indicate when the Wi-Fi access point is enabled.

1.2.3.2.7. The Wi-Fi access point shall operate simultaneously with the wired maintenance port and with the TMC connection.

1.2.4. Traffic Controller Connection

The communications interface panel shall provide one connection to communicate to the traffic controller through the cabinet.

1.2.4.1. The traffic controller connection shall support a TS2 Type 1 compatible SDLC interface. 1.2.4.1.1. The traffic controller connector shall be a 15-pin female metal shell D sub-miniature type connector to support a standard NEMA TS2 or TEES SDLC cable.

1.2.4.1.2. The traffic controller connection shall support a protocol interface to SDLC-capable traffic controllers (NEMA or TEES).

1.2.4.1.3. The traffic controller connection shall support the NEMA TS2 SDLC protocol to include up to 64 detector outputs and 32 inputs.

1.2.4.2. The traffic controller connection shall be able to connect to a wired input/output card, which supports wired I/O in cabinets without a SDLC-capable controller. 1.2.4.2.1. The wired I/O data communications link shall support at least 24 outputs and 16 inputs.

1.2.4.3. It shall be possible to connect and use both SDLC communications and communication to the wired input/output card simultaneously.

1.2.5. USB Ports

1.2.5.1. The communications interface panel shall include two USB 2.0 ports.

1.2.5.1.1. If a communications interface panel fails to start and run due to a software or operating system failure, it shall be possible to reinstall all system and application software from a USB memory stick without necessitating removal of the communications interface panel from the cabinet.

1.2.6. Power

1.2.6.1. The communications interface panel shall accept input voltage in the range of 89-265 VAC, 50/60 Hz power from the transient-protected side of the cabinet.

1.2.6.2. The communications interface panel shall be protected by two slow blow fuses. Spares shall be attached to the panel.

2. System Software

The video detection system shall include management software for configuration, monitoring and data collection purposes.

2.1. Management Software

2.1.1. Management software shall be a Windows-based application.

2.1.1.1. The software shall be compatible with Windows 7 and Windows 10 operating systems.

2.1.1.2. The software shall communicate with the video detection system via Ethernet.

2.1.2. The management software shall automatically determine all video sensors and communications interface panels available on the local network and populate a list of all devices.

2.1.3. The management software shall provide the user a means to name individual video sensors and communications interface panels.

2.1.4. The management software shall provide a means for the user to zoom the camera optics while viewing a live video stream.

2.1.5. The management software shall provide a means for the user to calibrate distances in the field of view.

2.1.6. The management software shall provide the user a means to create 4-sided detection zones in the field of view using either a still snapshot or live video.

2.1.6.1. The management software will overlay an outline of each detection zone over the background image.

2.1.6.2. It shall be possible for the user to place detection zones anywhere in the field of view for stop line detection and/or advance detection.

2.1.6.3. It shall be possible for the user to set the desired color of both the on and off states of the detection zone overlay.

2.1.6.4. It shall be possible for the user to alter the size and shape of any previously created zone.

2.1.6.5. It shall be possible for the user to overlap zones, either partially or fully.

2.1.6.6. It shall be possible for the user to name each zone uniquely.

2.1.6.7. It shall be possible for the user to assign each zone to detect vehicles, to detect bicycles, or to detect both, and to specify different outputs for each type.

2.1.6.8. It shall be possible for the user to assign the same output to multiple zones such that the output will be on if any of the zones are detecting a vehicle or bicycle.

2.1.6.9. It shall be possible for the user to assign a single zone to more than one output such that if a vehicle or bicycle is detected, all the assigned outputs shall be turned on.

2.1.6.10. The management software shall be capable of creating at least 99 detection zones per video sensor.

2.1.7. It shall be possible for the management software to retrieve all configuration parameters from video sensors or communications interface panels.

2.1.7.1. It shall be possible for the user to save all the settings for a video sensor or a communications interface panel to a laptop file.

2.1.7.2. The management software shall provide a means to read or import all the settings from a previously saved configuration file for a video sensor or a communications interface panel.

2.1.8. The management software shall be able to download a new version of the application software into a communications interface panel and its attached video sensors.

2.1.9. The management software shall provide a screen to monitor operation of a video sensor. 2.1.9.1. The monitoring screen shall include a live video stream from the video sensor with at least HD 1280x720 pixel resolution.

2.1.9.2. The monitoring screen shall show indications of detection in real time by changing the color of the detection zone.

2.1.9.3. It shall be possible for the user to configure different indications for vehicle detections vs. bicycle detections when both are configured for the same zone.

2.1.9.4. The monitoring screen shall include the following optional, configurable objects. It shall be possible for the user to size and position them anywhere on the screen and to change the color and size of text.

2.1.9.4.1. An indication of when an output is on or off, along with a user-configurable name for that indicator.

2.1.9.4.2. The current time in the video sensor.

2.1.9.4.3. A user-configurable title or name.

2.1.9.4.4. The version number of the video sensor software.

2.1.9.5. It shall be possible for the user to turn the overlay graphics on or off with a single setting.

2.1.10. The management software shall provide a screen to monitor operation of the intersection with a quad-view video stream from the communications interface panel. 2.1.10.1. The quad-view video stream shall have a resolution of at least HD 1280x720 pixels, where each of the sensor videos comprising the quad-view shall be at least 640x360 pixels.

2.1.10.2. It shall be possible for the user to configure the order that the sensor videos appear in the quad-view.

2.1.10.3. The real-time quad-view video stream shall be capable of displaying the overlay graphics for all four sensors simultaneously.

2.1.11. While monitoring the video of a single video sensor or of the quad-view, it shall be possible for the user to request a “snapshot” or single-frame image to save to a named file on a laptop.

2.1.12. While monitoring the video of a single video sensor or of the quad-view, it shall be possible for the user to record a period of the video to save to a named file on a laptop.

3. System Functionality

The video detection system shall provide the following features and functionality.

3.1. Detection Performance

3.1.1. The video detection system shall detect the presence of vehicles in defined zones and turn on the assigned output when the vehicle is present in the zone.

3.1.1.1. Stop Line Detection

3.1.1.1.1. For detection zones placed at the stop line, the probability of not detecting the presence of a vehicle shall be 1% or less under all operating conditions when the video sensor is installed and configured properly.

3.1.1.1.2. For detection zones placed at the stop line, the probability of falsely detecting a vehicle that is not present shall be 3% or less under all operating conditions when the video sensor is installed and configured properly.

3.1.1.2. Advance Detection

3.1.1.2.1. It shall be possible to place advance detector zones such that the farthest point of the zone is up to 600 feet from the video sensor. Advance detector zone placement shall include 2-3 car lengths of field-of-view beyond the farthest point of the zone.

3.1.2. To ensure statistical significance for the above detection performance specifications, the data shall be collected over 24-hour time intervals (so as to avoid a single lighting condition) and will contain a minimum of one hundred (100) vehicles per lane. The calculations of detection performance will not include turning movements where vehicles do not pass through the detectors, vehicle lane-change anomalies, or where they stop short or stop beyond the combined detection zones.

3.2. Failsafe Mode

3.2.1. The video detection system shall provide a failsafe mode for each video sensor. If the failsafe mode is enabled, all programmed presence detection outputs for the video sensor shall be turned on, thus placing constant calls to the controller. When failsafe mode is disabled, all outputs revert to normal on/off operations.

3.2.2. The video sensor shall continuously monitor the overall contrast in the video. If the overall contrast falls below a preset level (such as caused by dirty faceplate, severe glare, extreme fog, or temporary ice/snow on the faceplate), the sensor shall enable the failsafe mode. When sufficient contrast is restored in the video, the sensor will disable the failsafe mode.

3.2.3. The communications interface panel shall continuously monitor the connectivity status of the attached video sensors. If any video sensor goes offline due to either electrical failure or internal software failure, the communications interface panel shall enable the failsafe mode for that video sensor. If the video sensor comes back online, failsafe mode shall be disabled.

3.3. Data Collection

3.3.1. The video detection system shall automatically collect and store traffic flow data in non-volatile memory for later retrieval and analysis. No additional hardware or software shall be necessary. The data shall include:

3.3.1.1. Vehicle counts.

3.3.1.2. Vehicle average speeds.

3.3.2. The management software shall be able to retrieve collected data for a specified period of time or for all currently stored data and save into a standard CSV file.

3.4. Operations Log

3.4.1. The communications interface panel and each video sensor shall maintain a time-stamped operations log of routine and special events in non-volatile memory for later retrieval and analysis.

3.5. Time Synchronization

3.5.1. The video detection system and management software shall provide three methods to synchronize the time of day clocks in the communication interface panel and the video sensors, as follows:

3.5.1.1. Manual time synchronization operation by the user, which sets the time to the current time on the laptop where the management software is running.

3.5.1.2. A configuration setting to allow the communications interface panel to automatically obtain time from the NEMA TS2 protocol on the SDLC channel and broadcast it to the video sensors.

3.5.1.3. A configuration setting to allow the communications interface panel to automatically obtain time from up to five Network Time Protocol (NTP) sources and broadcast it to the video sensors.

3.6. Video Streaming

3.6.1. In addition to the ability to view video streams in the management software, it shall be possible to view video from individual sensors or to view the quad-view from the communications interface panel using a third-party video player application on a tablet, smartphone, or laptop computer.

4. Installation and Setup

The video detection system hardware shall be designed for flexible, fast, and easy installation and setup.

4.1. It shall be possible to mount the video sensor on an intersection pole, mast arm, or luminaire arm.

4.2. No special tools or extra equipment, other than a laptop for configuration, will be required.

4.3. Once all hardware is installed, connected and functional, it shall be possible to configure the video

detection system for a typical 4-approach, 8-phase intersection in 15 minutes or less.

5. Warranty, Service and Support

The video detection system shall be provided with the following warranty, service, and support options.

5.1. Warranty

5.1.1. The manufacturer shall warrant the video detection system for a minimum of three (3) years. An option for up to six (6) years of warranty shall be available.

5.2. Service

5.2.1. Ongoing software support by the manufacturer will include software updates of the video sensor, communications interface panel, and management software. These updates will be provided free of charge during the warranty period. The manufacturer will maintain a program for technical support and software updates following expiration of the warranty period. This program will be available to the contracting agency in the form of a separate agreement for continuing support.

5.3. Support

5.3.1. A quick-start guide, installation guide, application notes, and other materials shall be available from the manufacturer to assist in product installation and setup for various applications. In addition, training online or in person shall be available.

5.3.2. Training shall be available to personnel of the contracting agency in application design, operation, setup, and maintenance of the video detection system.

5.3.3. Manufacturer shall provide a tech support website and an 800 number for technical support.

2.0 MATERIAL

The CONTRACTOR shall provide all materials necessary for this item, including the single three-conductor camera cable.

3.0 CONSTRUCTION METHODS

The video detection system hardware shall be designed for flexible, fast, and easy installation and setup.

4.1. It shall be possible to mount the video sensor on an intersection pole, mast arm, or luminaire arm.

4.2. No special tools or extra equipment, other than a laptop for configuration, will be required.

4.3. Once all hardware is installed, connected and functional, it shall be possible to configure the video

detection system for a typical 4-approach, 8-phase intersection in 15 minutes or less.

4.0 MEASUREMENT AND PAYMENT

Labor, equipment, and materials to install video detection cameras will be measured and paid as the actual number of video detection cameras that are supplied, installed, and accepted.

Payment will be made under:

Supply/Install Video Detection Camera……EA

Supply/Install Video Detection Comm Manager……EA

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SP-36 SOLAR POWERED RECTANGULAR RAPID FLASHING BEACONS (RRFB)

1.0 GENERAL

A. The work covered by this special provision includes furnishing and installing Rectangular Rapid Flashing Beacons (RRFB) in accordance with the current edition of the North Carolina Department of Transportation (NCDOT) Traffic Signal Specifications, CDOT requirements, and the provisions of these specifications.

B. RRFB assemblies must be attached to a W11-2 (Pedestrian) crossing warning sign with a diagonal downward arrow (W16-7p) plaque, a pedestrian pole with base (SP-S3), and attachment hardware with pushbuttons in the median stop and on each side of the roadway. On multi-lane approaches, RRFB assemblies shall be dual indicated.

C. Equipment must operate on solar power. Solar powered systems must automatically charge batteries and prevent overcharging and over-discharging. Solar powered systems must include a charge indicator and AC/DC battery charger.

2.0 MATERIALS

A. Light Bar Housing and Indications

1. The Light Bar housing shall be constructed of durable, corrosion resistant powder-coated aluminum with stainless steel fasteners.

2. Enclosed components shall be modular in design whereby any component can be easily replaced using common hand tools, without having to remove the housing from the pole.

3. All mounting hardware required for mounting the Light Bar housing shall be provided and shall be stainless steel.

4. Each of the two vehicle RRFB-XL™ LED indications shall be approximately 7.25" wide x 3" high.

5. A pedestrian LED indication, approximately 0.5" wide x 2.5" high, shall be side-mounted in the Light Bar housing to be directed at and visible to pedestrians in the crosswalk.

6. The LEDs used shall be rated for a minimum 15-year life span.

B. Controller

1. The Controller shall be housed in a NEMA 3R rated aluminum enclosure, intended for indoor or outdoor use, primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and damage from ice formation.

2. The LED light outputs and flash pattern shall be completely programmable, with the capability to actuate RRFB-XL, RRFB, round LED signal beacons and LED-enhanced signs.

3. The flashing output shall have 70 to 80 periods of flashing per minute, during which one of the yellow indications shall emit two medium pulses of light and the other yellow indication shall emit four short rapid pulses of light followed by a long pulse. The output current shall be maintained as programmed for the duration of the pulse. The flashing output shall be programmable.

4. The Controller shall be reconfigurable if future MUTCD or State guidelines specify a different flash pattern.

5. The Controller shall be capable of storing input count data in preset intervals, with downloadable capabilities using optional Windows based PC software program and standard RS232 programming cable.

6. The Controller shall be, in the unlikely event of failure, replaceable independently of other components.

C. Battery

1. The Battery shall be a 12VDC Absorbed Glass Mat (AGM) sealed lead-acid, maintenance-free battery.

2. The Battery shall be rated at 45AH minimum and shall conform to Battery Council International (BCI) specifications.

3. The Battery shall be solar-charged with a capacity up to 30 days of autonomy without sunlight, varying with ambient temperature and number of activations.

4. The Battery shall be replaceable independently of other components.

5. The Battery shall have a minimum operating temperature range of -76o to 140oF (-60o to 60oC).

D. Wireless Transceiver Radio

1. Radio control shall be solar-powered, operating on a FCC approved 900mhz frequency, hopping spread spectrum network with a normal operating range of 1000 feet.

2. Radios shall provide wireless communication between the Assemblies to integrate the pushbutton activation of indications.

3. To ensure all integral indications consistently flash in unison, the Radio shall synchronize the Controllers to activate the indications within 120msec of one other and remain synchronized throughout the duration of the flashing cycle.

4. Radio systems shall operate from 3.6 VDC to 15 VDC.

5. The Radio shall be, in the unlikely event of failure, replaceable independently of other components.

6. The Radio shall have a minimum operating temperature range of -30oF to 165oF (-34.4o to 73.8oC).

E. Solar Panel

1. The Solar Panel shall provide 55 watts at peak total output.

2. The Solar Panel shall be affixed to an aluminum plate and bracket, adjustable at an angle of 45o - 60o to facilitate adjustment for maximum solar collection and optimal battery strength.

3.0 EXECUTION

A. The light intensity of the vehicle indications shall meet the minimum specifications of Society of Automotive Engineers (SAE) standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated November 2008. Manufacturer Certification of Compliance shall be provided upon request.

B. When activated, all indications associated with a given crosswalk (including those with an advance crossing sign, if used) shall simultaneously commence operation of their alternating rapid flashing within 120msec, and shall cease operation at a predetermined time after the pedestrian actuation.

C. The Pedestrian indication shall be directed at and visible to pedestrians in the crosswalk, and it shall flash concurrently with the vehicle indications to give confirmation that the RRFB-XL™ is in operation.

D. The system shall include an actuation counter providing data that can be downloaded on-site to a laptop computer using DB9 or USB type cables.

E. Autonomy with a fully charged battery shall be up to 14-28 days without sun, dependent upon ambient temperature and number of activations.

F. Restore any areas impacted by the installation of the crosswalk enhancement assembly to original condition unless otherwise shown in the Plans. Install crosswalk enhancement assembly in accordance with the Americans with Disabilities Act Standards for Transportation Facilities.

G. Ensure the midblock crosswalk enhancement assembly has a manufacturer's warranty covering defects for two years from the date of final acceptance. Ensure the warranty includes providing replacements within10 calendar days of notification for defective parts and equipment during the warranty period at no cost to the Department or the maintaining agency.

4.0 MEASUREMENT AND PAYMENT

A. RRFBs are intended to operate in pairs. The quantity of RRFBs to be paid for will be the actual number of RRFBs which have been furnished, installed and accepted, measured on a per PAIR basis.

B. The quantity of RRFBs, measured as provided above, will be paid for at the contract unit price per PAIR. Such payment will be full compensation for all work covered by this special provision, including but not limited to all excavation, furnishing and installing the RRFB.

Payment will be made under:

Solar Powered Rectangular Rapid Flashing Beacon……PR

SP-37 SCREW-IN HELICAL FOUNDATION ASSEMBLY (1743 MODIFIED)

1.0 DESCRIPTION

This item includes the labor and any necessary hardware to install one Screw-In Helical Foundation to support the installation of pedestal or camera poles as described in NCDOT Standard Specification 1743. Screw-in foundations are not to be used in concrete sidewalk without prior approval of The Engineer. Appropriate reach to pushbuttons per PROWAG, MUTCD and ADA must be maintained.

2.0 MATERIAL

Materials are as set out in **NCDOT Standard Specification 1743.**

3.0 CONSTRUCTION METHODS

Construction methods are as set out in **NCDOT Standard Specification 1743.**

4.0 MEASUREMENT AND PAYMENT

Screw-In Helical Foundation Assembly will be measured and paid for as the actual number of helical foundations installed and accepted.

Payment will be made under:

Screw-In Helical Foundation Assembly (Type I)……EA

Screw-In Helical Foundation Assembly (Type II)……EA

SP-38 AERIAL FIBER OPTIC CABLE (WITH HARDWARE)

1.0 DESCRIPTION

Consists of all labor and material necessary to install one (1) foot of aerial dry tube fiber optic cable in place including supporting messenger of ¼ inch diameter 6.6M class A galvanized steel extra high strength grade strand, .045-inch stainless steel lashing wire and hardware, double lashing the cable to the strand, bonding of the shield and strand in accordance with the Construction Sheets. All pole line hardware to be hot dipped galvanized steel. Also included is the placing of a CDOT provided cable identification tag at each pole.

The fiber optic cable will be single mode, low water peak, single jacket, armored, with loose no gel buffer tube and dielectric strength member construction. The number of fibers required is shown on the

plans and will not exceed 288-fibers for this unit. The cable will be double window tested at 1310nm and 1550nm with .35db/km and .25db/km attenuation, respectively.

The length of aerial cable measured for compensation purposes includes the sum of the cable distances between supporting structures as indicated by the sequential foot markings.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

24 Fiber Aerial Fiber Optic Cable (With Hardware)……LF

36 Fiber Aerial Fiber Optic Cable (With Hardware)……LF

48 Fiber Aerial Fiber Optic Cable (With Hardware)……LF

72 Fiber Aerial Fiber Optic Cable (With Hardware)……LF

SP-39 UNDERGROUND FIBER OPTIC CABLE

1.0 DESCRIPTION

Consists of all labor and material necessary to install one (1) foot of underground dry tube fiber optic cable in underground conduit and handholes. This unit also consists of setting up the cable within the handhole, providing and placing pull lines, duct seals or plugs, and rodding and cleaning of ducts, all as required in accordance with the plans. The Contractor shall not exceed the maximum pulling tension of the cable as specified by the manufacturer. Also included is the placing of a CDOT provided cable identification tag at each handhole or pullbox.

The fiber optic cable will be single mode, low water peak, single jacket, armored, sunlight resistant, outdoor rated, with loose no gel buffer tube and dielectric strength member construction. The number of fibers required is shown on the plans and shall not exceed 288-fibers for this unit. The cable will be double window tested at 1310nm and 1550nm with .35db/km and .25db/km attenuation, respectively.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item. The length of underground cable measured for compensation purposes is determined by measuring the distances paralleling the cable plus the vertical lengths of cable installed on supporting structures.

3.0 PAYMENT

Payment will be made under:

24 Fiber Underground Fiber Optic Cable……LF

36 Fiber Underground Fiber Optic Cable……LF

48 Fiber Underground Fiber Optic Cable……LF

72 Fiber Underground Fiber Optic Cable……LF

SP-40 FIBER OPTIC CABLE STUB

1.0 DESCRIPTION

Consists of all labor and material to install one (1) foot of 6-fiber fiber optic cable for a field-terminated patch panel. The fiber cable shall be riser-rated, single-mode, indoor/outdoor, gel-free, all dielectric cable with flame retardant UV-resistant outer jacket, and an attenuation loss not exceeding 0.4db/km @ 1310nm. The attenuation loss for the complete assembly shall not exceed 1.5db. Also, included is the placing of a CDOT-provided cable identification tag at each handhole or pull box. The fiber optic patch panel shall be paid for under the FIBER OPTIC PATCH PANEL unit.

Example:

Corning FREEDM® LST™ Cables, Part # 006ESF-T4101D20 (6 fiber, single mode, Gel-free Cable, indoor/outdoor riser, 12 fibers per tube standard, with markings every 4 feet, performance rated for SMFO with no additional special requirements)

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

6-Fiber Cable Stub……LF

SP-41 FIBER OPTIC PATCH PANEL

1.0 DESCRIPTION

Consists of all labor and material to install one (1) field-terminated fiber optic cable patch panel. There shall be 6 ports in the housing, matching 6 fibers in the stub cable. The patch panel shall be equipped with enough ST-type connector ports to accommodate all fibers in the stub and each port shall have a factory-installed fiber jumper of one meter in length. The unit shall be placed on a traffic control box shelf, but not permanently secured. This unit includes the required number of single fusion splices to splice each fiber of the fiber optic stub to the jumpers of the patch panel. The attenuation loss for the complete assembly shall not exceed 1.5db. The position number associated with each port shall be stenciled, at the factory, on the face of the housing. The fiber optic cable shall be paid for under the 6-FIBER CABLE STUB unit.

Example:

Multilink FWM-1X-SP wall-mount enclosure, Part # ML-33-006-B-SM6-T9-001-00-00.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Fiber Optic Patch Panel ……EA

SP-42 AERIAL FIBER OPTIC SPLICE ENCLOSURE

1.0 DESCRIPTION

Consists of all labor and material necessary to install a 6.5”x17” or 9.5”x19” aerial fiber optic splice closure with associated aerial hanger assembly in accordance with the manufacturer’s installation instructions. Armored cables are to be bonded together and secured to one bolt on the bulkhead and a ground lug attached to that bolt on the exterior side of the bulkhead. This closure is to be equipped with enough splice trays to accommodate the number of splices shown on the splice detail. The number of splices in each tray shall not exceed the manufacturer’s recommendation. At buffer tube entry points into the splice tray each buffer tube is to be wrapped with felt tape and secured with tie wraps. Fiber cables are to be labeled on the outside of the splice case with the “From” destination and the “To” destination noted on a cable marker tag and secured to the cables. For mid-entry applications, all buffer tubes shall be unwrapped and secured separately in the storage basket. For mid-entry applications, remove 180 inches of outer sheathing and armored jacket and for all other applications remove 90 inches of outer sheathing and armored jacket.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Aerial Fiber Optic Splice Enclosure ……EA

SP-43 UNDERGROUND FIBER OPTIC SPLICE ENCLOSURE

1.0 DESCRIPTION

Consists of all labor and material necessary to install an underground fiber optic splice closure in accordance with the manufacturer’s installation instructions. Armored cables are to be bonded together and secured to one bolt on the bulkhead and a ground lug put on that bolt on the exterior side of the bulkhead. This closure is to be equipped with enough splice trays to accommodate the number of splices shown on the splice detail. The number of splices in each tray shall not exceed the manufacturer’s recommendation. At buffer tube entry points into the splice tray each buffer tube is to be wrapped with felt tape and secured with tie wraps. Fiber cables are to be labeled on the outside of the splice case with the “From” destination and the “To” destination noted on a cable marker tag and

secured to the cables. For mid-entry applications, all buffer tubes shall be unwrapped and secured separately in the storage basket. For mid-entry applications, remove 180 inches of outer sheathing and armored jacket and for all other applications remove 90 inches of outer sheathing and armored jacket. The below table should be used to identify splice enclosure design. The part numbers are shown in bold.

CDOT reserves the right to open any splice enclosure at any time during construction to inspect the workmanship and/or take photos for records.

Example: **HUO (24)** COYOTE Dome Express 6.5" x 17" (Loose Tube) Splice Case 8006988 with (2) 8003701 grommets included.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Underground Fiber Optic Splice Enclosure…….EA

SP-44 FIBER OPTIC SPLICING ASSEMBLY UNIT

1.0 DESCRIPTION

Consists of all labor and materials necessary to Fusion Splice one (1) glass fiber in any cable in accordance with the various detail drawings. The labor shall include initial measurement, minimizing the attenuation to no more than 0.1db, splicing and stowing the spliced fiber in a fiber organizer. A heat-shrink splice protector is to be applied to each completed fusion splice. The labor and material for the fiber organizer is part of the splice closure unit. Note that cables are not to be cut and unused fibers and buffer tubes are to be expressed through and not cut/spliced as noted in the plans.

Also included in this specification are the attached PDF sheets (CDOT SPLICE ENCLOSURE AND FIBER DISTRIBUTION UNIT STANDARDS)

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Fiber Optic Cable Splicing Assembly Unit……EA

SP-45 FIBER OPTICAL POWER LEVEL TEST ASSEMBLY UNIT

1.0 DESCRIPTION

Consists of all labor and material necessary for the Contractor to make optical power level measurements on each terminated fiber including each transmit and receive fiber between the fiber end points at the optical patch terminations. The fibers are to be bi-directional tested at the optical patch terminations. Forms will be provided to record the test results. The optical power level measurements are to be made at both 1310 and 1550nm.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Fiber Optic Power Level Test Assembly Unit……EA

SP-46 FIBER OPTIC SPLICE TEST ASSEMBLY UNIT

1.0 DESCRIPTION

Consists of all labor and material necessary for the Contractor to make optical time-domain reflectometer (OTDR) signature traces on all fibers. All non-terminated fibers are to be bi-directional tested and terminated fibers are to be tested in one direction only. The signature traces are to be made at both 1310 and 1550nm. In addition, digital copies of each signature trace shall be furnished to the Engineer on a flash drive.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Fiber Optic Splice Test Assembly Unit……EA

SP-47 FIBER CURB MARKER

1.0 DESCRIPTION

Consists of all labor and material necessary to install one circular 2.5-inch diameter, plastic, permanent curb marker, in place, as shown on the construction drawings. The marker is to be installed in accordance with the manufacturer's directions, utilizing a manufacturer supplied or approved adhesive. The marker is to have an orange background, with a printed message of "CDOT Fiber Optic Cable - 811 Know what's below. Call before you dig. " in black letters.

Example:

das Manufacturing Inc., P.N.# 2.5 CDOT-811 with#RS-222-5 adhesive.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Fiber Curb Marker……..EA

SP-48 ELECTRONIC BALL MARKER

1.0 DESCRIPTION

Consists of labor and materials to install one electronic ball marker in equipment handholes and splice boxes below finish grad. The electronic ball marker shall be placed inside the handhole or splice box to mark the location as noted in the plans. Ensure that the electronic ball marker is a device specifically manufactured to electronically mark and locate underground facilities. Ensure that the electronic ball marker includes circuitry and an antenna encased in a waterproof polyethylene shell. Ensure that the outer shell is impervious to minerals, chemicals, and temperature extremes normally found underground plant environments. Ensure that the electronic box marker does not require batteries or active components to operate. Ensure that electronic ball markers used to mark fiber optic cable applications are orange in color and operate at 101.4 kHz. When excited by a marker locator, ensure that the electronic ball marker's passive circuits produce an RF field to direct the marker locator to its position. Ensure that the electronic ball marker has a minimum operating range of 5 feet from the marker locator. Electronic ball markers furnished, installed, and tested shall be measured as each.

Example:

Greenlee Omnimarker #0163-0001-1, 4" Ball Marker, or equivalent to be approved by the Engineer.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Electronic Ball Marker……EA

SP-49 CABLE RISER GUARD

1.0 DESCRIPTION

Consists of all labor and material necessary to install one (1) 2-inch inside diameter by 8 feet cable steel riser guard with two (2) riser guard straps and four (4) lag screws. All pole line hardware to be hot dipped galvanized steel.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Cable Riser Guard Unit……..EA

SP-50 FIBER OPTIC CABLE SLACK-STOW

1.0 DESCRIPTION

Consists of all labor and material necessary to install an in-span cable storage system. The number of fibers in the cable shall be indicated in the parentheses. The ONLY materials covered under this unit are the fiber cable and the stainless-steel cable straps. The labor and material for the storage racks and associated hardware are NOT a part of this unit and will be paid under the PM-ELB Unit. This unit specifies that the fiber optic cable be looped back upon itself twice and secured in place every three (3) feet with stainless steel cable straps. The placement of the slack cable shall be limited to a single pole span and the amount of cable to be stored is shown on the Construction Sheets. Only the slack cable to be stowed is a part of this unit, the labor to place the first of the three span lengths shall be paid under the applicable aerial fiber cable unit. Care should be taken when forming the initial and midpoint bends that the fiber cable is not subjected to a bend radius of less than twenty (20) times the diameter of the cable. To be installed in accordance with 'Slack Stow Units – Alternate Configuration without splice' detail on drawing "Typical Aerial Fiber Installation with Handhole".

2.0 **MEASUREMENT**

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install 24 Fiber Optic Cable – Slack Stow……..LF

Supply/Install 36 Fiber Optic Cable – Slack Stow……..LF

Supply/Install 48 Fiber Optic Cable – Slack Stow……..LF

Supply/Install 72 Fiber Optic Cable – Slack Stow……..LF

Supply/Install 24 Fiber Optic Cable Splice – Slack Stow Unit……..LF

Supply/Install 36 Fiber Optic Cable Splice – Slack Stow Unit ……..LF

Supply/Install 48 Fiber Optic Cable Splice – Slack Stow Unit ……..LF

Supply/Install 72 Fiber Optic Cable Splice – Slack Stow Unit ……..LF

SP-51 FIBER OPTIC JUMPER

1.0 DESCRIPTION

Consists of all labor and material necessary to install a duplex single fiber, single mode fiber jumper with a 3mm jacket. The length (in meters) of the jumper shall be indicated in the parentheses. The fiber jumper shall be routed between patch panels or equipment in a splice cabinet, traffic control box (TCB), camera control box (CCB) or traffic management center (TMC). The jumper connections are shown in the splice details.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Fiber Optic Jumper Assembly……EA

SP-52 SFP

1.0 DESCRIPTION

Consists of all labor and material necessary to securely install one (1) fiber optic Ethernet Small Form-Factor Pluggable (SFP) port that plugs into the Fast Ethernet port or slot on the Ethernet switch. The type of SFP will be shown in the last set of parentheses. The port shall be compatible with IEEE 802.3ah Draft 3.0 and with standard as specified in IEEE 802.3. The connectors shall be dual LC connectors. The SFP furnished shall be a "hot swappable", ruggedized, industrial rated transceiver with an operating temperature range of –40 to 85 degrees C and be of the same manufacturer as the FOE(TRX)(ESU) Ethernet switch.

Options designated by the following suffixes apply:

LX-R A 1310nm, single-mode, Fast Ethernet, ruggedized, 100Base-LX10 SFP transceiver with an operating range of 10km and industrial rated with an operating temperature range of -40to 85 degrees C.

Example: Cisco GLC-FE-100LX-RGD

GLX-R A 1310nm, single-mode, ruggedized, Gigabit 1000Base-LX/LH SFP transceiver with an operating range of 10km and industrial rated with an operating temperature range of -40 to 85 degrees C.

Example: Cisco GLC-LX-SM-RGD

GZX-R A 1550nm, single-mode, ruggedized, Gigabit 1000Base-ZX SFP transceiver with an operating range of 70km and industrial rated with an operating temperature range of -40 to 85 degrees C.

Example: Cisco GLC-ZX-SM-RGD

GEX-E A 1310nm, single-mode, non-ruggedized, Gigabit 1000Base-EX SFP transceiver with an operating range of 40km and commercial rated with an operating temperature range of -5 to 85 degrees C. SFP shall support digital optical monitoring (DOM) functions.

Example: Cisco GLC-EX-SMD

GZX-E A 1550nm, single-mode, non-ruggedized, Gigabit 1000 Base-ZX SFP transceiver with an operating range of 70km and commercial rated with an operating temperature range of -5 to 85 degrees C. SFP shall support digital optical monitoring (DOM) functions.

Example: Cisco SFP-GE-Z

GLX-E A 1310nm, single-mode, non-ruggedized, Gigabit Ethernet 1000Base-LX SFP transceiver with an operating range of 10km and commercial rated with an operating temperature range of -5 to 85 degrees C. SFP shall support digital optical monitoring (DOM) functions.

Example: Cisco SFP-GE-L

GZX-C A 1550nm, single-mode, non-ruggedized, Gigabit 1000 Base-ZX SFP transceiver with an operating range of 70km and commercial rated with an operating temperature range of 0 to 70 degrees C. SFP shall support digital optical monitoring (DOM) functions.

Example: Cisco GLC-ZX-SM

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install SFP……EA

SP-53, ETHERNET SWITCH UNIT/MODULE –ARUBA (FOE(TRX)(ESU)AR)

1.0 DESCRIPTION

Consists of all labor and materials necessary to securely mount one (1) industrial (ruggedized) Ethernet switch in an existing traffic control box. The mounting method must be approved by the Engineer before installation. The unit will be an industrially hardened, fully managed Ethernet switch with a minimum operating temperature range of -40 to +70 degrees C. The unit will have a minimum of eight (12) copper 10/100/1000 Ethernet ports and two (2) Small Form-factor Pluggable (SFP) ports. The provided SFP modules will be single mode, LC type. The contractor is to provide all power supplies, modules, auxiliary equipment, transformers and power cords (4’ minimum) necessary to have a fully functioning 10/100/1000 Ethernet switch that can be powered from a standard 110 VAC 3-pronged outlet.

See “FOE(TRX)(ESU)AR(4100i) CX4100i Ethernet Switch Details” for connection notes.
The unit must be fully compatible and support interoperability with the traffic control network core Aruba 8320 switch. The fiber jumpers routed between the patch panel stub and the transceiver are not part of this unit and will be compensated under the CHO-4() unit.
The Ethernet switch will meet the following specifications:

- IEEE 1588 PTP v2.
- NEMA TS-2 Compliant.
- Customized Industrial Automation Smartport configuration templates.
- DIN-rail and wall mount options.
- Small Form-factor Pluggable (SFP) options for 1000Base-LX and 1000Base-ZX deployments.
- Common Industrial Protocol (CIP) management support.
- Supported by Aruba Clearpass Policy Manager with DUR and NetEdit
- Provide both 30W and 60W PoE.
- PoE support for LLDP MED.

The Ethernet switch will support the following protocol/security features sets:

- Virtual Local Area Networks (VLANs)/Quality of Service (QoS).
- IGMPv3 snooping
- IGMP Filtering
- IEEE 802.1d
- IEEE 802.1x.
- Port Based Access Control Lists for Layer 2 Interfaces.
- MAC Address Filtering.
- Secure Shell (SSH) v2 Protocol.
- SNMPv3.
- TACACS+ and RADIUS authentication.
- MAC address notification.
- DHCP snooping.
- DHCP Interface Tracker (Option 82).
- Port Security.
- Support for up to 512 ACLs with two Profiles:
- Security (384 security ACL entries and 128 QoS Policies).
- QoS (128 Security ACL entries and 384 QoS Policies).
- Configurable up to 8000 MAC addresses
- Configurable up to 255 IGMP groups.
- Configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9220 bytes (jumbo frames) for bridging on Gigabit Ethernet ports, and up to 1998 bytes for bridging of Multiprotocol Label Switching (MPLS) tagged frames on both 10/100 and 10/100/1000 ports.
- Built-in programmable and easy-to-use REST API interface.
- Unidirectional link detection (UDLD)

Options designated by the following suffix(es) apply:
(4100i) – Aruba CX 4100; 12-Eight (12) copper 10/100/1000 Ethernet ports
Example:
Model: Aruba CX 4100i Switch JL817A
Power Supply: Mean Well NDR-240-48 5 Amp
When switch is assembled steel or stainless steel DIN rail must be used, aluminum is not acceptable.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:
ETHERNET SWITCH UNIT/MODULE –ARUBA (FOE(TRX)(ESU)AR(4100i))……..EA

SP-54 REMOVE EXISTING FIBER CABLE FROM CONDUIT

1.0 DESCRIPTION

Consists of all labor necessary for the removal of one (1) foot of fiber optic cable from conduit, and figure eighting or re-reeling the cable for immediate re-installation of the existing cable in new conduit or new conduit riser to limit system downtime. Number of fibers in cable is shown in last set of parentheses.

This unit does not include labor and material for re-installation of existing cable aerially. The labor and material for those items are provided for in the CABLE RE-LASHING UNIT.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Remove Existing Fiber Cable from Conduit……LF

SP-55 COMMUNICATION CABLE DE-LASHING

1.0 DESCRIPTION

Consists of all labor and material necessary to de-lash and store for reuse one (1) foot of existing fiber cable or cables from one (1) existing strand and includes the removal of the existing lashing wire. The cable size is shown in the parenthesis. Lashing wire shall be removed and properly disposed of. See Cable Re-lashing unit for re-installation of cable.

2.0 MEASUREMENT

Labor, equipment, and materials required in the removal of each item.

3.0 PAYMENT

Payment will be made under:

Communication Cable De-Lashing……LF

SP-56 COMMUNICATION CABLE LASHING

1.0 DESCRIPTION

Consists of all labor and material necessary to lash one (1) foot of existing cable or cables existing strand.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Communication Cable Lashing……LF

SP-57 INSTALL COPPER INTERCONNECT CABLE

1.0 DESCRIPTION

Consists of all labor and material necessary to install one (1) foot of aerial or underground twisted pair copper communication cable. The number of twisted pairs will be indicated on the signal plan. Also included is the placing of a CDOT provided cable identification tag at each pole for aerial installations.

Lash to strand with .045-inch stainless steel lashing wire and hardware, double lashing the cable to the strand or install in conduit. The cable must be outdoor rated and constructed with 22- or 24-gauge copper wires. The wires shall be in pairs and each pair must have a unique color combination that is not repeated in the cable. The cable must have a copper shield under a polyethylene outer jacket.

This unit does not include labor and material for copper splicing or splice closures. The labor and material for these items are provided for in other units.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Install Copper Interconnect Cable……LF

SP-58 COPPER INTERCONNECT SPLICING

1.0 DESCRIPTION

Consists of all labor and materials necessary to splice one (1) cable pair in any cable, including any non-working pair in an existing cable using mechanical splicing connectors such as 3M Scotchlock or insulated butt-connectors.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Copper Interconnect Splicing……EA

SP-59 COPPER INTERCONNECT SPLICE CLOSURE

1.0 DESCRIPTION

Consists of all labor and material necessary to supply and install one copper splice enclosure in accordance with the manufacturer's installation instructions. Shielding of the cables are to be bonded together inside of the case. The number of splices will be indicated on the signal plans.

This unit does not include labor and material for copper splicing. The labor and material for this item are provided for in another unit.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Copper Interconnect Splice Enclosure ……..EA

SP-60 OBSERVATION CAMERA

1.0 DESCRIPTION

Consists of all labor and material required to install one (1) Camera Assembly. The camera assembly includes camera, enclosure, High PoE midspan with patch cable, dome camera mounting arm, any other materials necessary to mount the camera per the manufacturer's specifications. This unit also includes all associated hardware, including stainless steel banding with screw clamps for attaching the pole adapter bracket to the pole. The cable between the Ethernet switch and the PoE midspan, will be a 1 meter long shielded, outdoor-rated CAT5es cable pre-terminated with male RJ45 gold-plated connectors with snagless boots, eight (8) 24 AWG conductors and tested to a minimum of 350 MHz. The camera must be compatible with the Genetec camera control software. This unit is not considered complete until the camera is fully functioning from the camera control panel. The camera shall be provided to CDOT for programming prior to installation.

The Camera must be ONVIF Profiles S & G compliant and meet or exceed the following requirements:

Image Sensor: 1/2.8" Progressive Scan CMOS

Lens: 4.25-170mm, auto iris and autofocus

Horizontal angle of view: 65.1°-2.00° (1080p)

Vertical angle of view: 39.1°-1.18° (1080p)

Day and Night: Automatic removable infrared-cut filter

Minimum Illumination/Light Sensitivity (lux):

Color: .1 lux at 30 IRE F1.6

B/W: .002 lux at 30 IRE F1.6

Color: .15 lux at 50 IRE F1.6

B/W: .003 lux at 50 IRE F1.6

Shutter Time: Electronic shutter with speed range from

1/11000 second to 1/3 second with 50 Hz

1/11000 second to 1/3 second with 60 Hz

Pan/Tilt/Zoon: 40x optical zoom, 12x digital zoom, total 480x zoom, E-flip, 256 preset positions, tour recording (max 10, max duration 16 minutes each), guard tour (max 100), control queue, on-screen directional indicator, adjustable zoom speed

Pan: 360° endless, 0.05°-450°/s

Tilt: 220°, 0.05°-450°/s

Power: Axis High PoE 60 W SPF midspan 1–port: 100–240 V AC, max 74 W Camera consumption: typical 16 W, max 60 W

Connectors: RJ45 for 10BASE-T/100BASE-TX PoE, RJ45 Push-pull Connector (IP66) included

Operating conditions: With 60 W midspan: -50°C to 50°C (-58 °F to 122 °F)

Warranty: Minimum 3-year manufacturer warranty

The Video must meet or exceed the following requirements:

Video compression: H.264 (MPEG-4 Part 10/AVC) Baseline

Main and High Profiles Motion JPEG H.265 (MPEG-H Part 2/HEVC)

Motion JPEG

Resolution: HDTV 1080p 1920x1080 to 320x180

Frame rate: Up to 50/60 fps (50/60 Hz) in HDTV 1080p

Video streaming: Multiple, individually configurable streams in H.264 and Motion JPEG

Image settings: Manual shutter time, Compression, Color, Brightness, Sharpness, White balance, Exposure control, Exposure zones, Fine tuning of behavior at low light, Rotation: 0°, 180°, Text and

image overlay, 32 individual 3D privacy masks, Image freeze on PTZ, Defogging, Backlight compensation, Wide dynamic range (WDR): up to 120 dB depending on scene

The Network and Security must meet or exceed the following requirements:

Security: Password protection, IP address filtering, HTTPS encryption, IEEE 802.1X network access control, Digest authentication, User access log, Centralized Certificate Management, Brute force delay protection

Network: IPv4, IPv6, QoS Layer 3 DiffServ

Examples:

AXIS Q6075-E PTZ Dome Network Camera

AXIS High PoE Midspan, Model T8154

AXIS Wall and Pole Mount, Model T91L61

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Supply/Install Observation Camera……EA

SP-61 AERIAL CAT 6 ETHERNET CABLE FOR OBSERVATION CAMERA

1.0 DESCRIPTION

Consists of all labor and material necessary to install one (1) 300 foot of outdoor rated category 6E Ethernet Cable Assembly in conduit. The cable shall be terminated on both ends with RJ-45 gold-plated connectors with snagless boots. The pin configuration shall follow the TIA-EIA-568B standard. The cable shall be (CMX) Rated, designed for Outdoor, UV and moisture resistant use. The cable shall be Aluminum foil Shielded (STP) with 4 twisted pairs of 23 AWG wire at 600MHz, along with a drain wire and shall support speeds of 10/100/1000Mbps.

The cable shall be routed between the power injector(PoE) located within the traffic control box and the circuit board inside of the Camera mounting arm.

Options designated by the following suffix may be used:

-IP66 – Identical to the UF-CAT6ES Unit except the cable shall be terminated on one end with RJ-45 gold-plated connectors with snagless a boot and terminated on the other end with an IP66 connector. The IP66 connector terminates in the top of the dome camera instead of inside the Camera mounting arm.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Aerial CAT 6 Ethernet Cable for Observation Camera…….. LF

Aerial CAT 6 IP66 Ethernet Cable for Observation Camera…….. LF

SP-62 UNDERGOUND CAT6 ETHERNET CABLE FOR OBSERVATION CAMERA

1.0 DESCRIPTION

Consists of all labor and material necessary to install one (1) 300 foot of outdoor rated category 6E Ethernet Cable Assembly. The cable shall be terminated on both ends with RJ-45 gold-plated connectors with snagless boots. The pin configuration shall follow the TIA-EIA-568B standard. The cable shall be (CMX) Rated, designed for Outdoor, UV and moisture resistant use. The cable shall be Aluminum foil Shielded (STP) with 4 twisted pairs of 23 AWG wire at 600MHz, along with a drain wire and shall support speeds of 10/100/1000Mbps.

The cable shall be routed between the power injector(PoE) located within the traffic control box and the circuit board inside of the Camera mounting arm.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Underground CAT 6 Ethernet Cable for Observation Camera……..LF

Underground CAT 6 IP66 Ethernet Cable for Observation Camera…….LF

SP-63 POLE GROUND ASSEMBLY UNIT

1.0 DESCRIPTION

Consists of all labor and material necessary to construct and install, using #4 AWG bare copper ground wire, a pole ground assembly. This unit also includes all labor and material required in the repair and/or replacement of streets, sidewalks, roads, drives, fences, lawns, shrubbery, water mains, pipes, pipelines and contents, underground power and telecommunications facilities, buried sewerage and drainage facilities, and any other property damaged during the unit installation. The following items will be required.

1 5/8" by 10' copper clad steel ground rod

1 ground rod clamp

#4 AWG bare copper ground wire and ground wire staples as required

Staples on ground wire should be about 18-inches apart. Ground wire should clear all hardware by 2-inches minimum and be stapled to maintain this position. The ground rod should be driven 24 inches from the pole with the ground wire and top of the rod at a minimum 24-inch depth.

2.0 MEASUREMENT

Labor, equipment, and materials required in the installation of each item.

3.0 PAYMENT

Payment will be made under:

Pole Ground Assembly Unit……EA

SP-64 REMOVAL ONLY OF SIGNAL EQUIPMENT

1.0 DESCRIPTION

This Special Provision is not intended to supersede the incidental nature of replacement items which are covered as paid or unpaid items under other Special Provisions, incidental to other Special Provisions, or any NCDOT Standard Specifications including 1700. These pay items are only to be paid when the scope of work involved is limited to the removal of an item set forth below.

Removal of an entire traffic signal shall include labor and materials required to remove all city- or state-owned signal equipment at a location, including but not limited to: signal heads, signs, pedestrian signals and poles, span wire, cable, cabinet, cabinet foundation, poles, down guys, anchors, meter service, breaker box, conduit, risers and pull boxes.

Return all unused signal equipment to The City at 3701 Craig Ave, Charlotte, NC.

2.0 MATERIAL

Materials are as set out in NCDOT Standard Specification 1700.

3.0 CONSTRUCTION METHODS

Construction methods are as set out in NCDOT Standard Specification 1700.

4.0 MEASUREMENT AND PAYMENT

No payment will be made for the return of signal equipment to The City.

Payment will be made under:

Remove Existing Junction Box……EA

Remove Existing Wood Pole……EA

Remove Existing Down Guy……EA

Remove Existing Anchor……EA

Remove Pedestrian Signal……EA

Remove Push Button……EA

Remove Pedestrian Signal Pole Foundation……EA

SP-65 COMBINATION METER PEDESTAL AND GROUNDING GRID

1.0 DESCRIPTION

The work in this special provision consists of all labor and material necessary to install one (1) electrical meter service and disconnect combination panel as a standalone pedestal with grounding grid. This shall be in accordance with drawing 1751.01-5-CDOT. This item includes all material necessary to install an electrical service including, combination panel, conduits, disconnect, wire, breakers, attachment structure, grounding hardware and all other incidentals. New services should be mounted on a pedestal unless approved prior by the Engineer. This unit also includes all labor and material required in the repair and/or replacement of streets, sidewalks, roads, drives, fences, lawns, shrubbery, water mains, pipes, pipelines and contents, underground power and telecommunications facilities, buried sewage and drainage facilities, and any other property damaged during the unit installation.

Combination pedestals shall:

1. Be no larger than 60” (H) x 14” (W) x 12” (D), installed (subtract total height from embedment for direct bury)
2. Be listed on Duke Energy’s Meter Equipment Group approved list or have written approval for use from Duke Energy’s Meter Engineering division.
3. Be capable of pad-mount or direct bury installation as applicable.
4. Have no externally visible conduits.
5. Feature a bypass lever in the meter socket.
6. Feature a factory-installed fifth terminal in the meter socket.
7. Feature breakers and breaker knockouts only, no receptacles.

Install a minimum of three grounding rods in accordance with NCDOT Standard Drawing 1700.02 ensuring existing underground facilities are not damaged and test grounding system with approved method ensuring resistance is less than 20 Ohms. All underground bond of grounding electrodes and conductors shall be made using irreversible compression ground connectors. Unless the irreversible compression connectors are designed for use with more than one conductor, only one conductor shall be placed under each irreversible compression ground connector. Ensure all connections are made using a hydraulic, power or ratcheting type crimper with appropriate dies. Use of handheld pliers for crimping is prohibited. For ease of inspection, the top of ground rods shall be no more than 6 inches below finished grade and shall remain exposed until electrical inspection is complete. Detectable burial tape shall be placed directly above all grounding electrodes and conductors and shall be buried at a typical depth of 12”-18. Locate the service equipment near the signal cabinet in a manner that will allow easy access to the service disconnect and does not obstruct motorist sight distance.

For overhead electrical service installations, supply & install wire (3 conductor, 8AWG) between the meter pedestal and point-of-service under this special provision. Conduit and riser from meter pedestal to pole are separate pay items.

2.0 MEASUREMENT

Installed Combination Meter Pedestal and Grounding Grid will be measured and paid as the actual number of pedestals installed and accepted.

3.0 PAYMENT

Payment will be made under:

Combination Meter Pedestal and Grounding Grid…….EA

SP-66 CONCRETE WASHOUT STRUCTURE:

1.0 Description

Concrete washout structures are enclosures above or below grade to contain concrete waste water and associated concrete mix from washing out ready-mix trucks, drums, pumps, or other equipment. Concrete washouts must collect and retain all the concrete washout water and solids, so that this material does not migrate to surface waters or into the ground water. These enclosures are not intended for concrete waste not associated with wash out operations.

The concrete washout structure may include constructed devices above or below ground and or commercially available devices designed specifically to capture concrete wash water.

2.0 Materials

Item	**Section**
Temporary Silt Fence	1605

Safety Fence shall meet the specifications as provided elsewhere in this contract.

Geomembrane basin liner shall meet the following minimum physical properties for low permeability; it shall consist of a polypropylene or polyethylene 10 mil think geomembrane. If the minimum setback dimensions can be achieved the liner is not required. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

3.0 Construction Methods

Build an enclosed earthen berm or excavate to form an enclosure in accordance with the details and as directed.

Install temporary silt fence around the perimeter of the enclosure in accordance with the details and as directed if structure is not located in an area where existing erosion and sedimentation control devices are capable to containing any loss of sediment.

Post a sign with the words "Concrete Washout" in close proximity of the concrete washout area, so it is clearly visible to site personnel. Install safety fence as directed for visibility to construction traffic.

The construction details for the above grade and below grade concrete washout structures can be found on the NCDOT Connect Website.

Alternate details for accommodating concrete washout may be submitted for review and approval.

The alternate details shall include the method used to retain and dispose of the concrete waste water within the project limits and in accordance with the minimum setback requirements. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

4.0 Maintenance and Removal

Maintain the concrete washout structure(s) to provide adequate holding capacity plus a minimum freeboard of 12 inches. Remove and dispose of hardened concrete and return the structure to a functional condition after reaching 75% capacity.

Inspect concrete washout structures for damage and maintain for effectiveness.

Remove the concrete washout structures and sign upon project completion. Grade the earth material to match the existing contours and permanently seed and mulch area.

5.0 Measurement and Payment

Concrete Washout Structure will be paid for per each enclosure installed in accordance with the details. If alternate details or commercially available devices are approved, then those devices will also be paid for per each approved and installed device.

Temporary Silt Fence will be measured and paid for in accordance with Article 1605-5 of the *Standard Specifications*.

Safety Fence shall be incidental to the measurement for each washout structure.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Concrete Washout Structure……..EA

SP-67, RISER ASSEMBLIES (1722 MODIFIED)

1.0 DESCRIPTION

Furnish and install riser assemblies with Sch. 80 PVC conduit, Sch. 80 PVC weatherheads, galvanized pole attachment fittings and all necessary hardware.

2.0 MATERIAL

Materials are as set out in NCDOT Standard Specification 1722 with the addition of:

Use only Schedule 80 PVC conduit and weatherheads unless otherwise approved by the Engineer.

3.0 CONSTRUCTION METHODS

Construction methods are as set out in NCDOT Standard Specification 1722.

4.0 MEASUREMENT AND PAYMENT

Measurement and payment are as set out in NCDOT Standard Specification 1722.

SPSRW -01, EROSION CONTROL MATTING **Version Date: 8/02/2024**

1.0 DESCRIPTION

The work covered in this special provision includes all elements of work covered in Section 1631, "Rolled Erosion Control Products" and applicable Charlotte Land Development Standards of the Standard Specifications with the following exceptions pertaining to Materials, Installation, and Payment.

2.0 MATERIALS

All matting shall be 100% biodegradable, containing organic fibers such as cotton, jute, or coconut only. Netting that contains any plastic or nylon is not allowed. The following material specifications shall be met:

Material	Description	Tensile Strength (lbs/ft) (MD)	Duration (mos)	Unveg Velocity (ft/s)	Weight (oz/sy)
Straw	Biodegradable w/ organic netting	100 - 200	12	5.0 - 7.0	8 - 9.5
Straw/Coconut	Biodegradable w/ organic netting	190 - 210	18 - 24	7.0 - 8.0	8 - 11.5
Coconut	Biodegradable w/ organic netting	190 - 240	24 - 36	9.0 - 10.0	9.5 - 10
		Dry Tensile Strength (lbs/ft) (MD/TD)			
Coir Fiber 400g	Biodegradable w/ coir fiber	500 - 800	36	8	11.8 - 12.5
Coir Fiber	Biodegradable w/ coir fiber	1250 - 1600	36	10.0 -	20.0 - 27

700g				12.0	
Coir Fiber 900g	Biodegradable w/ coir fiber	1900 - 2000	36	16	26 - 27

Anchors:

Staples Article 1060-8:

Only allowed for Straw, Straw/Coconut, and Coconut Mattings

Wooden Dead Stout Stake:

Provide hardwood stakes 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil.

Wooden Matting Stake:

Provide hardwood stakes 12” long, with a nominal 1” x 1” square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 0.75" notch following to catch and secure the coir fiber mat.

Alternate methods of securing the coir fiber mat with the stake may be proposed by the Contractor to be approved by the Engineer prior to implementation.

This item also includes all elements of work required for seedbed preparation, furnishing, and applying fertilizer, limestone, and grass seed in accordance with the City of Charlotte “Landscape Construction Standards” Seeding and Sodding Turfgrass Section 04200 with the exception that portions pertaining to mulch will not apply.

3.0 INSTALLATION

Installation will be in accordance with Section 1631, “Rolled Erosion Control Products” with the exception that the staple pattern will be per the Manufacturer’s recommendations or as directed by the Engineer.

Coir matting bank stabilization installation shall be per City of Charlotte Storm Water Services Coir Matting Bank Stabilization detail.

4.0 MEASUREMENT

Measurement will be per Section 1631, “Rolled Erosion Control Products” with the exception that there shall be no separate measurement for overlap areas.

5.0 PAYMENT

Payment will be per Section 1631, “Rolled Erosion Control Products” with the exception that no separate payment will be made for wire staples, wooden anchors, overlap areas, seedbed preparation, furnishing and applying fertilizer, limestone, and grass seed for Erosion Control Matting.

Payment will be made under:

Matting for Erosion Control……SY

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ARTICLE 3: CHARLOTTE WATER SPECIAL PROVISIONS

SPU-01, ADJUST WATER VALVES, WATER METER BOXES, WATER MANHOLES, WATER VAULTS, SANITARY SEWER MANHOLES, SANITARY SEWER CLEANOUTS, & SANITARY SEWER LID CONVERSION:

1.0 DESCRIPTION

The Contractor shall provide all labor and equipment necessary to adjust water valves, water meter boxes, water manholes, water vaults, fire hydrants, sanitary sewer manholes, sanitary sewer cleanouts, and convert sanitary sewer lids to solid lid and sealed as shown on the plans or as directed by the Engineer.

2.0 MATERIALS

Adjust water valves and manholes by utilizing cast iron or steel fittings. When fittings are used, leave the existing walls in place and securely attach the fittings to the existing walls or install in a manner which will eliminate movement of the fitting. Backfill excavated areas in an existing pavement with Portland cement concrete meeting requirements for Class B or of any higher class of concrete. High early strength concrete may be used. Wait at least 72 hours after the placement of the concrete before placing any surfacing or resurfacing material over the concrete. This time period will not be required where the strength of the concrete is at least 2500 psi as evidenced by nondestructive tests made in place by a rebound hammer in accordance with ASTM C805. Thoroughly compact backfill of other excavated areas. In areas open to traffic, construct a temporary ramp of asphalt plant mix around structures which have been adjusted. Construct the ramp to extend a minimum of 3.0 feet from the structure within one calendar day after completing the adjustment. Construct the ramp using any type of asphalt surface course plant mix meeting the requirements of any job mix formula issued by the Division of Highways. Compact to an approved density. Place bituminous plant mix flush with the top of the raised structure within 7 days after raising the structure.

Bring all adjusted utility manhole covers to an elevation slightly higher than the surrounding terrain so that surface water will not enter the manhole after the adjustment.

Construct manholes located in paved areas flush with the surrounding pavement. Existing manholes located in proposed gutter pans shall have the existing frames and covers replaced with solid lids and sealed/watertight covers so that surface water will not enter the manholes.

Adjust water valves, water meter boxes, water manholes, water vaults, fire hydrants, sanitary sewer cleanouts, and sanitary sewer manholes to be flush with the surrounding ground.

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

3.0 MEASUREMENT AND PAYMENT

The quantity of water valves, water meter boxes, water manholes, water vaults and sanitary sewer manholes adjusted shall be measured by and paid for at the contract unit price per each for “Adjust Existing Water Valve”, “Adjust Existing Meter Box”, “Adjust Existing Fire Hydrant”, “Adjust Existing Water Manhole”, “Adjust Existing Water Vault”, “Adjust Existing Sanitary Sewer Cleanout”, and “Adjust

Existing Sewer Manhole". The quantity of existing manholes requiring the frame and cover to be replaced with solid lids and sealed/watertight covers shall be measured and paid for at the contract unit price per each for "Convert to Solid Lid & Sealed Frame & Cover (Watertight)". Such prices and payments will be full compensation for all materials, equipment, labor, and incidentals necessary to complete the work as required.

Payment will be made under:

Adjust Existing Water Valve……EA

Adjust Existing Meter Box……EA

Adjust Existing Fire Hydrant……EA

Adjust Existing Water Manhole……EA

Adjust Existing Water Vault……EA

Adjust Existing Sewer Manhole……EA

Adjust Existing Sanitary Sewer Cleanout……EA

Convert to Solid Lid & Sealed Frame & Cover (Watertight)……EA

SPU-02, RELOCATE EXISTING WATER METER

1.0 DESCRIPTION

The Contractor shall provide all labor and equipment necessary to remove and install the existing water meter and meter box or meter vault at the appropriate location and the work shall be done in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

2.0 MATERIALS

The relocation of the existing water meter may include, but is not limited to, any meters, meter boxes, meter vaults, valves, piping, or fittings. All pipe and fittings necessary to reconnect the water meter to the water main shall be considered incidental. Any electrical service connections and relocations, in addition to all permits, licenses and inspections shall be the responsibility of the Contractor and considered incidental to this relocation.

3.0 MEASUREMENT AND PAYMENT

The quantity of water meters installed in accordance with the plans and utility provisions herein and accepted, will be measured and paid for at the contract unit price per each for "Relocate Existing Water Meter & Meter Box". Such prices and payments will be full compensation for all materials, removal and relocating water meter, meter box, meter vault, pipe, fittings, tapping saddles, equipment, excavation, labor, backfilling, and incidentals necessary to complete the work as required.

Payment will be made under:

Relocate Existing Water Meter & Meter Box ……..……..……EA

SPU-03, RELOCATE EXISTING FIRE HYDRANT

1.0 DESCRIPTION

This item includes furnishing equipment, labor and new materials necessary to complete the relocation of an existing fire hydrant as specified in the plans, and as shown in the Standard Details. The Contractor shall rotate the existing hydrant tee if the hydrant must be relocated in the opposite direction. Existing fire hydrants shall not be out of service more than two days. The Charlotte Fire Department shall be notified two days prior to taking any fire hydrants out of service.

2.0 MATERIALS

On tie-in sections, the Contractor may be required to anchor pipe bends, tees, etc. with precast concrete blocking, timbers, rodding, or other approved method to allow the water line to be placed back into service as soon as possible. Make final connections to existing mains where indicated on the drawings, as required to fit the actual conditions, or as directed. Order materials, install the new line, provide thrust restraint, and perform sterilization and pressure tests on the new line prior to installation and tie-in of the new line into service to the satisfaction of the Engineer. Notify owners in advance of any interruptions of water service with ample time to make arrangements. Limit interruption of water service on main lines to a maximum of 8 hours unless otherwise approved.

Relocate all existing fire hydrants in the road construction area, and others that will be a hazard to the motorist, adjacent to the right of way, as shown on the plans, and/or as directed. Separate existing fire hydrants to be relocated at the hydrant base from the existing pipe and place in the new location. Where necessary, remove the hydrant shoe and replace with the appropriate type to connect the relocated hydrant to the new pipe. Furnish, install or remove hydrant extension pieces to provide the proper bury of the pipe and hydrant. Handle pipe and appurtenances in such a manner as to ensure delivery to the site and installation in a sound, undamaged condition, Store plastic pipe out of direct sunlight until placement. All plastic pipes showing discoloration, or deterioration will be rejected for use and replaced with suitable pipe, at no additional cost. Carefully examine all pipe, fittings, and appurtenances for defects before placing, rejecting any found defective. If, at any time before completion of the contract, any broken pipe or any defects are found in the lines or in any of their fittings or appurtenances, replace them.

3.0 MEASUREMENT AND PAYMENT

The quantity of fire hydrants to be relocated, installed in accordance with the plans and provisions herein accepted, will be measured and paid for at the contract unit price per each for “Relocate Existing Fire Hydrant”. The prices and payment will be full compensation for furnishing and installing all materials including accessories, concrete blocking, excavation, backfilling, compaction, and incidentals necessary to complete the work as required.

Payment will be made under:

Relocate Existing Fire Hydrant…….……..……..……EA

SPU-04, DUCTILE IRON RESTRAINED JOINT WATER PIPE

1.0 DESCRIPTION

Install all Ductile Iron Restrained Joint Water Pipe as shown on the plans or as recommended by the engineer.

2.0 MATERIALS

Flexible restrained joint or Mechanical joint restraints may be used.

Flexible restrained joints shall be supplied by the pipe manufacturer. Gaskets with vulcanized internal stainless steel locking segments may be used for 6 inch through 12-inch Ductile Iron Pipe. Only designs using a welded retainer ring on the spigot will be allowed for 16 inch and larger diameter pipe. Ductile iron restrained joint water pipe shall conform to AWWA C151.

Mechanical joint restraints may be through the use of a follower gland with restraining device that imparts a wedging action against the pipe. The restraining device shall have twist off nuts to ensure proper contact with the pipe. Glands and restraining devices shall be manufactured of Ductile Iron. The restraining devices shall be heat treated to a hardness of 370 BHN. Gland dimensions shall be compatible with the MJ fittings herein before specified. The restrained joint shall be rated for a minimum 250 PSI working pressure with a 2:l safety factor. Mechanical joint restraints may be through the use of a specially machined ductile iron ring and follower gland that is used with standard mechanical joint gaskets and T-bolts. Retainer glands will not be permitted. Restrained joints may be used where shown on the plan, standard details or as approved by the Engineer.

3.0 MEASUREMENT AND PAYMENT

The quantity of ductile iron restrained joint water pipe which has been incorporated into the completed and accepted work will be measured from end to end by the linear foot in place with no deduction for length through valves or other fixtures. The quantity of ductile iron restrained joint water pipe measured, as provided above, will be paid for at the contract unit price per linear foot of XX" DI Restrained Joint Water Pipe, PC 350 installed. The prices and payments will be full compensation for furnishing and installing all materials, including pipe, 12-gauge copper locator wire, paint or tape for reuse markings, accessories, compression couplings, anchoring, concrete blocking, connections, pressure test, leak test, sterilization, backfilling and compaction to spring line, and incidentals necessary to complete the work as required.

Payment will be made under:

4" DI Restrained Joint Water Pipe, PC 350……..LF

6" DI Restrained Joint Water Pipe, PC 350……..LF

SPU-05, DUCTILE IRON RESTRAINED JOINT WATER PIPE FITTINGS

1.0 DESCRIPTION

Restrained joint water pipe fittings shall be used where shown on the plan, standard details or as approved by the Engineer.

2.0 MATERIALS

Mechanical joint restraints may be through the use of a follower gland with restraining device that imparts a wedging action against the pipe. The restraining device shall have twist off nuts to ensure proper contact with the pipe. Glands and restraining devices shall be manufactured of Ductile Iron. The restraining devices shall be heat treated to a hardness of 370 BHN. Gland dimensions shall be compatible with the mechanical joint fittings herein before specified. The restrained joint shall be rated for a minimum 250 PSI working pressure with a 2:l safety factor. Mechanical joint restraints may be through the use of a specially machined ductile iron ring and follower gland that is used with standard mechanical joint gaskets and T-bolts. Retainer glands will not be permitted.

3.0 MEASUREMENT AND PAYMENT

The quantity of ductile iron restrained joint water pipe fittings will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C110/A21.10 exclusive of the weights of any accessories. If the Contractor elects to use compact ductile iron water pipe fittings, measurement shall be based on the weight of standard size ductile iron water pipe fittings as published in ANSI A21.10 (AWWA C-110). No measurement of the accessories will be made as the accessories are considered incidental to other work being paid for by the various items in the contract. The quantity of ductile iron restrained joint water pipe fittings, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per pound “DI Restrained Joint Water Pipe Fittings”. The prices and payments will be full compensation for furnishing and installing all materials and incidentals necessary to complete the work as required.

Payment will be made under:

DI Restrained Joint Water Pipe Fittings ……..……LB

SPU-06, LINE STOPS

1.0 DESCRIPTION

In order to minimize service disruptions, line stops may be necessary in relocation areas. Line stops will be used as a means of stopping flow and providing a temporary shutoff. Line stops will be used to isolate piping systems or sections for repairs, alterations, or relocations without shutting the entire system down.

2.0 MEASUREMENT AND PAYMENT

The quantity of line stops will be measured by and paid for at the contract unit price per each for sized Line Stop shown below. Such prices and payments will be full compensation for all materials, valves, equipment, labor, and incidentals necessary to complete the work as required.

Payment will be made under:

4” Line Stop…….……EA

6” Line Stop…….……EA

8” Line Stop……EA

12” Line Stop……EA

SPU-07, CONCRETE THRUST BLOCKING

1.0 DESCRIPTION

Install all Concrete Thrust Blocking as shown on the plans or as recommended by the engineer.

2.0 METHODS AND MATERIALS

Concrete Thrust Blocking shall be installed as shown in the plans and/or directed by the Engineer in accordance with the Charlotte Water Standard Details. Concrete Thrust Blocking includes all-thread rods, nuts, washers, hex head bolts, pig tail eye bolts, couplings and plates required to temporarily restrain the new water main. All hardware shall be made of the same alloy steel used to manufacture standard AWWA tee head bolts.

3.0 MEASUREMENT AND PAYMENT

Measurement and payment will be made per cubic yard of concrete blocking installed. All other parts listed above to install concrete thrust blocking is considered incidental to the installation.

Concrete Thrust Blocking……CY

00 90 00 – ADDENDA