

**CITY OF HENDERSONVILLE  
SEVENTH AVENUE STREETScape**

ADDENDUM NO. 1

October 1, 2021

The attention of all Prequalified Bidders on the above Contract, on which formal bids are to be taken October 12, 2021 is called to this Addendum No. 1:

1. Pre-Bid Conference Meeting Minutes and Attendance List

- a. Meeting minutes for the pre-bid conference held September 22, 2021 at 10:00 am local time and the attendance list are attached.

2. Bidding Requirements:

- a. Please note that the Bid Schedule was missing from the original Project Manual. **ADD** the attached Bid Schedule and note that it shall supersede any Bid Schedule that may have been forwarded via email.

3. Technical Specifications

- a. **DELETE** Section 01630 – Measurement and Payment and **REPLACE** it with the attached Section 01630 Measurement and Payment.
- b. **ADD** the attached Section 02732 - Storm Drainage System and Accessories.
- c. Refer to Section 03410 – Precast Concrete Structures, Page 8, Section 2.9, Paragraph F, last sentence:
  - i. **REPLACE** *“waterplug” as manufactured by Thoro System Products* with **“MasterSeal 590 as manufactured by Master Builders Solutions”**. **REPLACE** *“or equal.”* with **“DRYLOK FastPlug Hydraulic Cement by UGL, or approved equal.”**

4. Drawings

- a. Refer to Sheet C-2 (General Notes) of the Contract Drawings:
  - i. See note on “Workings Hours”. **REPLACE** *“... from 7:00 A.M. to 5:00 P.M. Monday thru Saturday...”* with **“... from 7:00 A.M. to 5:00 P.M. Monday thru Friday...”**. **REPLACE** *“No night work or work on Sundays or Holidays...”* with **“No night work or work on Saturdays, Sundays or Holidays...”**.
- b. Refer to Sheet LA-11 of the Contract Drawings:
  - i. **DELETE** Detail 2/LA-11-Concrete Steps & Handrail and the item shall not be constructed. Other illustrations or representations of this item in the contract documents shall also be **DELETED**.
- c. Refer to Sheet LA-2 of the Contract Drawing:

- i. **REPLACE** the note “*Trash Cans (Typ)*” shall be replaced by “**Trash Cans By Others (Typ)**”. And it shall be understood that other illustrations or representations of this item in the contract documents shall be performed by others. The note is located next to the North Arrow of sheet LA-2.

5. Acknowledgement by bidder.

- a. Each bidder is required to acknowledge receipt of this Addendum No. 1 and in the space provided in the Bidding Documents.

**CITY OF HENDERSONVILLE**



Brendan Shanahan, PE  
Civil Engineer

**City of Hendersonville – Seventh Avenue Streetscape  
Prebid Meeting**

<b>Name</b>	<b>Organization</b>	<b>Phone Number</b>	<b>Email Address</b>
Brendan Shanahan	City of Hendersonville	(828) 233-3237 o, (828) 674-0697 c	<a href="mailto:bshanahan@hvlnc.gov">bshanahan@hvlnc.gov</a>
Jamie Carpenter	City of Hendersonville	(828) 233-3294	<a href="mailto:jcarpenter@hvlnc.gov">jcarpenter@hvlnc.gov</a>
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Drew Finley	City of Hendersonville	(828) 233-2992	<a href="mailto:dfinley@hvlnc.gov">dfinley@hvlnc.gov</a>
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Adam Steurer	City of Hendersonville	(828) 233-3207	<a href="mailto:asteurer@hvlnc.gov">asteurer@hvlnc.gov</a>
Logan Hickey	City of Hendersonville	(828) 233-3203	<a href="mailto:lhickey@hvlnc.gov">lhickey@hvlnc.gov</a>
Mike Huffman	City of Hendersonville	(828) 697-3013 o, (828) 458-5693 c	<a href="mailto:spayne@hvlnc.gov">spayne@hvlnc.gov</a>
Brooke Alexander	Watermark Landscape Architecture	(423) 432-1358	<a href="mailto:Brooke@watermarkland.com">Brooke@watermarkland.com</a>
Lile Sharif	Seventh Ave. property owner/stakeholder	(305) 776-7600	
Trae Wilson	Frank Blum Construction		
Todd Trace	Trace and Company	(828) 674-5664	<a href="mailto:todd@traceandcompany.com">todd@traceandcompany.com</a>
Jessica Haltiwanger	Harper Corporation		<a href="mailto:jhaltiwanger@harpergc.com">jhaltiwanger@harpergc.com</a>
Kevin Ward	Saluda Construction	(864) 884-7379	

**Wednesday, September 22, 2021, 10am**

CITY OF HENDERSONVILLE

**18022 – SEVENTH AVENUE STREETSCAPE**

**PREBID CONFERENCE AGENDA**

September 22, 2021

10:00 AM

1. INTRODUCTIONS

- A. Attendance at pre-bid is highly encouraged but is not mandatory. The attendance list will be attached to the minutes of the pre-bid conference.
- B. Four Bidders have been prequalified to bid on this project – Armen Construction, Frank L. Blum Construction, Harper General Contractors, and Trace and Company.

2. PROJECT DESCRIPTION

The City of Hendersonville SEVENTH AVENUE STREETSCAPE consists of the installation of approximately 670 linear feet of 8-inch DIP water main, 112 linear feet of 8-inch PVC sewer main, 100 linear feet of 8-inch DIP sewer main with sidewalk and stormwater improvements along Seventh Avenue, 280 linear feet of 8-inch DIP water main and sidewalk improvements along Locust St, 150 linear feet of 24-inch stormwater pipe along Maple St and Seventh Avenue in the City of Hendersonville. The project also contains water and sewer service connections and appurtenances, underground telecommunications conduit installation, landscaping, stormwater and traffic calming treatments. The project will involve a complete water and gravity sewer installation including all connections, manholes, abandonment of existing utilities, bypass pumping, surface restoration, and all related appurtenances necessary to complete the work.

3. INSTRUCTIONS TO BIDDERS

- A. Examination of Site
  - Bidders are encouraged to complete site visits at their own discretion.
- B. Interpretations and Addenda
  - All questions regarding the meaning or intent of the Bidding Documents are to be submitted in writing to Brendan Shanahan, [bshanahan@hvlnc.gov](mailto:bshanahan@hvlnc.gov).
  - All changes and noteworthy clarifications will be issued by Addenda.
  - Only questions answered by Addendum will be binding. Oral answers will not be binding.
  - Questions received less than seven days prior to date of opening of Bids may not be answered.

C. Submittal of Bid

- Each Bid Proposal must be submitted in an ‘outer sealed envelope’, to indicate its contents without being opened. Within the ‘outer sealed envelope’, there shall be two additional, labeled sealed envelopes, one containing the bid bond and the other containing the remainder of the required bidding documents. Please review Article 14 in the Instructions to Bidders regarding submitting sealed bids.
- The Bidding Forms must be filled out completely
- Bidder may only submit one Bid
- To be included with the Bid:
  - Bid Form for Construction Contract
  - Bid Schedule
  - Bid Bond
  - Contractor’s License No.
  - Insurance Documentation

D. Bidder shall acknowledge receipt of any addenda on the Bid Form

E. Opening of Bids: October 12th, 2021, at 2:00 p.m. local time at the City Operations Center, 305 Williams Street, Hendersonville, NC 28792 in the large assembly room.

4. CONTRACT REQUIREMENTS

A. Notice of Award

- Bids shall be subject to acceptance for 60 days after Bid opening.

B. Performance and Payment Bonds

- Shall be submitted within 10 days of Notice of Award.

C. Execution of Agreement

- Contractor shall execute the Agreement within 10 days of Notice of Award.

D. Certificate of Insurance

- Certificates of Insurance shall be submitted within 10 days of Notice of Award.

E. Notice to Proceed

- Notice to Proceed will be issued on the 30<sup>th</sup> day after the Effective Date of the Contract or otherwise issued by the City.

F. Contract Times

- Substantial Completion is 240 days from NTP
- Final Completion is 285 days from NTP

G. Liquidated Damages

- \$500.00 per day construction is delayed beyond Substantial Completion.

5. PROJECT REQUIREMENTS

A. Work by Others

- Relocation/replacement of utility poles.
- Installation of AT&T handholes.
- Connection of AT&T/Duke services.
- Final surface course of pavement.

B. Work by Contractor

- The Contractor will be responsible for coordination with the City, NCDOT, Duke Energy, AT&T and other utilities during the entire duration of the project.
- The Contractor will be responsible for phasing the project to allow completion within the allotted time while minimizing disturbances to business activity.
- Contractor shall coordinate closely with property owners, merchants, business owners and residents through project.
- See specifications for backfill materials, compaction requirements, and concrete placement. Compaction testing and concrete tests will be performed by the City's consultant during the project.
- Traffic control, Dust and noise control, requirements are noted on the General Notes sheet.
- Erosion controls are in the specifications. Dump sites over one acre will be required to have an Erosion & Sediment Control Permit issued by Henderson County
- City will obtain all necessary easements, NCDOT encroachment, NCDENR mainline water permits.
- For bidding purposes, the working hours are from Monday to Saturday except holidays from 7:00am - 5:00 pm (working outside of these hours must be approved by the Engineer). Please pay attention to the special requirements for NCDOT lane closures on the General Notes sheet.

C. Highlighted Project Items

- Owner is purchasing tree grates and decorative light poles.
- Will be issuing addendum with updated Measurement and Payment section and bid sheet.

6. QUESTIONS AND ANSWERS:

Bid Proposal

Quest CDN #8027052 / Seventh Avenue Streetscape

Bid Opening: October 12, 2021 at 2:00 PM 305 Williams Street, Hendersonville, NC 28792

**MOBILIZATION / MISC.**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
1	Mobilization	LS	1		
2	Traffic Control	LS	1		

**DEMOLITION**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
3	Safety Fence	LF	1500		
4	Remove Existing Trees	EA	10		
5	Remove Awnings (317,319,321,323 7th Ave)	LS	1		
6	Concrete Sidewalk and Drive Removal	SY	1460		
7	Remove Existing Curb (provide granite curb to COH)	LF	1370		
8	Sawcut Asphalt & Concrete	LF	3000		
9	Asphalt Removal	SY	3735		
10	Abandon Valve or Meter Box	EA	10		
11	Miscellaneous Removal	LOAD	3		
12	Remove Bike Racks	EA	2		
13	Remove Street Light Poles	EA	6		
14	Remove Trash Cans, Etc..	EA	7		

**EROSION CONTROL**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
15	Inlet Protections	EA	5		
16	Seeding & Mulching	AC	1		
17	Matting for Erosion Control	SY	275		

**EARTHWORK**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
18	Grading	LS	1		

**ROADWAY PREPARATION**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
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19	Compacted ABC Stone	TN	1760		
20	Binder Course (2")	TN	400		

**ADJUSTMENTS / RELOCATIONS**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
21	Utility Adjustments	EA	22		
22	Remove & Relocate Signs	EA	7		
23	Remove & Relocate Power Poles	EA	2		

**CONCRETE, BRICK PAVERS, STONE BASE**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
24	18" Curb & Gutter	LF	1650		
25	30" Curb & Gutter	LF	90		
26	Valley Gutter	LF	185		
27	4" Scored Concrete Sidewalk	SY	2400		
28	6" Concrete Sidewalk/ Drive Apron	SY	320		
29	Truncated Domes	EA	17		
30	Brick Paver Utility Strip	SY	160		
31	Brick Paver Crosswalk w/Conc Band	SY	250		
32	Remove & Relay Brick Pavers (Maple St.)	SF	1140		

**SITE FEATURES, LANDSCAPING**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
33	Bike Racks	EA	2		
34	Benches	EA	11		
35	Install Tree Grates	EA	32		
36	Trees	EA	46		
37	Planting Areas (Shrubs & Plantings)	SF	1880		
38	Retractable Bollards	EA	5		
39	Permanent Bollards	EA	4		

**ELECTRICAL AND TELECOMMUNICATIONS**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
40	1.25" PVC Schedule 40 Pipe and Fittings	LF	6000		
41	1.5" PVC Schedule 40 Pipe and Fittings	LF	6000		



42	2" PVC Schedule 40 Pipe and Fittings	LF	2000		
43	4" PVC Schedule 40 Pipe and Fittings	LF	2540		
44	Tree Well Lights	EA	32		
45	Plug Outlets	EA	32		
46	Landscape Light	EA	15		
47	Install 14' Street Light	EA	29		
48	Install 18' Street Light	EA	4		
49	#10 electrical wire	LF	18000		
50	#3 triplex	LF	6000		
51	Electrical Panel	LS	3		
52	Electrical and Telecommunications Trench Excavation	LS	1		
53	Crosswalk LED Heads	EA	6		
54	Traffic Signal Heads	EA	6		

**WATER & SEWER MAINS AND APPURTENANCES**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
55	Asphalt Removal	SY	500		
56	Miscellaneous Removal	LOAD	1		
57	Compacted ABC Stone	TN	1100		
58	Binder Course (2")	TN	55		
59	Traffic Control	LS	1		
60	Abandon Manhole	EA	1		
61	Temporary Bypass Pumping	LS	1		
62	PVC SDR 35 Gravity Sanitary Sewer Pipe, 8"	LF	200		
63	Precast Manhole, Standard (0'-6' Depth)	EA	2		
64	Precast Manhole, Standard (6'-8' Depth)	EA	2		
65	Sewer Laterals, 4"	LF	400		
66	Sewer Laterals, 6"	LF	200		
67	Ductile Iron Water Pipe, 8"	LF	575		
68	Ductile Iron Water Pipe, 8", restrained	LF	100		
69	Gate Valve, 8"	EA	9		
70	COH Standard Fire Hydrant Assembly, 250 PSI	EA	1		
71	6" Full bodied mechanical sleeve (long)	EA	4		

72	4" Full bodied mechanical sleeve (long)	EA	1		
73	Water Service Connection, Short Service, 1"	EA	9		
74	Water Service Connection, Long Service, 1"	EA	3		
75	Hose Bib Connections	EA	10		

**SEWER SYSTEM IMPROVEMENTS**

Line Item	Item Description	UofM	Quantity	Unit Price	Extension
76	Bio-Swales	SF	2400		
77	Sylva Cells	EA	192		
78	Abandon Storm Structure	EA	3		
79	Abandon Pipe	LF	150		
80	New Catch Basins	EA	2		
81	New Junction Box	EA	3		
82	4" PVC Storm Drain Pipe	LF	100		
83	4" PVC Perforated Storm Drain Pipe	LF	230		
84	6" PVC Storm Drain Pipe	LF	320		
85	6" PVC Perforated Storm Drain Pipe	LF	650		
86	15" HDPE Storm Drain Pipe	LF	20		
87	18" HDPE Storm Drain Pipe	LF	20		
88	24" HDPE Storm Drain Pipe	LF	130		
89	Washed Stone Bedding	TN	120		
90	Tie to Ex. Catch Basin	EA	1		

**TOTAL BID:**

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**TOTAL BID IN WORDS:**

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**SECTION 01630  
MEASUREMENT AND PAYMENT**

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**PART 1 GENERAL**

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1.1 SCOPE OF WORK

- A. This section covers methods of measurement and payment for items of Work under this Contract.
  
- B. The Contract Price shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction materials, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the prices bid.

1.2 ESTIMATED QUANTITIES

- A. All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work, and (b) for the purpose of comparing the bids submitted for the Work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished as stipulated in each specific measurement and payment section below. Contractor agrees that he will make no claim for damages, anticipated profits, or otherwise, on account of any difference between the amounts of work actually performed and materials actually furnished, and the estimated amounts thereof, as described in the General and Supplementary Conditions.

1.3 PERMITS AND TAXES

- A. Refer to Section EJCDC C-700 – General Conditions for payment of construction and license permits. The Contractor shall include costs of all construction permits and licenses in the bid.
  
- B. Refer to Section EJCDC C-700 – General Conditions for payment of taxes. The

Contractor shall include costs of state and local sales taxes in the Bid.

1.4 RETAINAGE

- A. Refer to the Agreement.

1.5 EXCAVATION AND TRENCHING

- A. Except where otherwise specified, the unit or lump sum price bid for each item of Work which involves excavation or trenching shall include all costs for such Work. No direct payment shall be made for excavation or trenching. There shall be no separate payment for excavation and stabilization below grade, or special backfill for such excavation, unless specifically stated in the Measurement and Payment sections.
- B. Except where otherwise specified, the unit or lump sum price bid for each item of Work shall include all costs for rock excavation. There shall be no separate payment for Rock Excavation associated with the Project.

1.6 MEASUREMENT AND PAYMENT

A. Mobilization:

1. Partial payments for the item Mobilization will be made with the first and second partial pay estimates paid on the contract and will be made at the rate of 50% of the lump sum price for Mobilization on each of these partial pay estimates. The amount for Mobilization in the approved schedule of values shall not exceed 3% of the total project bid. Mobilization shall include all costs for Contractor's bonds, insurance, temporary office facilities, survey and layout, sanitary and power, and all other miscellaneous costs. No separate payment will be made.

B. Traffic Control:

1. The measurement for payment for Traffic Control shall be the lump sum price stated in the Bid Schedule.
2. The lump sum price shall include all necessary signage, flagmen, and appurtenant requirements as required by the Contract Documents, the MUTCD, and NCDOT. No separate payment will be made.
3. Payment shall be divided into equal monthly amounts based on Lump Sum Price bid and length (time) of the work requiring Traffic Control as agreed upon by Owner and Engineer.

C. Safety Fence:

1. The measurement for payment for Safety Fence shall be the per linear foot (LF) price stated in the Bid Schedule.
2. The unit price for Safety Fence shall include all work associated with the construction of safety fence in accordance with the plan detail and specifications in locations shown and/or as directed by the Engineers. No separate payment will be made.

D. Remove Existing Trees:

1. The measurement for payment for Remove Existing Trees shall be the per each (EA) price stated in the Bid Schedule.
2. The unit price for Remove Existing Trees shall consist of all work associated with the removal and disposal of existing trees in accordance with the plan detail and specifications in locations shown and/or as directed by the Engineers. This item shall include removal of all vegetation, topsoil, roots, and all other organic matter. No separate payment will be made.

E. Remove Awnings:

1. The measurement for payment for Remove Awnings shall be the lump sum (LS) price stated in the Bid Schedule.
2. The unit price for Remove Awnings shall include all work associated with the removal and disposal of existing awnings in accordance with the plan detail and specifications in locations shown and/or as directed by the Engineers. No separate payment will be made.

F. Concrete Sidewalk and Drive Removal:

1. The measurement for payment for Concrete Sidewalk and Drive Removal shall be the per square yard (SY) price stated in the Bid Schedule. The measurement shall include only the area actually removed.
2. The unit prices bid for Concrete Sidewalk and Drive Removal shall include all costs in connection with the total depth removal including cutting, removal, and disposal of old concrete sidewalk, drive and base material. Additional excavation of existing subgrade material will be necessary in some locations to install the new concrete sidewalk and drives at proposed grades and shall be included in the price bid per square yard of Concrete Sidewalk and Drive Removal. No separate payment will be made.

3. All costs involved in repairing or removal and replacement of existing concrete outside the specified pay limits and project area, where damaged during construction operations, shall be considered a subsidiary obligation of the Contractor and shall be the responsibility of the Contractor.

G. Remove Existing Curb:

1. The measurement for payment for Remove Existing Curb shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually removed.
2. The unit prices bid for Remove Existing Curb shall include all costs related to the total depth removal including cutting, removal, and disposal of existing curb and base material. Additional excavation of existing subgrade material will be necessary in some locations to install the proposed infrastructure at final grades and shall be included in the price bid per square yard of Remove Existing Curb. Price shall also include the cost of transporting any granite curb removed to 312 Williams St. Contractor must coordinate with the City Engineering Department on exact location of placement. No separate payment will be made.
3. All costs involved in repairing or removal and replacement of existing curb outside the specified pay limits and project area, where damaged during construction operations, shall be considered a subsidiary obligation of the Contractor and shall be the responsibility of the Contractor.

H. Sawcut Asphalt and Concrete:

1. The measurement for payment for Sawcut Asphalt and Concrete shall be the per linear foot (LF) price stated in the Bid Schedule.
2. The unit price for Sawcut Asphalt and Concrete shall include all work associated with the sawcutting in accordance with the plan detail and specifications in locations shown and/or as directed by the Engineers.

I. Asphalt Removal:

1. The measurement for payment for Asphalt Removal shall be the per square yard (SY) price stated in the Bid Schedule. The measurement shall include only the area actually removed.
2. The unit prices bid for Asphalt Removal shall include all costs in connection with the total depth removal including cutting, removal, and disposal of old asphalt pavement and concrete base course. Additional excavation of existing subgrade material will be necessary in some

locations to install the new asphalt pavement surface at proposed grades and shall be included in the price bid per square yard of Asphalt Removal. No separate payment will be made.

3. All costs involved in repairing or removal and replacement of existing pavement outside the specified pay limits and project area, where damaged during construction operations, shall be considered a subsidiary obligation of the Contractor and shall be the responsibility of the Contractor.

J. Abandon Valve or Meter Box:

1. The measurement for payment for Abandon Valve or Meter Box shall be the per each (EA) price stated in the Bid Schedule.
2. The unit price for Abandon Valve or Meter Box shall include all work associated with complete abandonment of any valve or meter box, including excavation, backfill, compaction, flowable fill and all other ancillary material, labor or equipment in accordance with the plan detail and specifications in locations shown and/or as directed by the Engineers. No separate payment will be made.

K. Miscellaneous Removal:

1. The measurement for payment for Miscellaneous Removal shall be the per load price stated in the Bid Schedule. The measurement shall include only the measured and recorded truck load of material actually removed and hauled offsite. Note this a contingency item and will cover any ancillary items to be demolished and not covered in other unit prices.
2. The unit price bid for Miscellaneous Removal shall include all costs in connection with the total excavation, removal and disposal of materials. No separate payment will be made.

L. Remove Bike Racks:

1. The measurement for payment for Remove Bike Racks shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Remove Bike Racks shall include all costs in connection with the removal including hauling and disposal. No separate payment will be made.

M. Remove Street Light Poles:

1. The measurement for payment for Remove Street Light Poles shall be the per each (EA) price stated in the Bid Schedule.

2. The unit prices bid for Remove Street Light Poles shall include all costs in connection with the removal, disposal, and electrical disconnection of the lights. Disconnection of electrical wires shall be safely completed per applicable electrical codes. No separate payment will be made.

N. Remove Trash Cans, Etc.:

1. The measurement for payment for Remove Trash Cans, Etc. shall be the per each (EA) price stated in the Bid Schedule. The measurement shall include each trash or recycling can removed, undamaged.
2. The unit prices bid for Remove Trash Cans, Etc. shall include all costs in connection with removing without damage, each can and providing it to City Staff, as directed by the Engineer, in a timely manner. No separate payment will be made.

O. Inlet Protection:

1. Inlet Protection shall be installed and maintained at all catch basins receiving runoff from disturbed areas.
2. The Unit Price in the Bid for Inlet Protection shall include all of the Contractor's cost to complete the installation of Inlet Protection, exclusive of items provided for elsewhere in the Bid Form.
3. The Unit Price Bid for Inlet Protection shall include:
  - a. Furnishing and installing Inlet Protection in accordance with the Contract Documents.
  - b. Maintenance and repair of Inlet Protection throughout the length of the project.
  - c. Removal of Inlet Protection after restoration of disturbed areas.
4. Measurement for payment shall be the actual number of Inlet Protection installed, as verified in the field.
5. Payment shall be in accordance with the unit prices stated in the Bid for Inlet Protection.

P. Seeding and Mulching:

1. Seeding and Mulching shall be applied and maintained as necessary to stabilize disturbed pervious areas.
2. The Unit Price in the Bid for Seeding and Mulching shall include all of the Contractor's cost to apply and achieve stable ground cover, exclusive of items provided for elsewhere in the Bid Form.
3. Measurement for payment shall be the actual number of acres Seeded and Mulched, as verified in the field.



Q. Matting for Erosion Control:

1. Matting for Erosion Control shall be applied and maintained as necessary to stabilize disturbed pervious areas.
2. The Unit Price in the Bid for Matting for Erosion Control shall include all of the Contractor's cost to apply and achieve stable ground cover, exclusive of items provided for elsewhere in the Bid Form.
3. Measurement for payment shall be the actual number of square yards where matting was successfully applied, as verified in the field.

R. Grading:

1. Work included in this line item of payment shall consist of construction surveying, earthwork, compaction, and grading for the project. All grading is considered unclassified. Any vegetated surface to receive fill material must be cleared and grubbed to prepare for the placement of fill material.
2. Payment shall be made on a lump sum basis for all work, Partial payment will be made on an agreed upon percentage completed during any given month during the construction time period.

S. Compacted ABC Stone:

1. The measurement for payment for Compacted ABC Stone shall be the per ton (TN) price stated under various items in the Bid Schedule and shall apply to the installation of all asphalt, concrete and paver items as well as water and sewer line installation. The measurement shall include only the amount actually installed. Any compacted ABC stone installed as part of the Stormwater items shall be included in the unit prices bid for those items and will not be measured and/or paid for separately.
2. The unit price bid for Compacted ABC Stone shall include all costs in connection with placing compacted ABC stone not included as part of other items and shall include excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, compaction. No separate payment will be made.

T. Binder Course (2"):

- a. The quantity of Binder Course (2") to be paid for will be the actual number of tons of asphalt binder placed that has been incorporated into the completed and accepted work. Material shall be placed in accordance with the plans and details governing this construction. Binder shall be placed after all

trenching in the roadway is completed. Binder Course (2") shall be placed to an elevation approximately 2 inches below the final pavement surface (which will be installed by others). Binder course shall be placed in accordance with best practices. Any overage in this line item of more than ten percent (10%) of the contract quantity will need approval from the Engineer.

- b. The quantity of asphalt binder (Type I 19.0B) for pavement repair in trench and for widening, measured as provided in paragraph above will be paid for at the contract unit price per ton placed in accordance with the contract documents. The Contractor shall furnish copies of certified weight tickets for all asphalt material placed on the project. Such prices will be full compensation for shaping and compacting base material, furnishing hauling, placing, and surface repairs if any are necessary. Any required tack coat will be considered incidental to the asphalt pavement repair. No separate payment will be made.

U. Utility Adjustments:

- 1. The measurement for payment for Utility Adjustments shall be the per each (EA) price stated in the Bid Schedule. Utility appurtenances covered under this section include all infrastructure items that may require adjustment vertically or horizontally to allow the installation of items included in the contract documents. Such appurtenances include, but are not limited to manholes, water valves, junction boxes.
- 2. The unit price for Utility Adjustments shall include all work associated with adjusting appurtenances to comport with the design and as specified in the contract documents and/or as directed by the Engineers. No separate payment will be made.

V. Remove & Relocate Signs and Power Poles:

- 1. The measurement for payment for Remove & Relocate Signs and Power Poles shall be the per each (EA) price stated in the Bid Schedule.
- 2. The unit price for Remove & Relocate Signs and Power Poles shall include all work associated with adjusting or removing said item to comport with the design and as specified in the contract documents and/or as directed by the Engineers. No facilities belonging to Duke, AT&T, or any other utility shall be altered unless permitted with consent expressly granted to the contractor of and in a manner permitted by the utility. No separate payment will be made.

W. Curb & Gutter:

1. The measurement for payment for 18" Curb & Gutter, 30" Curb & Gutter and Valley Gutter shall be the per linear foot (LF) price stated in the Bid Schedule.
  2. The unit price for 18" Curb & Gutter, 30" Curb & Gutter and Valley Gutter shall include all work associated with the placement and construction of concrete curb, in accordance with the requirements shown on the plans and the provisions of the specifications.
- X. Concrete Sidewalk & Concrete Apron:
1. The measurement for payment for Concrete Sidewalk & Concrete Apron shall be the per square yard (SY) price stated in the Bid Schedule.
  2. The unit price for Concrete Sidewalk & Concrete Apron shall include all work associated with the construction of concrete sidewalk and apron, in accordance with the requirements shown on the plans and the provisions of the specifications. This item shall include the placement of concrete in ramps. No separate payment will be made.
- Y. Truncated Domes:
1. The measurement for payment for Truncated Domes shall be the per each (EA) price stated in the Bid Schedule.
  2. The unit price for Truncated Domes shall include all work associated with the proper installation of truncated domes in accordance with the requirements shown on the plans and the provisions of the specifications and ADA guidelines. Unit price shall include Truncated Domes of various sizes. No separate payment will be made.
- Z. Brick Paver Utility Strip:
1. The measurement for payment for Brick Paver Utility Strip shall be the per square yard (SY) price stated in the Bid Schedule.
  2. The unit price for Brick Paver Utility Strip shall include all work associated with the proper installation of the brick paver utility strips in accordance with the requirements shown on the plans and the provisions of the specifications.
- AA. Brick Paver Crosswalk with Concrete Band:
1. The measurement for payment for Brick Paver Crosswalk with Concrete Band shall be the per square yard (SY) price stated in the Bid Schedule. Measurement will include the full extent of the crosswalk including the concrete band.

2. The unit price for Brick Paver Crosswalk with Concrete Band shall include all work associated with the proper installation of the brick paver crosswalk with concrete band in accordance with the requirements shown on the plans and the provisions of the specifications.

BB. Remove and Relay Brick Pavers (Maple St.):

1. The measurement for payment for Remove and Relay Brick Pavers (Maple St.) shall be the per square foot (SF) price stated in the Bid Schedule.
2. The unit price for Remove and Relay Brick Pavers (Maple St.) shall include all work associated with the careful removal, storage and relaying of pavers at finished grade. This item shall include any materials, labor and/or equipment necessary to compact and prepare sub-base. Pavers shall be placed evenly and maintain the drainage characteristics of the roadway.

CC. Bike Racks:

1. The measurement for payment for Bike Racks shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Bike Racks shall include all costs associated with assembly, verification of proper location and configuration, adjustments, fixing in place, concrete work, and completion of installation per manufacturers requirements. No separate payment will be made.

DD. Benches:

1. The measurement for payment for Benches shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Benches shall include all costs associated with assembly, verification of proper location and configuration, adjustments, fixing in place, and completion of installation per manufacturers requirements. No separate payment will be made.

EE. Tree Grate Installation:

1. The measurement for payment for Tree Grate Installation shall be the per each (EA) price stated in the Bid Schedule. The cast iron tree grates and frames will be supplied by the City and will be available upon commencement of the project.
2. The unit prices bid for Tree Grate Installation shall include all costs associated with assembly, verification of proper location and elevation,

adjustments, assembly of all components including electrical appurtenances, fixing in place, concrete work, and completion of installation per manufacturers requirements. No separate payment will be made.

FF. Trees:

1. The measurement for payment for Trees shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Trees shall include all costs associated with acquisition and proper handling of healthy tree specimen, planting in location specified and in accordance with plan specifications and care of tree throughout the warranty period. The work at each tree shall include layout (with owner's approval prior to planting), excavation, planting, staking, backfill, mulching and all related construction. No separate payment will be made.

GG. Planting Areas (Shrubs & Plantings):

1. The measurement for payment for Planting Areas (Shrubs & Plantings) shall be the per square foot (SF) price stated in the Bid Schedule.
2. The unit prices bid for Planting Areas (Shrubs & Plantings) shall include all costs associated with acquisition and proper handling of healthy plant specimen, planting in location specified and in accordance with plan specifications and care of plants throughout the warranty period. The work shall include layout (with owner's approval prior to planting), excavation, planting, staking, backfill, mulching and all related construction. No separate payment will be made.

HH. Retractable and Permanent Bollards:

1. The measurement for payment for Retractable and Permanent Bollards shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Retractable and Permanent Bollards shall include all costs associated with assembly, verification of proper location, excavation, concrete work, backfill and compaction, completion of installation per manufacturers requirements, adjustments, and verification of function. No separate payment will be made.

II. PVC Schedule 40 Pipe and Fittings:

1. The measurement for payment for PVC Schedule 40 Pipe and Fittings shall be the linear foot (LF) price stated in the Bid Schedule.

2. The unit prices bid for PVC Schedule 40 Pipe and Fittings shall include all costs associated with placing the conduit, separation from other utilities, placement at specified depth (min of 24 inches unless otherwise indicated), electrical connection, verification of wiring plan, verification of function. Note that trenching and excavation is covered in its own lump sum item. Connection of electrical wires shall be safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

JJ. Tree Well Lights:

1. The measurement for payment for Tree Well Lights shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Tree Well Lights shall include all costs associated with the assembly, mounting, adjustments, electrical connection, verification of lighting function and completion of installation per manufacturers requirements. Connection of electrical wires shall be safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

KK. Plug Outlets:

1. The measurement for payment for Plug Outlets shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Plug Outlets shall include all costs associated with the assembly, mounting, adjustments, electrical connection, verification of lighting function and completion of installation per manufacturers requirements. Connection of electrical wires shall be safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

LL. Landscape Light:

1. The measurement for payment for Landscape Light shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Landscape Light shall include all costs associated with the assembly, mounting, adjustments, electrical connection, verification of lighting function and completion of installation per manufacturers requirements. Connection of electrical wires shall be

safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

MM. Street Light Installation:

1. The measurement for payment for Street Light Installation shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Street Light Installation shall include all costs associated with placing the foundations (per manufacturer's design), assembly, mounting, adjustments, electrical connection, verification of lighting function and completion of installation per manufacturers requirements. Decorative street lights will be supplied by the City and will be available upon commencement of the project. Connection of electrical wires shall be safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

NN. Electrical Wire:

1. The measurement for payment for Electrical Wire shall be the linear foot (LF) price stated in the Bid Schedule.
2. The unit prices bid for Electrical Wire shall include all costs associated with placing wire with conduit or without conduit, separation from other utilities, placement at specified depth (min of 24 inches unless otherwise indicated), electrical connection, verification of wiring plan, verification of function and completion of installation per manufacturers requirements. Note that trenching and excavation is covered in its own lump sum item. Connection of electrical wires shall be safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

OO. Electrical Panel:

1. The measurement for payment for Electrical Panel shall be the lump sum (LS) price stated in the Bid Schedule.
2. The unit prices bid for Electrical Panel shall include all costs associated with placing the footers (per manufacturer's design), assembly, mounting, adjustments, electrical connection, verification of wiring plan, verification of function and completion of installation per manufacturers

requirements. Connection of electrical wires shall be safely completed per applicable electrical codes. Note that trenching and excavation is covered in its own lump sum item. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

PP. Electrical and Telecommunications Trench Excavation:

1. The measurement for payment for Electrical and Telecommunications Trench Excavation shall be the lump sum (LS) price stated in the Bid Schedule.
2. The unit price bid for Electrical and Telecommunications Trench Excavation shall include the cost of all materials, labor and equipment associated with the excavation, trenching, bedding, backfill for all electrical and telecommunications conduit, wire, boxes, fittings, fixtures, panels, and other ancillary electrical and telecommunication items. Work shall include any material removal, disposal, use of trench box as necessary, securing trench, separation from other utilities, installation and compaction of backfill material. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

QQ. Crosswalk LED Heads :

1. The measurement for payment for Crosswalk LED Heads shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Crosswalk LED Heads shall include all costs associated with the assembly, mounting, adjustments, electrical connection, verification of function and completion of installation per manufacturers requirements. Connection of electrical wires shall be safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

RR. Traffic Signal Heads:

1. The measurement for payment for Traffic Signal Heads shall be the per each (EA) price stated in the Bid Schedule.
2. The unit prices bid for Traffic Signal Heads shall include all costs associated with the assembly, mounting, adjustments, electrical connection, verification of signal function and completion of installation per manufacturers requirements. Connection of electrical wires shall be



safely completed per applicable electrical codes. Contractor shall coordinate with any impacted agencies and utilities to facilitate proper installation and to arrange service outages. No separate payment will be made.

SS. Water and Sewer Mains and Appurtenances – Measurement and payment for Water & Sewer Mains and Appurtenances items, with the exception of Asphalt Removal, Miscellaneous Removal, Compacted ABC Stone, Binder Course (2”) and Traffic Control, are contained with the City of Hendersonville Water and Sewer Standard Specifications in the Project Manual. The line items Asphalt Removal, Miscellaneous Removal, Compacted ABC Stone, Binder Course (2”) and Traffic Control under the Water and Sewer Mains and Appurtenances section shall be measured as described in this specification section. Payment shall be made under the respective line item within the Water and Sewer Mains and Appurtenances section.

TT. Bio-Swales:

1. The measurement for payment for Bio-Swales shall be the per square foot (SF) price stated in the Bid Schedule. The measurement shall include only the amount properly installed per the specifications provided.
2. The unit price bid for Bio-Swales shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, installing filter fabric (if specified), installation of underdrains and storm pipe, bedding, soil media mix, concrete curbs and check dams, river rock, installation and compaction of backfill material, inlets and overflow structures. No separate payment will be made.
3. The plantings and mulch shall be included under other items.

UU. Sylva Cells:

1. The measurement for payment for Sylva Cells shall be the per each (EA) price stated in the Bid Schedule. The measurement shall include only the number properly installed per the specifications provided.
2. The unit price bid for Sylva Cells shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding, installing filter fabric (if specified), installation of underdrains, installation and compaction of backfill material. Please note that the placement of Sylva Cells may be reasonably adjusted to accommodate underground utilities. No separate payment will be made.
3. The planting of trees and installation of tree grates shall be included under other items.

VV. Abandon Storm Structure :

1. The measurement for payment for Abandon Storm Structure shall be the per each (EA) price stated in the Bid Schedule. The measurement shall include only the number properly abandoned.
2. The unit price bid for Abandon Storm Structure shall include all costs in connection with excavation, removal, disposal, installation and compaction of backfill material. No separate payment will be made.

WW. Abandon Pipe:

1. The measurement for payment for Abandon Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length properly abandoned.
2. The unit price bid for Abandon Pipe shall include all costs in connection with excavation, removal, disposal, installation and compaction of backfill material and/or flowable fill. No separate payment will be made.

XX. New Catch Basin:

1. The measurement for payment for New Catch Basin shall be the per each (EA) price stated in the Bid Schedule.
2. The unit price bid for New Catch Basin shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding structure, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of risers, frames, grates, hoods, installation and compaction (if necessary) of backfill material. No separate payment will be made.

YY. New Junction Box:

1. The measurement for payment for New Junction Box shall be the per each (EA) price stated in the Bid Schedule.
2. The unit price bid for New Junction Box shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding structure, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of risers, frames, lids, installation and compaction (if necessary) of backfill material. No separate payment will be made.

ZZ. 4" PVC Storm Drain Pipe:

1. The measurement for payment for 4" PVC Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 4" PVC Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

AAA. 4" PVC Perforated Storm Drain Pipe:

1. The measurement for payment for 4" PVC Perforated Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 4" PVC Perforated Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

BBB. 6" PVC Storm Drain Pipe:

1. The measurement for payment for 6" PVC Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 6" PVC Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

CCC. 6" PVC Perforated Storm Drain Pipe:

1. The measurement for payment for 6" PVC Perforated Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 6" PVC Perforated Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter

fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

DDD. 15" HDPE Storm Drain Pipe:

1. The measurement for payment for 15" HDPE Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 15" HDPE Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

EEE. 18" HDPE Storm Drain Pipe:

1. The measurement for payment for 18" HDPE Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 18" HDPE Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

FFF. 24" HDPE Storm Drain Pipe:

1. The measurement for payment for 24" HDPE Storm Drain Pipe shall be the per linear foot (LF) price stated in the Bid Schedule. The measurement shall include only the length actually installed.
2. The unit price bid for 24" HDPE Storm Drain Pipe shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, bedding pipe, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation of fittings, installation and compaction (if necessary) of backfill material. No separate payment will be made.

GGG. Washed Stone Bedding:

1. The measurement for payment for Washed Stone Bedding shall be the per ton (TN) price stated in the Bid Schedule. The measurement shall include only the amount actually installed.
2. The unit price bid for Washed Stone Bedding shall include all costs in connection with bedding not included as part of other items and shall include excavation, removal, disposal, trenching, use of trench box as necessary, securing trench. No separate payment will be made.

HHH. Tie to Ex. Catch Basin:

1. The measurement for payment for Tie to Ex. Catch Basin shall be the per each (EA) price stated in the Bid Schedule. The measurement shall include only the number of actual tie in connections made into an existing catch basin.
2. The unit price bid for Tie to Ex. Catch Basin shall include all costs in connection with excavation, removal, disposal, trenching, use of trench box as necessary, securing trench, modifying existing catch basin, additional brick or block, concrete, reinforcement, patching, sealing, grouting, installing filter fabric (if specified), shooting elevations to ensure proper drainage, separation from other utilities, installation and compaction (if necessary) of backfill material. No separate payment will be made.

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**PART 2      PRODUCTS**

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2.1      RECORD DRAWINGS

- A. Progress Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.

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**PART 3      EXECUTION**

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3.1      RECORDING AND MAINTENANCE

- A. Recording:
  1. Label each document "PROJECT RECORD" in neat, large, printed letters.
  2. Record information concurrently with construction progress.
    - a. Do not conceal any work until required information is recorded.

3. Drawings; legibly mark to record actual construction.
    - a. Elevations of various elements of foundation in relation to finish datum.
    - b. All underground piping with elevations and dimensions, specifically including fittings and valves and changes to piping location shall be referenced. Horizontal and vertical locations of underground utilities and appurtenances shall be referenced to permanent surface improvements. Markings shall include actual installed pipe material, class, etc.
    - c. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structures.
    - d. Field changes of dimension and detail.
    - e. Changes made by Field Order or by Change Order.
    - f. Details not on original Contract drawings.
    - g. Equipment and piping relocations.
  4. Specifications and Addenda; legibly mark each Section to record:
    - a. Manufacturer, trade name, catalog number, and Supplier of each Product and item of equipment actually installed.
    - b. Changes made by Field Order or by Change Order.
  5. Shop Drawings (after final review and approval):
    - a. One set of record shop drawings for each process equipment, piping, (including casings) electrical system and instrumentation system.
- B. Maintain at the site for the Owner one (1) record copy of:
1. Drawings.
  2. Specifications.
  3. Addenda.

4. Change Orders and other Modifications to the Contract.
  5. Engineer's Field Orders or Written Instructions.
  6. Approved Shop Drawings, Working Drawings, and Samples.
  7. Field Test Records.
  8. Construction Photographs.
  9. Detailed Progress Schedule.
- C. Maintenance of Record Documents and Samples:
1. Store documents and samples in Contractor's field office apart from other documents used for construction.
    - a. Provide files and racks for storage of documents.
    - b. Provide locked cabinet or secure storage space for storage of samples.
  2. File documents and samples in accordance with CSI/CSC format.
  3. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
  4. Make documents and samples available at all times for inspection by the Engineer.
  5. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated "record documents" for review by the Engineer and the Owner.
- D. Review: RPR to review record drawings each month prior to approving pay application request.

**END OF SECTION**

**SECTION 02732**  
**STORM DRAINAGE SYSTEM AND ACCESSORIES**

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**PART 1 GENERAL**

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1.1 SCOPE OF WORK

- A. This section covers providing and installing the storm drainage and underdrainage collection systems. Storm drainage systems shall be constructed as shown on the Contract Drawings and as specified within.

1.2 DELIVERY, STORAGE AND HANDLING

- A. Unloading and Handling: All pipe and storm drainage material shall be unloaded and handled with reasonable care. Pipe shall not be rolled or dragged over gravel or rock during handling. When any joint or section of pipe is damaged during unloading or handling, the undamaged portions of the joint or section may be used where partial lengths are needed, or if damaged sufficiently, the Engineer will reject the joint or section as being unfit for installation and the Contractor shall remove such rejected pipe from the Project.

1.3 QUALITY ASSURANCE

- A. Pipe and drainage materials shall meet the following reference requirements:
1. 4- through 10-inch (100 to 250 mm) pipe shall meet AASHTO M252, Type S.
  2. 12- through 60-inch (300 to 1500 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306
- B. Precast concrete structures shall meet Section 03410
- C. Combination inlet frame, grate, curb box shall be cast iron, manufactured in the United States, with language showing aquatic life and that water drains to streams.

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**PART 2 PRODUCTS**

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1.1 HDPE PIPE

A. Material Properties:

1. Material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500 mm) pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively.

B. Joint Performance:

1. Pipe shall be joined using a bell & spigot joint meeting the requirements of AASHTO M252, AASHTO M294, or ASTM F2306. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

C. Fittings:

1. Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a welded bell and valley or saddle gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294, or ASTM F2306

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**PART 3 EXECUTION**

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3.1 ALIGNMENT

- A. The construction for the item specified shall conform to the plans and be placed at the locations and elevations shown on Contract Drawings. Lines and grades may not be altered unless given the consent of the Engineer. Temporary support, adequate protection, and maintenance of all underground and surface

utility structures, drains, and other structures encountered in the progress of the work shall be furnished by the Contractor at its own expense. Where the grade or alignment of the pipe is obstructed by existing utility structures such as conduits, ducts, watermains, branch connections to main sewers, or main drains, the obstruction shall be permanently supported, relocated, removed, or reconstructed by the Contractor in cooperation with the Owners of such utility structures. Whenever necessary to determine the location of existing underground utility structure the Contractor, after an examination of available records shall make all explorations and excavations for such purpose as may be directed by the Engineer. All pipe shall be laid to the depth shown on the plans or as directed by the Engineer in writing. The depth of the cover shall be measured from the top of the pipe to the final permanent ground elevation. Any costs incurred for this work shall be included in the prices for pipeline construction as shown in the proposal.

### 3.2 INSTALLATION

- A. Installation shall be in accordance with ASTM D2321 and manufacturer recommended installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot. (0.3 m) and for 60-inch (1500 mm) diameter the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1 (compacted), Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01.
- B. To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

**END OF SECTION**