INVITATION TO BID
No. 201807

S. KENT STREET AND WOODSTOCK LANE INFRASTRUCTURE IMPROVEMENTS

FOR THE

DEPARTMENT OF PUBLIC SERVICES

Project Manual

Contract Documents

Specifications

May 2018

City of Winchester
S. Kent Street and Woodstock Lane Infrastructure Improvements
ITB# 201807
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INVITATION TO BID

S. Kent Street and Woodstock Lane Infrastructure Improvements

ITB # 201807

The City of Winchester is submitting this Invitation to Bid to establish a contract with qualified Contractors furnishing all labor, equipment, transportation and materials necessary for the following project:

S. Kent Street and Woodstock Lane Infrastructure Improvements

Work includes the replacement of existing utilities in South Kent Street between Millwood Avenue and Cork Street and Woodstock Lane between Pleasant Valley Road and Pine Street. Project components include, but are not limited to replacement of City water mains, water service lines, fire hydrants, sanitary sewer manholes, sanitary laterals, curb and curb/gutter, storm drain inlets and piping, street paving and site restoration.

A **mandatory** pre-bid meeting will be held on **Friday, June 22, 2018 at 10:A.M.** in the City Council Chambers of Rouss City Hall, 15 N. Cameron Street, Winchester, VA 22601. Due to the importance of all respondents having a clear understanding of the specifications/scope of work and requirements of this solicitation, attendance at this conference will be a prerequisite for submitting a proposal. Proposals will only be accepted from those respondents who are represented at this pre-bid meeting. Attendance at the meeting will be evidenced by the representative's signature on the attendance roster. No one will be admitted after10:05 A.M. (local time).

Contract Specifications may be obtained from the below address and all bids shall be received at:

City of Winchester, Virginia
Finance Department - Purchasing Division
Rouss City Hall, 4th Floor
15 North Cameron Street
Winchester, Virginia 22601
Telephone (540) 667-2378

The contract documents and drawings may be downloaded at no cost from the City's website at:
http://www.winchesterva.gov/purchasing/itbrfp.php

Any questions regarding the contract documents or drawings shall be sent **in writing via e-mail** to:

Kelly Henshaw: kelly.henshaw@winchesterva.gov

Bid prices shall be made on the blank Bid Form provided herein. Bids shall be delivered to the above address on or before **2:00 p.m. (local time) on Friday, July 6th, 2018,** at which time the bids shall be publicly read aloud.

Bids will be received only from contractors who are registered in the Commonwealth of Virginia. **Bidders shall indicate on the outside of the envelope containing the Bid their current Virginia Contractor's**

Registration Number. Bids without this information on the outside of the envelope may be non-responsive.

Each Bid shall be accompanied by complete response to the Contractor Qualification Data Sheet. The successful bidder shall meet the minimum qualifications specified in the Contractor Qualification Data Sheet. A bid from a bidder that does not meet the minimum qualifications specified in the Contractor Qualification Data Sheet, as determined by the City, shall be non-responsive.

Each Bid shall also be accompanied by a satisfactory Bid Guarantee in the amount of 5% of the bid, in the form of a certified or cashier's check drawn on a bank chartered under the laws of the Commonwealth of Virginia; payable to the Treasurer of the City of Winchester, or a Bid Bond, as a guarantee that the bidder will within fifteen (15) days after the date of the award of the Contract, execute an agreement and file insurance as required by the Contract Documents if his proposal is accepted. If the successful bidder fails to execute and file the agreement and insurance, the amount of the Bid Guarantee shall be forfeited. Bids without a satisfactory Bid Guarantee shall be rejected.

Performance and Payment Bonds will be required of the successful bidder, each in an amount equal to one hundred (100) percent of the amount of the Contract, conditioned upon the faithful performance of the Contract and to the payment in full to all persons furnishing labor, materials, equipment, etc., for and in connection with the work to be performed under the contract.

Bidder desiring to withdraw his bid after the bid opening procedure, shall give notice in writing of his claim of right to withdraw his bid within two (2) business days after the conclusion of the bid opening procedure. Bidder shall submit to the City his original work papers; documents and materials used in preparation of the bid sought to be withdrawn. Bidder withdrawing his bid that does not meet these requirements shall forfeit their bid bond.

The City of Winchester reserves the right to reject any proposal for failure to comply with all requirements of this notice or any of the Contract Documents; however, it may waive any minor defects or informalities at its discretion. The City further reserves the right to reject any and all proposals, cancel the ITB at any time prior to award or to award a contract that in its judgment is in the best interest of the City.

CITY OF WINCHESTER, VIRGINIA

BY: Mike Marzullo, Purchasing Agent

S. Kent Street and Woodstock Lane Infrastructure Improvements

INSTRUCTIONS TO BIDDERS

1. **OWNER AND ENGINEER:**

The Owner is the City of Winchester Department of Public Services, which shall be represented by the City Engineer or his designee who shall perform the duties of the Engineer. Telephone: Department of Public Services, (540) 667-1815, extension 1481.

2. **COPIES OF CONTRACT DOCUMENTS:**

2.01 Bidding Documents may be examined and downloaded from the City's website at http://www.winchesterva.gov/purchasing/itbrfp at no charge.

City of Winchester, Virginia
Finance Department - Purchasing Division
Rouss City Hall, 4th Floor
15 North Cameron Street
Winchester, Virginia 22601
Telephone: (540) 667-2378

2.02 Complete set of Bidding Documents shall be used in preparing bids; neither the Owner nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents. Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining bids on the Work and do not confer a license or grant for any other use.

3. **EXAMINATION OF CONTRACT DOCUMENTS AND SITE:**

3.01 Before submitting a bid, each bidder must examine the Contract Documents thoroughly, visit the site to familiarize himself with local conditions that may in any manner affect cost, progress, or performance of the work, familiarize himself with federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress, or performance of the work; and study and carefully correlate bidder's observations with the Contract Documents.

3.02 Before submitting his bid, each bidder will, at his own expense, make such additional investigations and tests as the bidder may deem necessary to determine his bid for performance of the work in accordance with time and other terms and conditions of the

Contract Documents. The Contractor shall be responsible for taking his own borings or making any investigations he requires to establish subsurface conditions in the area of this Contract. The City does not assume any responsibility for the subsurface conditions which may be encountered. On request, Owner will provide each bidder access to the site to conduct such investigations.

3.03 The submission of a bid will constitute an incontrovertible representation by the bidder that he has examined the site and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of the Work.

3.04 It is understood and agreed by the bidder that the estimate of quantities (if provided) are approximate, and are presented in order to obtain unit prices and approximate amount of the Contract. The Contractor shall make no claim against the City because of any estimate, tests or representations made by any officer or agent of the City, which may prove to be in any respect erroneous.

3.05 Scope of the work is as specified herein. The Owner, however, reserves the right to make adjustments to the scope of the work. Such adjustments shall be accomplished by appropriate Change Orders.

4. SPECIFICATIONS:

The technical specifications for the project are provided within this contract document.

5. INTERPRETATIONS:

All questions about the discrepancies or ambiguities in the Contract Documents prior to the bid opening shall be submitted in writing via e-mail to the following:

Kelly Henshaw, City Engineer: kelly.henshaw@winchesterva.gov

Replies to questions will be issued by Addenda mailed or delivered to all parties recorded by the Purchasing Agent as having received the Bidding Documents or by posting on a Question and Answer Bulletin Board posted at the following location:

http://www.winchesterva.gov/purchasing/itbrfp

Questions received less than five (5) calendar days prior to the date for opening of bids may not be answered. Only questions answered by formal written Addenda or in writing on the Question and Answer Bulletin Board will be binding.

6. **REQUIRED BOND - BID GUARANTEE:**

6.01 Bid Guarantee shall be made payable to Owner, in an amount of five percent (5%) of the bidder's maximum bid price and in a form of a certified or cashier's check drawn on a bank chartered under the laws of the Commonwealth of Virginia; payable to the Treasurer, City of Winchester, or a Bid Bond issued by a surety having registered resident agents in Virginia.

6.02 The Bid Guarantee of the successful bidder will be retained until such bidder has executed the Agreement and furnished the required Contract Security, whereupon it will be returned. If the successful bidder fails to execute the agreement and furnish the required Contract Security within fifteen (15) calendar days of the Notice of Award, Owner may annul Notice of Award and the Bid Guarantee of the bidder will be forfeited.

7. **REQUIRED BONDS – PAYMENT AND PERFORMANCE:**

Performance and Payment Bonds will be required of the Successful bidder, each in an amount equal to one hundred percent (100%) of the amount of the Contract, conditioned upon the faithful performance of the Contract and to the payment in full to all persons furnishing labor, materials, equipment, etc., for and in connection with the work to be performed under the Contract.

8. **CONTRACT TIME:**

Contractor agrees that all work shall be completed within 180 calendar days following the Notice to Proceed.

Owner and Contractor recognize that the time is of essence in this Contract, and if the work is not completed within the specified times outlined above, plus any extensions allowed, then the Contractor shall pay, as liquidated damages, $1,000.00 for each calendar day that expires after the specified completion date.

9. **PAYMENT PROCEDURE:**

9.01 The basis for payment shall be the actual percentage of work completed, as determined in the field by the Engineer.

9.02 An amount equal to five percent (5%) of each progress payment shall be held from each payment as retainage.

10. **SUBCONTRACTORS:**

10.01 The apparent successful bidder and any other bidder so requested, will within seven (7) days after the day of bid opening submit to Owner a list of all subcontractors and other persons and organizations, including those who are to furnish the principal items of material and equipment, proposed for the work. Such list shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of qualification for each such subcontractor, person, and organization. If Owner or Engineer, after due investigation has reasonable objection to any proposed subcontractor, other person or organization, either may before giving the Notice of Award request the apparent successful bidder to submit an acceptable substitute without an increase in Bid price. If the apparent successful bidder declines to make any such substitution, the Contract shall not be awarded to such bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Bond. Any subcontractor, other person, or organization so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer.

10.02 No Contractor shall be required to employ any subcontractor, other person, or organization against whom he has reasonable objection.

11. **SUBSTITUTE MATERIAL AND EQUIPMENT**

11.01 Whenever it is indicated in the Contract Documents that a substitute or "or equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered until after the Effective Date of the Contract Agreement. The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in the General Conditions.

12. **PREPARATION OF BID:**

12.01 The Bid Form is included in these Specifications, and may not be altered in any way. Additional copies may be obtained from the City of Winchester.

12.02 Bid Forms must be completed in ink or by typewriter. The Total Base Bid price must be stated in words and numerals; in case of conflict, words will take precedence.

12.03 A. Bids MUST give full firm name and address of bidder. Failure to manually sign bid may disqualify it. Person signing bid will show TITLE or AUTHORITY TO BIND THE FIRM IN A CONTRACT. Firm name and authorized signature must appear on bid in the space provided on the bid form. Those authorized to sign are as follows:

If a sole proprietorship, the owner may sign.
If a general partnership, any general partner may sign.
If a limited partnership, a general partner must sign.
If a limited liability company, a "member" may sign or a "manager" must sign if so specified by the articles or organization.
If a regular corporation, the CEO, President or Vice-President must sign.
Others may be granted authority to sign but the City requires that a corporate document authorizing him/her to sign be submitted with bid.

B. Contractor's license or registration number shall be entered in the space provided on the Bid Form.

C. A bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 of the Code of Virginia shall include in its bid or proposal the identification number issued to it by the State Corporation Commission (SCC). Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 of the Code of Virginia or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. Any bidder or offeror described herein that fails to provide the required information may not receive an award unless a waiver of this requirement and the administrative policies and procedures established to implement this section is granted by the City Manager. The SCC may be reached at (804) 371-9733 or at http://www.scc.virginia.gov/default.aspx.

12.04 Bidder shall make acknowledgement on the Bid Form of receipt of all Addenda, the numbers of which shall be filled in the Bid Form.

SUBMISSION OF BIDS:

13.01 Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be included in an opaque sealed envelope, along with the Bid Bond, Non-collusion Affidavit, and other required documents. The sealed envelope shall indicate the Project Title, name and address of the bidder, and State Registration No. of the bidder. If the bid is sent through the mail, or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation **"BID ENCLOSED"** on the face thereof.

13.02 Timely delivery of the Bid shall be the sole responsibility of the Bidder. Bids must be received not later than the time and date stated in the Invitation to Bid. Bids by telephone, facsimile or other forms shall not be accepted.

14. **MODIFICATION AND WITHDRAWAL OF BIDS:**

14.01 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a bid must be executed) and delivered to the place where bids are to be submitted at any time prior to opening of the bids. The request for withdrawal or modification must be in writing and signed by a person duly authorized to do so.

14.02 No bidder may withdraw his bid within thirty (30) calendar days after the actual date of the bid opening, except as allowed by the Code of the City of Winchester, Virginia, Section 21-43(a), which states "the Bidder shall give notice in writing of his claim of rights to withdraw this bid within two (2) business days after the conclusion of the bid opening procedure". Bidder shall submit to the Owner his original work papers, documents and materials used in preparation of his bid sought to be withdrawn.

OPENING OF BIDS:

14.03 Bids shall be opened publicly, and will be read aloud at the time and location indicated on the Invitation to Bid. An abstract of the amounts of the Bids shall be made available after the opening of bids.

14.04 All bids shall remain open for sixty (60) days after the day of the bid opening, but Owner may, in his sole discretion, release any bid and return the Bid Bond prior to that date.

AWARD OF CONTRACT:

14.05 Owner reserves the right to reject any and all bids, to waive any and all informalities and to negotiate Contract terms with the successful bidder, and the right to disregard all nonconforming, nonresponsive, or conditional bids. Discrepancies between words and figures shall be resolved in favor of words. Discrepancies between indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

14.06 In evaluating bids, Owner will consider the qualifications of the bidders, whether or not the bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid Form. Owner may consider the qualifications and experience of subcontractors and other persons and organizations proposed for the work.

14.07 Owner may conduct such investigations as he deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and financial ability of the bidders, proposed subcontractors and other persons and organizations, to do the work in accordance with the Contract Documents and to the Owner's satisfaction within the prescribed time.

14.08 Owner reserves the right to reject the bid of any bidder who does not pass any such evaluations to Owner's satisfaction.

14.09 If the Contract is to be awarded, it will be awarded on a Base Bid price basis to the lowest responsive and responsible bidder, and whose evaluation by the Owner indicates that the award will be in the best interest of the Project and the City. Discounts for prompt payment, liquidated damages, and cash incentives will not be part of the award.

15. **NEGOTIATION WITH THE LOWEST BIDDER**:

Unless all bids are cancelled or rejected, the City of Winchester reserves the right granted by § 2.2-4318 of the *Code of Virginia* to negotiate with the lowest responsive, responsible bidder to obtain a contract price within the funds available to the agency whenever such low bid exceeds the agency's available funds. For the purpose of determining when such negotiations may take place, the term "available funds" shall mean those funds which were budgeted by the agency for this contract prior to the issuance of the written Invitation for Bids. Negotiations with the low bidder may include both modifications of the bid price and the Scope of Work/Specifications to be performed. The agency shall initiate such negotiations by written notice to the lowest responsive, responsible bidder that its bid exceeds the available funds and that the agency wishes to negotiate a lower contract price. The times, places, and manner of negotiating shall be agreed to by the agency and the lowest responsive, responsible bidder.

16. **SIGNING OF CONTRACT:**

Owner shall give Notice of Award to the successful bidder accompanied by at least three (3) unsigned counterparts of the Contract and all other Contract Documents. Within fifteen (15) days thereafter, Contractor shall sign and deliver at least three (3) counterparts of the Contract to the Owner with all other Contract Documents attached. Within ten (10) days thereafter, Owner will deliver all fully signed counterparts to Contractor. Engineer will identify those portions of the Contract Documents not fully signed by Owner and Contractor and shall ensure that all parties appropriately execute all required portions of the contract immediately.

*** * * END OF SECTION * * ***

BID FORM
S. Kent Street and Woodstock Lane Infrastructure Improvements
ITB# 201807

This Bid is submitted to:

City of Winchester, Virginia
Finance Department - Purchasing Division
Rouss City Hall, 4th Floor
15 North Cameron Street
Winchester, Virginia 22601

In submitting this Bid, bidder acknowledges that the bidder has examined copies of the following Contract Documents:

BIDDING DOCUMENTS

- Invitation to Bid
- Instructions to Bidders
- Bid Form
- Contractor Qualification Data Sheet
- Bid Bond
- Non-Collusion Affidavit
- Contract
- Performance Bond
- Labor and Material Payment Bond
- Notice of Intent to Award
- Notice of Award
- Notice to Proceed
- City of Winchester Required General Terms and Conditions
- General Conditions
- Supplement to General Conditions
- Special Terms and Conditions

TECHNICAL SPECIFICATIONS

- Scope of Work – Sequence of Construction
- Surveying
- As-Built Drawings
- Demolition
- Disposal of Materials
- Tree Removals
- Erosion and Sediment Control
- Allaying Dust

- Maintenance of Traffic
- Concrete (Curb & Gutter, Sidewalks, Entrances)
- Rubber Sidewalks
- Detectable Warning Surfaces
- Handrail
- Sidewalk Switchback
- Rock Excavation
- Topsoil and Seeding
- Tree Plantings
- Storm
- Roof Drains
- Trench Drains
- Water Distribution System
- Sanitary Sewer Collection System

DRAWINGS

ADDENDA:

NUMBER	**DESCRIPTION**	**DATE**
_____	_____	_____
_____	_____	_____
_____	_____	_____

Receipt of all of above is hereby acknowledged.

CONTRACTOR: _____

BY (SIGNATURE): _____

NAME AND TITLE: _____

DATE: _____

BID ITEMS/QUANTITIES

(a) The Contractor shall provide all unit prices or lump sum prices for all bid items on the Bid Form herein. **If a unit price or lump sum price is omitted or left blank the bid and bidder shall be non-responsive.** The bid forms designate which prices are for *Install* only work, complete and in place, (i.e. assumes equipment and/ or materials will be supplied by the City). All other bid prices are for Furnish and Install work, complete and in place.

(b) The quantities shown for unit bid items are based upon the best information available at time of preparation of these bid documents, and are established for the purpose of obtaining a bid price. No adjustments to the bid prices based on changes to quantities will be considered. All bid prices will be held throughout the duration of the contract regardless of any increase or decrease in bid quantity.

(c) Emergency work shall be negotiated with a maximum allowable amount of 50% over the bid price by item. This excludes all lump sum bid items.

(d) All other bid items not listed or described in the Contract Documents will be negotiated between the City and the Contractor before the time of need. Once a negotiated price is established, it will be used for the remainder of the contract.

The undersigned Bidder proposes to complete all work in accordance with the Contract Documents for the following unit prices:

City of Winchester

S. Kent Street and Woodstock Lane Infrastructure Improvements – ITB #201807

BID TABLE

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
Mobilization					
1	Mobilization (Maximum of 3% of Total Price)	1	Lump Sum		
Surveying					
2	Surveying/Project Layout	1	Lump Sum		
3	As-built Drawings	1	Lump Sum		
Demolition/Removal					
4	Demolition of Existing Asphalt or Concrete	23,000	SY		
5	Tree Removal	8	EA		
6	Removal of Existing Storm Drain Pipe, Includes Disposal	75	LF		
7	Removal of Existing Storm Drain Inlet or Manhole, Includes Disposal	2	EA		
8	Asphalt Milling (per 2” depth) [VDOT Section 315], Includes Disposal	250	SY		
Erosion and Sediment Control					
9	Erosion and Sediment Control	1	Lump Sum		
Maintenance of Traffic					
10	Maintenance of Traffic	1	Lump Sum		
Sidewalk and Street Improvements					
11	Standard Curb, CG-2 (Includes aggregate base course)	3,200	LF		
12	Combination Curb & Gutter, CG-6 (Includes aggregate base course)	1,000	LF		
13	Concrete Sidewalk, 4” Thick (Includes aggregate base course)	5,000	SY		

14	Brick Paver Sidewalks on 4” Concrete Base	1,200	SY		
15	Rubber Sidewalk	150	SY		
16	Concrete Entrance, CG-9 (7” Thick)	200	SY		
17	Detectable Warning Surfaces, CG-12	30	SY		
18	Handrail	230	LF		
19	Sidewalk Switchback	1	Lump Sum		
20	Aggregate Base Course, 21-A (for road work only) [VDOT Section 309]	7,000	TON		
21	Asphalt Concrete Base Course, BM-25.0D, [VDOT Section 315]	3,800	TON		
22	Asphalt Concrete Surface Course, SM-9.5 AL [VDOT Section 315]	1,900	TON		
Rock					
23	Rock Excavation, Includes Disposal	100	CY		
Restoration and Landscaping					
24	Topsoil and Seeding	100	SY		
25	Tree, Princeton American Elm Tree, 4” caliper	7	EA		
26	Tree, River Birch, 4” Caliper	1	EA		
27	Tree, Kousa Dogwood, 4” Caliper	8	EA		
28	Tree, Redbud, 4” Caliper	10	EA		
29	Tree, Serviceberry, 4” Caliper	3	EA		
30	Tree, Paperbark Maple, 4” Caliper	2	EA		
Storm Drainage					
31	Storm Drain Pipe, Class IV RCP, 18-inch	90	LF		
32	Storm Drain Pipe, Class IV RCP, 24-inch	70	LF		
33	Drop Inlet, Modified DI-1 with Dual Inlet Top (City Standard Detail SD-5)	2	EA		
34	Drop Inlet, Modified DI-1 with Triple Inlet Top (City Standard Detail SD-5)	5	EA		
35	Storm Sewer Manhole	3	EA		

36	Storm Sewer Manhole, Doghouse	1	EA		
37	Storm Sewer Manhole Frame & Cover	4	EA		
38	Roof Drain Pipe, 4” PVC	800	LF		
39	Trench Drain with Solid Cover, 18” Wide	12	LF		
Water System					
40	Water Main Replacement, 4” Ductile Iron	60	LF		
41	Water Main Replacement, 6” Ductile Iron	250	LF		
42	Water Main Replacement, 8” Ductile Iron	5,000	LF		
43	Water Main Replacement, 10” Ductile Iron	75	LF		
44	Gate Valve and Box, 4”	3	EA		
45	Gate Valve and Box, 6”	13	EA		
46	Gate Valve and Box, 8”	56	EA		
47	Gate Valve and Box, 10”	2	EA		
48	Insert Gate Valve, 4”	2	EA		
49	Insert Gate Valve, 6”	4	EA		
50	Insert Gate Valve, 8”	10	EA		
51	Insert Gate Valve, 10”	1	EA		
52	Insert Line Stop, 3 ½”	1	EA		
53	Wet Tap, ¾-inch	85	EA		
54	Wet Tap, 1-inch	10	EA		
55	Wet Tap, 2-inch	1	EA		
56	Water Service Line, ¾-inch Copper	1,400	LF		
57	Water Service Line, 1-inch Copper	200	LF		
58	Water Service Line, 2-inch Poly	20	LF		
59	Water Meter Assembly, ¾-inch	85	EA		
60	Water Meter Assembly, 1-inch	10	EA		

61	Water Meter Assembly, 2-inch	1	EA		
62	Fire Hydrant Assembly	11	EA		
63	Remove Existing Fire Hydrant	8	EA		
Sanitary Sewer System					
64	Replace Existing Sanitary Sewer Manhole	23	EA		
65	Sanitary Sewer Manhole Frame & Cover	25	EA		
66	Sanitary Sewer Lateral Replacement, 4” SDR 26 PVC	2,200	LF		
67	Sanitary Sewer Lateral Replacement, 6” SDR 26 PVC	100	LF		
68	Sanitary Sewer Connection to Existing Main and New Cleanout, 4”	130	EA		
69	Sanitary Sewer Connection to Existing Main and New Cleanout, 6”	5	EA		
70	Sanitary Sewer Main Replacement, 8” PVC	260	LF		
71	New Sanitary Sewer Manhole	1	EA		
72	Excavate and Cap Existing Sanitary Sewer Lateral	10	EA		
TOTAL FOR ALL – BASE BID					

TOTAL BASE BID: $_____

IN WORDS:

_____

CONTRACTOR: _____

BY: (SIGNATURE) _____

NAME AND TITLE: _____

_____

DATE: _____

ADDRESS: _____

_____

_____

TELEPHONE: _____

CURRENT VIRGINIA CONTRACTOR REGISTRATION NUMBER: _____

NOTE: REQUIRED BID GUARANTEE MUST BE ENCLOSED WITH THIS BID PROPOSAL.

S. Kent Street and Woodstock Lane Infrastructure Improvements – ITB# 201807

CONTRACTOR QUALIFICATION DATA SHEET

1. General:

In order to be considered for selection, Bidders shall submit the following information as part of your response to this solicitation. Failure to complete and provide this data sheet and the requested information may result in a non-responsive bid.

1.1 Proprietary Information

All source code, executables, user data, materials, meeting minutes, progress reports and documentation shall be submitted to the City and shall belong exclusively to the City, and shall be subject to public inspection in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by a Bidder shall not be subject to public disclosure under the Virginia Freedom of Information Act provided the Bidder invokes the protections of Section 2.2-4342F of the Virginia Public Procurement Act, which provides that:

> "Trade secrets or proprietary information submitted by a Bidder, or subsequently the Contractor, in connection with a procurement transaction, shall not be subject to public disclosure under the Virginia Freedom of Information Act. However, the Bidder or Contractor must invoke the protection of this Section prior to, or upon submission of the data or other materials. The Contractor must identify the data or other materials to be protected and justify in writing the explicit reasons that such protection is necessary. Failure to mark the data or other materials as proprietary or otherwise classified, will result in the data or other materials being released to Bidders or to the public as provided in the Virginia Freedom of Information Act."

The classification of the entire proposal document and total bid price as proprietary or trade secrets is not acceptable.

1.2 Incurred Cost

The Bidder is responsible for all costs of proposal preparation. The City of Winchester is not liable for any costs incurred in response to the ITB.

1.3 Contractor Qualifications:

Proposals should be as thorough and detailed as possible so that City may properly evaluate your capabilities to provide the required services. Bidders shall submit responses for the following items within your Bid response.

1.3.1 General

1.3.1.1 How many years has your organization been in business as a General Contractor?

1.3.1.2 How many years has your organization been in business under its present name?

1.3.1.3 What is your organization's Virginia Contractors Registration Number?

1.3.1.4 List the states and categories of construction in which your organization is legally qualified to do business?

1.3.1.5 *Qualifications:* Provide a description of the organizational structure and history. Identify key personnel to be assigned to this project and their relevant experience in work similar to this project.

1.3.1.6 *Debarment/Suspension List:* Firms shall confirm in writing that they are not currently on any debarment or suspension list of any local, state or federal government. Any firm found to be listed shall be rejected as non-responsive.

1.3.2 Construction-Specific

1.3.2.1 *Quality Management Plan and Timeliness Tracking Plan*

The Contractor shall provide a detailed description of all internal control methods used to insure quality throughout all of the contractor's operations, as well as the system or method that will be employed to track, monitor, and ensure compliance with all time line requirements of this ITB.

1.4.2.2 *Past Project Experience*

The Contractor shall provide a minimum of three (3) references that are similar in nature to the City's proposed construction project. The submitted projects shall have been initiated or completed in the past five (5) years and exceed $1,000,000 of total value. In the response, the Contractor shall provide a one to two paragraph description of the work performed, and the name, address, telephone number, and email address of the owner's representative. For each reference, the response shall also delineate the specific value of the underground utility installations, as defined above, as well as the total value of all the work completed.

The Contractor shall include in this list any contract(s) in the past five (5) years that were terminated and shall provide the reason for termination.

1.4.2.3 *Management of Simultaneous Contracts*

The Contractor shall list all the name of projects, owner's name and address, percent complete and scheduled completion of the major projects in progress on the date of proposal submittal and the estimated contract amount of all executed contracts that will be underway at the same time as the City's proposed construction project. The contractor shall also state how the contract needs of the City will be met with the available company resources considering that these other contracts will be underway simultaneously.

1.4.3 Financial Statements

Please submit your company's audited annual financial statement and/or Dunn & Bradstreet report for the last two (2) years.

1.4.4 Subcontracting Restrictions

The Prime Contractor shall perform or exercise responsibility for this contract with its own work force for at least 50% of the total dollar value of the contract. Identify the sub-Contractor(s) who will do work on this project and the amount of work that each is projected to perform.

1.4.5 Certification

An authorized representative of the company shall sign the Technical Proposal, which shall include the following statement above the name/signature/date line:

I certify that the information provided in the Contractor Qualifications is complete and accurate to the best of my knowledge.

Authorized Signature Title Date

BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____
(Here insert the name & address or legal title of the Contractor)

as Principal, hereinafter called the Contractor and _____

_____
(Here insert the legal title of the Surety)

as Surety, hereinafter called the Surety, are held and firmly bound unto the City of Winchester, Virginia, as obligee, hereinafter called the Owner, in the amount of

_____
(Dollars)

($_____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a Bid for:

ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements

in accordance with Drawing and Specifications prepared by the Public Services Department, City of Winchester, Virginia.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Obligee shall accept the Bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with terms of such Bid, and give such bonds as specified in the Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bonds, if the Principal shall pay the Obligee the difference not to exceed the penalty hereof between the amount specified in said Bid and such larger amount for which the

Obligee may in good faith contract with another party to perform the Work covered by said Bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

SIGNED AND SEALED THIS_____DAY OF_____A.D., 2018.

_____
PRINCIPAL

_____
TITLE

_____
WITNESS

_____
SURETY

_____
TITLE

_____
WITNESS

NON-COLLUSION AFFIDAVIT

STATE OF VIRGINIA

Ss: **ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements**

CITY OF WINCHESTER, COUNTY of FREDERICK

I, _____ of the City of _____

In the County of _____ and the State of _____

Of full age, being duly sworn according to law or my oath depose and say that:

I am _____ of the firm of _____

_____, of the Company making the Bid for the above named project, and that I executed the said Bid with full authority to do so; that the Company has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bid preparation in connection with the above named project; and that all statements contained in said Bid and in this affidavit are true and correct, and made with full knowledge that the City of Winchester relies upon the truth of the statements contained in said Bid and in the statements contained in this affidavit in awarding the Contract for said Project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by:

_____
(Name of Contractor)

Subscribed and sworn to _____
(Type or print name of applicant under signature)

before me this _____ day of _____, 20____.

_____
(Notary Public)

of _____

My commission expires: _____, 20____.

S. Kent Street and Woodstock Lane Infrastructure Improvements
ITB # 201807

CONTRACT

THIS CONTRACT, made and entered into in triplicate originals this _____ day of **_____, 2018**, by and between the **City of Winchester, Virginia**, Party of the First Part, hereinafter referred to as the **"Owner"** and _____, Party of the Second Part, hereinafter referred to as the **"Contractor"**.

WITNESSETH, That the Contractor and the City for the consideration stated herein agree as follows:

ARTICLE I, SCOPE OF WORK - The Contractor shall perform everything required to be performed and shall provide and furnish all of the labor, materials, necessary tools, expendable equipment and all utility and transportation services required to perform and complete in a workmanlike manner all the work required in connection with:

ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements

all in strict accordance with the Contract Documents prepared by the Public Services Department, City of Winchester, Virginia. The Contractor shall do everything required by this Contract and other Documents constituting a part thereof.

ARTICLE II, CONTRACT PRICE - The City shall pay to the Contractor for the performance of this Contract, subject to any additions or deductions provided therein, in current funds, the Contract Price computed as follows:

TOTAL CONTRACT PRICE= _____

ARTICLE III. PAYMENTS - Payments are to be made to the Contractor in accordance with and subject to provisions embodied in the Documents made a part of this Contract.

ARTICLE IV. CONTRACT TIME - Work under this Contract shall commence no later than the date to begin work set forth in a written Notice to Proceed from the City or its authorized representative, to the Contractor. The Contractor shall complete all work under this Contract within 180 calendar days following the Notice to Proceed issued for the project.

The Work shall be prosecuted (performed) regularly, diligently and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. **It is**

expressly understood and agreed by and between the Contractor and the City that the time for the completion of the Work described herein is a reasonable time for the completion of the same.

ARTICLE V. ENGINEER – The project has been designed by the City of Winchester Public Services Department, Engineering Division, 15 N. Cameron Street, Winchester, VA 22601, who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE VI. HOLD HARMLESS CLAUSE - Bids shall provide that during the term of the Contract, including warranty period, for the successful bidder indemnifying, defending, and holding harmless the City, its officers, employees, agent and representatives thereof from all suits, actions, claims of any kind, including attorney's fees, brought on account of any personal injuries, damages, or violation of rights sustained by any person or property in consequence of any neglect in safeguarding contract work, or on account of any act or omission by the Contractor or his employees, or from any claims or amounts arising from violation of any law, bylaw, ordinance, regulation or decree. The Contractor agrees that this clause shall include claims involving infringement of patent or copyrights.

ARTICLE VII. LIQUIDATED DAMAGES AND INCENTIVES - **It is hereby fully understood and agreed that the time is of essence in the performance of this Contract**. For each and every calendar day that elapses between the Contract Completion Dates specified in Article IV of this Contract and the date on which the work covered by such Contract is actually completed, including the removal of all plant and obstructions from the site of such work, the Contractor shall pay to the City as liquidated damages and not as a penalty, the sum of ONE THOUSAND DOLLARS PER CALENDAR DAY ($1,000.00). The total amount so payable by the Contractor as liquidated damages either may be deducted from any moneys due or payable to the Contractor by the City or so much thereof as is not so deducted shall be chargeable to and will be payable promptly by such Contractor and his Surety, or either of them, to the City. Such liquidated damages shall be payable to reimburse or compensate, at least in part, the City for (1) the administration of the work covered by such Contract and any other contract or contracts beyond the Contract Completion Date, including the additional expense to the City for supervision, inspection, and superintendence; (2) expenditures resulting from the inability of the City (and the general public) to use the improvement being constructed from and after such Contract Completion Date until the actual date of completion; (3) other miscellaneous obligations and expenditures incurred by the City directly as a result of the failure to complete the Work covered by such Contract on or before the Contract Completion Date.

ARTICLE VIII. COMPONENT PARTS OF THIS CONTRACT - That this Contract consists of the following component parts which are made a part of this agreement and Contract as fully and absolutely as if they were set out in detail in this Contract:

BIDDING DOCUMENTS

- Invitation to Bid
- Instructions to Bidders
- Bid Form
- Contractor Qualification Data Sheet
- Bid Bond
- Non-Collusion Affidavit
- Contract
- Performance Bond
- Labor and Material Payment Bond
- Notice of Intent to Award
- Notice of Award
- Notice to Proceed
- City of Winchester Required General Terms and Conditions
- General Conditions
- Supplement to General Conditions
- Special Terms and Conditions

TECHNICAL SPECIFICATIONS

- Scope of Work – Sequence of Construction
- Surveying
- As-Built Drawings
- Demolition
- Disposal of Materials
- Tree Removals
- Erosion and Sediment Control
- Allaying Dust
- Maintenance of Traffic
- Concrete (Curb & Gutter, Sidewalks, Entrances)
- Rubber Sidewalks
- Detectable Warning Surfaces
- Handrail
- Sidewalk Switchback
- Rock Excavation
- Topsoil and Seeding
- Tree Plantings
- Storm
- Roof Drains
- Trench Drains

- Water Distribution System
- Sanitary Sewer Collection System

DRAWINGS

ADDENDA:

Above components are complimentary and what is called for by one shall be binding as if called by all.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals the date first written above.

CONTRACTOR:	CITY OF WINCHESTER, VIRGINIA:
_____	_____ CITY MANAGER
_____ NAME AND TITLE	_____ ATTEST
_____ ATTEST	

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we_____

_____as Principal, hereinafter

called Contractor, and _____

Surety Company, with General Offices in _____

_____, a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Virginia as Surety, hereinafter called Surety, are held and firmly bound onto the City of Winchester, Virginia, hereinafter called Owner, in the penal sum

_____

(_____)Dollars, lawful money of the United States, for the payment of which sum, will and truly be made, the Said Contractor and Surety bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and delivered this____day of _____, 2018.

WHEREAS, the above named and bounded Contractor has entered into a written contract with the Owner, dated_____, 2018 for:

ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements

in accordance with the Drawings and Specifications prepared by the Engineering Department, City of Winchester, Virginia, which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

1. Complete the Contract in accordance with its terms and conditions, or

2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of contract price," as used in this paragraph, shall mean the total amount payable by the Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

Signed and sealed this _____day of_____ 2018.

_____	_____
PRINCIPAL	SURETY
_____	_____
TITLE	TITLE
_____	_____
WITNESS	WITNESS

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____as Principal, hereinafter

called Contractor, and _____

Surety Company, with General Offices in _____

_____, a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Virginia as Surety, hereinafter called Surety, are held and firmly bound unto the City of Winchester, Virginia, hereinafter called Owner, in the penal sum _____ (_____)Dollars, lawful money of the United States, for the payment of which sum, will and truly be made, the Said Contractor and Surety bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and delivered this _____day of_____ 2018.
WHEREAS, the above named and bounded Contractor has entered into a written contract with the Owner, dated_____, 2018 for:

ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements

in accordance with the Drawings and Specifications prepared by the Engineering Department, City of Winchester, Virginia, which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Contractor shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before

the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgement for such sum or sums as my be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

a) Unless claimant, other than the one having a direct Contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage paid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

b) After the expiration of one (1) year following the date on which Principal ceased work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanic's liens which may by be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this _____day of_____, 2018.

_____
PRINCIPAL

_____
TITLE

_____
WITNESS

_____
SURETY

_____
TITLE

_____
WITNESS

CITY OF WINCHESTER, VIRGINIA

NOTICE OF INTENT TO AWARD

Date:

To:

Thank you for your proposal concerning our Invitation to Bid For:

The City of Winchester intends to award this Invitation to Bid to:

This is not a Notice of Award or a Notice to Proceed.

Sincerely,

Michael Marzullo, CPPB
City of Winchester
Purchasing
Finance Department
15 N. Cameron Street
Winchester, VA 22601
(540) 667-1815 EXT 1477

NOTICE OF AWARD

DATE:

TO:

PROJECT TITLE: **ITB# 201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements**

Gentlemen:

Your Bid, dated _____, for the above Project has been considered and you are the apparent successful bidder. You are hereby notified that you have been awarded a Contract for:

The Contract Price of your contract is $_____.

Three copies each of the proposed Contract between Owner and Contractor and the Contract Documents accompany this Notice of Award.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award, that is by _____.

1. You must deliver to the Owner three (3) fully executed counterparts of the Contract between Owner and Contractor including all the Contract Documents. This includes the sets of Plans and Specifications. Each of the Contract Documents must bear your signature on the Index page of the Plans and on the Specification Table of Contents page.
2. You must deliver with the executed Contract, Payment and Performance Bonds, and required Certificates of Insurance. The Certificate of Insurance must identify the above referenced project as the project for which insurance is being provided. *Additionally, it must indicate the City of Winchester as the Certificate Holder, and name the City of Winchester as an additional insured.*

Failure to comply with these conditions within the time specified will entitle Owner to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

After you comply with those conditions, and upon approval of the Contract Security by the Owner, the Owner will return to you one fully signed counterpart of the Contract with the Contract Documents.

City of Winchester, Virginia

By: _____
City Manager

NOTICE TO PROCEED

DATE:

TO:

Re: City of Winchester, Department of Public Services

PROJECT TITLE: **ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements**

Gentlemen:

In accordance with the Contract between Owner and Contractor, you are notified that the Time for Completion under the above Contract will commence to run on _____, 2018. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Contract between Owner and Contractor, the Work shall be substantially completed within 180 calendar days which is _____, 2019.

City of Winchester, Virginia

By: _____
City Manager

CITY OF WINCHESTER

REQUIRED GENERAL TERMS AND CONDITIONS

A. APPLICABLE LAWS AND COURTS
B. ANTI-DISCRIMINATION
C. ETHICS IN PUBLIC CONTRACTING
E. IMMIGRATION REFORM AND CONTROL ACT OF 1986
F. DEBARMENT STATUS
G. ANTITRUST
H. MANDATORY USE OF CITY FORM AND TERMS AND CONDITIONS
I. CLARIFICATION OF TERMS
J. PAYMENT
K. PRECEDENCE OF TERMS
L. QUALIFICATIONS OF BIDDERS OR OFFERORS
M. TESTING AND INSPECTION
N. ASSIGNMENT OF CONTRACT
O. SEVERABILITY
P. CHANGES TO THE CONTRACT
Q. DEFAULT
R. TAXES
S. USE OF BRAND NAMES
T. TRANSPORTATION AND PACKAGING
U. INSURANCE
V. ANNOUNCEMENT OF AWARD
W. DRUG-FREE WORKPLACE
X. NONDISCRIMINATION OF CONTRACTORS
Y. AVAILABILITY OF FUNDS
Z. LICENSES AND PERMITS
AZ. TERMINATION
BZ. HOLD HARMLESS INDEMNIFICATION
CZ. CONFIDENTIALITY OF PERSONALLY IDENTIFIABLE INFORMATION
DZ. BID PRICE CURRENCY

These General Terms and Conditions are required for all sealed and unsealed written or verbal solicitations issued by the City of Winchester for procurements that are subject to the Winchester City Code unless changed, deleted or revised by the City Attorney.

A. **APPLICABLE LAWS AND COURTS:** This solicitation and any resulting contract shall be governed by the laws of the Commonwealth of Virginia. Any dispute arising from the performance or non-performance of this Agreement shall be resolved or otherwise litigated in the Circuit Court for the City of Winchester, Virginia or the Fourth Circuit Federal District Court in Harrisonburg, Virginia. The agency and the contractor are encouraged to resolve any issues in controversy arising from the award of the contract or any contractual dispute following the Winchester City Code, Chapter 21-61. The contractor shall comply with all applicable federal, state and local laws, rules and regulations.

B. **ANTI-DISCRIMINATION:** By submitting their (bids/proposals), (bidders/offerors) certify to the City of Winchester that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the *Virginia Public Procurement Act (VPPA).* If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (*Code of Virginia*, § 2.2-4343.1E).

In every contract over $10,000 the provisions in 1. and 2. below apply:

1. During the performance of this contract, the contractor agrees as follows:

a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.

c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting these requirements.

2. The contractor will include the provisions of 1. above in every subcontract or purchase order over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

C. **ETHICS IN PUBLIC CONTRACTING:** By submitting their (bids/proposals), (bidders/offerors) certify that their (bids/proposals) are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other (bidder/offeror), supplier, manufacturer or subcontractor in connection with their (bid/proposal), and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

D. **IMMIGRATION REFORM AND CONTROL ACT OF 1986:** By submitting their (bids/proposals), (bidders/offerors) certify that they do not and will not during the performance of this contract employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986.

E. **DEBARMENT STATUS:** By submitting their (bids/proposals), (bidders/offerors) certify that they are not currently debarred by the Federal Government, Commonwealth of Virginia, or by any City, Town or County from submitting bids or proposals on contracts for the type of goods and/or services covered by this solicitation, nor are they an agent of any person or entity that is currently so debarred.

F. **ANTITRUST:** By entering into a contract, the contractor conveys, sells, assigns, and transfers to the City of Winchester all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the City of Winchester under said contract.

H. **MANDATORY USE OF CITY FORM AND TERMS AND CONDITIONS:** Failure to submit a bid/proposal on the official City form provided for that purpose may be a cause for rejection of the bid/proposal. Modification of or additions to the General Terms and Conditions of the solicitation may be cause for rejection of the bid/proposal; however, the City of Winchester reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a bid/proposal.

I. **CLARIFICATION OF TERMS:** If any prospective (bidder/offeror) has questions about the specifications or other solicitation documents, the prospective (bidder/offeror) should contact the buyer whose name appears on the face of the solicitation no later than five working days before the due date. Any revisions to the solicitation will be made only by addendum issued by the Purchasing Agent, or designee.

J. **PAYMENT:**

1. To Prime Contractor:

a. Invoices for items ordered, delivered and accepted shall be submitted by the contractor directly to the payment address shown on the purchase order/contract. All invoices shall show the state contract number and/or purchase order number; social security number (for individual contractors) or the federal employer identification number (for proprietorships, partnerships, and corporations).

b. Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after invoice or delivery, whichever occurs last. This shall not affect offers of discounts for payment in less than 30 days, however.

c. All goods or services provided under this contract or purchase order, that are to be paid for with public funds, shall be billed by the contractor at the contract price, regardless of which department is being billed.

d. The following shall be deemed to be the date of payment: the date of postmark in all cases where payment is made by mail.

e. **Unreasonable Charges**. Under certain emergency procurements and for most time and material purchases, final job costs cannot be accurately determined at the time orders are placed. In such cases, contractors should be put on notice that final payment in full is contingent on a determination of reasonableness with respect to all invoiced charges. Charges which appear to be unreasonable will be researched and challenged, and that portion of the invoice held in abeyance until a settlement can be reached. Upon determining that invoiced charges are not reasonable, the City of Winchester shall promptly notify the contractor, in writing, as to those charges which it considers unreasonable and the basis for the determination. A contractor may not institute legal action unless a settlement cannot be reached within thirty (30) days of notification. The provisions of this section do not relieve an agency of its prompt payment obligations with respect to those charges which are not in dispute (*Code of Virginia*, § 2.2-4363).

2. To Subcontractors:

a. A contractor awarded a contract under this solicitation is hereby obligated:

(1) To pay the subcontractor(s) within seven (7) days of the contractor's receipt of payment from the City of Winchester for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or

(2) To notify the agency and the subcontractor(s), in writing, of the contractor's intention to withhold payment and the reason.

b. The contractor is obligated to pay the subcontractor(s) interest at the rate of one percent per month (unless otherwise provided under the terms of the contract) on all amounts owed by the contractor that remain unpaid seven (7) days following receipt of payment from the City of Winchester, except for amounts withheld as stated in (2) above. The date of mailing of any payment by U. S. Mail is deemed to be payment to the addressee. These provisions apply to each sub-tier contractor performing under the primary contract. A contractor's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the City of Winchester.

K. **PRECEDENCE OF TERMS:** The following General Terms and Conditions APPLICABLE LAWS AND COURTS, ANTI-DISCRIMINATION, ETHICS IN PUBLIC CONTRACTING, IMMIGRATION REFORM AND CONTROL ACT OF 1986, DEBARMENT STATUS, ANTITRUST, MANDATORY USE OF CITY FORM AND TERMS AND CONDITIONS, CLARIFICATION OF TERMS, PAYMENT shall apply in all instances. In the event there is a conflict between any of the other General Terms and Conditions and any Special Terms and Conditions in this solicitation, the Special Terms and Conditions shall apply and take precedence.

The City's procurement, Contractor's response and written negotiation summary shall form part of the Contract. In the case of conflicts, discrepancies, errors or omissions among the City's procurement, the Contractor's response, written negotiation summary and the main body of the Contract, the documents and amendments to them shall take precedence and govern in the following order:

1. Contract
2. Negotiation Summary
3. City's Procurement Document(s)
4. Contractor's Response
5. Other Documents

L. **QUALIFICATIONS OF (BIDDERS/OFFERORS):** The City of Winchester may make such reasonable investigations as deemed proper and necessary to determine the ability of the (bidder/offeror) to perform the services/furnish the goods and the (bidder/offeror) shall furnish to the City of Winchester all such information and data for this purpose as may be requested. The City of Winchester reserves the right to inspect (bidder's/offeror's) physical facilities prior to award to satisfy questions regarding the (bidder's/offeror's) capabilities. The City of Winchester further reserves the right to reject any (bid/proposal) if the evidence submitted by, or investigations of, such (bidder/offeror) fails to satisfy the City of Winchester that such (bidder/offeror) is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.

M. **TESTING AND INSPECTION:** The City of Winchester reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications.

N. **ASSIGNMENT OF CONTRACT:** A contract shall not be assignable by the contractor in whole or in part without the written consent of the City of Winchester.

O. **SEVERABILITY OF CONTRACT:** In the event that any provision shall be adjudged or decreed to be invalid, such ruling shall not invalidate the entire Agreement but shall pertain only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect.

P. **CHANGES TO THE CONTRACT:**

1. A public contract may include provisions for modification of the contract during performance, but no fixed-price contract may be increased by more than twenty-five percent of the amount of the contract or ten thousand dollars ($10,000), whichever is greater, without the advance written approval of the City Council. In no event may the amount of any contract, without adequate consideration, be increased for any purpose, including, but not limited to, relief of an offeror from the consequences of an error in its bid or offer (Winchester City Code 21-44).

2. Changes can be made to the contract in any of the following ways:

   a. The parties may agree in writing to modify the scope of the contract. An increase or decrease in the price of the contract resulting from such modification shall be agreed to by the parties as a part of their written agreement to modify the scope of the contract.

   b. The City of Winchester may order changes within the general scope of the contract at any time by written notice to the contractor. Changes within the scope of the contract include, but are not limited to, things such as services to be performed, the method of packing or shipment, and the place of delivery or installation. The contractor shall comply with the notice upon receipt. The contractor shall be compensated for any additional costs incurred as the result of such order and shall give the City of Winchester a credit for any savings. Said compensation shall be determined by one of the following methods:

      1. By mutual agreement between the parties in writing; or
      2. By agreeing upon a unit price or using a unit price set forth in the contract, if the work to be done can be expressed in units, and the contractor accounts for the number of units of work performed, subject to the City of Winchester's right to audit the contractor's records and/or to determine the correct number of units independently; or
      3. By ordering the contractor to proceed with the work and keep a record of all costs incurred and savings realized. A markup for overhead and profit may be allowed if provided by the contract. The same markup shall be used for determining a decrease in price as the result of savings realized. The contractor shall present the City of Winchester with all vouchers and records of expenses incurred and savings realized. The City of Winchester shall have the right to audit the records of the contractor as it deems necessary to determine costs or savings. Any claim for an adjustment in price under this provision must be asserted by written notice to the City of Winchester within thirty (30) days from the date of receipt of the written order from the City of Winchester. If the parties fail to agree on an amount of adjustment, the question of an increase or decrease in the contract price or time for performance shall be resolved in accordance with the procedures for resolving disputes provided by the Disputes Clause of this contract or, if there is none, in accordance with the disputes provisions of the City of Winchester Code. Neither the existence of a claim nor a dispute resolution process, litigation or any other provision of this contract shall excuse the contractor from promptly complying with the changes ordered by the City of Winchester or with the performance of the contract generally.

Q. **DEFAULT:** In case of failure to deliver goods or services in accordance with the contract terms and conditions, the City of Winchester, after due oral or written notice, may procure them from other sources and hold the contractor responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies which the City of Winchester may have.

R. **TAXES:** Sales to the City of Winchester are normally exempt from State sales tax. State sales and use tax certificates of exemption, Form ST-12, will be issued upon request.

S. **USE OF BRAND NAMES:** Unless otherwise provided in this solicitation, the name of a certain brand, make or manufacturer does not restrict (bidders/offerors) to the specific brand, make or manufacturer named, but conveys the general style, type, character, and quality of the article desired. Any article which the public body, in its sole discretion, determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The (bidder/offeror) is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City of Winchester to determine if the product offered meets the requirements of the solicitation. This is required even if offering the exact brand, make or manufacturer specified. Normally in competitive sealed bidding only the information furnished with the bid will be considered in the evaluation. Failure to furnish adequate data for evaluation purposes may result in declaring a bid nonresponsive. Unless the (bidder/offeror) clearly indicates in its (bid/proposal) that the product offered is an equal product, such (bid/proposal) will be considered to offer the brand name product referenced in the solicitation.

T. **TRANSPORTATION AND PACKAGING:** By submitting their (bids/proposals), all (bidders/offerors) certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.

U. INSURANCE: By signing and submitting a bid or proposal under this solicitation, the bidder or offeror certifies that if awarded the contract, it will have the following insurance coverage at the time the contract is awarded. For construction contracts, if any subcontractors are involved, the subcontractor will have workers' compensation insurance in accordance with §§ 2.2-4332 and 65.2-800 et seq. of the *Code of Virginia*. The bidder or offeror further certifies that the contractor and any subcontractors will maintain these insurance coverage during the entire term of the contract and that all insurance coverage will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission.

MINIMUM INSURANCE COVERAGES AND LIMITS REQUIRED FOR MOST CONTRACTS:

1. Workers' Compensation - Statutory requirements and benefits. Coverage is compulsory for employers of three or more employees, to include the employer. Contractors who fail to notify the City of Winchester of increases in the number of employees that change their workers' compensation requirements under the *Code of Virginia* during the course of the contract shall be in noncompliance with the contract. The insurer must have an A.M. Best rating of A- or better.

2. Employer's Liability - $100,000.

3. Commercial General Liability - $1,000,000 per occurrence. Commercial General Liability is to include bodily injury and property damage, personal injury and advertising injury, products and completed operations coverage. The City of Winchester must be named as an additional insured and so endorsed on the policy by the insurer. A notation on the certificate of insurance is not sufficient.

4. Automobile Liability - $1,000,000 per occurrence. (Only used if motor vehicle is to be used in the contract.)

NOTE: In addition, various Professional Liability/Errors and Omissions coverages are required when soliciting those services as follows:

Profession/Service	**Limits**
Accounting	$1,000,000 per occurrence, $3,000,000 aggregate
Architecture	$2,000,000 per occurrence, $6,000,000 aggregate
Asbestos Design, Inspection or Abatement Contractors	$1,000,000 per occurrence, $3,000,000 aggregate
Health Care Practitioner (to include Dentists, Licensed Dental Hygienists, Optometrists, Registered or Licensed Practical Nurses, Pharmacists, Physicians, Podiatrists, Chiropractors, Physical Therapists, Physical Therapist Assistants, Clinical Psychologists, Clinical Social Workers, Professional Counselors, Hospitals, or Health Maintenance Organizations.)	$1,925,000 per occurrence, $3,000,000 aggregate

(Limits increase each July 1 through fiscal year 2008, as follows:

July 1, 2008 - $2,000,000. This complies with §8.01-581.15 of the *Code of Virginia*.

Insurance/Risk Management	$1,000,000 per occurrence, $3,000,000 aggregate
Landscape/Architecture	$1,000,000 per occurrence, $1,000,000 aggregate
Legal	$1,000,000 per occurrence, $5,000,000 aggregate
Professional Engineer	$2,000,000 per occurrence, $6,000,000 aggregate
Surveying	$1,000,000 per occurrence, $1,000,000 aggregate

V. **ANNOUNCEMENT OF AWARD:** Upon the award or the announcement of the decision to award a contract over $50,000, as a result of this solicitation, the Purchasing Agent will publicly post such notice on the City of Winchester's web site (www.winchesterva.gov/purchasing) for a minimum of 10 days.

W. **DRUG-FREE WORKPLACE:** During the performance of this contract, the contractor agrees to (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "*drug-free workplace*" means a site for the performance of work done in connection with a specific contract awarded to a contractor, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

X. **NONDISCRIMINATION OF CONTRACTORS**: A bidder, offeror, or contractor shall not be discriminated against in the solicitation or award of this contract because of race, religion, color, sex, national origin, age, disability, faith-based organizational status, any other basis prohibited by state law relating to discrimination in employment or because the bidder or offeror employs ex-offenders unless the state agency, department or institution has made a written determination that employing ex-offenders on the specific contract is not in its best interest. If the award of this contract is made to a faith-based organization and an individual, who applies for or receives goods, services, or disbursements provided pursuant to this contract objects to the religious character of the faith-based organization from which the individual receives or would receive the goods, services, or disbursements, the public body shall offer the individual, within a reasonable period of time after the date of his objection, access to equivalent goods, services, or disbursements from an alternative provider.

Y. **AVAILABILITY OF FUNDS:** In the event that funds are not appropriated for this Contract for any City fiscal year, following the City's current year, the Contract shall terminate automatically as of the last day for which funds were appropriated without the City providing written notice to the Contractor prior to the date of termination. The City shall not consider termination of the Contract pursuant to this section default. Upon such termination, the City shall be released from any obligation to make future payments and shall not be liable for cancellation or termination charges.

Z. **LICENSES AND PERMITS:** Contractors will be responsible for all licenses and permits, if required. Any person, firm, or corporation responding to the City's procurement which is required to have a current and valid City of Winchester business license and, in fact, does not, will not be considered a "responsive bidder" as such term is defined by the Code of Virginia §2.2-4301, as amended. Any bid received from such an entity may be rejected, at the City's sole option, for that reason alone. In addition, the successful bidder or offeror will be required to produce affirmative evidence, satisfactory to the Purchasing Agent, or designee that it has such a license, or is not required to have such a license, prior to approval and execution of any contract to perform the work herein described.

AZ **TERMINATION:**

a. Termination for Convenience: The City of Winchester may terminate a contract, in whole or in part, whenever the City OF Winchester determines that such termination is in the best interest of the City of Winchester, without showing cause, upon giving ten (10) days written notice to the vendor.
b. Termination for Default: When the vendor has not performed or has unsatisfactorily performed the contract, the City of Winchester may terminate the contract for default. Upon termination for default, payment may be withheld at the discretion of the City of Winchester. The Vendor will be paid for work satisfactorily performed prior to termination.

BZ **HOLD HARMLESS:** Bids/Proposal shall provide that during the term of the contract, including warranty period, for the successful bidder/offeror indemnifying, defending, and holding harmless the City, its officers, employees, agent and representatives thereof from all suits, actions, claims of any kind (including claims for attorney's fees) brought on account of any personal injuries, damages, or violation of rights sustained by any person or property in consequence of any neglect in safeguarding contract work, or on account of any act or omission by the contractor or his employees, or from any claims or amounts arising from violation of any law, bylaw, ordinance, regulation or decree. The vendor agrees that this clause shall include claims involving infringement of patent or copyrights.

CZ**.** **CONFIDENTIALITY OF PERSONALLY IDENTIFIABLE INFORMATION:** The contractor assures that information and data obtained as to personal facts and circumstances related to patients or clients will be collected and held confidential, during and following the term of this agreement, and will not be divulged without the individual's and the agency's written consent and only in accordance with federal law or the Code of Virginia. Contractors who utilize, access, or store personally identifiably information as part of the performance of a contract are required to safeguard this information and immediately notify the agency of any breach or suspected breach in the security of such information. Contractors shall allow the City to both participate in the investigation of incidents and exercise control over decisions regarding external reporting. Contractors and their employees working on this project may be required to sign a confidentiality statement.

DZ**.** **BID PRICE CURRENCY:** Prices are to be stated in US dollars unless otherwise specified in the solicitation.

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

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Construction Specifications Institute

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These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

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18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

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39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. *Intent of Certain Terms or Adjectives*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable,"

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"proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day*

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

D. *Defective*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents, or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or

c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

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

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence

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to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review**:**

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

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

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations.

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in

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effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

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2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

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

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and

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procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

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

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the

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Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

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2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes

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due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

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

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

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

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective

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officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

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

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

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

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

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

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

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the

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insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order .

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

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

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

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

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

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

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6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

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

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

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

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

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

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

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an

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acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified , and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

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6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued . No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer,, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or

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royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

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

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and

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disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent

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threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

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

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:* Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

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

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

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

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2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

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

E. *Resubmittal Procedures*

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

6.18 *Continuing the Work*

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

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

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

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B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

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

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their

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work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

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

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

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

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

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

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

8.06 *Insurance*

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

8.07 *Change Orders*

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

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8.08 *Inspections, Tests, and Approvals*

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

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

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

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any

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such adjustment , a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

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

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

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees,

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bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

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

10.03 *Execution of Change Orders*

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

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph

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12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

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

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

11.01 *Cost of the Work*

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

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

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5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on

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the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation , overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

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

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

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1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times , or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is

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essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 *Notice of Defects*

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

13.02 *Access to Work*

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

13.03 *Tests and Inspections*

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

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

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

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

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

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C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such

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correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of

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materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

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a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver

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to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

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

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

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3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

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

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

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

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents

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(including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

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15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

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

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

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

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract

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Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

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1. Delete subparagraph 5.06(A), 5.06(A) Sections 1-7, and subparagraph 5.06(B)

2. Delete sentence in subparagraph 5.07(A) beginning with "All such projects shall contain provisions…."

3. Delete subparagraph 5.07(B), 5.06(B) Sections 1-2, and subparagraph 5.06(C)

4. Delete Paragraph 10.05 (Claims) and replace Paragraph 10.05 (Claims) by reference with the Winchester City Code, Section 21-61 (Contractual Disputes), as amended and where the Winchester City Code does not specify in writing the Virginia Public Procurement Act (VPPA) §2.2-4363 shall apply, as amended. Under Winchester City Code 21-61(C), the Purchasing Agent will render such decision within thirty (30) days.

5. Add subparagraph 12.01(D), as follows:
"In accordance with Winchester City Code, Section 21-44, Contract Modification: A public contract may include provisions for modification of the contract during performance, but no fixed-price contract may be increased by more than twenty-five percent of the amount of the contract or ten thousand dollars ($10,000), whichever is greater, without the advance written approval of the City Council. In no event may the amount of any contract, without adequate consideration, be increased for any purpose, including, but not limited to, relief of an offeror from the consequences of an error in its bid or offer."

6. Add the following language to 14.02 (A3), as follows: "See Special Conditions, Section 4.02."

7. Delete paragraph 14.09

8. Add subparagraph 17.01 (B), as follows: "This section, or any other General Condition in conflict with Virginia Code §8.01-222 shall not supercede the Commonwealth of Virginia statutory notice provisions. Virginia Code §8.01-222 shall prevail under all circumstances.

ITB #201807 – S. Kent Street and Woodstock Lane Infrastructure Improvements

SPECIAL CONDITIONS

1. **SPECIFICATIONS**

Unless otherwise described in the Contract Documents, the following specifications and standards apply to this work:

1. 2007 VDOT Road and Bridge Specifications
2. City of Winchester – Public Services Standards Manual

2. **INSURANCE REQUIREMENTS – CITY OF WINCHESTER**

2.01 Before any work at the site is started, Contractor shall deliver to Owner, with a Copy to Engineer, an executed Certificate of Insurance. The Certificate shall indicate that the required insurance is in force and state that the policies will not be materially changed or canceled without a thirty (30) day advance notice by registered mail to Owner and Engineer. The representative signing the Certificate shall furnish evidence that he is authorized to so sign as well as his address and the name and address of the agency or agencies through which the insurance was obtained. Contractor shall take out and maintain the following insurance:

2.02 Contractor's Comprehensive General Liability (bodily injury and property damage) shall be provided for the following limits:

A. Combined single limit 5,000,000 dollars each occurrence
B. Combined single limit: 5,000,000 dollars annual aggregate
C. The general liability insurance shall include the following coverage:

1. Comprehensive Form
2. Premises - Operation
3. Explosion and Collapse Hazard
4. Underground Hazards
5. Products/Completed - Operations Hazards
6. Contractual Liability Insurance
7. Broad Form Comprehensive General Liability, Property Damage, including Completed Operations
8. Independent Contractors (Contractor's Protective Liability)
9. Personal Injury (all insuring agreements), Deleting the Employee Exclusion
10. If protection is under an umbrella policy, it shall not exclude any of the above items under the basic policy.

D. City of Winchester shall be named by endorsement as Additional Insured.

2.03 Contractor's Automobile Liability (bodily injury and property damage) shall be provided for the following limits:

A. Combined single limit: 1,000,000 dollars each occurrence

B. The Automobile Liability Insurance shall include the following coverage:

1. Comprehensive Form
2. Owned
3. Hired
4. Non-Owner

2.04 Contractor's Workers Compensation Insurance as required by Federal, State, and Municipal Laws for the protection of all Contractor's employees working on or in connection with the Project, including broad form, all state and voluntary compensation coverage, and employer's liability coverage with the following limits:

A. Bodily injury by accident 1,000,000 Dollars each accident

B. Bodily injury by disease 1,000,000 Dollars policy limit

C. Bodily injury by disease 1,000,000 Dollars for each employee

2.05 All insurers shall be licensed to conduct business in the Commonwealth of Virginia and all insurance companies are required to have an A.M. Best Company financial rating of A- or better.

2.06 Contractor shall require his insurance agent to certify on the insurance certificate that the insurance coverage specified by these specifications is fully in effect, both in scope and amount. If insurance coverage is effected with more than one company, the individual certificates shall identify the items of insurance which the individual companies cover. The insurance certificates shall contain a provision that the coverage afforded under the policies will not be canceled or materially changed unless at least a thirty (30) days prior written notice has been given to the Owner.

2.07 Left Intentionally Blank

2.08 Notification and Handling of an Insurance Claim:

The general contractor on any City construction project shall be responsible for ensuring that all matters concerning the completion of an assigned project, including but not limited to handling of insurance claims by third parties arising as a result of the acts and omissions of the general contractor or his subcontractors, are handled in a professional manner. To this end, the City expects the general contractor to act responsibly with regard to prompt payment of valid insurance claims and upon notice of a claim, the general contractor shall immediately notify the Owner's project manager, investigate and document the claim, and make a liability determination within ten (10) business days. Pending subrogation between the general contractor and/or sub-contractor and/or any insurance carrier will not be a cause for delay in payment of a valid claim. Default of this provision may result in retainage payments

being withheld and jeopardize the general contractor's future bid opportunities with the City of Winchester.

3. **WORKING HOURS - HOLIDAYS**

Work under the Contract shall not be prosecuted on Sundays, or on legal holidays. Work hours (Monday – Saturday) shall be from 7:00 a.m. until 6:00 p.m. If the Contractor wishes to prosecute any portion of the Work outside of the established work hours or on Sundays or legal holidays, he shall first obtain written permission from the Engineer. Such requests shall be submitted at least 48 hours in advance of the period proposed for such overtime work. For the purpose of this Contract, the legal holidays are identified as:

- Labor Day (September 3, 2018)
- Veteran's Day (November 11, 2018)
- Thanksgiving Day (November 22, 2018)
- Day after Thanksgiving (November 23, 2018)
- Christmas Eve (December 24, 2018)
- Christmas Day (December 25, 2018)
- New Year's Day (January 1, 2019)
- Martin Luther King Day (January 21, 2019)
- Memorial Day (May 27, 2019)

4. **PROGRESS PAYMENTS**

4.01 The basis for payments shall be the actual quantity of work completed, as determined in field by the Engineer.

4.02 An amount equal to five percent (5%) of each progress payment shall be held from each payment as retainage.

5. **MISCELLANEOUS OTHER CONDITIONS**

5.01 It shall be the responsibility of the Contractor to locate utilities in the field. Contractor shall give all utility companies that may have subsurface or surface utilities in the area adequate notice at least 48 hours in advance that the Contractor is to perform work in this area.

5.02 The attention of the Contractor is drawn to the fact that the possibility exists of the Contractor encountering various water, chemical, electrical, or other lines. Contractor shall exercise extreme care before and during construction to locate and flag these items so as to avoid damage to existing lines. Should damage occur to an existing line, the Contractor shall repair the line at no cost to the Owner. Temporary support, adequate protection and maintenance of all underground and surface utility installations and structures, drains, and other obstructions encountered in the progress of the work shall be provided by the Contractor at his own expense.

5.03 Contractor shall be responsible for the temporary removal and re-installation of structures including, but not limited, to piping, conduits, drains, that may interfere with the work. The cost of such work shall be included in the Bid for the project and shall not result in any additional cost to the Owner. It shall be the Contractor's responsibility to contact and obtain permission from various authorities having jurisdiction over such structures, prior to start of the work.

5.04 Local drainage is not to be blocked. Shoulders, ditches, and drainage facilities shall be kept clear at all times and in condition satisfactory to the Engineer.

5.05 Adequate barricades, construction signs, red lanterns and guards as required shall be placed and maintained during the course of the work, and until it is safe for the pedestrian and vehicular traffic to use the area. The rules and regulations of the Local and State and Federal authorities respecting safety provisions shall be observed.

5.06 All acceptance and payment of work is subject to inspection by the City of Winchester.

5.07 The Contractor shall be responsible to establish and maintain communications with the residents and business owners of the area affected by the construction. The purpose of this communication is to notify the residents and business owners of construction activities which affect them, and to coordinate accommodations for them during construction. The Contractor shall also be required to assist businesses and residents as necessary with access into or out of their property during the construction.

5.08 Contractor and all sub-contractors shall obtain a City of Winchester Business License before beginning work.

5.09 Contractor is responsible for correcting any damages caused to private property as a result of construction, at their own expense. Contractor shall be responsible for completing a video recording (DVD) of the entire project area within the City's right-of-way before construction begins and providing a copy of the DVD to the City. This recording must be completed before the mobilization fee is paid to the contractor. This recording will be the basis for help in determining any damages to private property that may occur during construction that the contractor may be responsible for.

5.10 The Contractor shall be solely responsible for adhering to all OSHA requirements at all times during the construction of the project.

5.11 The Contractor shall be solely responsible for protecting the newly poured sidewalks from vandalism (i.e. children writing names or words in the wet concrete) and shall be required to replace any concrete that is vandalized as directed by the City at the Contractor's expense.

5.12 The Contractor shall be responsible to construct the new facilities and/or modify existing facilities to ensure positive drainage at all locations.

5.13 High-early strength concrete shall be used on all driveway entrances.

5.14 The Contractor shall be solely responsible for ensuring that all new sidewalks and ramps constructed meet all current ADA (American's with Disabilities Act) requirements.

*****END SPECIAL CONDITIONS*****

SCOPE OF WORK – SEQUENCE OF CONSTRUCTION

I. Description.

This specification summarizes the scope of work for this project and the sequence of construction that the Contractor shall follow for this project.

II. Scope of Work

This is a multi-faceted project with numerous project components. In general, the project consists of replacing all or some of the following infrastructure in the project areas:

A. Water Mains
B. Water Services and Fire Lines (replace from main to behind sidewalk)
C. Fire Hydrants
D. Water Valves and Fittings
E. Sanitary Sewer Mains and Manholes
F. Sanitary Sewer Services (replace from main to behind sidewalk)
G. Sidewalks (and structures located within the sidewalks)
H. Curb & Gutter
I. Storm Drainage
J. Asphalt Roadways

<u>No time extensions to the completion date for this project shall be granted for the following:</u>

A. Water service and/or sewer service line replacements not shown on the plans
B. Errors or missing information with regard to the existing utilities shown on the schematic drawings
C. Changes to the actual location of the installation of water, sewer and storm infrastructure due to field conditions such as the actual locations of existing underground infrastructure.
D. Changes or modifications to the type of size of storm structures shown on the drawings.
E. Typical weather conditions.
F. Rock encountered.

III. Sequence of Construction

In general, the contractor may utilize multiple crews to complete the construction. The following conditions must be followed:

A. South Kent Street
    a. Work shall be completed such that only two consecutive blocks of Kent Street are closed at one time.
    b. Only one section of Kent (consisting of two consecutive blocks) can be completely closed while work is occurring in that section. Work can only occur in one section at a time.

B. Woodstock Lane
   a. For work completed Monday through Friday, the contractor shall be required to flag traffic and keep the street open to thru traffic. If the contractor chooses to close the street to thru traffic, work must be completed on a Saturday or Sunday, scheduled with and approved by the City in advance.
   b. If the contractor chooses to close Woodstock Lane on a Saturday/Sunday, a detour shall be established and approved by the City.

C. Pleasant Valley Road Intersection
   a. Work in the intersection of Woodstock Lane and Pleasant Valley Road must be completed during the weekend.
   b. The Contractor shall be permitted to reduce traffic to one lane in each direction.

D. Written Project Schedule
   a. The Contractor shall prepare a written project schedule for the construction of the entire project which shall be reviewed and approved by the City before construction begins. This schedule shall delineate the number of work crews and the work each will be completing.

E. Sidewalk/Curb and Asphalt Demolition
   a. Only the sections of sidewalk/curbs and asphalt required for the utility installations shall be removed initially. Entire sections of sidewalks/curb and asphalt shall not be removed until such time as the contractor is prepared and ready to reconstruct these facilities immediately following demolition.

IV. Measurement and Payment.

There is no separate payment for this section.

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
SURVEYING

May 2018

I. Description.

This work shall consist of performing the necessary field surveying, verification of existing sizes and elevations of existing utilities and construction staking to complete the work for this project.

II. Procedures

A. The Contractor shall be responsible for any surveying necessary to complete the project. This includes verifying depths of existing sanitary sewer manholes and storm structures and manholes that will be replaced.
B. The Contractor shall be responsible for any construction staking necessary to complete the project.

III. Measurement and Payment.

All the activities required for this component of the work shall be paid for as a lump sum. Payment will be made under:

Surveying/Project Layout	Lump Sum

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
AS-BUILT DRAWINGS

May 2018

I. Description.

This work shall consist of preparing and providing as-built drawings for all utility and finish work completed on the project.

II. Procedures

1) As-built drawings shall be prepared in accordance with the latest edition of the City's Public Services Standard Manual, Chapter VIII, As-Built Drawings.
2) The Contractor shall provide to the Owner the following:
   a) One hard-copy set of 24x36 drawings
   b) Digital files of the as-builts, in both AutoCAD (*.dwg or *.dxf) and PDF formats

III. Measurement and Payment.

"As-Built Drawings" will be measured and paid for as a lump sum for the project and shall include all necessary materials and work to develop and submit a complete set of as-built drawings, per the City's standards.

Payment will be made under:

Pay Item	Pay Unit
As-Built Drawings	Lump Sum

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
DEMOLITION AND REMOVAL

May 2018

I. Description.

This work shall consist of demolition/removal and disposal of existing curb & gutter, sidewalks, asphalt, storm drainage facilities, and other items.

II. Procedures

Demolition of concrete curb & gutter, sidewalks and driveway entrances, and asphalt roadways: existing concrete or asphalt shall be saw cut (if necessary), removed, and properly disposed of. When necessary, existing pipes and structures shall be removed and properly disposed of.

III. Measurement and Payment.

"Demolition of Existing Asphalt or Concrete, Includes Disposal" shall be measured and paid for per square yard and shall include saw cutting (if necessary), demolition, removal and disposal. The depth of the materials removed may vary, but must be sufficient to complete the installation of all new items.

"Removal of Existing Storm Drain Pipe, Includes Disposal" shall be measured and paid for per linear foot of storm drain pipe that must be removed and disposed. Price shall include excavation and backfill as necessary.

"Removal of Existing Drainage Inlet or Manhole, Includes Disposal" shall be measured for each inlet or manhole that must be removed and disposed. Price shall include excavation and backfill as necessary.

Payment will be made under:

Pay Item	Pay Unit
Demolition of Existing Asphalt or Concrete, Includes Disposal	SY
Removal of Existing Storm Drain Pipe, Includes Disposal	LF
Removal of Existing Storm Drain Inlet or Manhole, Includes Disposal	EA

DISPOSAL OF MATERIALS

I. Description.

This work shall consist of properly disposing of all excess and unsuitable materials from the project including, but not limited to: concrete, asphalt, bricks, soil/gravel, rock, existing pipes, existing manholes, signs, posts, etc.

II. Procedures

A. Disposal of all materials shall comply with all applicable federal, state, and local regulations and compliance shall be the sole responsibility of the Contractor.
B. Prior to commencing work, the Contractor shall submit to the City for approval, a written plan detailing how and where all materials shall be disposed of from the project.
C. The Contractor shall provide the City with copies of written agreements from private landowners and/or written approval from landfill operators accepting disposal of the materials from the project.
D. For disposal of materials on private property, the written disposal plan shall include the following:

(1) the location and approximate boundaries of the disposal area;
(2) procedures to minimize erosion and siltation;
(3) provision of environmentally compatible screening;
(4) restoration plan;
(5) cover vegetation;
(6) other use of the disposal site;
(7) the drainage pattern on and away from the area of land affected, including the directional flow of water and a certification with appropriate calculations that verify all receiving channels are in compliance with Minimum Standard 19 of the Virginia Erosion and Sediment Control Regulations;
(8) location of haul roads and stabilized construction entrances if construction equipment will enter a paved roadway;
(9) constructed or natural waterways used for discharge;
(10) a sequence and schedule to achieve the approved plan and;
(11) the total drainage area for temporary sediment traps and basins shall be shown. Sediment traps are required if the runoff from a watershed area of less than three acres flows across a disturbed area. Sediment basins are required if the runoff from a watershed area of three acres or more flows across a disturbed area. The Contractor shall certify that the sediment trap or basin design is in compliance with VDOT Standards and Specifications, all local, state, and federal laws. Once a sediment trap or basin is constructed, the dam and all outfall areas shall be immediately stabilized.

E. Upon completion of the use of private property as an approved disposal area, the Contractor shall furnish the City a release signed by the property owner indicating that the property has been satisfactorily restored.

III. Measurement and Payment.

There shall be no separate payment for this work and the costs associated with this work shall be included in other pay items.

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
TREE REMOVALS

May 2018

I. Description.

This work shall consist of removing and disposing of existing trees and removing tree stumps and restoring the area.

II. Procedures

A. Tree Removals
1) Trees shall be cut and removed in a safe manner.
2) All branches, limbs, leaves, etc. shall be cleaned up, removed from the site, and disposed of properly.
3) The trunk shall be cut down to ground level.

B. Grind Tree Stump
1) Tree stumps shall be ground down and all roots removed to a level as necessary to properly complete the work on the project.
2) All materials shall be removed and disposed of properly.

III. Measurement and Payment.

"Tree Removal" will be measured and paid for each tree removed. This price shall include all equipment, labor and materials for cutting, removing and disposing of the tree, grinding and removing the tree stump/roots as necessary, and cleaning up the area.

Payment will be made under:

Pay Item	Pay Unit
Tree Removal	Each

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
EROSION AND SEDIMENT CONTROL

I. Description.

This work shall consist of implementing and maintaining all necessary erosion and sediment control measures to comply with all applicable laws and regulations.

II. Procedures

A. Permit: The Contractor shall prepare the Stormwater Pollution Prevention Plan (SWPPP) for the project and obtain the required VSMP General Permit for Stormwater Discharges from Construction Activities from the City of Winchester before commencing construction. The contractor shall provide the City with proof of coverage under the VSMP prior to starting construction.

B. General: All materials and erosion control measures shall be in accordance with the Virginia Erosion and Sediment Control Handbook (VESCH), and all revisions and addenda. Methods used on site shall include, but shall not be limited to; VESCH, Chapter 3.

C. Performance Requirements: The erosion control measures shall be installed such that the erosion of disturbed ground and the siltation of storm drain pipes and inlets will be prevented.

D. Regulatory Requirements: All phases of the construction work shall comply with or exceed the minimum state requirements for controlling erosion and sedimentation from "land disturbing activities" as outlined in the "Virginia Erosion and Sediment Control Handbook" (VESCH), and all revisions and addenda thereto.

E. All erosion control facilities shall be inspected by the contractor weekly and after each significant rainfall. Inspection shall be performed daily during periods of prolonged precipitation. Any required repairs shall be made immediately. The contractor shall be required to install all measures necessary to be in compliance with the permit at all times during the project, as directed by the County.

III. Measurement and Payment.

"Erosion and Sediment Control" shall be paid for as a lump sum for the project and shall include all necessary materials and erosion control measures to maintain compliance with the SWPPP obtained for this project by the Contractor. Price shall also include the cost necessary to obtain the SWPPP permit from the City.

Payment will be made under:

Pay Item	Pay Unit
Erosion and Sediment Control	Lump Sum

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
ALLAYING DUST

May 2018

I. Description.

This work shall consist of applying water on areas designated by the City for the purpose of allaying dust as required during the project.

II. Procedures

A. The contractor shall furnish a truck(s) equipped with a water tank having a capacity of at least 1,000 gallons and pumps for furnishing, loading, and applying water to the roadway. Equipment and operators shall be available at all times.
B. Water shall be applied at locations and at intervals as directed by the City as necessary to minimize dust.
C. Contractor will be allowed to fill the water tank at a fire hydrant in the project area, designated by the City, at no cost to the contractor.

III. Measurement and Payment.

There shall be no separate payment for this work and the costs associated with this work shall be included in the pay item for Erosion and Sediment Control.

MAINTENANCE OF TRAFFIC

I. Description.

This work shall consist of maintaining and protecting traffic (vehicular and pedestrian) through areas of construction, maintaining public and private entrances, constructing and obliterating detours, and protecting the traveling public (both vehicles and pedestrians) within the limits of the project and over detours.

II. Procedures

Traffic shall be maintained and protected in accordance with the requirements of Section 105.14 of the VDOT Specifications. Work shall be scheduled and performed so as to provide minimum interference with and maximum protection for traffic. The Contractor's personnel, equipment, machinery, tools, and supplies shall be kept outside the clear zone and clear of active traffic lanes except as necessary for prosecuting active work. Stabilized construction entrances shall be used in construction areas where there is a potential for construction vehicles to track material from the construction site onto a paved surface. Material that is spilled or tracked onto the traveled pavement during prosecution of the work shall be promptly removed.

The Contractor shall maintain the traffic control devices, which shall include, but not be limited to, repositioning of displaced devices including traffic barrier service, replacement due to inadequate structural integrity including traffic barrier service, replacement due to loss of reflectivity, repair of defaced sheeting and legend, replacement of broken supports, repositioning of leaning signs so they are plumb and the sign face is perpendicular to the pavement edge, cleaning of dirty devices, and replacement of stolen or vandalized devices. Barricades, barriers, and other safety devices shall be inspected at least daily, and deficiencies shall be immediately corrected. Safety and protective devices furnished by the Contractor will remain the property of the Contractor and shall be removed from the project site upon completion of the work or as directed by the City.

The procedures and devices for the maintenance of traffic shall be the same as in Section 512 of the VDOT Specifications.

Additional details regarding allowable street closures and detours are provided in the Scope of Work – Sequence of Construction specification.

The Contractor shall submit a traffic control plan that shall be reviewed and approved by the City before construction commences. **The Contractor shall make immediate changes to the traffic control devices as directed by the City to maintain safety.**

III. Measurement and Payment.

Maintenance of Traffic shall be paid for as a lump sum and shall include barricades, signs, barrels, obliterating existing pavement markings and installing new (including temporary) pavement markings, flaggers, and any other items necessary to maintain traffic as per these specifications.

Pay Item	Pay Unit
Maintenance of Traffic	Lump Sum

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
CAST-IN-PLACE CONCRETE

I. Description.

This work shall consist of furnishing and installing various concrete components including, but not limited to: curb, gutter, sidewalks and entrances.

II. Materials

a) Subbase Material

1) Subbase materials shall be in conformance with VDOT Section 208, gradation size 21-A.

b) Concrete

1) Concrete shall be Portland Cement air-entrained Class A4 Low Permeability (4,000 psi) with natural sand unless otherwise approved in writing by the Department of Public Services. Additives such as anti-freeze and calcium chloride are prohibited.

c) Joint Filler

1) Joint filler shall be ½" preformed asphalt expansion joint material conforming to ASTM D994 or ASTM D1751.

d) Concrete Sealer

1) Sealer shall be Protectosil CHEM-TRETE 40 VOC by Evonik Industries or approved equal.

e) Rubber

1) Rubber sidewalk shall be KBI Flexi-Pave HD2000. Color shall be "concrete" for sections where the sidewalk is concrete and "brick red" for sections where there is brick sidewalk.

f) Detectable Warning Pavers

1) Truncated dome pavers used in all handicap accessible ramps shall be Hanover Detectable Warning Pavers, 11 ¾" x 11 ¾" x 2", Red 15 color, Tudor finish, or approved equal.

g) Brick

1) Brick sidewalks shall be constructed in the Historic District per standard details SW-2, SW-3 and SW-4. Bricks shall be Pine Hall Brick Pavers, Color – Pathway Full Range, or approved equal.

III. Procedures

a) Sidewalks and Entrances

1) After sidewalks have been removed, the contractor shall pour replacement sidewalks within 48 hours, weather permitting.
2) The contractor shall provide adequate access for abutting owners/tenants and shall keep all natural drainage unobstructed or provide equal courses effectively placed. The Contractor shall maintain access and drainage in such a manner to afford pedestrian access to houses or buildings.

3) Any drain pipe that is under the sidewalk being replaced and is damaged, broken, or clogged, shall be replaced with SDR 35 or greater PVC pipe.
4) Contractor shall provide concrete forms and pour the concrete in conformance with Section 504 of the VDOT specifications. Concrete shall not be poured until the forms have been inspected and approved by the Department of Public Services – Engineering Division.
5) Grades shall be established by the contractor. The subgrade shall be constructed to a minimum of eight inches below the finished grade of the sidewalk. All soft and unsuitable materials shall be removed and replaced with suitable materials. The subgrade shall be compacted by approved methods until a smooth, hard and dense surface is obtained.
6) Aggregate base shall be applied to a minimum of four inches thick on the subgrade, and shall be placed in conformance with Section 309 of the VDOT Specifications.
7) The concrete for all sidewalks shall have a minimum thickness of four inches, except at driveways, where the minimum thickness shall be 7 inches. The stone subgrade shall be moistened prior to the placing of concrete.
8) The depth of the sidewalk shall be as specified and shall not have a deficiency of more than one-quarter inch.
9) All concrete sidewalks shall be constructed so as to drain to the curb on a minimum slope of one-quarter inch per foot or a maximum slope of one-half inch per foot.
10) Expansion joints shall be constructed at intervals of 30 feet, except for closures, but a slab shall not be less than five feet in length. Slabs shall be separated by transverse premolded expansion joint filler for the full width of the slab, extending from the bottom of the slab to within one-quarter inch of its top surface. The slab between the expansion joints shall be divided into blocks 10 feet in length by scoring transversely. When slabs are more than seven feet in width, they shall be scored longitudinally to secure uniform blocks approximately square. Transverse and longitudinal scoring shall extend to at least one-third of the depth of the concrete slab. Scoring may be done with trowels, finishing and edging tools or by other approved means.
11) Where sidewalks are constructed adjacent to permanent structures or other rigid construction on one side and curb on the other, an expansion joint of premolded material extending along both the structure and the curb shall be placed for the full depth of the slab. A premolded expansion joint shall be placed between the sidewalk and adjacent sidewalk or curb at all intersections or crosswalks, both public and private. All premolded expansion joint filler shall be securely fastened to prevent displacement.
12) Where the sidewalk is constructed in conjunction with adjacent curb, the expansion joints in the curb and sidewalk shall coincide. Where such construction is adjacent to existing curb, the expansion joints shall, if practicable, coincide. Prior to placing concrete around any permanent structure, premolded expansion joint material shall be placed around such structure for the full depth of the sidewalk.
13) Where existing or proposed structures, such as light standards, poles, fire hydrants, etc., are within the limits of the sidewalk area, the concrete around such structures shall be scored in a block <u>eight</u> inches wider than the maximum dimension of the structure at the sidewalk elevation. Prior to placing the concrete around such structure, a premolded expansion joint shall be placed around the structure the full depth of the concrete.

14) Finish concrete walks and driveways as specified in Section 404.19 of the VDOT Specifications.
15) Pedestrian traffic shall not be permitted to use the sidewalk for at least three days after the placing of the concrete. Vehicles shall not be permitted on the concrete until it has been in place for at least ten days, unless high early strength concrete is used.
16) Handicap ramps shall be installed in accordance with VDOT CG-12 curb ramp Specifications. Flares of the CG-12 curb ramps will have a standard broom finish.

b) Curb and Gutters

1) The subgrade shall be constructed to the required elevation below the finished surface of the gutter in accordance with dimensions and design as shown on VDOT Standards. Remove all soft and unsuitable material and replace with subbase material, which shall be compacted to 95% density in accordance with AASHTO-T-99 and finished to a smooth surface. Moisten the subbase prior to placing the concrete.
2) Forms shall be constructed of wood or metal conforming to VDOT Section 403.03.
3) Prior to placing concrete, check the line and grade for accuracy and fasten the face forms of the curb to the gutter forms. Spade the concrete and tamp sufficiently to bring the mortar to the surface, after which finish with a magnesium float. Construction shall be in sections of uniform lengths, providing transverse joints at approximately 10-feet intervals and when the time elapsing between placements exceeds 45 minutes. No section shall be less than 6 feet in length. Separate sections by plate steel templates set perpendicular to the grade and center line of the unit specified. The templates shall be 1/8 inch in thickness and shall have a width and depth equal to the unit cross-section. Leave these templates in place until the concrete has set sufficiently to hold its shape.
4) Form expansion joints at intervals of 100 feet or less. When the curb and gutter is constructed adjacent to rigid pavements, the location and width of expansion joints shall coincide with those in the pavement, where practicable. Where stationary structures, such as catch basins and drop inlets, are within the limits of the curb and gutter, place an expansion joint between the structure and the curb and gutter. Place expansion joints at all returns.
5) Screed the face and top of curb and surface of gutter smooth and round the edges to a radius as shown on the VDOT Standards.
6) As soon as the concrete has attained sufficient set, remove the face forms of the curb. The exposed surfaces shall be screeded with a straight edge and finished with a steel trowel. Remove all trowel marks with a brush wet with clear water. Do not use mortar in finishing.
7) The finished surface of curb and gutter shall be true to line and grade with an allowable tolerance as specified in Section 316.05 of the VDOT Specifications.
8) After the concrete has set, fill the spaces on both sides of the gutter or the back side of curb to the required elevation with suitable material and compact to 95% density in layers of not more than 6-inches.
9) The Contractor is responsible for the replacement of any pavement that is damaged and/or removed due to placement of curb and gutter. All patches shall be saw cut and patched according to the latest practices used in asphalt practices used in asphalt patching and as approved by the Department of Public Utilities - Engineering Division.

c) Construction of Forms

1) Construct wood forms of sound material, and of the correct shape and dimensions, constructed tightly and of sufficient strength. Brace and tie the forms together so that the movement of men, equipment, materials or placing and vibrating the concrete will not throw them out of line or position. Forms shall be strong enough to maintain their exact shape under all imposed loads.
2) Use form ties of sufficient strength and in sufficient quantities to prevent spreading of the forms. Place ties at least 1 inch away from the finished surface of the concrete.

e) Preparation for Placing

1) Remove water from excavations before concrete is deposited. Remove hardened concrete, debris, ice and other foreign materials from the interior of the forms and from the inner surfaces of mixing and conveying equipment. Do not place on frozen ground.
2) Prior to the placing of any concrete, notify the Owner so that proper inspection may be made.

f) Delivery

1) Submit a delivery ticket indicating the date, time, ticket and load number, concrete class and design mix, quantity and location of placement. The delivery ticket shall be submitted to the Owner.

g) Placing Concrete

1) Before placing concrete, remove all construction debris, water and ice from the places to be occupied by the concrete. Give particular attention to the removal of dirt and debris from all formed construction joints.
2) Concrete, when deposited, shall have a temperature ranging between a minimum of 50 degrees Fahrenheit (F) and a maximum of 90 degrees F. When the temperature of the surrounding air is below 50 degrees or above 90 degrees F, concreting shall be done in accordance with the recommendations noted in ACI-306 and ACI-305 respectively.
3) Mix concrete in such quantities as required for immediate use and place prior to loss of slump.
4) Spade, work and vibrate concrete as it is being poured, to secure its maximum density, free from voids and completely filling the forms.

h) Removal of Forms

1) After concrete has been placed, all forms, bracing and supports shall remain undisturbed long enough to allow the concrete to reach the strength necessary to support with safety its own weight plus any live load or pressure that might be placed upon it without causing excessive settlement or deflective or any temporary or permanent damage to the structure. Prevent the breaking of edges and corners of concrete in the stripping of forms. Upon removal of formwork, immediately patch any honeycombed areas and other voids to the satisfaction of the Department of Public Utilities – Engineering Division.
2) Thoroughly clean forms before each reuse.

i) Protection of New Work

1) Protect all freshly placed concrete from mechanical injury or action of the elements until such time as the concrete is thoroughly set.

j) Preformed Joints

1) Furnish and install preformed expansion joint material at appropriate locations as described above.
2) Tool the concrete edges at expansion or contraction joints to a 1/8-inch radius.

k) Finishing

1) After screeding and floating, give concrete slabs a light steel toweling to seal the surface and remove any irregularities left by the float. Just before the concrete becomes non-plastic, the surface of the concrete shall be given a fine broom finish perpendicular to the line of traffic and so executed that the corrugations thus produced will be uniform in character and width. The broomed surface shall be free from porous spots, irregularities, depressions, and small pockets rough spots such as may be caused by accidentally disturbing particles of coarse aggregate embedded near the surface.

l) Curing

1) Curing shall be started as soon as it is possible to apply the curing medium without damaging the surface, preferably immediately upon completion of the finishing operation. At no time during the curing period shall the temperature of the concrete be permitted to drop below 40 degrees F.

m) Sealing

1) Concrete must be allowed to cure for a minimum of 28 days before applying sealer.
2) Contractor shall follow manufacturer's instructions for application and coverage.

n) Defective Concrete

1) Defective concrete is defined as concrete in place which does not conform to strength, shapes, alignment, appearance and/or elevations as required; areas which contain faulty surface areas and/or concrete surfaces not finished in accordance with these specifications.
2) Remove all defective concrete and replace in a manner meeting with the approval of the Department of Public Services.

IV. Measurement and Payment.

"Standard Curb, CG-2" will be measured in linear feet and will be paid for at the contract unit price per linear foot. Measurement shall be along the face of curb. This price shall include all equipment, labor and materials for installing the curb, aggregate base course, excavating, backfilling, compacting, disposing of surplus and unsuitable materials, existing site restoration (including but not limited to asphalt and concrete) and any other item required for a complete installation.

"Combination Curb & Gutter, CG-6" will be measured in linear feet and will be paid for at the contract unit price per linear foot. Measurement shall be along the flow-line of the gutter. This price shall

include all equipment, labor and materials for installing the curb & gutter, aggregate base course, excavating, backfilling, compacting, disposing of surplus and unsuitable materials, existing site restoration (including but not limited to asphalt and concrete) and any other item required for a complete installation.

"Concrete Sidewalk, 4" Thick" will be measured in square yards of finished surface, complete-in-place, and will paid for at the contract unit price per square yard. The unit price shall include all equipment, labor and materials for the installation of the sidewalk, excavation and disposal of existing material (soil, grass, or gravel), backfill, aggregate base course, existing site restoration and any other item required for a complete installation.

"Brick Paver Sidewalks on 4" Concrete Base" will be measured in square yards of finished surface, complete-in-place, and will paid for at the contract unit price per square yard. The unit price shall include all equipment, labor and materials for the installation of the sidewalk, excavation and disposal of existing material (soil, grass, or gravel), backfill, aggregate base course, existing site restoration and any other item required for a complete installation.

"Concrete Entrance, CG-9 (7" Thick)" will be measured in square yards of finished surface, complete-in-place, and will paid for at the contract unit price per square yard. The unit price shall include all equipment, labor and materials for the installation of the entrance, excavation and disposal of existing material (soil, grass, or gravel), backfill, aggregate base course, existing site restoration and any other item required for a complete installation.

Payment will be made under:

Pay Item	**Pay Unit**
Standard Curb, CG-2	LF
Combination Curb & Gutter, CG-6	LF
Concrete Sidewalk, 4" Thick	SY
Brick Paver Sidewalks on 4" Concrete Base	SY
Concrete Entrance, CG-9 (7" Thick)	SY

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
RUBBER SIDEWALKS

I. Description.

This work shall consist of furnishing and installing flexible porous pavement around existing, mature trees.

II. Materials.

a) Rubber Sidewalks

1) The Flexible Porous Pavement shall be KBI Flexi®-Pave HD2000, or approved equal, made from recycled passenger tires, crushed stone and a urethane binding agent as manufactured by K.B. Industries, Inc. (KBI), 7300 Bryan Dairy Road, Suite 400, Largo, Florida 33777-1544. Color shall be "concrete" for sections where the sidewalk is concrete and "brick red" for sections where there is brick sidewalk.
2) All components, materials and compounds shall be 100% sourced and manufactured in the USA.
3) The Flexible Porous Pavement shall be supplied by a manufacturer with at least 10 years experience that can supply references for similar applications and installations in the USA.
4) The Contractor shall be a Certified Installer of KBI Flexi®-Pave HD2000.
5) The Contractor shall;
   i) Furnish all labor, materials, tools, equipment, and incidentals required to install KBI Flexi®-Pave HD2000.
   ii) Supply and install the crushed stone sub-base as described in the specifications.
   iii) Install the KBI Flexi®-Pave HD2000 to depth and width as described in the specifications.

III. Procedures

1) Install rubber sidewalks as per manufacturer's specifications.
2) Bedding requirement – 4 inches of #57 stone.
3) Material thickness – 2 inches

IV. Measurement and Payment.

"Rubber Sidewalk" will be measured and paid for at the contract unit price per square yard. This price shall include all equipment, labor and materials for installing the rubber sidewalk, crushed rock base course, aluminum edging, fiberglass dowels, steel spikes, geotextile, backfilling, compacting, disposing of surplus and unsuitable materials, existing site restoration (including but not limited to asphalt and concrete) and any other item required for a complete installation. The adjacent concrete sidewalk will be paid for separately under "Concrete Sidewalk, 4" Thick".

Payment will be made under:

Pay Item	**Pay Unit**
Rubber Sidewalk	SY

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
DETECTABLE WARNING SURFACES

May 2018

I. Description.

This work shall consist of providing all labor, tools, equipment, and materials required to construct sidewalk detectable warning surfaces at all ADA ramps at crosswalks.

II. Materials.

a) Truncated Dome Pavers

1) Hanover Detectable Warning Pavers, 11 ¾ ” x 11 ¾ ” x 2”, Red 15 color, Tudor finish, or approved equal.

III. Procedures

1) Install pavers at all ADA ramps in accordance with all ADA requirements.
2) Install pavers in a 1-inch latex mortar bed, on top of a 4-inch concrete slab.

IV. Measurement and Payment.

“Detectable Warning Surfaces, CG-12” will be measured and paid for at the contract unit price per square yard of surface installed. This price shall include all equipment, labor and materials for installing the truncated dome pavers: pavers, mortar bed, and concrete base slab.

Payment will be made under:

Pay Item	Pay Unit
Detectable Warning Surfaces, CG-12	SY

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
HANDRAIL

May 2018

I. Description.

This work shall consist of installing a pedestrian handrail behind and adjacent to the new sidewalk.

II. Materials.

a) Pedestrian Railing

1) Railing shall be VDOT HR-1, Type II Pedestrian Railing as modified below. No gripping rail is required.
2) Handrail shall not be galvanized. Instead, handrail shall be powder coated as follows: A TGIC polyester powder coating shall be applied to the galvanized steel in such a manner that the coating will not peel off. The coating shall be applied at a thickness of 0.075 mm to 0.15 mm by electrostatic spray process and bake finished per manufacturer's directions. The coating shall be applied without voids, tears, or cuts that reveal the substrate, and shall thoroughly adhere to the metal without peeling when scratched with a pick device or knife point blade. Coating color: Black.
3) Organic zinc repair paint shall be 65% zinc by weight and meet the requirements of ASTM A780.

III. Procedures

1) Handrail shall be completely shop fabricated and powder coated prior to delivery to the site.
2) Handrail shall be grouted in place (minimum of 8-inches depth) with non-shrink grout anchoring cement, "Por-Rok" or approved equal.

IV. Measurement and Payment.

"Handrail" will be measured and paid for at the contract unit price per linear foot of handrail installed. This price shall include all equipment, labor and materials for installing the handrail including placing sleeves in the concrete sidewalk before pouring or core drilling holes in the new sidewalk, and grouting the handrail in place

Payment will be made under:

Pay Item	Pay Unit
Handrail	Linear Feet

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
SIDEWALK SWITCHBACK

I. Description

This work shall consist of constructing a sidewalk switchback along the southeast corner of Kent and Clifford Streets, including cast-in place concrete retaining wall, handrail, and stone veneer.

II. Materials.

A. Retaining Wall
   1. Materials shall meet all applicable VDOT specifications for cast-in-place retaining walls.

B. Stone Veneer
   1. Limestone Anchored Stone Veneer
      a. Material Standard: Comply with ASTM C 568.
      b. Varieties and Sources: Alverson Limestone, Ashlar Blend, Platnum series available through Frederick Block or approved equal.
      c. The cap stone shall consist of cut limestone that matches stone veneer on walls, minimum of 2” thickness.
   2. Mortar Materials
      a. Regional Materials: Aggregate for mortar and grout, cement and lime shall be extracted, harvested or recovered, as well as manufactured within 500 miles of project site.
      b. Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-weather construction; natural color or white cement may be used as required to produce mortar color indicated.
         i. Low-Alkali Cememt: Nor more than 0.60 percent total alkali when tested according to ASTM C114.
   3. Veneer Anchors
      a. Adjustable, Screw-Attached Veneer Anchors: Units consisting of a wire tie section and a metal anchor section that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
      b. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment to studs, and as follows:
         i. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
         ii. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
            a) Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
               i) Heckmann Building Products Inc.; Pos-I-Tie.
               ii) Wire-Bond; SureTie.
               iii) Approved Equal
            b) First four subparagraphs below are examples of proprietary anchor sections. Insert others to suit Project. First subparagraph describes Dayton Superior's "D/A 213" and Wire-Bond's "RJ-711."

c) First subparagraph below describes Heckmann Building Products' "Pos-I-Tie" and Wire-Bond's "SureTie."
d) Anchor Section: Corrosion-resistant, self-drilling, eye-screw designed to receive wire tie.
e) Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from minimum 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized steel wire.
f) Seismic Masonry-Veneer Anchors: Units consisting of a metal anchor section and a connector section designed to engage a continuous wire embedded in the veneer mortar joint.

4. Embedded Flashing Materials
   a. Flexible Flashing: For flashing not exposed to the exterior, use one of the following, unless otherwise indicated (at the base of walls, at door and window heads, and at window sills):
      i. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.040 inch.
         a) Manufacturers: Subject to compliance with requirements, provide products by one of the following:
            i) Perma Barrier by W.R. Grace
            ii) IPCO
            iii) Approved equal.

5. Fabrication
   a. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated.
      i. For limestone, comply with recommendations in ILI's "Indiana Limestone Handbook."
   b. Select stone to produce pieces of thickness, size, and shape indicated, including details on Drawings.
   c. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.
   d. Cut and drill sinkages and holes in stone for anchors and supports.
   e. Carefully inspect stone at quarry or fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units before shipment.
      i. Clean sawed backs of stone to remove rust stains and iron particles.
   f. Thickness of Stone: Provide thickness indicated, but not less than the following:
      i. Thickness: 4 inches (100 mm) plus or minus 1/2 inch (13 mm).
   g. Shape stone for type of masonry (pattern) as indicated.

6. Masonry Cleaners
   a. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.

i. Manufacturers: Subject to compliance with requirements, provide products by one of the following
   a) Prosoco, Inc.
   b) Approved Equal

C. Brick Sidewalk
   1. Brick sidewalks shall be constructed in the Historic District per standard detail SW-4. Bricks shall be Pine Hall Brick Pavers, Color – Pathway Full Range, or approved equal.

D. Handrail
   1. Railing shall be VDOT HR-1, Type II Pedestrian Railing as modified below. No gripping rail is required.
   2. Handrail shall not be galvanized. Instead, handrail shall be powder coated as follows: A TGIC polyester powder coating shall be applied to the galvanized steel in such a manner that the coating will not peel off. The coating shall be applied at a thickness of 0.075 mm to 0.15 mm by electrostatic spray process and bake finished per manufacturer's directions. The coating shall be applied without voids, tears, or cuts that reveal the substrate, and shall thoroughly adhere to the metal without peeling when scratched with a pick device or knife point blade. Coating color: Black.
   3. Organic zinc repair paint shall be 65% zinc by weight and meet the requirements of ASTM A780.

III. Procedures

A. Retaining Wall
   1. Cast-in place wall shall be constructed as per details shown on the drawings.
   2. All exposed (visible) sections of the wall shall receive a Class 2, Rubbed Finish (VDOT Section 404.07)

B. Stone Veneer
   1. Examination
      a. Examine surfaces indicated to receive stone masonry, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry.
      b. Examine substrate to verify that dovetail slots, inserts, reinforcement, veneer anchors, flashing, and other items installed in substrates and required for or extending into stone masonry are correctly installed.
      c. Retain last paragraph above or first paragraph below, or both depending on substrates.
      d. Examine wall framing, sheathing, and weather-resistant sheathing paper to verify that stud locations are suitable for spacing of veneer anchors and that installation will result in a weatherproof covering.
      e. Proceed with installation only after unsatisfactory conditions have been corrected.

   2. Preparation
      a. Accurately mark stud centerlines before beginning stone installation.

b. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3. Setting of Stone Masonry, General
   a. Perform necessary field cutting and trimming as stone is set.
      i. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snipping.
      ii. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
      iii. Pitch face at field-split edges as needed to match stones that are not field split.

   b. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
   c. Arrange stones in range ashlar pattern with course heights as indicated.
   d. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.
   e. Set stone to comply with requirements indicated on Drawings. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
   f. Provide sealant joints of widths and at locations indicated.
      i. Keep sealant joints free of mortar and other rigid materials.

   g. Install metal expansion strips in sealant joints at locations indicated. Build flanges of expansion strips into masonry by embedding in mortar between stone masonry and backup wythe. Lap each joint 4 inches (100 mm) in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
   h. Install embedded flashing and weep holes at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

      i. At stud-framed walls, extend flashing through stone masonry, up sheathing face at least **8 inches (200 mm)** and behind weather barrier.
      ii. At lintels and shelf angles, extend flashing full length of angles but not less than 6 inches (150 mm) into masonry at each end.
      iii. At sills, extend flashing not less than 4 inches (100 mm) at ends.
      iv. At ends of head and sill flashing, turn up not less than 2 inches (50 mm) to form end dams.
      v. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
      vi. Cut flexible flashing flush with wall face after completing masonry wall construction.

i. Coat limestone with cementitious dampproofing as follows:

   i. Stone at Grade: Beds, joints, and back surfaces to at least 12 inches (300 mm) above finish-grade elevations.
   ii. Stone Extending below Grade: Beds, joints, back surfaces, and face surfaces below grade.
   iii. Allow cementitious dampproofing formulations to cure before setting dampproofed stone. Do not damage or remove dampproofing in the course of handling and setting stone.

j. Place weep holes and vents in joints where moisture may accumulate, including at base of cavity walls, above shelf angles, and at flashing.
k. Install vents in head joints at top of each continuous cavity at spacing indicated.
   i. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

4. Construction Tolerances
   a. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (10 mm in 6 m), or 1/2 inch in 40 feet (13 mm in 12 m) or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (13 mm in 12 m) or more.
   b. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (13 mm in 12 m) or more.
   c. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet (13 mm in 6 m) or 3/4 inch in 40 feet (19 mm in 12 m) or more.
   d. Measure variation from level, plumb, and position shown in plan as a variation of the average plane of each stone face from level, plumb, or dimensioned plane.
   e. Variation in Mortar-Joint Thickness: Do not vary from joint size range indicated.
   f. Variation in Plane between Adjacent Stones: Do not exceed one-half of tolerance specified for thickness of stone.

5. Installation of Anchored Stone Masonry
   a. Anchor stone masonry to stud framing with screw-attached veneer anchors unless otherwise indicated.
   b. Embed veneer anchors in mortar joints of stone masonry at least halfway, but not less than 1-1/2 inches (38 mm), through stone masonry and with at least a 5/8-inch (16-mm) cover on exterior face.
      i. Install continuous wire reinforcement in horizontal joints and attach to seismic veneer anchors as stone is set.
   c. Space anchors to provide not less than one anchor per 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (300 mm) of openings, sealant joints, and perimeter at intervals not exceeding 12 inches (300 mm).

d. Anchor stone trim with stone trim anchors where indicated. Install anchors by fastening to substrate and inserting tabs and dowels into kerfs and holes in stone units. Provide compressible filler in ends of dowel holes and bottoms of kerfs to prevent end bearing of dowels and anchor tabs on stone. Fill remainder of anchor holes and kerfs with mortar.
e. Set stone in full bed of mortar with full head joints unless otherwise indicated. Build anchors into mortar joints as stone is set.
f. Provide cavity between stone masonry and backup construction unless otherwise indicated. Keep cavity free of mortar droppings and debris.
   i. Slope beds toward cavity to minimize mortar protrusions into cavity.
   ii. Do not attempt to trowel or remove mortar fins protruding into cavity.
g. Rake out joints for pointing with mortar to depth of not less than 1/2 inch (13 mm) before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides.

6. Pointing
   a. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than 3/8 inch (10 mm) deep until a uniform depth is formed.
   b. Point stone joints by placing and compacting pointing mortar in layers of not more than 3/8 inch (10 mm) deep. Compact each layer thoroughly and allow to it become thumbprint hard before applying next layer.
   c. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profile: Beaded.

7. Adjusting and Cleaning
   a. Remove and replace stone masonry of the following description:
      i. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
      ii. Defective joints.
      iii. Stone masonry not matching approved samples and mockups.
      iv. Stone masonry not complying with other requirements indicated.
   b. Replace in a manner that results in stone masonry matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.
   c. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.
   d. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:
      i. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
      ii. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone masonry.

iii. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
iv. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
v. Clean stone masonry by bucket and brush hand-cleaning method described in BIA Technical Note No. 20, Revised II, using job-mixed detergent solution.
vi. Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.
vii. Clean limestone masonry to comply with recommendations in ILI's "Indiana Limestone Handbook."

C. Brick Sidewalk
1. Brick sidewalk in area of switchback shall be constructed in accordance with the Cast-in-Place concrete specification and per standard detail SW-4.

D. Handrail
1. Handrail shall be completely shop fabricated and powder coated prior to delivery to the site.
2. Handrail shall be grouted in place (minimum of 8-inches depth) with non-shrink grout anchoring cement, “Por-Rok” or approved equal.

IV. Measurement and Payment.

“Sidewalk Switchback” will be measured and paid for at the contract unit price per cubic yard of concrete. This price shall include all equipment, labor, and materials for constructing the wall including the concrete, steel reinforcement, rubbed finish, 4” drain pipe, filter fabric, and free draining backfill.

Payment will be made under:

Pay Item	Pay Unit
Sidewalk Switchback	Lump Sum

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
ROCK EXCAVATION

May 2018

I. Description.

This work shall consist of excavation of solid rock required to complete any work on the project. No blasting shall be allowed.

II. Measurement and Payment.

"Rock Excavation" will be measured and paid for at the contract unit price per cubic yard of rock removed. This price shall include excavation and disposal of material.

Payment will be made under:

Pay Item	Pay Unit
Rock Excavation	Cubic Yard

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
TOPSOIL AND SEEDING

I. Description.

This work shall consist of furnishing and placing topsoil and seeding the area with grass.

II. Materials.

a) Topsoil

1) Topsoil shall be VDOT Class B.

b) Seed

Seed will be fescue blend (see below) with less than 1% weed seeds and inert matter. (unless otherwise specified)

- 35% Shenandoah Tall II Fescue
- 25% Falcon IV Tall Fescue
- 10% Falcon III Tall Fescue
- 10% Creeping Red Fescue
- 10% Kentucky Bluegrass
- 10% Perennial Ryegrass

*Seed vendor: Trinity Turf, Inc. 2291 Pulse Hill Lane Harrisonburg, VA.22802, or approved equal.

c) Fertilizer

1) Fertilizer will be at a minimum 15-15-15 sulfur coated slow release.

III. Procedures

a) Contractor shall remove and properly dispose of all the existing loose surface gravel/rocks of the area that shall receive topsoil.
b) A minimum depth of 8-inches of topsoil shall be applied to the entire area.
c) Lime shall be applied to the topsoil (rate of 2 tons/acre).
d) Topsoil shall be prepared as per VDOT Section 603.03(b).
e) Seeding method will be that of hydroseeding. Hydromulch, seed and fertilizer are to be mixed into slurry directly applied to the loosened soil.
f) Clean, dry straw is to cover all seeded areas. All straw is to be heavily tacked using a tackifier and hydroseed slurry so that the straw does not blow away.
g) Contractor shall water the new grass until a full stand of grass reaches a height of 3-inches. Any areas where a full stand of grass does not germinate and grow shall be reseeded at no additional cost to the City.

IV. Measurement and Payment.

"Topsoil and Seeding" will be measured and paid for at the contract unit price per square yard of topsoil placed, prepared, and seeded. This price shall include all equipment, labor and materials for preparing

the area to receive topsoil, placing the topsoil, lime, hydromulch, seed, fertilizer, straw, watering until the grass reaches a height of 3-inches, and re-seeding if necessary.

Payment will be made under:

Pay Item	**Pay Unit**
Topsoil and Seeding	Square Yard

I. Description.

This work shall consist of supplying and planting trees at various locations in the project area. All tree planting shall be in accordance with the International Society of Arboriculture (ISA), *New Tree Planting* guide.

II. Materials.

a) Subsoil Material

1) Subsoil to be used in tree planting areas shall comply in all respects to the following requirements: the soil shall have a defined granular or blocky structure and shall be reasonably free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the subsoil unsuitable for use.

b) Topsoil Material

1) Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if approved by the city arborist or soil scientist. Regardless, topsoil shall fertile, friable, natural topsoil without admixture of subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials, with acidity range of between pH 5.5 to 6.0 and be typical of the area.
2) Identify source location of topsoil proposed for use on the project.
3) Provide topsoil free of substances harmful to the plants which will be grown in the soil.

c) Trees

1) All trees to be single trunk, ball and burlap stock with a minimum caliper of two inches.
2) Trees shall meet the American Standard for Nursery Stock (ANSI Z60.1).

d) Mulch

1) Mulch shall be shredded hardwood bark and be naturally brown in color without coloring or dyes.

e) Extended Watering Devices

1) All extended watering devices shall be 20 Gallon Treegator® or approved equal.

III. Procedures

a) Excavation

1) To facilitate healthy growth of the trees and provide stable bedding, each location which will receive a new tree shall be excavated to a depth of four feet from the top of the existing surface. The length and width of the excavation shall be a minimum of 4-feet by 5-feet.
2) All material excavated from the tree well shall be hauled away and legally disposed of.
3) Any rock or concrete encountered shall be removed by mechanical means.

b) Subsoil Replacement

1) Subsoil meeting the above specifications shall be placed in the tree well following excavation.
2) The subsoil shall be settled by watering and careful tamping, but shall not be compacted.
3) The top of the subsoil shall coincide with the proper depth of the root ball.

c) Tree Placement

1) Remove all non-degradable materials from the tree and the root ball.
2) Fold down or pull back string, burlap, and/or wire basket from the top 1/3 of the root ball.
3) If the main order root is deeper than 1”-2” in the root ball, remove soil from the top of the root ball until the main order root is 1” deep.
4) Set root ball level 1”-2” above grade, finished grade being 2” below the top of sidewalk.

d) Topsoil Placement

1) Topsoil meeting the above specifications shall be placed around the root ball.
2) The topsoil shall be settled by watering and brought to finished grade level.
3) A small berm shall be constructed of topsoil around the root ball to contain water runoff.

e) Mulching

1) Mulch 2”-4” deep shall be placed on topsoil, keeping a 3” circle of bare soil around the trunk of the tree.

f) Extended Water Devices and Watering

1) Contractor shall furnish and install two (2), 20-gallon Treegator’s on each tree.
2) At the end of the first year maintenance period, contractor shall remove the watering devices and deliver them to City Yards for the City’s use in the future.
3) Watering shall occur at intervals directed by the City and may vary depending on weather conditions.
4) The City will allow the contractor to obtain water from the fire hydrant at City Yards to be used for the tree watering on this project at no additional cost.

g) Staking

1) Two 8’ long metal tee posts shall be driven into the subsoil 6”-8” outside the root ball, on opposite sides of the tree.
2) The tree shall be tied to the stakes with polypropylene straps which connect horizontally from the stake to a point just below the first branch of the tree (2 per tree).
3) The straps shall be loose enough to allow for trunk flexing.

h) Sidewalks and Adjacent Property

1) Any damage to the existing sidewalks or property adjacent to the tree wells that occurs during the installation of the trees shall be repaired immediately by the Contractor at the Contactor’s sole cost.

i) Cleanup

1) The Contractor shall promptly cleanup the sidewalk and street area following the tree planting. The sidewalk area shall be washed down with water at the conclusion of the cleanup.

j) Traffic Control – Pedestrian Access

1) The Contractor shall be responsible for the proper maintenance of traffic throughout the project. All lanes of traffic shall be maintained at all times. The Contractor can restrict parking in the work areas by giving a minimum of 24 hours notice to affected areas. The Contractor shall install proper signs and cones in the work areas. The Contractor shall also ensure pedestrian access on sidewalks throughout the project and shall properly protect the work areas from pedestrians.

k) Maintenance

1) Each new tree shall be watered and weeded for a period of one year from the date the last tree is planted. Weeding for each tree shall occur at a minimum interval of at least once per month.
2) Watering shall be performed with an extended release watering device and at intervals as directed by City.
3) At the end of the one year period, extended watering devices, stakes and straps shall be removed. The extended watering devices shall be taken to City Yards for the City to re-use in the future.

l) Warranty

1) All trees shall be fully warranted for a period of one year from the date the last tree is planted. Any tree that does not survive shall be replaced with the same species and planted according to these specifications during the next available planting season, as determined by the City Arborist.
2) The City Arborist shall have final determination of the status of a tree at the end of the warranty period.
3) Any tree replaced within two months of the end of the warranty period shall be replaced with a tree of the same species but of a caliper which is consistent with the original caliper plus one year's growth.
4) All replacement trees shall be warranted for one year from the replacement date.
5) Warranty shall not include damage or loss of trees caused by fires, floods, freezing rains, lightning storms, or winds over 75 miles per hour, winter kill caused by extreme cold and severe winter conditions not typical of planting areas; acts of vandalism, traffic accidents, or negligence on the part of the Owner. Any replacement attributed to these causes must be in addition to the contract amount.

m) Rock Excavation

1) Any rock encountered in the tree wells that cannot be removed by hand shall be removed by mechanical means and disposed of properly. No blasting shall be allowed.

IV. Measurement and Payment

Payment will be made under:

"Trees" will be measured by each living tree in a healthy growing condition and will be paid for at the contract unit price per each. This price shall include furnishing and delivering trees and incidental planting materials; preparing planting pits including removing and disposing of the existing materials in each tree location to a depth of 4-feet, placing and compacting new subsoil, forming saucers; installing trees; staking, furnishing and installing extended watering devices and watering trees as necessary the first year, back filling with approved topsoil mixture; pruning; applying mulch, weeding, and maintaining trees in a healthy growing condition until final acceptance.

Payment will be made under:

Pay Item	Pay Unit
Tree (type and size)	Each

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
STORM SEWERS

I. Description.

This work shall consist of furnishing and installing or replacing various storm drainage system infrastructure components including, but not limited to: pipe, inlets (precast or cast-in-place), and manholes.

II. Materials.

a) Pipe

1) Unless otherwise noted, all drainage pipes within the roadway shall be Class IV reinforced concrete pipe.
2) Drainage pipe outside of the roadway may be HDPE, if approved by the City.

b) Inlets

1) Inlets can be standard VDOT inlets or a special/modified design.
2) Inlets that are not standard VDOT designed shall be designed by a Virginia Professional Engineer. Contractor shall submit the sealed design drawings for all special/modified inlets to the City for review and approval.
3) Precast inlets are preferred, but inlets can be cast-in-place as approved by City.
4) Inlets within the street shall be capable of sustaining an H-20 loading.
5) Covers on DI-3 inlets (including modified VDOT) shall have the City of Winchester logo.

c) Manholes

1) Manholes shall be capable of sustaining an H-20 loading.
2) Manholes can be standard VDOT manholes or a special/modified design
3) Manholes that are not standard VDOT designed shall be designed by a Virginia Professional Engineer. Contractor shall submit the sealed design drawings for all special/modified manholes to the City for review and approval.
4) Precast manholes are preferred, but inlets can be cast-in-place as approved by City.
5) All manhole covers shall have the City of Winchester logo.

III. Procedures

a) Backfill/Bedding

1) Storm pipe shall be bedded and backfilled by hand, or approved mechanical method, from 6 inches below the pipe to the surface (asphalt) with granular backfill (VDOT Class 21-A). Backfill material shall be deposited in the trench for its full width of each side of the pipe and shall be placed in 6-inch layers and compacted by tamping.
2) All inlets and manholes shall be installed on 6-inches of compacted granular bedding material (VDOT Class 21-A).

IV. Measurement and Payment.

"Storm Drain Pipe (Size and Type)" will be measured in linear feet and will be paid for at the contract unit price per linear foot. Measurement shall be along the centerline of the pipe. This price shall include furnishing and installing: the pipe, all fittings, excavation, removal and disposal of existing

asphalt or concrete, bedding and backfill, compaction, connection to existing system, removal and disposal of excess material, sheeting and shoring.

"Drop Inlet (Type)" will be measured and paid for at the contract unit price for each. This price shall include furnishing and installing: the inlet (pre-cast or cast in place) or structure, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring. Where curb or curb and gutter extend along the drop inlet, the contract unit price for drop inlets shall include that part of the curb or gutter within the limits of the structure. Price shall also include providing a sealed design drawing from a Virginia Professional Engineer for any special or VDOT modified inlet. If the structure is an existing structure, the price shall include any and all modifications required to the existing structure.

"Storm Sewer Manhole" will be measured and paid for each manhole installed. This price shall include furnishing and installing: the manhole (pre-cast or cast-in-place), removing and disposing of existing storm piping, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, existing site restoration (including but not limited to asphalt and concrete), removal and disposal of excess material, sheeting and shoring. Price shall also include providing a sealed design drawing from a Virginia Professional Engineer for any special or VDOT modified manhole.

"Storm Sewer Manhole Frame & Cover" will be measured and paid for each. This price shall include furnishing and installing: the manhole frame & cover, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, existing site restoration (including but not limited to asphalt and concrete), removal and disposal of excess material, sheeting and shoring.

Payment will be made under:

Storm Drain Pipe (Size and Type)	LF
Drop Inlet (Type)	EA
Storm Sewer Manhole	EA
Storm Sewer Manhole frame and Cover	EA

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
ROOF DRAINS

I. Description.

This work shall consist of replacing/installing new pipes that connect to roof drains on buildings and extend under the new sidewalks to be constructed.

II. Materials.

a) Pipe

1) 4-inch, 6-inch diameter SDR 35 PVC pipe as required.
2) SDR 35 PVC gasketed fittings.

b) Joint Filler

1) Joint filler shall be ½" preformed asphalt expansion joint material conforming to ASTM D994 or ASTM D1751.

c) Connections to Underground Storm Drain Pipes

1) Hydraulic cement mortar

III. Procedures

a) Roof Drains Through Curbs

1) Install pipe to ensure positive drainage from downspout to edge of pavement at curb.
2) Roof drain pipe through curb shall be 4" diameter. Reducers/expanders shall be used if existing downspout will not fit inside 4**"** pipe.
3) Place preformed asphalt expansion joint filler on top of PVC pipe before pouring the new sidewalk.
4) Form control joint in concrete along pipe length to back of curb.

b) Backfill

Roof drain pipe shall be bedded and backfilled by hand, or approved mechanical method, from 6 inches below the pipe to the surface (asphalt) with granular backfill (VDOT Class 21-A). Backfill material shall be deposited in the trench for its full width of each side of the pipe and shall be placed in 6-inch layers and compacted by tamping.

IV. Measurement and Payment.

"Roof Drain Pipe" will be measured and paid for at the contract unit price per linear foot of pipe installed. This price shall include all equipment, labor and materials for installing the new pipe: pipe, fittings, connection to existing roof drain pipe, connection to underground storm drain pipe, excavation, removal and disposal of the existing roof drain pipe, disposal of excess materials, backfill, bedding, and compaction.

Payment will be made under:

Pay Item	**Pay Unit**
Roof Drain Pipe (Size and Type)	Linear Feet

CITY OF WINCHESTER
TECHNICAL SPECIFICATION
TRENCH DRAINS

May 2018

I. Description.

This work shall consist of replacing existing sidewalk trench drains with solid lids in the project area when the sidewalks are replaced.

II. Materials.

a) Trench Drain Lids

1) Lids and frames shall be solid, bolted, gray iron for heavy duty use. Manufacturer: Neenah R-4999, or approved equal.

III. Procedures

1) Complete installation as per manufacturer's instructions.

IV. Measurement and Payment.

"Trench Drain with Solid Cover" will be measured and paid for at the contract unit price per linear foot of trench drain installed. This price shall include all equipment, labor and materials for installing the new trench drain: frame and lid, concrete, steel reinforcement, excavation, backfill, compaction, and existing site restoration. Price shall also include removal and proper disposal of existing trench drain/cover.

Payment will be made under:

Pay Item	Pay Unit
Trench Drain with Solid Cover (size)	Linear Feet

I. Description.

This work shall consist of furnishing and installing various potable water distribution system infrastructure components including, but not limited to: water mains, water services and meters, fire hydrants, valves, and fittings.

II. Materials.

A. Water Mains

1) Ductile iron pipe shall be used for water lines 4 inches and larger in diameter. The ductile iron pipe shall conform to the requirement of AWWA Standard C151. Pipe shall be Class 52 minimum with cement-mortar lining and a bituminous seal coating conforming to the requirements of AWWA C205.
2) Ductile iron pipe shall be encased in polyethylene in accordance with AWWA C105.

B. Pipe Fittings

1) All pipe fittings shall be ductile iron conforming to AWWA C-110, C-111, C-153. Fittings shall be cement-mortar lined and with a bituminous seal coat.
2) Fittings shall be short body standard with mechanical joints for buried installation and flanged for interior and exterior exposed installations.
3) All fittings shall have a pressure rating of 350 psi or greater.
4) Mechanical joint restraint for ductile iron fittings shall be incorporated in the design of the retainer gland. The gland shall include a restraining mechanism which, when activated, imparts multiple wedging action against the pipe which increases its resistance as pressure increases.
5) Glands shall be designed to allow flexibility of pipe joints after installation and backfill. Glands shall be manufactured of ductile iron, conforming to ASTM A536-80. Glands shall have U.L. listing through 24-inch in size and Factory Mutual approval through 12-inch.
6) Retainer glands shall be used on each side of fittings where the water main changes direction. Additional sets of retainer glands are required at pipe lengths above and below fittings as required.
7) Retainer glands shall be Megalug Series 1100, Uni-Flange Series 1400, or approved equal.
8) Thrust restraint on slip joint ductile iron pipe shall be bell restraints using Megalug Series 1700, Uni-Flange Series 1450, or approved equal.

C. Direct Bury Gate Valves

1) Gate valves 12 inches and smaller shall be of the tight-closing resilient seated gate valves, which meet or exceed the requirements for AWWA C-515.
2) All resilient seat valves are to be ductile iron body, internally reinforced molded natural rubber mounted, wedged disc, non-rising stem, tapered seat type.
3) Valves shall have a clear, unobstructed water way when fully opened and shall be at least as large as the pipe inside diameter for which it is intended.
4) Valves shall open counterclockwise and seating shall use compression closure.
5) Valve end connections shall be mechanical joint.
6) Top operating nut shall be 2-inch square operating nut.

7) The operating stem shall be a minimum diameter of 7/8-inch with a triple O-ring seal. The configuration of the O-rings shall be two above and one below the thrust collar.
8) Valves must have a 250 psi working pressure and 400 psi test pressure.
9) Valves installed with more than 5 feet of cover shall have extension rods added to bring the operating nuts to within 3 feet of the surface.
10) Manufacturer shall be Mueller Company (Model 2360), American Flow Control (Series 2500 Resilient Wedge Valve), Kennedy (Model #7571 D.B.) or approved equal.

D. Valve Box Assemblies

1) Valve boxes are to be installed on all valves within the water network. These boxes shall be two piece and screw type for adjustment to finish grade.
2) All valve boxes shall be installed upon the valve with the use of a Valve Box Adaptor II as manufactured by Adaptor, Inc. or approved equal. The adaptor shall be manufactured to fit the specified size and brand of both valve and valve box with which it is installed. The adaptor shall be made of a resilient rubber material. The adaptor shall be installed in lieu of hardwood blocking and shall be installed incidental to the valve and box installation.
3) Valve box shall be furnished with a 5-1/4-inch lid made of cast iron and marked "Water".
4) When valve may be subjected to traffic, the top of the valve box shall be flush with the final surface. An 18" x 18" concrete pad (6" thick) is required around valve boxes installed outside of pavement area.

E. Tapping Sleeves and Valves ("Wet Taps")

1) Tapping sleeves shall be ductile iron construction meeting ASTM Grade 65-45-12. Side flange seals shall be of the O-ring type. Sleeves shall be coated with asphaltic varnish in compliance with NSF-61.
2) Stainless steel tapping sleeves may be used on pipe sizes 6 inch through 30 inch and shall be Ford Style FAST or FTSS, or approved equal.
3) Tapping sleeves shall be American Flow Control Series 2800, or approved equal.
4) Valves shall be American Flow Control Series 2500 resilient wedge valve or approved equal.
5) Tapping valves shall be resilient seat type with bodies and bonnets made of ductile iron for 250 psi working pressure. Cutters used shall be at least 1/4-inch smaller than the valve size.

F. Fire Hydrants

1) Hydrants shall be dry barrel conforming to AWWA C502, and have a traffic breakaway flange and stem coupling.
2) Design of the hydrant shall be of the compression type main valve and O-ring seal between the operating nut and bonnet.
3) Traffic breakaway flange shall be installed 4 inches from the final grade.
4) Hydrant shall have a 6-inch inlet and a 4-1/2 inch valve opening. Outlets shall be one 4-1/2 inch streamer nozzle and two 2-1/2 inch hose nozzles. Outlet nozzles shall be field replaceable utilizing straight threads or quarter turn seal by an O-ring. Each nozzle cap shall be equipped with chain and gasket.
5) Hydrant shall open right (clockwise) utilizing a pentagon shaped nut 1-1/2 inch in size.

6) Install "out-of-service" signs on new fire hydrants until all testing is complete and the hydrants become active.
7) Fire hydrants to be used as air release shall:

    a) Provide positive slope upward from hydrant tee to fire hydrant base.
    b) Mechanical joint ductile iron pipe and fittings with retainer glands at each fitting required.

8) Hydrants shall be American Darling, Model MK-73-2, as manufactured by American Flow Control, Kennedy Valve Guardian K81D, or approved equal. Upper barrel, lower barrel and base must be ductile iron painted yellow. Base bolts and nuts must be stainless steel.
9) Hydrant shall have a solid base surrounding the barrel no less than 24 inches by 24 inches by 6 inches deep. The solid base shall include high density concrete. Tamped soil is not considered a solid base.

G. Water Services

1) 3/4-inch Water Service

a) Water services to be installed in accordance with the City of Winchester Standard Details.
b) Corporation stops shall conform to AWWA C800, minimum pressure rating of 250 psi, 3/4-inch ball style, as manufactured by Ford, Model FB1000 or approved equal. Connection at corporation stop shall be flared or compression.
c) Service line shall be 3/4-inch ID type "K" copper tubing and shall be one continuous piece from corporation stop to meter setting.
d) Meter setting shall consist of a meter yoke, inlet angle valve, and outlet double check valve. The meter setting shall have two independent vertical cartridge check valves and be in conformance with ASSE 1024. Meter setting shall include:
    - iron yoke bar (Ford model Y502)
    - iron yoke expansion connector (Ford Y502)
    - yoke angle dual check valve (Ford HHCA94-323TV)
    - yoke angle ball valve (Ford BA94-223W)
e) Meter box shall be 18 inches in diameter and 30 inches tall, high density polyethylene (HDPE), with an 18-inch diameter frame and 11-1/2 inch diameter hinged lid. Meter box shall have a 10,000 lb minimum crush rating and shall have a minimum wall thickness of ½ inch. Frame and lid shall be made of cast iron and shall be recessed to accommodate the Neptune Radio Read antennae. Frame and lid shall be A.Y McDonald model number 74M32ARG. Traffic rated lids are required in areas subject to traffic; frame and lids shall be A.Y. McDonald meter box cover 74H32ARG.

1) 1-inch and Dual ¾-inch Water Service

a) Water services to be installed in accordance with the City of Winchester Standard Details.
b) Corporation stops shall be 1-inch and shall conform to AWWA C800, as manufactured by Ford, Model FB1000 or approved equal.
c) Service line shall be 1-inch ID type "K" copper tubing and shall be one continuous piece from corporation stop to meter setting.
d) Meter box shall be 18-inch by 22-inch tapered “bullet box” and 30 inches tall, high density polyethylene (HDPE). The interior of the box shall be white for light reflection. Frame and lid shall be made of cast iron and shall be recessed to accommodate the Neptune Radio Read antennae. Frame and lid shall be A.Y. McDonald model number 74M32A. Traffic rated lids are required in areas subject to traffic and shall be Ford meter box cover X32H.
e) 1-inch meter setting shall consist of a meter yoke, inlet angle valve, and outlet double check valve. The meter setting shall have two independent vertical cartridge check valves and be in conformance with ASSE 1024. Meter settings shall include:
   - Iron yoke bar (Ford model Y504)
   - Iron yoke expansion connection (Ford Y504)
   - Yoke angle dual check valve (For HHCA94-444TV)
   - Yoke angle ball valve (Ford BA94-334W)
f) Dual ¾-inch meter settings shall consist of two single meter settings connected by a U-branch (Ford U48-427.5).

2) 1-1/2 inch and 2-inch Water Services

a) Water services to be installed in accordance with the City of Winchester Standard Details.
b) Corporation stops shall be 2 inches in size and shall conform to AWWA C800, as manufactured by Ford, or approved equal.
c) Service line shall be 2-inch ID SDR 9 polyethylene line and shall be one continuous piece from corporation stop to curb stop. Tracer wire shall be wrapped around the polyethylene service line and shall be connected on each end to the corporation stop and the curb stop.
d) Meter shall be set in a custom meter setting consisting of flanged angle valve on the inlet and outlet. Include bypass with ball valve and locking cap.
e) Meter box shall be 4'-0" long x 4’-0" wide x 4'-0" deep as shown in Standard Detail WD-4.
f) Access door shall be H-20 rated as manufactured by Bilco Door Company, Type PCM-2, or Halliday Products Model H1R3030. Dimensions shall be 2’-6” x 2’-6”.
g) Backflow device shall meet applicable plumbing codes and City of Winchester Ordinance. Device must be installed outside of meter box.

III. Procedures

A. Bedding and Backfill

1) Outside of Traffic Area (see Detail WS-1)

1) The water main pipe, fittings and appurtenances shall be bedded by hand, or approved mechanical method, from 6 inches below the pipe to 12 inches above the pipe with crushed stone classified as VDOT No. 57. Bedding material shall be deposited in the trench for its full width of each side of the pipe, fitting or appurtenance.
2) From 12 inches above the pipe to the final grade, excavated trench material containing stones no greater than 3 inches in diameter may be used as backfill material, unless otherwise specified.

2) Within Traffic Area (See Detail WS-2)

a) The water main pipe, fittings and appurtenances shall be bedded by hand, or approved mechanical method, from 6 inches below the pipe to 12 inches above the pipe with crushed stone classified as VDOT No. 57. Bedding material shall be deposited in the trench for its full width of each side of the pipe, fitting or appurtenance.
b) When pipe is constructed within the road, street, driveway or parking lot, granular backfill (VDOT Class 21A) is required for the full depth of backfill. Backfill shall be placed in 6-inch layers and compacted by tamping.
c) Granular backfill (VDOT Class 21A) is required for the full depth of backfill where the trench is outside of the pavement but the nearest trench wall is within 5 feet of the edge of pavement.
d) Pipe trenches shall be restored within 24 hours. When necessary, trenches may be restored temporarily with cold patch asphalt. When weather permits, temporary trenches must be restored permanently within 7 days.

B. Thrust Restraint

1) Both megalug mechanical joint restraints and/or megalug slip joint restraint harness <u>and</u> concrete thrust blocks are required in all locations for thrust restraint including:
   a) Bends (Inlet and Outlet)
   b) Tee – All Branches
   c) Offsets – Inlet and Outlet
   d) Caps
   e) Plugs
   f) Dead Ends
   g) Hydrant run-outs shall be restrained as dead ends

C. Depth

1) All lines shall be laid with a minimum cover of 36 inches from the top of pipe to finished ground surface grade. Water main cover shall not exceed 11 feet with City approval.

D. Separation of water mains and sewers (both sanitary and storm)

1) Parallel installation. Under normal conditions water mains shall be laid at least 10 feet horizontally from a sewer or sewer manhole. The distance shall be measured edge to edge.
2) Parallel installation. Under unusual conditions when local conditions prevent a horizontal separation of 10 feet, the water main may be laid closer to a sewer or sewer manhole provided that:

    a) The bottom of the water main shall be at least 18 inches above the top (crown) of the sewer.
    b) Where this vertical separation cannot be obtained, the sewer shall be constructed of Class 52, ductile iron water pipe, pressure tested in place without leakage prior to backfilling.
    c) The sewer manhole shall be of watertight construction and tested in place.

3) Crossing. Under normal conditions, water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer whenever possible.
4) Crossing. Under unusual conditions when local conditions prevent a vertical separation of 18 inches, the following construction shall be used:

    a) Sewers passing over or under water mains shall be constructed of Class 52, ductile iron sewer pipe according to the standards for ductile iron gravity mains.
    b) Water mains passing under sewers shall be protected by providing:

        (1) A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water main.
        (2) Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the water main. Support may be provided by a concrete cradle sized appropriately for the sizes of the mains and the surrounding soil conditions.
        (3) The length of the water main pipe section shall be centered at the point of crossing so that the joints shall be equidistant and as far as possible from the sewer.

5) No water main shall pass through or come in contact with any part of a sewer manhole.

E. Connections to Existing System

1) All connections to the existing system shall be made by a "wet tap" with a tapping sleeve/valve, as directed by the City.

F. Pressure and Leakage Test

1) General - Distribution Mains

   a) Testing shall be in accordance with the Virginia Department of Health and AWWA C600.
   b) Test pressure shall not exceed pipe or thrust-restraint design pressures.
   c) Test pressure shall not vary for the duration of the test.
   d) Test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.
   e) When hydrants are in the test section, the test shall be made against open hydrant valves.

2) Test Procedure - Distribution Mains

   a) After the pipe has been laid all pipe shall be subjected to a hydrostatic pressure of not less than 150 psi or 1.25 times the working pressure at the highest point along the test section.
   b) Each section of pipe to be tested shall be slowly filled with water.
   c) Expel all air from pipeline.
   d) Apply 100 percent of required test pressure at beginning of test. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.
   e) Maintain test pressure for a minimum of 2 hours.
   f) There shall be zero leakage during the test period.
   g) If the leakage is greater or the pressure cannot be maintained, the contractor shall locate and make approved repairs as necessary until the leakage is within the specified tolerance.
   h) All visible leaks are to be repaired, regardless of the amount of leakage.

3) Test Procedure - Fire Lines

   a) Test procedure is the same as described above, except that the test pressure shall be 200 psi, duration of test is 1 hour. There shall be zero leakage during the 1-hour test period.

G. Disinfection

1) Disinfection shall be performed after the pressure testing has passed and approved by the City of Winchester.

2) All water mains shall be disinfected and bacteriological testing completed immediately prior to being placed in operation.
3) The basic disinfection procedure consists of:

   A. Preventing contamination materials from entering the water main during storage, construction or repair.
   B. Removing, by flushing or other means, those materials that may have entered the water main.
   C. Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main. A newly installed main shall be disinfected in accordance with AWWA C651, and the Virginia Department of Health regulations.
   D. Protecting the existing distribution system from backflow due to hydrostatic pressure test and disinfection procedures.
   E. Determining the bacteriological quality by laboratory test after disinfection.
   F. Final connection of the approved new main to the active distribution system.

4) Chlorination shall be by the tablet method, unless otherwise approved in writing by the City of Winchester. This method may be used only if the pipe and appurtenances are kept clean and dry during construction. Alternate disinfection procedures may be required at the option of the City of Winchester if the circumstances are such that the pipe and appurtenances are not kept clean and dry.

   During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe. Also, one such tablet shall be placed in each hydrant, hydrant branch and other appurtenances. Table 1 shows the number of tablets required for commonly used sizes of pipe.

Table 1. Number of 5-g calcium hypochlorite tablets required for dose of 25 mg/l

Length of Pipe Section, ft					
Pipe Diameter (inches)	</= 13	18	20	30	40
	Number of 5-g calcium hypochlorite tablets				
4	1	1	1	1	1
6	1	1	1	2	2
8	1	2	2	3	4
10	2	3	3	4	5
12	3	4	4	6	7
16	4	6	7	10	13

Filling and contact. When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity no greater than 1 ft/s. Precautions shall be taken to ensure that air pockets are eliminated. This water shall remain in the pipe for at least 24 hours.

Final flushing: After the required retention period, the chlorinated water shall be flushed from the main using potable water. However, the chlorinated water shall not be flushed out until the residual is less than 1 mg/L. A reducing agent shall be applied as required to achieve this residual.

After final flushing and before the main is placed in service, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the main. At least one set of samples shall be collected from every 1,000 feet of the new main, plus one set from the end of the line and at least one set from each branch. Samples shall be collected in the presence of an inspector for the Department of Public Utilities in bottles provided by the City. Samples shall be tested for bacteriologic quality by the City of Winchester, and shall show the absence of coliform organisms. If contamination is indicated, then the disinfection/testing procedure must be repeated.

H. New Service Line Installations

1) Contractor shall coordinate and schedule with each individual customer any disruption in service necessary to place the new water service lines in operation.

I. Valve Insertions

1) As directed by the City, valves shall be inserted into existing water mains, as necessary, to minimize disruptions to existing customers during the project.

J. Bypass System

1) Contractor shall provide and operate a water service bypass system as shown on the contract drawings. Contractor shall be permitted to provide an alternate bypass plan for the City's consideration; any deviation from the City-provided plan shall be reviewed and approved by the City prior to bypass system installation.

IV. Measurement and Payment.

"Ductile Iron Water Main Replacement" will be measured in linear feet and will be paid for at the contract unit price per linear foot. Measurement shall be along the centerline of the pipe and fittings. This price shall include furnishing and installing: the pipe, all fittings, poly-wrap, mechanical restraints and concrete thrust blocks, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring, concrete encasement, testing, disinfecting, dewatering, and any other work necessary to provide a complete and working water system. The price shall also include establishing and maintaining a water main bypass system during installation and the removal and disposal of the existing water main.

"Gate Valve and Box" will be measured and paid for each valve installed in the water main and fire hydrant services. This price shall include furnishing and installing: all components shown on standard detail WD-8, including the valve, mechanical restraints and concrete thrust blocks, extension stem, valve box, concrete pad around the valve box (in unpaved areas), excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring.

"Insert Gate Valve" will be measured and paid for each valve inserted in an existing water main. This price shall include furnishing and installing: the valve, mechanical restraints, concrete thrust blocks, valve box and extension stem, concrete pad around the valve box (in unpaved areas), excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring.

"Insert Line Stop" will be measured and paid for each line stop inserted in an existing water main. This price shall include furnishing and installing: the valve, mechanical restraints, concrete thrust blocks, valve box and extension stem, concrete pad around the valve box (in unpaved areas), excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring.

"Wet Tap" will be measured and paid for each tapping sleeve and valve installed to connect to an existing water main. This price shall include furnishing and installing: the tapping sleeve and valve, mechanical restraints and concrete thrust blocks, valve box and extension stem, concrete pad around the valve box (in unpaved areas), excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring.

"Water Service Line" will be measured and paid per linear foot of service line installed. This price shall include furnishing and installing the service saddle and tapping the water main, corporation stop, quarter bend coupling, copper or PE service line, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring. **The existing water meter will be placed in the new meter assembly by the Contractor at the time of placing the new service line in operation.** Price shall also include existing site restoration, including asphalt repairs within the roadway, topsoil, seeding, etc.

"Water Meter Assembly" will be measured and paid for each meter assembly installed. This price shall include furnishing and installing: all components shown on standard details WD-1, WD-2, WD-3 or WD-4, including the meter setting, meter box/vault and lid/hatch, valves, backflow devices, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring. **The existing water meter will be placed in the new meter assembly by the Contractor at the time of placing the new service line in operation.** Price shall also include existing site restoration, including asphalt repairs within the roadway, topsoil, seeding, etc.

"Fire Hydrant Assembly" will be measured and paid for each fire hydrant installed. This price shall include furnishing and installing: all components shown on standard detail WD-7, including the fire hydrant, fittings, mechanical thrust restraint and concrete thrust blocks, tie road, concrete base, drainage fill, disinfection and testing, excavation, removal and disposal of existing asphalt or concrete,

bedding and backfill, compaction, removal and disposal of excess materials, sheeting and shoring. The lateral piping required will be paid under "Ductile Iron Water Main" and the gate valve/box will be paid for under "Gate Valve and Box."

"Remove Existing Fire Hydrant" will be measured and paid for each existing hydrant removed. This price shall include removing the existing hydrant and delivering it to the Utility Maintenance shop located at the east end of Woodstock Lane, removing and properly disposing of the vertical piping, removing and disposing of the existing valve box, excavation, backfill and compaction.

Payment will be made under:

Pay Item	**Pay Unit**
Ductile Iron Water Main Replacement	LF
Gate Valve and Box	EA
Insert Gate Valve	EA
Wet Tap	EA
Water Service Line	LF
Water Meter Assembly	EA
Fire Hydrant Assembly	EA
Remove Existing Fire Hydrant	EA

I. Description.

This work shall consist of furnishing and installing various sanitary sewer collection system infrastructure components including, but not limited to: sanitary sewer mains, manholes, laterals and cleanouts.

II. Materials.

a) Gravity Sanitary Sewer Mains

1) Sanitary sewers shall be polyvinylchloride (PVC) SDR 26 heavy wall sewer pipe and shall meet or exceed ASTM D-3034. Joints shall be gasketed, bell and spigot type with the bell made integral with the pipe.
2) Each length of pipe shall be marked with the manufacturer's name, trade name, nominal size, class, hydrostatic test pressure, manufacturer's standard symbol to signify it was tested, and date manufactured.
3) When connecting PVC main pipe to either clay or cast iron, Indiana Seal Shear Guards or approved equal are required.

b) Pipe Fittings

1) PVC fittings used in a gravity collection system shall be of the same SDR rating as the collection pipe being used.
2) Fittings are permitted only on service laterals and drop manholes in gravity collection system.

c) Manholes

1) Manholes shall be precast reinforced concrete capable of sustaining an H-20 loading and meeting standards put forth under ASTM C-478.
2) Manholes shall have a minimum inside diameter of 48 inches with a minimum wall thickness of five inches.
3) The base section shall be monolithic to a point 12 inches above the crown of the incoming pipe with a minimum base thickness of 8 inches. The base shall have a diameter 12 inches larger than the barrel of the manhole.
4) Pipe holes up to 12 inches in new manholes shall be properly located and cast in place with appropriate boot (Tylox by Hamilton-Kent or approved equal). After assembly, pipe to be grouted in place using non-shrinking grout inside the manhole. Pipe holes 15 inches and above are required to be cored.
5) New mains or six-inch laterals into existing manholes may be cored and shall be sealed using Kor-N-Seal or Lock-Joint with two stainless steel bands by Dukor Co., Milford, NH, to hold the pipe in position.
6) Cone sections shall be eccentric narrowing from 48 inches to 24 inches inside diameter.
7) Flat top sections shall be used in place of a cone section for manholes less than 5 feet deep. The 24-inch access hole shall be offset to allow easy access to steps and shall be reinforced to support H-20 loading.
8) The exterior of the manhole shall be covered with fibrous bitumastic coating.
9) Manhole steps conforming to the applicable provisions of ASTM Specifications C 478 such as aluminum 14967 as manufactured by Alcoa or plastic steps manufactured by MA Industries or equal, shall be factory built into precast sections. Step spacing and

alignment to be maintained uniform and vertical throughout the depth of the manhole.

10) Each manhole section shall have not more than two holes for the purpose of handling and laying. These holes shall be sealed with cement mortar.
11) Joints of the manhole sections shall be of the tongue and groove type; sections shall be joined using profile gaskets for single step joints such as Type 4G manufactured by Press-Seal Gasket Corp,. or equal. Gaskets shall conform to the physical property requirements of ASTM standard C 443 and C 361.
12) All joints, holes, etc., shall be sealed with cement mortar.
13) Drop connections shall be used in the following cases:
    1) For pipes with diameters between 8” and 12”, an inside drop connection shall be used when the distance between the invert in and invert out is greater than 3’-1”. If the distance between the invert in and invert out is less than 3’ – 1”, the incoming line shall be lowered such that the invert in is no greater than 2’ above the invert out.
    2) For pipe with diameters 15” and greater, an outside drop connection shall be used when the distance between the invert in and invert out is greater than 6’-0”. If the distance between the invert in and invert out is less than 6’-0”, the incoming line shall be lowered such that the invert in is no greater than 2’ above the invert out.

d) Manhole Frame & Cover

1) Manhole frames and covers shall conform to ASTM A-48. The words "sanitary sewer" and the City Logo shall be cast into the cover and shall be plainly visible, per standard detail SS-6.
2) Manhole frames and covers shall be as manufactured by Neenah Foundry catalog #R-1643, component #N 1371-0061 (frame), and #N 1371-0062 (lid), or approved equal.

e) Lateral Piping

1) PVC pipe used for installation of lateral services shall be 4-inch unless otherwise specified and have a minimum wall thickness of SDR 26. All fittings shall be gasketed.
2) D.W.V. fittings shall comply with ASTM D-2665, and be socket by socket. Gasketed adapter shall meet ASTM D-3139 with gaskets meeting ASTM F-477.
3) 4-inch main line and lateral cleanout wyes shall be gasket by gasket by gasket on stand pipe lead.
4) Cleanouts for 4-inch and 6-inch laterals, located in grass areas, shall be cast iron gasketed cleanouts with a recessed brass screw plug, Panella model PA4SV-CSK.
5) Cleanouts subject to traffic or in the sidewalk area shall have a cleanout frame and cover over a PVC cleanout top. Cleanout frames and cover shall be Capitol Foundry model B-1140 or approved equal.
6) Lateral connections to an existing sewer shall be made with a boot-n-saddle with stainless steel straps and appropriate rubber fitting or by cut-in wye, using an 8x6 inch PVC tee wye, then reduced to 4” PVC.
7) Tracer wire shall be provided on all sanitary laterals within 6 feet of the surface.
8) When connecting PVC laterals pipe to existing clay or cast iron pipe, Indiana Seal Shear Guards or approved equal are required.

III. Procedures

A. Bedding and Backfill

1) Outside of Traffic Area (see Detail WS-1)

a) The sewer main pipe, fittings and appurtenances shall be bedded by hand, or approved mechanical method, from 6 inches below the pipe to 12 inches above the pipe with crushed stone classified as VDOT No. 57. Bedding material shall be deposited in the trench for its full width of each side of the pipe, fitting or appurtenance.
b) From 12 inches above the pipe to the final grade, excavated trench material containing stones no greater than 3 inches in diameter may be used as backfill material, unless otherwise specified.

2) Within Traffic Area (See Detail WS-2)

a) The sewer main pipe, fittings and appurtenances shall be bedded by hand, or approved mechanical method, from 6 inches below the pipe to 12 inches above the pipe with crushed stone classified as VDOT No. 57. Bedding material shall be deposited in the trench for its full width of each side of the pipe, fitting or appurtenance.
b) When pipe is constructed within the road, street, driveway or parking lot, granular backfill (VDOT Class 21A) is required for the full depth of backfill. Backfill shall be placed in 6-inch layers and compacted by tamping.
c) Granular backfill (VDOT Class 21A) is required for the full depth of backfill where the trench is outside of the pavement but the nearest trench wall is within 5 feet of the edge of pavement.
d) Pipe trenches shall be restored within 24 hours. When necessary, trenches may be restored temporarily with cold patch asphalt. When weather permits, temporary trenches must be restored permanently within 7 days.

B. Depth

1) All sanitary sewer mains shall be laid with a minimum cover of 36 inches from the top of pipe to finished ground surface grade.

C. Separation of water mains and sewers (both sanitary and storm)

1) Parallel installation

a) Under normal conditions water mains shall be laid at least 10 feet horizontally from a sewer or sewer manhole. The distance shall be measured edge to edge.
b) Under unusual conditions when local conditions prevent a horizontal separation of 10 feet, the water main may be laid closer to a sewer or sewer manhole provided that:

i. The bottom of the water main shall be at least 18 inches above the top (crown) of the sewer.
ii. Where this vertical separation cannot be obtained, the sewer shall be constructed of Class 52, ductile iron water pipe, pressure tested in place without leakage prior to backfilling.
iii. The sewer manhole shall be of watertight construction and tested in place.

c) Where the sanitary sewer is installed parallel to a storm drainage structure, there shall be at least 10 feet horizontally, measured center to center, between them.

2) Crossing

a) Under normal conditions, water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer whenever possible.
b) Under unusual conditions when local conditions prevent a vertical separation of 18 inches, the following construction shall be used:

i. Sewers passing over or under water mains shall be constructed of Class 52, ductile iron sewer pipe according to the standards for ductile iron gravity mains.
ii. Adequate structural support shall be provided to the mains to prevent excessive deflection and settling. Support may be provided by a concrete cradle sized appropriately for the sizes of main and the surrounding soil conditions.
iii. A full length of the water main pipe section shall be centered at the point of crossing so that the joints shall be equidistant and as far as possible from the sewer.

c) When it is necessary for sanitary sewer mains to cross above water mains, the water main shall be protected by providing:
i. A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water main.
ii. A full length of the sanitary main pipe section shall be centered at the point of crossing so that the joints shall be equidistant and as far as possible from the water main.

d) All crossings should be as close to 90 degrees as possible.
e) No water main shall pass through or come in contact with any part of a sewer manhole.

D. Inspections and Testing

1) General

a) All costs of cleaning, inspection and testing are to be borne by the Contractor and/or Developer.
b) Cleaning, televising and testing shall be performed a minimum of 30 days after the completion of backfill and compaction, and shall be witnessed by the City. The Contractor or Developer shall contact the City at the start of the waiting period.
c) Any portion of the sanitary sewer system failing to meet the inspection or testing requirements of the City of Winchester shall be corrected to the satisfaction of the City. The costs for such corrections shall be borne by the Contractor and/or Developer.
d) All repair methods, other than replacement of the defective areas with new materials, shall be subjected to prior approval of the City. Grouted, collared, clamped, or otherwise patched sewer pipe shall not be acceptable.
e) All unacceptable conditions found during television inspection must be corrected and re-televised.

2) Test Procedure – Gravity Sewer Mains

a) The completed sanitary sewer shall be high-pressure water jet cleaned and subjected to a low-pressure air test, in accordance with the following procedures:

1) All service laterals, cleanouts, stubs and fittings within the sewer test section shall be properly capped or plugged during construction to prevent air loss that could cause an erroneous air test result.
2) Plugs shall be supplied and installed by the Contractor in the line to be tested at each manhole. Each plug shall be securely placed.
3) Low pressure air shall be slowly introduced into the sealed line until a constant internal pressure of 4.0 psi is maintained.
4) After a constant pressure of 4.0 psi is reached, the air supply shall be throttled back to maintain that internal pressure for at least two minutes.
5) After the stabilization period, the air hose from the control panel to the air supply shall be shut off or disconnected, and the test shall begin.
6) For a section of the line to pass, there shall be zero leakage for a five-minute interval after the supply has been shut off.

b) The entire length of all flexible sewers shall be tested for deflection using a “go-no-go” mandrell (95% of the pipe’s internal diameter).
c) Sewer line sections shall be visually inspected by means of a closed circuit television. The inspection shall be done one manhole section at a time and recorded on a DVD or flash drive. Sewers are to be flow tested before television inspection to ensure no ponding occurs.

1) The television camera used for the inspection shall be one specifically designed and constructed for such inspection. The image shall be clear enough to enable the City representative and others viewing the monitor to easily evaluate the interior condition of the pipe. The inspection shall be recorded on a DVD or flash drive and the City shall retain a copy of the recording.

2) The visual inspection may be provided by an approved TV inspection firm or by the City. If the Developer should request this service from the City, he/she shall be charged per lineal foot inspected at the current rate.

3) Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall have a footage-recording device and the footage shall be displayed on the monitor.

4) Unacceptable conditions that adversely affect the ability of the system to function as designed or to be properly maintained may include, but are not limited to the following:

   a) Protruding taps.
   b) Root intrusion.
   c) Cracked or faulty pipe.
   d) Improper pipe repair.
   e) Misaligned or deformed pipe.
   f) Debris in line.
   g) Infiltration/exfiltration.
   h) Bellies or sags with a depth greater than or equal to 10% (or a maximum of 1-1/2 inches) of pipe diameter and/or a length greater than 25 feet.

3) Test Procedure - Manholes

   a) Precast concrete manholes shall be tested in accordance with ASTM C 1244-93, standard test method for concrete sewer manholes by the negative air pressure test (vacuum method).
   b) Manholes shall be tested after installation with all connections in place.
   c) Procedure for testing shall be as follows:

      1) Temporarily plug all pipes entering the manhole at least eight inches into the sewer pipe. The plug must be inflated at a location past the manhole/pipe gasket, and braced to prevent the plugs or pipes from being drawn into the manhole.
      2) The test head shall be placed inside the frame at the top of the manhole and inflated, in accordance with the manufacturer's recommendations.
      3) A vacuum of ten inches of mercury (10" Hg) shall be drawn on the manhole. Shut the valve on the vacuum line to the manhole and shut off the pump or disconnect the vacuum line from the pump.
      4) The pressure gauge shall be liquid filled, having a 3.5 inch diameter face with a reading from zero to 30 inches of mercury.
      5) The manhole is considered to pass the vacuum test if the time for the vacuum reading to drop from 10" to 9" Hg is one minute or more.
      6) If the manhole fails the test, necessary repairs shall be made. The vacuum test shall be repeated until the manhole passes the test.
      7) All temporary plugs and braces shall be removed after each test.

d) Manholes shall show no signs of ponding water in the inverts.

g) New Service Line Installations

1) Contractor shall coordinate and schedule with each individual customer any disruption in service necessary to place the new sanitary laterals in operation.

h) Inactive Sewer Laterals

1) All sewer laterals found to be inactive when excavated shall be sealed with concrete and backfilled. Concrete cap may be placed at the point of excavation as the lateral does not need to be terminated at the main.

IV. Measurement and Payment.

"Replace Existing Sanitary Sewer Manhole" will be measured and paid for each manhole replaced. This price shall include furnishing and installing: the manhole, up to 10 feet of PVC main stubbed from each invert and connected to the existing main, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring. The price shall also include any pumping and diversion of the existing sanitary flow necessary to complete the work and the removal and proper disposal of the complete existing manhole and up to 10 fee of the existing main replacement extending from the manhole.

"Sanitary Sewer Manhole Frame & Cover" will be measured and paid for each framed and cover installed. This price shall include furnishing and installing: the manhole frame & cover, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring.

"Sanitary Sewer Lateral Replacement" will be measured in linear feet and will be paid for at the contract unit price per linear foot. This price shall include furnishing and installing: the lateral piping, connection to the existing service, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, existing site restoration (including but not limited to asphalt and concrete), removal and disposal of excess material, sheeting and shoring. The price shall also include any pumping and diversion of the existing sanitary flow necessary to complete the work and the removal and proper disposal of the existing lateral.

"Sanitary Sewer Connection to Existing Main and New Cleanout" will be measured and paid for each saddle installed to connect an existing sewer main. This price shall include furnishing and installing: cleanout assembly, connection to the existing main, excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, existing site restoration (including but not limited to asphalt and concrete), removal and disposal of excess material, sheeting and shoring.

"Sanitary Sewer Main Replacement" will be measured in linear feet and paid for at the contract unit price per linear foot. Measurement shall be along the centerline of the pipe. This price shall include furnishing and installing: the pipe (SDE 26 PVC and Class 52 ductile iron where necessary), excavation, removal and

disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring, testing, and any other work necessary to provide a complete and working sanitary sewer system. The price shall also include any pumping and diversion of the existing sanitary flow necessary to complete the work and the removal and proper disposal of the existing sanitary main.

"New Sanitary Sewer Manhole" will be measured and paid for each new manhole installed. This price shall include furnishing and installing: the manhole, up to 10 feet of PVC main stubbed from each invert and connected to the existing main (unless the manhole is installed on a new sewer main), excavation, removal and disposal of existing asphalt or concrete, bedding and backfill, compaction, removal and disposal of excess material, sheeting and shoring. The price shall also include any pumping and diversion of the existing sanitary flow necessary to complete the work and up to 10 feet of the existing main replacement extending from the manhole (unless the manhole is installed on a new sewer main).

"Excavate and Cap Existing Sanitary Sewer Lateral" will be measured and paid for each existing sewer lateral that is capped. This price shall include excavation, furnishing and placing the concrete cap, removal and disposal of excess material, bedding and backfill, compaction, sheeting and shoring and any other work necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Replace Existing Sanitary Sewer Manhole	EA
Sanitary Sewer Manhole Frame & Cover	EA
Sanitary Sewer Lateral Replacement	LF
Sanitary Sewer Connection to Existing Main and New Cleanout	EA
Sanitary Sewer Main Replacement	LF
New Sanitary Sewer Manhole	EA
Excavate and Cap Existing Sanitary Sewer Lateral	EA