



Invitation for Bid

IFB:	IFB#22-85	<u>Issuing Department/ Agency:</u> City of Charlottesville Department of Utilities 305 4th Street NW Charlottesville, Virginia 22903
Project:	LAMBETH PUMP STATION IMPROVEMENTS	
Date:	FEBRUARY 14, 2022	
TO:	POTENTIAL BIDDERS	

The City of Charlottesville requests a bid for the work described in the “Scope of Service” sections provided. This solicitation is subject to the provisions of the City of Charlottesville’s Instructions to Bidders, General Terms and Conditions for Construction, Special Terms and Conditions, Supplemental Terms and Conditions, Technical Specifications, Construction Drawings and any other information provided with the Bid Documents.

Project Description: The purpose of this bid is to secure a contractor for performing civil, structural and instrumentation and control improvements at the Lambeth Pump Station. Compensation shall be based on the unit prices provided in this bid.

Scope of Service:

The intent of the contract is to provide the construction and completion in every detail of the work described.

Pre-Bid Meeting (non-mandatory): Scheduled for **Wednesday, February 23, 2022 at 10:00 AM** local prevailing time. The Pre-Bid Meeting will be conducted virtually using Microsoft Teams. Interested Bidders shall contact Gary Fern via e-mail at gfern@wrallp.com and provide an e-mail address for the attendee(s) to receive the Microsoft Teams invite and link. Attendance will be taken at the start of the Pre-Bid Meeting. Attendance is not mandatory, but is strongly recommended.

ALL MAILED OR HAND DELIVERED BIDS MUST BE SUBMITTED TO:

**City of Charlottesville, Department of Utilities,
305 4th Street NW, Charlottesville, Virginia 22903, Attention Kathryn McNannay.**

Sealed Bids are due by 2:00 PM local prevailing time on March 15, 2022.

The exterior of the sealed envelope shall be plainly marked to identify: (i) the IFB number and project name, (ii) the name and address of the bidder, (iii) the bidder’s licensed Virginia contractor number, (iv) the State Corporation Commission ID Number: and (v) the date, time and location on/at which bids are scheduled to be received by the City. The mailing (utilizing contracted shipping services) of bids is preferred.

MAILED BIDS: Due to restrictions surrounding the COVID-19 pandemic, public access to City facilities is currently prohibited. The City is still receiving and accepting deliveries from shipping services such as USPS, FedEx and UPS, etc. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope or shipping container addressed to the City at the post office address identified within this solicitation.

HAND DELIVERED BIDS: Hand delivered bids may **ONLY** be delivered on **Tuesday, March 15, 2022 at 305 4TH STREET NW, CHARLOTTESVILLE (Utilities/Public Works Administration Building) between the hours of 1:00-2:00 PM (local prevailing time).** Bids will not be accepted at any other building access location. While on City property Bidders are expected to adhere to the Commonwealth of Virginia’s restrictions and social distancing rules must be observed.

All Bids will be date and time stamped upon receipt and retained unopened in a secure location until bid opening. No consideration will be given to date of postmark or error in delivery to incorrect address. It is the responsibility of the Bidder to ensure timely and correct delivery of their proposal/bid regardless of the chosen delivery method.

All Inquiries For Information Should Be Submitted in Writing and Be Directed To: Kathryn McNannay, Program Coordinator/Utilities by Fax at 434-970-3817 or email to mcnannay@charlottesville.gov.

**TO RECEIVE A COMPLETE BID PACKAGE, PLEASE VISIT OUR
WEBPAGE AT WWW.CHARLOTTESVILLE.GOV/PURCHASING AND
CLICK ON BIDS AND PROPOSALS OR FAX (434) 970-3069.**

This public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, § 2.2-4343.1 or against a bidder or offeror because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment.

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I.	CITY OF CHARLOTTESVILLE, VIRGINIA <u>INSTRUCTIONS TO BIDDERS</u> for PROCUREMENT OF CONSTRUCTION AND RELATED SERVICES
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The general instructions, rules and conditions which follow apply to procurement of construction and construction related services conducted by the City of Charlottesville, unless otherwise specified. Bidders are expected to inform themselves fully as to all applicable terms, conditions, instructions, requirements and specifications, before submitting bids. Failure to do so will be at the bidder's own risk, and relief cannot be secured on the plea of error.

Subject to all laws, policies, resolutions and regulations of the Commonwealth of Virginia and the City of Charlottesville, and all applicable rules, regulations and limitations, if any, imposed by legislation of the Federal government, bids submitted in response to a solicitation issued by the City of Charlottesville will bind bidders to the conditions and requirements herein set forth, unless otherwise expressly specified in the solicitation.

"This public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, § 2.2-4343.1 or against a bidder or offeror because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment."

SECTION 1: DEFINITIONS

- 1.1.** "Agency" means any department, agency, authority, commission, board or other unit in the administrative service of the City.
- 1.2.** "Bid" means the offer of a bidder to provide specific goods or services at specified prices and/or other conditions specified in the solicitation.
- 1.3.** "City" means the City of Charlottesville, Virginia and its agencies, officials, officers, employees, agents and designated representatives.
- 1.4.** "Contractor" shall have the same meaning as "successful bidder," as set forth below.
- 1.5.** "Construction Documents" shall mean the plans, specifications, approved change orders, revisions, addenda and other information approved by the City, which set forth in detail the Work to be performed for a construction Project.
- 1.6.** "Department" shall mean the City of Charlottesville Department of Utilities and designated representatives.
- 1.7.** "Goods" means all material, equipment, supplies, printing and automated data processing hardware and software.
- 1.8.** "Informality" means a minor defect or variation of a bid from the exact requirements of a solicitation, which does not affect the price, quality, quantity or delivery schedule for the goods or services being procured.
- 1.9.** "Invitation for Bids," "Invitation to Bid," and "IFB" shall each mean a competitive sealed bidding procurement process by which a request is made to prospective suppliers (bidders) for their quotation on goods or services desired by the City. The issuance of an IFB will contain or incorporate by reference the specifications and contractual terms and conditions applicable to the procurement.
- 1.10.** "Issuing Authority" means the authorized representative of the department of the City who issued the solicitation.
- 1.11** "Project" means the planned construction undertaking which is the subject of this Contract for Construction.
- 1.12.** "Purchasing Agent" means the head of the City's Purchasing Division, or a designated contact person acting for him or at his direction.

1.13. “*Responsible Bidder*” means a bidder having the capability in all respects to perform fully the contract requirements, and who has the moral and business integrity and reliability which will assure good faith performance of the contract sought to be procured, and who has been pre-qualified, if required.

1.14. “*Responsive Bidder*” means a bidder who has submitted a bid or proposal which conforms in all material respects to the IFB.

1.15. “*Services*” means any work performed by an independent contractor wherein the service rendered does not consist primarily of acquisition of equipment or materials, or the rental of equipment, materials and supplies.

1.16. “*Solicitation*” means the process of notifying prospective bidders that the City wishes to receive bids on a set of requirements to provide goods or services. The notification of City requirements may consist of public advertising, the mailing of an IFB, the public posting of notices, the conduct of small purchase procedures, and/or telephone calls or facsimiles to prospective bidders.

1.17. “*State*” means the Commonwealth of Virginia.

1.18. “*Successful bidder*” means the lowest responsive and responsible bidder to whom a contract is awarded as a result of a competitive sealed bidding procedure conducted by the City. The term “contractor” and “general contractor,” as used herein, shall mean “successful bidder.”

SECTION 2: TERMS, CONDITIONS, INSTRUCTIONS APPLICABLE TO PROCUREMENT

2.1. Bid Forms.

A. Unless otherwise specified, forms provided by the City (including, without limitation: bid cover sheets, pricing schedules, etc.) shall be utilized by the bidder. All bids shall be submitted on forms provided, properly signed in ink in the proper spaces and submitted in a sealed envelope. All blanks must be filled in, and answers shall be printed in ink or typewritten. Should the bid prices and/or any other submissions on any copy of a submitted bid differ from those on the original, the ORIGINAL shall prevail.

B. Each bid must be submitted in a sealed envelope addressed to the City. The exterior of the sealed envelope shall be plainly marked to identify: (i) the IFB number and project name, (ii) the name and address of the bidder, (iii) the bidder’s licensed Virginia contractor number, (iv) the State Corporation Commission ID Number: and (v) the date, time and location on/at which bids are scheduled to be received by the City. If forwarded by mail (U.S. Postal Service, UPS, Fedex, etc.) the sealed envelope containing the bid must be enclosed in another envelope or shipping container addressed to the City at the post office address identified within the solicitation.

C. STATE CORPORATION COMMISSION IDENTIFICATION NUMBER: Pursuant to Code of Virginia, §2.2-4311.2 subsection B, a bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 is required to 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 or as otherwise required by law is required to include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized. Link to the Virginia State Corporation Commission site: <http://www.scc.virginia.gov/>.

D. All contractors who perform any construction work for the City are subject to the provisions of the Virginia Code, Title 54.1, Chapter 11, and are required to be licensed as required therein. Each bidder shall, as part of its bid, provide the City with the following information: (i) whether the bidder is a resident or non-resident of the Commonwealth of Virginia; (ii) whether the bidder possesses all required licenses and certificates required by law for the work to be performed; and (iii) documentation of proper license or certification under the provisions of Title 54.1, Chapter 11 of the Virginia Code.

E. Each bidder is and shall be subject to the provisions of the Virginia Governmental Frauds Act, Virginia Code, Title 18.2, Chapter 12, Article 1.1. In compliance with this law, each bidder is required to submit a certification that its bid, or any claim resulting therefrom, is not the result of, or affected by, any act of collusion with another person engaged in the same line of business or commerce, or any act of fraud punishable under the Act. Any bidder who knowingly makes a false statement on the Certificate of No Collusion shall be guilty of a felony, as provided in Virginia Code §18.2-498.5.

2.2. Late Bids and Modifications of Bids.

A. Each bidder is solely responsible for delivering his bid to the correct location on or before the date and time on which bids are scheduled to be received by the City. Any bid/modification received at the office designated in the solicitation after the exact time specified for receipt of the bid/modification is considered a late bid/modification. A late bid/modification will not be considered for award. The time of receipt of a bid at the specified location is the time/date stamp of such location on the bid wrapper or other documentary evidence of receipt maintained by the specified location.

B. Any bidder may withdraw or modify its bid, by a writing containing the original signature of the bidder, which writing must be received by the City's Purchasing Agent or Issuing Authority prior to the date and time set for submission of bids. Withdrawal or modification shall be delivered by one of the following means: (i) hand delivery by the bidder itself, a courier, or other delivery service; (ii) by mail (no consideration shall be given to any postmark); or (iii) by telegram or facsimile or e-mail received prior to the date and time set for submission of bids, followed by written confirmation containing the original signature of the bidder, where the City is able to determine that the written confirmation was or has been sent out by the bidder prior to the date and time set for submission of the bids, or (iv) by marking(s) on the exterior of the bid submission envelope, but only if the marking is dated and includes the original signature of the bidder. If written confirmation of a telegram or facsimile communication is not, in fact, received by the City within five days following the date and time set for submission of bids, no consideration will be given to the requested withdrawal or modification.

C. Written withdrawals or modifications of bids should not reveal the bid price contained in the previously submitted sealed bid, but should simply provide the desired addition, subtraction or modification, so that the final price or terms of the bid will not be known to the City until the sealed bids are opened.

2.3. Errors in bids

A. Each bidder must carefully examine all documents and plans (including, without limitation, specifications and drawings, and the form contract) made available by the City for inspection by potential bidders, prior to submission of a bid. In addition, each bidder, prior to submission of a bid, must use whatever means necessary to satisfy itself of the extent and requirements of the Project and of the actual conditions under which the Project is to be performed. Comprehensive or detailed information of existing Site conditions may not be included in the Contract Documents; therefore, prior to bid submission, the Contractor must visit and examine the Site. Submission of a bid shall be deemed evidence that the bidder has visited the Site of the Project, that the bidder has familiarized itself with existing conditions at the Site (including without limitation, areas for storage of materials and equipment), and that the bidder is satisfied that it can construct the Project, in accordance with the Construction Documents, for the price(s) specified within its bid. Contractors will not be allowed or provided additional compensation as relief from the consequences of an error in their bids, including, without limitation errors which are attributable to conditions or factors which could have been identified by thorough examination of the Site and the Contract documents (including, without limitation, boring reports and subsurface condition reports, if available) prior to submission of a bid.

B. A bidder for a construction contract, other than a contract for construction or maintenance of public highways, may withdraw a bid from consideration after bid opening if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith and the mistake was a clerical mistake as opposed to a judgmental mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of the bid, if the unintentional arithmetic error or unintentional omission clearly can be shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn.

C. If a bid contains both clerical and judgment mistakes, a bidder may withdraw his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a bid which shall be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn.

D. The bidder shall give notice in writing to the purchasing agent of a claim of right to withdraw a bid, within two (2) business days after the conclusion of the opening of the bids and shall submit original work papers with such notice.

E. If the purchasing agent denies the withdrawal of the bid, he shall notify the bidder in writing, stating the reasons for the decision; in that event, the purchasing agent, or his designee, shall award the contract to the bidder at the bid price, provided such bidder is responsible and responsive.

F. If a bid is withdrawn, the lowest remaining bid shall be deemed to be the low bid; however, no bid may be withdrawn when the result would be the awarding of the contract on another bid of the same bidder or of another bidder in which the ownership of the withdrawing bidder is more than five (5) percent.

2.4. Binding Effect.

A. Bids must be submitted and prepared in accordance with these Instructions to Bidders. It is the responsibility of each bidder to examine all documents and plans (including, without limitation, specifications and drawings, and the form contract) made available by the City for inspection by potential bidders, prior to submission of a bid. Unless otherwise specified by the solicitation, all bids and proposals submitted shall be binding for thirty (30) calendar days following receipt by the City, unless extended by mutual consent of all parties.

B. Each bid in excess of \$100,000 submitted in response to this IFB shall be accompanied by a bid bond in an amount equal to five percent (5%) of the total monetary amount of the bid (total base bid plus all additive bid items). The bid guarantee may be either (i) a certified or cashier's check made payable to "The City of Charlottesville, Virginia," or (ii) a bid bond made payable to "The City of Charlottesville, Virginia." The bid guarantee shall be for the purpose of promising and guaranteeing that the bidder will not withdraw its bid for a period of 30 days following bid opening. The proceeds of the bid guarantee shall be and remain the sole property of the City, as liquidated damages, should the successful bidder fail to execute a contract, proof of all required insurance and endorsements and all required payment and performance bonds within ten (10) calendar days of the City's issuance of notice of award of the contract. In lieu of a bid bond, a bidder may furnish a certified check or cash escrow in the face amount required for the bond, or, if approved in advance by the city attorney, a bidder may furnish a personal bond, property bond, or a bank or savings institution's letter of credit on certain designated funds in the face amount required for the bid bond.

C. The bid guarantees of all except the three lowest bidders will be returned within three (3) days after bid opening. The remaining bid guarantees will be returned as soon as the City has received a fully-executed contract, or within 75 days after bid opening, whichever occurs first.

D. An attorney-in-fact who executes a bid guarantee must file with the guarantee a certified and dated copy of the written power of attorney which authorizes them to act. Such power of attorney shall be filed with the Clerk of Court for the City of Charlottesville.

E. In lieu of a bid bond, a bidder may furnish a cashier's check or cash escrow in the face amount required for the bid bond. If approved by the city attorney, a bidder may furnish a personal bond, property bond or bank or savings and loan association's letter of credit on certain designated funds in the face amount required for the bid bond. Approval shall be granted only upon a determination by the city attorney that the alternative form of security proffered affords protection to the city equivalent to a corporate surety's bond.

2.5. Conditional Bids.

Conditional bids will be subject to rejection in whole or in part by the City.

2.6. Time for Opening Bids.

Bids received prior to the time designated for submission of bids, and (if different) opening of bids, shall be securely kept, unopened. The Purchasing Agent, or his designee, or the Issuing Authority, will decide when the specified time has arrived, and no bid received thereafter will be considered. No responsibility will attach to the Purchasing Agent or his designee, or the Issuing Authority, for the premature opening of a bid not properly addressed and identified. Unless specifically authorized in a solicitation, telegraphic or facsimile bids/modifications of bids will not be considered.

Inclement Weather/Closure of City Offices: If the City of Charlottesville is closed for business at the time scheduled for bid opening, for whatever reason, sealed bids will be accepted and opened on the next scheduled business day, at the originally scheduled time.

2.7. Public Opening of Sealed Bids.

All bids will be opened at the time and place specified in the solicitation and bids will be read publicly and will remain available for public inspection in the office of the Purchasing Agent or his designee, or the Issuing Authority.

2.8. Public Inspection, Bids and Proposals.

A. Except as provided herein, or by applicable law, all proceedings, records, contracts and other public records relating to procurement transactions shall be open to the inspection of any citizen, or any interested person in accordance with the Virginia Freedom of Information Act and the Virginia Public Procurement Act.

B. Cost estimates relating to a proposed procurement transaction, prepared by or for the City, shall not be open to public inspection.

C. Any competitive sealed bidding bidder, upon request, shall be afforded the opportunity to inspect bid records within a reasonable time after the opening of all bids but prior to award, except in the event that the City decides not to accept any of the bids and to reopen the contract, postpone the contract or not contract at all. Otherwise, competitive sealed bid records shall be open to public inspection only after award of the contract.

D. Any inspection of procurement transaction records shall be subject to reasonable restrictions to ensure the security and integrity of the records.

E. Trade secrets or proprietary information submitted by a bidder in connection with this procurement transaction shall not be subject to the Virginia Freedom of Information Act, but only if the bidder (i) invokes the protections of Virginia Code §2.2-4342 prior to or upon submission of the data or other materials; (ii) identifies the specific data or other materials to be protected, and (iii) states the reasons why protection is necessary. A general designation of a contractor's entire bid submission as being "confidential" shall not be sufficient to invoke the protections referenced above. The City will not be liable for any damages sustained by a bidder or offeror who fails to follow the procedures designated by Virginia Freedom of Information Act, the Virginia Public Procurement Act, and the Charlottesville City Code as being prerequisite to protection of trade secrets or proprietary information.

F. Tabulations of bids are a matter of public record and are available upon request.

2.9. Omissions and Discrepancies.

Any items or parts of any equipment listed in a solicitation which are not fully described, or which are omitted from the specifications, and which are clearly necessary for the completion of such equipment and its appurtenances, shall be considered a part of such equipment although not directly specified or called for in the specifications. Should a bidder find discrepancies or ambiguities in, or omissions from, the solicitation, including any drawings or specifications, he or she shall notify the Issuing Authority at least five (5) days prior to the date set for the opening of bids. If necessary the Issuing Authority will send a written addendum for clarification to all bidders. Notifications regarding specifications will not be considered if received within five days of the date set for opening of bids.

2.10. Bidder interested in more than one Bid.

If more than one bid or proposal is offered by any one party, either directly or by or in the name of his or her clerk, partner or other persons, all such bids or proposals may be rejected. A person who has quoted prices on work, materials or supplies to a bidder or offeror is not thereby disqualified from quoting prices to other bidders or offerors submitting a bid.

2.11. Pricing.

A. The Purchasing Agent or Issuing Authority shall encourage open and competitive bidding by all possible means and shall endeavor to obtain the maximum degree of open competition on all purchase transactions using the competitive sealed bidding method of procurement. In submitting a bid or proposal, each bidder shall, by virtue of submitting a bid, be deemed to have warranted that he or she has not been a party with other bidders to an agreement to bid a fixed or uniform price. Violation of this implied warranty shall render void the bids of participating bidders. Any disclosure to or acquisition by a competitive sealed bidder, in advance of the opening of bids, of the terms or conditions of the bid submitted by a competitor shall render the entire proceedings void and shall require the re-advertisement for bids.

B. All prices submitted must be FOB Destination–Freight Prepaid and Allowed.

C. The Contractor shall pay all sales, consumer, use and other similar taxes for the Work (as defined in the "General Terms and Conditions for Construction Contracts") provided by the Contractor which are legally enacted at the time bids are received. The City is exempt from the payment of federal and State taxes. Therefore, prices bid by the Contractor to the City must be net, exclusive of taxes. In other words, the City pays sales tax on goods and materials incorporated into the Work; however, the City does not pay sales tax on the value of the construction contract, or subcontracts.

D. Taxes to be paid by Contractor's located in the City of Charlottesville shall include, but shall not be limited to, the Charlottesville City Business, Professional and Occupational License Tax (a gross receipt tax, or local license fee).

E. Where there is an error in the extension of any unit prices set forth within a Bid, the unit price shall govern.

2.12. Questions Concerning Contract Terms, Conditions, Specifications.

A. Any information or requests relative to interpretation or clarification of contract documents, terms or conditions, specifications, plans or drawings shall be requested of the Purchasing Agent or Issuing Authority, in writing, sufficiently prior to the date set for opening of bids to allow the Purchasing Agent or Issuing Authority to evaluate and respond to the information or request for interpretation. The request shall be made on a pre-bid question form, one request per form (See Item VI. Pre-Bid Question Form). Electronic submission is preferred. To be given consideration the request must be received more than five (5) business days prior to the date fixed for the submission of bids. Any material change will be submitted to all bidders through issuance of an addendum.

B. No inquiries received by the Purchasing Agent or Issuing Authority within five (5) business days of the date set for the opening of bids, will be given any consideration.

C. Any material interpretation, as determined by the Purchasing Agent or Issuing Authority, will be expressed in the form of an addendum to the specification, and will be sent to all prospective bidders. Oral answers given by any City official, employee or representative to any inquiry or request will not be binding upon the City.

D. The City shall not be responsible for ensuring any bidder's actual receipt of any addendum. The failure of a bidder to receive any addendum issued by the City shall not relieve the bidder from any obligation under its bid as submitted.

2.13. Brand Name or Equal Items.

A. Unless otherwise provided in the IFB, the name of a certain brand, make or manufacturer referenced in an IFB does not necessarily restrict bidders to the specific brand, make or manufacturer named; it conveys the general style, type, character, and quality of the article desired, and any article which the City 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. It shall be the responsibility of the Bidder to obtain the City's written determination that a proposed alternative brand, make or manufacturer is the equal of that specified in the IFB, considering quality, workmanship, economy of operation and suitability for the purpose intended.

B. Bidders must submit requests for substitutions in writing to the City, and they must be delivered so that they are received by the City no later than five (5) business days prior to the date set for public opening of bids. Requests shall include all information necessary to determine if the proposed substitution is equal to a product, brand, make or manufacturer specified in the IFB or is an acceptable substitute therefor.

2.14. Formal Specifications.

When a solicitation contains a specification or other provision which allows no substitutes, no deviation from the specification will be permitted and the bidder will be required to furnish articles in conformity with that specification. The bidder shall abide by and comply with the true intent of the specifications and shall not take advantage of any unintentional error or omission. Whenever mention is made of any articles, materials or workmanship to be in accordance with laws, ordinances, building codes, underwriter's codes, ASTM regulations, or similar expressions, the requirements of such laws, ordinances, etc., shall be construed as to the minimum requirements of the specifications.

2.15. Material Safety Data.

A material safety data sheet (MSDS) is required to be submitted to the City, for all chemicals proposed to be furnished in the performance of the services, or the provision of goods, which are the subject of this procurement transaction. The MSDS must list all ingredients which constitute more than one percent (1%) of any product, or more than one-tenth percent (0.1%) for any known or suspected carcinogens. The MSDS must identify each product by its common or chemical name, provide physical and chemical characteristics of any hazardous materials or hazardous components, list any known acute or chronic health effects, specify exposure limits, and list any necessary or recommended precautionary measures and emergency and first aid procedures.

2.16. Award of Contract.

A. The City shall award the contract to the lowest responsive and responsible bidder(s) complying with all material provisions of the IFB, provided it is in the best interests of the City to do so. City reserves the right to make multiple awards.

B. Unless canceled or rejected, a responsive bid from the lowest responsible bidder in a competitive sealed bidding process shall be accepted as submitted, except that if the bid from the lowest responsible bidder exceeds available funds, then the City may negotiate with the low bidder to obtain a contract price within available funds. If the City wishes to negotiate with the low bidder to obtain a contract price within available funds, negotiations shall be conducted in accordance with the procedures as described in City of Charlottesville Code of Ordinances, Sec. 22-6.

C. Written notice of award of a contract to the lowest responsive and responsible bidder will be provided by the City to the successful bidder. A written award letter which has been faxed, e-mailed, mailed or otherwise furnished to the successful bidder within ninety (90) days after bid opening, or such other time for acceptance specified within the solicitation, shall be deemed to result in a binding contract, and the successful bidder shall not refuse to execute the contract documents.

D. Public notice of award of the contract to the successful bidder shall be provided by the City, by posting electronically on the City's website.

2.17. Cancellation or Rejection.

The City may cancel or reject an invitation for bids, a request for proposals, any other solicitation, or any or all bids or proposals received in response thereto.

2.18. Waiver of Informalities.

The City may waive any informalities in bids, whenever, in the sole discretion of the City, such waiver is in the best interests of the City.

2.19. Determination of Responsibility.

No contract may be awarded to a bidder who is determined by the Purchasing Agent or Issuing Authority to be non-responsible. In determining the responsibility of a bidder or offeror, the following criteria will be considered:

- A. The ability, capacity or skill of the bidder to perform the contract or provide the services required;
- B. Whether the bidder can perform the contract or provide the service promptly, or within the time specified, without delay or interference;
- C. The character, integrity, reliability, reputation, judgment, experience and efficiency of the bidder;
- D. The quality of performance on previous contracts or services;
- E. The previous and existing compliance by a bidder with laws and ordinances relating to the contract or service;
- F. The sufficiency of the financial resources and ability of the bidder to perform the contract or provide the service;
- G. The quality, availability, and adaptability of the goods or services to the particular use required;
- H. The number and scope of any conditions attached to the bid;
- I. Whether the bidder is in arrears to the City on a debt or contract or is in default on a surety to the City, and whether the bidder's City taxes or assessments are delinquent;
- J. Such other information as may be secured by the Purchasing Agent or Issuing Authority, having a bearing on the decision to award the contract.

**Upon request by the City, it shall be the responsibility of each bidder to ensure that the bid submitted contains information sufficient to enable the City to evaluate each of the above-referenced criteria.

2.20. Equal Opportunity.

It is the policy of the City of Charlottesville to facilitate the establishment, preservation and strengthening of small businesses and businesses owned by women and minorities, and to encourage their participation in the City's procurement activities. Toward this end, the City encourages these firms to compete and encourages bidders to provide for the participation of small businesses, and businesses owned by women and minorities, through partnership, joint

ventures, subcontracts or other contractual opportunities. Bidders are asked, as part of their submission, to describe any planned use of such businesses with respect to the performance of the construction services which are the subject of this contract.

2.21 Contractor's Form/Boilerplate Contracts.

All written agreements, contracts, service agreements, account applications, forms and other documents, of any nature, that the Contractor would require the City to sign in connection with any contract resulting from this procurement transaction, or the performance thereof by the Contractor, must be submitted along with the Contractor's bid. Under no circumstances shall the City be required to agree to any contractual provision (i) that would materially conflict with any provision of this Invitation for Bids, (ii) that would affect the price, quality, quantity or delivery schedule for any goods or services, or (iii) that would, in the City's sole discretion, materially alter the overall combination of quality, price and various elements of required services that in total are optimal relative to the City's needs, and the Contractor shall not condition its performance or delivery upon any such agreement by the City.

2.22 COVID-19 Procedures

Due to restrictions surrounding the COVID-19 pandemic, public access to City facilities is currently prohibited. The City is still receiving and accepting deliveries from shipping services such as USPS, FedEx and UPS. The mailing (utilizing contracted shipping services) of bids is preferred, but if a bid is hand delivered by the Bidder, it may ONLY be hand delivered on **Tuesday, March 15, 2022** at **305 4TH STREET NW, CHARLOTTESVILLE** (Utilities/Public Works Administration Building) between the hours of **1:00-2:00 PM** (local prevailing time). **ALL HAND DELIVERED OR MAILED BIDS MUST BE SUBMITTED AT THIS LOCATION.** Bids will not be accepted at any other building access location. Bids will be date and time stamped upon receipt and retained unopened in a secure location until bid opening. No consideration will be given to date of postmark or error in delivery to incorrect address. It is the responsibility of the Bidder to ensure timely and correct delivery of their proposal/bid regardless of the chosen delivery method. While on City property Bidders are expected to adhere to the attached City of Charlottesville COVID-19 Response Document.



City of Charlottesville COVID-19 Response Document: Procedures for City Staff and Contractor work in City Owned and Maintained Facilities

Purpose:

The purpose of this procedure is to outline the process to be taken by City of Charlottesville (“City”) staff and outside contractors during the COVID-19 healthcare pandemic. Health and Safety shall be a prime concern of the Contractor at all times. The Contractor shall be solely responsible for and have control over the means, methods, techniques, sequences and procedures for coordinating and performing construction, including project site safety and safety precautions and programs. The City’s contract administrator or their designee will have final authority regarding the appropriateness of the Contractor’s plan and execution and will have the final decision regarding admission of Contractors to the work site.

Some City owned or maintained facilities will be temporarily and/or conditionally opened and available for site investigations and/or construction work. Based on recommendations set forth by the Centers for Disease Control (CDC), the Virginia Department of Health and the Thomas Jefferson Health District, all City staff, contractors and vendors must adhere to strict social distancing recommendations, wearing of face coverings, enhanced sanitizing procedures, and apply relevant workplace guidance and regulations from state and federal authorities including:

- CDC: <https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html>
- OSHA: <https://www.osha.gov/SLTC/covid-19/controlprevention.html#health>
- Virginia Department of Labor and Industry: <https://www.doli.virginia.gov/vosh-programs/coronavirus-covid-19-resources/>

NOTE: The Virginia Department of Labor and Industry (“DOLI”) passed its Emergency Temporary Standard for Infectious Disease Prevention related to COVID-19 on July 15: <https://www.doli.virginia.gov/wp-content/uploads/2020/07/COVID-19-Emergency-Temporary-Standard-FOR-PUBLIC-DISTRIBUTION-FINAL-7.17.2020.pdf> It includes hazard assessment, communication and training requirements, depending on the types of tasks employees perform at work. The standard became effective on July 27, 2020.

Authority & Definition

The basis of this policy is rooted in the guidance from the Centers for Disease Control (CDC) and the Virginia Department of Health (VDH) regarding transmission of COVID-19.



City of Charlottesville COVID-19 Response Document: Procedures for City Staff and Contractor work in City Owned and Maintained Facilities

“Community facilities” (e.g., schools, daycares centers, businesses) comprise most non-healthcare settings that are visited by the general public outside of a household.

Procedure:

I. Responsibilities of all persons who enter City owned or maintained facilities:

a. Practice and enforce social distancing:

- i. Increase distance between shared work spaces. When physically greeting others, avoid physical contact. (i.e. do not fist bump, shake hands, hugs, etc.)
- ii. Limit work groups to 10 individuals or less and keep at least 6 feet apart. When possible, avoid more than 1 person in the elevator at a time.
- iii. Practice and enforce social distancing with colleagues and visitors by keeping space between yourself and others. Actively monitor and ask colleagues to stay 6 feet apart if feasible.
- iv. Convert most in-person meetings to virtual meetings. Ensure in-person groups are no larger than 10 people and appropriate physical space of at least 6 feet is maintained between each individual.
- v. Increase physical workspace between employees. This includes modifying existing seating arrangements in workspaces, break areas and conference rooms as necessary.

b. Practice preventive measures:

- i. Individuals who are sick should remain at home.
- ii. If a worker shows symptoms or indicates they may have been exposed, they must be sent home. Anyone with a temperature above 100.0 degrees Fahrenheit will not be permitted to work on City property, and if a worker is found to have developed a temperature above 100.0 degrees while working, they must leave the work site.
- iii. Hand-shaking and physical contact are prohibited. Practice cough etiquette. Cough or sneeze into your elbow or tissues. If you cough into tissues throw them in the trash **and** wash your hands immediately.
- iii. Request visitors who enter the building wash their hands or use alcohol-based hand rubs containing at least 60% alcohol upon arrival and during their visit.
- iv. Wash hands frequently with soap and water for at least 20 seconds. If



City of Charlottesville COVID-19 Response Document: Procedures for City Staff and Contractor work in City Owned and Maintained Facilities

soap and water are not available, use hand sanitizer which should be rubbed on hands until dry, about 20 seconds.

- v. Face coverings are required to be worn by everyone in shared spaces where social distancing measures cannot be maintained.

Note: Cloth face coverings are NOT surgical masks or respirators and are not appropriate substitutes for them in workplaces where masks or respirators are recommended or required.

- vi. Refrain from talking over documents, equipment, or food items that will be distributed to others.
- vii. For certain occupied facilities, special traffic routes and restroom facilities may, or may not, be available for Staff, Contractor staff and subcontractors. Such restrictions will be detailed in solicitations for work but may be modified as conditions change. Contractors shall review and train, daily, with its employees and subcontractors regarding which foot traffic routes, restroom facilities, and areas of the facility are restricted for the Contractor staff and subcontractors.
- viii. Clean all frequently touched surfaces routinely (i.e. daily).
- ix. Maintain an open line of communication with the workforce and keep them informed with the latest news and/or changes which may directly affect them.

c. Specific Responsibilities of the Outside Contractor(s) when entering City owned or maintained facilities:

In addition to the above practices, it is the responsibility of the Outside Contractor to also:

- i. Comply with existing OSHA standards (<https://www.osha.gov/SLTC/covid-19/standards.html>) as these standards apply to protecting workers from the novel coronavirus, COVID-19. The contractor is responsible to remain compliant with all applicable OSHA requirements.
- ii. The Contractor is required to implement a health screening protocol that includes both temperature monitoring and health screening questions to determine if workers are experiencing COVID-19 symptoms or (potentially) exposed to someone with COVID-19 symptoms. Results will be documented and maintained and can be audited by the City's representative at any time.



City of Charlottesville COVID-19 Response Document: Procedures for City Staff and Contractor work in City Owned and Maintained Facilities

- iii. Promote frequent and thorough hand washing, including by providing workers, customers, and worksite visitors with a place to wash their hands. If soap and running water are not immediately available, provide alcohol-based hand rubs containing at least 60% alcohol.
- iv. Provide reminders to their staff of the importance of regular handwashing and take all precautionary measures to ensure that workers have hand washing facilities, or an alternative to prevent further spread of the virus.
- v. Ensure hand sanitizer is fully stocked in all portable restrooms.
- vi. Provide to workers, customers, and worksite visitors cloth face covers which cover the mouth and nose.
- vii. Maintain enhanced housekeeping practices, including routine cleaning and disinfecting of surfaces, equipment, and other elements of the work environment.
- viii. Ensure that all safety related information (including signage) is relayed to the workers in their native language as to ensure that they will understand the message.
- ix. Submit the contractor's plan for responding to a COVID case in terms of worker removal from jobsite, notification, workspace cleaning, and return to work. This plan must include immediate notification of the City's contract administrator of a worker who is or has been working on City property who is suspected or who has tested positive for COVID 19.
NOTE: If a COVID case involving City employees occurs in the proximity of the contractor's jobsite, the contractor will be notified.
- x. Upon completion of work, the entire work area shall be thoroughly cleaned and disinfected with a disinfectant approved by the Environmental Protection Agency.

Thank you in advance for demonstrating community care by implementing the above prevention measures.

II. Resources:

- a. [CDC Guidance on Cleaning and Disinfecting for Community Facilities](#)
- b. [United States Environmental Protection Agency site on approved cleaners](#)

II.

SCOPE OF SERVICES

Quantities set forth in this solicitation are estimates only, and the contractor shall supply at bid prices of actual quantities as ordered, regardless of whether such total quantities are more or less than those shown. This contract is to be construed strictly as a Unit-Price Contract for actual quantities used/installed as directed by the City.

All work performed hereunder shall be subject to the following specifications and the Contractor agrees to abide by the same in the performance of its work. These specifications shall be in addition to and not in lieu of the highest standards pertaining in the water transmission and distribution system industry as well as all federal, state and local laws, codes, regulations and ordinances applicable to the work. The Contractor is to furnish all labor, material and equipment for construction of the Project.

The scope of the work includes but is not limited to:

Furnishing and installing pipe and all required drainage structures.
Furnish and install all roofing components.
Furnish and install all concrete slab and steps.
Furnish and install fence and gate.
Furnish and install programmable logic controller.
Furnish and install all conduit and wiring required for desired operation.
Stone backfill, bedding and compaction.
Erosion and sediment control measures.
Permitting.

The intent of the Project is to provide for the construction and completion in every detail of the work described.

CONTRACTOR'S PERSONNEL:

The contractor shall be required to have sufficient and qualified personnel to perform all phases of work. The contractor shall be capable, with instructions or specifications which may be furnished by the City, of competently making any installation which the contractor may be called on to perform under this contract, without further assistance from the City.

The contractor's personnel will behave responsibly, professionally and show courtesy to the general public and City work crews at all times while performing the work for the City. The City's Project Manager, at their sole discretion, may request the Contractor to reprimand and/or promptly remove any employee or sub-contractor for any one or more, but not limited to, the following reasons: Intoxication, use of cell phone while engaged in traffic control operations, smoking while performing traffic control duties, personnel unable to provide valid and current "Flagging Certification", use of foul, profane, vulgar or obscene language or gestures.

All personnel while on-site are required to wear apparel which shall prominently display the construction company name.

Should the City deem any employee unqualified for his assigned duties, the contractor shall re-assign him. Should any employee be deemed incompetent, negligent or for any cause unfit for his duties by the engineer in charge or his agent, the contractor shall dismiss him from any work negotiated under this contract.

CONTRACTOR'S EQUIPMENT:

Consistent failure of equipment will result in the Project being shut down and contractor being replaced if deemed necessary by the City.

All of the contractor's on-site equipment shall bear the name of the construction company. The City shall determine if the name is appropriately displayed on the equipment.

All equipment shall be secured and all vehicles locked at the end of each shift.

TRAFFIC CONTROL:

Work may be required at congested traffic intersections; it is imperative that the contractor’s personnel be sufficiently experienced to perform work in an expeditious manner and with a minimum of interference with traffic. Temporary traffic control plans should be prepared by persons knowledgeable (trained and/ or certified) about fundamental principles of temporary traffic control plans and work activities to be performed. State certified flag persons must be used to control traffic in accordance with the Virginia Work Area Protection Manual. Contractors or sub-contractor must be properly trained to setup traffic control within the City right of way. Contractor shall make every effort to have all work locations completed by each Friday afternoon, or shall make temporary arrangements for pedestrian use over the weekend. These efforts are to be approved by the City Traffic Engineer.

SUPERVISION:

By Contractor. The Contractor shall provide adequate supervision over the work and shall keep on each crew a competent person, as defined by OSHA Regulation 29 C.F.R., Part 1926, who has experience with water main and service construction, and is acceptable to the City. Contractor shall have a full-time Construction Manager to monitor crew(s). Whenever the Contractor has two or more crews working in Charlottesville, the Construction Manager must be able to respond within one hour. This person may not also act as foreman or operator.

By City. The City may assign as its representative, one or more inspectors to represent and act for the City in connection with the work performed under this contract.

WARRANTY:

The contractor shall guarantee the work for a period of one (1) year from the Final Completion date, or the date of acceptance by the City, whichever is later.

WORK HOURS:

The regular day work hours are 7:00 a.m. to 5:00 p.m. and the regular day work week is Monday through Friday. The regular night work hours are 9:00 p.m. to 5:00 a.m. and the regular night work week is Sunday through Thursday. The Contractor shall not work on any observed City holidays or special events without prior approval of the City. City holidays include, but are not limited to:

- | |
|-----------------------------|
| New Year’s Day |
| Martin Luther King, Jr. Day |
| Presidents Day |
| Liberation & Freedom Day |
| Memorial Day |
| Juneteenth |
| Independence Day |
| Labor Day |
| Veteran’s Day |
| Thanksgiving |
| Day after Thanksgiving |
| Christmas Eve |
| Christmas Day |

The Contractor will be required to request, in writing, from the Department deviations from the regular work hours and work week. The request shall come at least five (5) business days in advance to allow arrangements to be made for proper inspection. The City reserves the right to assess costs incurred due to the extended work hours.

PERMITS AND EASEMENTS:

Upon request, the City shall provide the Contractor with copies of permits in effect and on file with the City.

Absent written agreement to the contrary, the Contractor shall have the responsibility to obtain all additional permits necessary to perform the work. This includes street cut permits (Street Cut Administrator @ 434.970.3361), sidewalk/street closure permits and traffic control permits (Traffic Engineering @ 434.970.3182) when working on City streets. The City shall cooperate with Contractor to assist in obtaining all necessary permits pursuant to Charlottesville City Code Section 28-51. Please refer to Exhibit A - Pedestrian

Accessibility in the Public Way During Construction. The Contractor shall submit copies of all permits to the on-site inspector prior to construction.

The City shall obtain all necessary easements in advance of any work on private property and shall inform the Contractor that the same have been obtained. Contractor shall comply with all covenants and requirements contained in any deed of easement, or other evidence of easement, for work on private property.

SUBCONTRACTOR:

No portion of the work may be sublet to subcontractors without the prior written permission of the City. If the Contractor intends to sublet any portion of the work to subcontractors, they shall notify the Department, in writing, setting forth the work to be subcontracted, the names and addresses of all subcontractors, and the estimated cost to the Contractor and the City, if any, of all subcontracted work.

SAFETY:

The Contractor agrees to perform all work in a safe and careful manner, to furnish and use and require its employees to use safety devices and equipment as necessary, and to comply with all laws, rules, codes and regulations applicable to the safe performance of the work. The Contractor's employees shall be required to wear safety vests or orange shirts (orange shirts cannot be substituted for safety vests at night or when they are not allowed by City or Virginia Law) and hard hats while in construction areas. The Contractor shall provide traffic control signs, signals, flashing lights, guards, plates, enclosures, barricades and notices, including all special design signs as may be required by the City or the Virginia Department of Transportation, as necessary to protect both its employees, the City's employees, and the public at large against damage to property and bodily injury or death. Truck mounted crash cushions, if needed, shall be negotiated on an individual basis. The Contractor shall comply with the Virginia Department of Transportation Flagging Certification Program. The contractor shall also comply with OSHA Regulation 29 CFR, Part 1926, Subpart P – Excavations. As part of a safe plan of work, the City requires the following from contractor(s):

UTILITY PROTECTION PLAN

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work included in this section includes the development of a Utility Protection Plan (UPP) by the Contractor for the protection of in-service utilities and the safety of the public, construction personnel, inspectors and the City's representatives during the course of the work.

1.02 UPP SUBMITTAL

A. The UPP shall be submitted to the Owner fourteen (14) calendar days prior to the start of any construction on the project.

1.03 UPP MINIMUM REQUIREMENTS

A. The UPP shall detail a step-by-step process for addressing utility protection from the initial call to the Virginia "Miss Utility" call-in center to obtain a ticket through final backfill.

B. The UPP shall include the list of training each employee will receive prior to working on the Project. At a minimum, each employee shall be required to receive, and shall attest to the following training:

1. UPP Policy
2. Personal Protective Equipment
3. Basic Work Zone Safety Training
4. Flagger Certification

At least one (1) Construction Manager responsible for the on-site crews shall pass the computer-based training and testing administered through the VA 811 website. Employee training records shall be provided to the City for each employee working on the Project. The record shall include the date on which the training of each topic occurred, the employee's signature attesting to taking the training, and their Construction Manager's signature confirming the employee's attendance at the training.

C. The UPP shall include the frequency of in-office and jobsite safety training meetings.

D. The UPP shall include a Pothole Manifest Form which shall be completed for each utility crossing the proposed pipeline. The Pothole Manifest Form shall include:

1. Name of Utility (i.e. water, sewer, gas, stormwater, etc.)
2. Location (Station)
3. Utility Diameter
4. Utility Depth
5. Utility Pipe Material (steel, cast iron, ductile iron, PVC, concrete, etc.)
6. Date

7. V811 "Miss Utility" Ticket Number

E. The UPP shall include a Corrective Action Report Form which shall be completed each time a violation of the "Miss Utility" Law occurs. The form shall be submitted to the Owner within 24 hours of the occurrence. The Corrective Action Report Form shall include the following information:

1. Occurrence Date
2. Location
3. Occurrence
4. Recommended Corrective Action
5. Name of Site Supervisor
6. On-site Crew Members

The City has the right to require additional corrective action to further protect existing utilities and public safety and/or to modify the UPP requirements as listed herein.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 UTILITY MARKINGS

A. The entire jobsite crew shall be required to check the utility markings to be encountered during that day's construction with the Pothole Manifest Forms.

PROTECTION AND REPAIR OF PROPERTY (PRIVATE AND PUBLIC):

Contractor shall use all due care and diligence to avoid damage to existing utilities and property, including but not limited to buildings, pipes, conduits, sewers, water lines, gas lines, electric lines, communication lines, meters, manholes, and handholes. Contractor shall immediately replace or properly repair as necessary any such damages to property or private utilities at Contractors' expense. Contractor shall inform Miss Utility of the date and location of any excavation work, drilling, or digging in advance thereof to avoid damages to existing underground utilities. Contractor shall use a "Hole Hog" at the Contractor risk. Contractor shall properly repair or replace, at Contractors' expense, damaged marked or unmarked private utilities or facilities including, but not limited to, water lines, sewer lines, sprinkler systems, and invisible fencing. The location of private and public utilities encountered shall be shown on the as-built drawings provided by the Contractor.

SCHEDULING INSTALLATIONS OF MAINS AND SERVICES

The Contractor shall be responsible to schedule and install all mains and services to meet the scheduling requirements of the City and/or the responsible site coordinator (i.e. builder, construction forman, superintendent, etc.). The Contractor shall have a published cellular telephone with voice mail for daily contact with the City and/or the responsible site coordinator (i.e. builder, construction forman, superintendent, etc.). The Contractor shall submit to the City a written weekly schedule of work by Friday (or last normal regular work day) of the upcoming work week.

COMPLETION DATES:

Time is of the essence for this Contract. The completion dates stated in the Contract are absolute deadlines, which may only be extended by the City in accordance with the provisions of the Contract. The Contractor agrees that the work required for the Project to attain Substantial Completion shall be completed within one-hundred and twenty (120) calendar days after issuance of the Notice to Proceed. Final Completion shall be attained within one-hundred and fifty (150) calendar days after issuance of the Notice to Proceed.

PROTECTION OF WORK AND WORK SITE:

All Contractors are required to comply with any/all American with Disability Act Requirements during the Project. These include any local, state and federal laws and regulations both in effect now and any that may be required in the future, during the term of this contract. Exhibit A - Pedestrian Accessibility in the Public Way During Construction explains and illustrates examples of what is correct and not correct for sidewalk closures/access; this is for "example" purposes only and in no way is a complete or exhaustive list of contractor obligations to meet the ADA requirements that may be necessary during the term of this contract.

OSHA STANDARDS:

All contractors and subcontractors performing services for the City are required and shall comply with all Occupational Safety and Health Administration (OSHA), State and City Safety and Occupational Health Standards and any other applicable rules and regulations. Also, all contractors and subcontractors shall be held responsible for the safety of their employees and any unsafe acts or conditions that may cause injury or damage to any persons or property within and around the work site area under this contract.

BONDS:

A. **Bid Bond:** See Instructions to Bidders, Section 2.4 Binding Effect.

B. **Performance and Payment Bonds:**

Within ten (10) calendar days after Notice of Award the successful Bidder shall deliver performance and payment bonds, in the entire dollar amount of the bid for the Project. No contract shall be binding upon the City until such an acceptable performance and payment bonds shall have been given.

Release of Performance and Payment Bonds: In the event that the contract is not executed, the City will release the bonds. A final inspection will be made by the City prior to the Project being accepted. The City will notify the Contractor in writing of the final acceptance and release of the bonds.

III.**GENERAL TERMS AND CONDITIONS
FOR CONSTRUCTION CONTRACTS**

	DEFINITIONS
ARTICLE 1:	THE CONTRACT DOCUMENTS
ARTICLE 2:	GENERAL CONTRACTOR'S REVIEWS AND EVALUATIONS
ARTICLE 3:	GENERAL CONTRACTOR'S DUTIES, OBLIGATIONS AND RESPONSIBILITIES
ARTICLE 4:	GENERAL CONTRACTOR'S PERSONNEL, SUBCONTRACTORS, AND SUPPLIERS
ARTICLE 5:	GOODS, PRODUCTS AND MATERIALS
ARTICLE 6:	DOCUMENTS AND INFORMATION
ARTICLE 7:	SUBMITTALS
ARTICLE 8:	GENERAL CONTRACTOR'S INSPECTION OF AND CORRECTION OF DEFECTIVE OR INCOMPLETE WORK
ARTICLE 9:	CHANGE ORDERS AND CHANGES TO THE WORK
ARTICLE 10:	FINANCIAL CLAIMS AND LIENS
ARTICLE 11:	CITY'S CONSULTANT(S), PROFESSIONAL(S) AND CONSTRUCTION ADMINISTRATION
ARTICLE 12:	INSPECTION, CORRECTION OF WORK, AND PROJECT CLOSE OUT
ARTICLE 13:	GENERAL CONTRACTOR'S WARRANTIES AND GUARANTEES
ARTICLE 14:	CITY'S DUTIES, OBLIGATIONS AND RESPONSIBILITIES
ARTICLE 15:	GENERAL CONTRACTOR'S COMPENSATION
ARTICLE 16:	SCHEDULE REQUIREMENTS
ARTICLE 17:	LIQUIDATED DAMAGES
ARTICLE 18:	CONCEALED AND UNFORESEEN CONDITIONS
ARTICLE 19:	GENERAL CONTRACTOR'S RECORDS
ARTICLE 20:	PROPRIETARY DOCUMENTS AND CONFIDENTIALITY
ARTICLE 21:	GENERAL INSURANCE REQUIREMENTS
ARTICLE 22:	GENERAL BOND REQUIREMENTS
ARTICLE 23:	CITY'S RIGHT TO STOP WORK
ARTICLE 24:	TERMINATION OR SUSPENSION OF CONTRACT FOR CONSTRUCTION
ARTICLE 25:	APPLICABLE LAW AND DISPUTE RESOLUTION
ARTICLE 26:	DAMAGES AND REMEDIES
ARTICLE 27:	ADA COMPLIANCE AND NON-VISUAL ACCESS TO DOCUMENTS

DEFINITIONS AND INSTRUCTIONS FOR INTERPRETATION

When one of the following words, terms or phrases is used in this contract, it shall be interpreted or construed first, as defined below; second, according to its generally-accepted meaning in the construction industry; and third, according to its common and customary usage.

Builder: The General Contractor to whom a Contract for Construction has been awarded by the City.

Change Order: A document issued on or after the effective date of the Contract for Construction, which is agreed to by the Contractor and approved by the City and the Professional, and which authorizes an addition, deletion or revision in the Work, including any adjustment in the Contract Price and/or the Contract Completion Date. A change order, once signed by all parties required to sign it, is incorporated into and becomes a part of the Contract.

Change Directive: A construction change directive is a written order signed by the City and the Professional, directing a change in the work prior to agreement on adjustment (if any) in the contract price or contract time, or both.

City: The City of Charlottesville, Virginia, including all its officers, officials, agencies, departments, divisions, and all of the employees and agents thereof.

Claim: A demand or assertion by one party seeking, as a matter of right, an adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract for Construction. The term "claim" also includes other disputes and matters in question between the City and the General Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate claims rests with the party making the claim.

Construction: The term used to include new construction, reconstruction, renovation, restoration, major repair, demolition and all similar work upon buildings and ancillary facilities, including any draining, dredging, excavation, grading or similar work upon real property.

Construction Documents: Plans, specifications, approved change orders, revisions, and addenda, and other information approved by the City, which set forth in detail the Work to be performed for this Construction Project.

Contract Documents: The documents identified in the City's Fixed Price Construction Contract.

Contract Price: The dollar amount for which the Builder agrees to perform the Work which is the subject of the Contract For Construction.

Contract Specifications: The written requirements for materials, equipment, systems, standards and workmanship for the Work and for performance of related services.

Contractor. An alternative way of referring to the General Contractor, the person with whom the City has entered into the Contract for Construction.

Defective: An adjective which, when modifying the word "work" refers to work that is unsatisfactory, faulty, deficient, does not conform to the Contract Documents, or which does not meet the requirements of inspections, standards, tests or approvals required by the Contract Documents, or Work that has been damaged prior to the Professional's recommendation of final payment, excluding any damage caused by the Owner or a third party whose actions are not subject to the General Contractor's control.

Drawing: A page or sheet of the Construction Plans which presents a graphic representation, usually drawn to scale, showing the technical information, design, location and dimensions of various elements of the Work. The graphic representations include, but are not limited to: plan views, elevations, transverse and longitudinal sections, large- and small-scale sections and details, isometrics, diagrams, schedules, tables and/or pictures.

Field Order: A written order issued by the Professional which clarifies or explains the plans or specifications, or any portion or detail thereof, without changing the design, the Contract Price, the time for Substantial Completion or the date of Final Completion.

Float: The excess time included in a construction schedule to accommodate such items as inclement weather and associated delays, equipment failures, and other such unscheduled events. It is the contingency time associated with a path or chain of activities and represents the amount of time by which the early finish date of an activity may be delayed without impacting the critical path and delaying the overall completion of the Project. Any difference in time between the Contractor's approved early completion date and the Contract Completion Date shall be considered a part of the Project float.

Float, Free: The time (in days) by which an activity may be delayed or lengthened without having an impact upon the start day of any activity following in the chain.

Float, Total: The difference (in days) between the maximum time available within which to perform an activity and the duration of an activity. It represents the time by which an activity may be delayed or lengthened without impacting the time for Completion or the Contract Completion Date.

Final Completion: The stage of construction when the Work has been completed in accordance with the Contract for Construction and the City has received all documents and items necessary for closeout of the Work.

General Contractor: Also referred to within the Contract for Construction as the "Contractor," this is the person with whom the City has entered into the Contract for Construction.

Hazardous Substances: The term "Hazardous Substance" shall have the same meaning and definition as set forth in the Comprehensive Environmental Response Compensation and Liability Act as amended, 42 USC § 6901 et seq., and regulations promulgated thereunder (collectively "CERCLA") and any corresponding state or local law or regulation, and shall also include: (a) any Pollutant or Contaminant as those terms are defined in CERCLA; (b) any Solid Waste or Hazardous Constituent as those terms are defined by, or are otherwise identified by, the Resource Conservation and Recovery Act as amended, 42 USC § 6901 et seq., and regulations promulgated thereunder (collectively "RCRA") and any corresponding state or local law or regulation; (c) crude oil, petroleum and fractions of distillates thereof; (d) any other material, substance or chemical defined, characterized or regulated as toxic or hazardous under any applicable law, regulation, ordinance, directive or ruling; and (e) any infectious or medical waste as defined by any applicable federal or state laws or regulations.

Occupancy, beneficial: The condition after Substantial Completion but prior to Final Completion, at which time the Project is sufficiently complete and systems operational such that the City could, after obtaining necessary approvals and certificates, occupy and utilize the space for its intended use. Guarantees and warranties applicable to that portion of the Work begin on the date the City accepts the Project for such Beneficial Occupancy, unless otherwise specified in the Supplemental General Conditions or by separate agreement.

Occupancy, partial: Partial occupancy or use occurs when the City occupies or uses any completed or partially completed portion of the work, at a stage when such portion is designated by a separate agreement between the City and the General Contractor, in accordance with Section 12.2 of these General Terms and Conditions.

Person: The term "person" includes any individual, corporation, partnership, association, company, business, trust, joint venture or other legal entity.

Plans: The term used to describe the group or set of project-specific drawings which are included in the Contract Documents.

Product Data: Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the General Contractor, or a subcontractor, manufacturer, supplier or distributor, to illustrate materials or equipment for some portion of the Work.

Professional: An individual or entity, including but not limited to an architect, engineer, geo-technical engineer or consultant, land surveyor, landscape architect, or other professional engaged directly by the City to provide design, engineering, testing or other services in relation to the Project.

Project: The planned construction undertaking which is the subject of this Contract for Construction.

Project Manual: A volume assembled for the Work, which may include the bidding requirements, sample forms, documents, etc.

Related Party: Any affiliated entities of the City of Charlottesville (including, without limitation, agencies, departments, divisions or commissions of the City of Charlottesville) and their respective officers, officials, office holders, and employees.

Samples: Physical examples, which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

Shop Drawings: Drawings, diagrams, schedules and other data specially prepared for the Work by the General Contractor or a subcontractor, manufacturer, supplier or distributor, to illustrate some portion of the Work.

Site: The geographical location where the Project is to be constructed, and where the Work by the General Contractor is to be performed.

Specifications: That part of the Project Manual/Contract Documents containing the written administrative requirements and the technical descriptions of materials, equipment, construction systems, standards, and workmanship which describe the proposed Work in detail and provide information for a Building Official to determine code compliance and for the Contractor to perform the Work.

Subcontractor: A person having a direct contract with the General Contractor, or with any other subcontractor, for the performance of the Work. The term “subcontractor” includes any person who provides on-site labor but does not include any person who only furnishes or supplies materials for the Project.

Submittals: Documents prepared by the General Contractor or a subcontractor, manufacturer, supplier or distributor, consisting of: Shop, fabrication, setting or installation drawings, diagrams, illustrations, schedules, samples, brochures, performance charts, instructions, diagrams, or other, similar data or items. The purpose of submittals is to demonstrate conformance of some portion of the Work with the requirements of the Contract Documents.

Substantial Completion: The stage in the progress of the Work when the Work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so that the City can occupy or use the Work for its intended purpose(s).

Supplier: A manufacturer, fabricator, distributor, materialman or vendor who provides material(s) for the Project but who does not provide on-site labor.

Total Project Construction Cost: The total cost to the City to complete construction of the Project, including, without limitation, the Work, the cost of utilities, the cost of fees for permits and licenses required to be obtained by the General Contractor, and modifications necessitated by local conditions.

Work: The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the General Contractor to fulfill the General Contractor’s obligations.

In construing this Construction Contract, the parties hereto agree that the following standards and directives shall apply:

Computation of Time: When the Contract requires any notice to be given, or an act to be done, a certain time before a specified event or deadline, then there must be that time, exclusive of the day for such specified event or deadline, but the day on which the notice is given or an act done shall be counted as part of the time. When the Contract requires any notice to be given, or an act to be done, within a certain time after a specified event or deadline, then that time shall be allowed in addition to the day on which the specified event or deadline occurred. When the last day fixed by this Contract for the commencement of any action, or the giving of any notice, falls on a Saturday, Sunday, legal holiday, or any day on which Charlottesville City Hall is closed, then the notice or act may be given on the next day that is not a Saturday, Sunday, legal holiday, or other day on which Charlottesville City Hall is closed.

Day: Unless otherwise specified, the word “day” shall be construed to mean a calendar day.

Headlines. The headlines of the several articles, sections and paragraphs of this Contract are intended as mere catchwords to indicate the contents of the articles, sections or paragraphs, and such headlines shall not be deemed or construed as titles of such articles, sections or paragraphs, or as any part thereof, nor, unless otherwise expressly provided by the Contract, shall any headlines be so deemed or construed following any amendment or modification of a particular article, section or paragraph.

Month. Unless otherwise expressed, the word “*month*” shall be construed to mean a calendar month.

Severability. In the event that any provisions of this Contract, or the application of any requirements stated herein to any person or circumstances, are determined invalid by a court of competent jurisdiction, such judicial determination shall not affect the validity of other provisions or requirements of this Contract which can be given effect without the invalid provisions or applications.

ARTICLE 1 THE CONTRACT DOCUMENTS

- 1.1 **Additional Sets Of Documents:** Any additional copies of Construction Documents required by the General Contractor for execution of its scope of the Work (beyond the number of copies specified in this Construction Contract) shall be made by the General Contractor at its cost and expense.
- 1.2 **Return Of Documents To City:** Upon request, the General Contractor shall return to the City all copies of Construction Documents, including reproducible sets, if any, furnished to the General Contractor, upon final acceptance of the Work or termination of this Contract For Construction, whichever occurs first. Otherwise, the General Contractor shall retain records of this Construction Contract as required by Article 15.
- 1.3 **Electronic Media:** The General Contractor may request that the Construction Documents be furnished to it on electronic media. To the extent that such documents are available on electronic media, the General Contractor will be furnished one (1) set of the requested information on electronic media. Any additional electronic copies of Construction Documents shall be made by the General Contractor at the General Contractor's cost and expense. The General Contractor shall return one copy of electronic Construction Documents to the City upon final acceptance of the Work or termination of the Contract For Construction, whichever occurs first, and shall destroy all remaining electronic copies of the documents within its possession.
- 1.4 **Minimum Requirements:** Requirements established by the Construction Documents shall be considered as the minimum which will be accepted.
- 1.5 **City Disclaimer Of Warranty:** The City has requested that the Professional(s) prepare documents for the Project, including the plans and specifications for the Project, which are to be complete, accurate, coordinated, and adequate for bidding, negotiating and constructing the Work. However, the City makes no representation or warranty, of any nature whatsoever, to the General Contractor concerning such documents. The General Contractor hereby acknowledges and represents that it has not, does not, and will not rely upon any representations or warranties by the City concerning such documents, as no such representations or warranties have been or are hereby made.
- 1.6 **Conflicts In Documents:** In the event of any conflict, discrepancy, or inconsistency among any of the documents which make up this Contract For Construction, the following shall control:
 - 1.6.1 As between figures given on plans and scaled measurements, the figures shall govern;
 - 1.6.2 As between large-scale plans and small-scale plans, the large-scale plans shall govern;
 - 1.6.3 As between plans and specifications, the requirements of the specifications shall govern;
 - 1.6.4 As between the General Conditions of the Construction Contract and the plans or specifications, the General Conditions shall govern;
 - 1.6.5 As between the Construction Contract Form and the General Conditions of the Construction Contract, the Contract Form shall govern.

- 1.6.6 As between the Supplemental Conditions and any General Conditions or the Contract Form, the Supplemental Conditions shall govern.
- 1.7 **Shop Drawings And Submittals:** Shop drawings and other submittals from the General Contractor or its subcontractors and suppliers do not constitute a part of this Contract. The General Contractor shall not perform any Work requiring shop drawings or other submittals unless such shall have been approved in writing by the Professional. All Work requiring approved shop drawings or other submittals shall be done in strict compliance with such approved documents; however, approval by the Professional or the City shall not be evidence that Work installed or performed pursuant thereto conforms with the requirements of this Contract. Neither the City nor the Professional shall have any duty to review partial submittals or incomplete submittals. The General Contractor shall maintain a submittal log which shall include, at a minimum, the date of each submittal, the date of any resubmittal, the date of any approval or rejection, and the reason for any approval or rejection. The General Contractor shall have the duty to carefully review, inspect and examine any and all submittals before submission of same to the City or the Professional. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the General Contractor represents that it has determined and verified materials, field measurements and field construction criteria related thereto, or that it will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- 1.8 **Contract Changes:** The General Contractor understands and agrees that the Contract For Construction cannot be changed except as expressly provided by the Contract Documents. No act, omission or course of dealing by the parties shall alter the requirement that modifications of this Contract For Construction can be accomplished only by written documents signed by the parties.
- 1.9 **On-Site Documents.** The General Contractor shall keep an updated copy of this Contract for Construction at the Site. Additionally, the Contractor shall keep copies of all approved shop drawings and other submittals at the Site.

ARTICLE 2 GENERAL CONTRACTOR'S REVIEWS AND EVALUATIONS

- 2.1 **Sufficiency of Construction Documents:** Prior to submission of its Bid, but in all events prior to signing this Contract For Construction, the General Contractor has received and carefully reviewed and evaluated the Construction Documents and agrees that the Construction Documents are complete and sufficient for bidding, negotiating, costing, pricing and construction of the Project.
- 2.1.1 The General Contractor acknowledges its continuing duty to review and evaluate the Construction Documents during the performance of its services and shall immediately notify the City and the Professional(s) about any (i) problems, conflicts, defects, deficiencies, inconsistencies or omissions it discovers in or among the Construction Documents; and, (ii) variances it discovers between the Construction Documents and any applicable laws, statutes, building codes, rules and regulations.
- 2.1.2 If the General Contractor performs any Work which it knows or should have known involves: (i) a recognized problem, conflict, defect, deficiency, inconsistency or omission in the Construction Documents; or (ii) a variance between the Construction Documents and requirements of applicable laws, statutes, building codes, rules and regulations, without notifying the Professional(s) and prior to receiving written authorization from the appropriate Professional(s) to proceed, the General Contractor shall be responsible for the consequences of such performance.
- 2.2 **Sufficiency Of Site Conditions:** Prior to submission of its Bid, but in all events prior to signing this Contract For Construction, the General Contractor certifies that it has:
- (i) visited the Site and become familiar with local conditions under which the Project is to be constructed and operated; and,
 - (ii) reviewed and familiarized itself with the Site survey and any existing structures on the Site, and gathered all other information necessary for a full understanding of its obligations under this Contract.

- 2.3. In addition, if the Scope of the Work involves modifications to or remodeling of an existing structure(s) or other man-made feature(s) on the Site, the General Contractor certifies that it has:
 - (i) reviewed all available as-built and record drawings, plans and specifications; and,
 - (ii) thoroughly inspected the structure(s) and man-made feature(s) to be modified or remodeled prior to submission of its Bid, but in all events prior to signing this Contract For Construction.
- 2.4. Claims against the City or Related Parties resulting from the General Contractor's failure to familiarize itself with the Site or pertinent documents shall be deemed waived by the General Contractor.
- 2.5. The General Contractor shall commence performance of its obligations under this Contract for Construction, upon receipt of a written notice to proceed issued by the City.

**ARTICLE 3
GENERAL CONTRACTOR'S DUTIES, OBLIGATIONS AND RESPONSIBILITIES**

- 3.1 **Performance Of Work:** The General Contractor shall supervise and complete its obligations under this Contract For Construction, using its best skill and attention. The General Contractor shall furnish management, supervision, coordination, labor and services which (i) expeditiously, economically and properly complete its scope of the Work; (ii) comply with the requirements of this Contract For Construction; and, (iii) are performed in a workmanlike manner and in accordance with the standards currently practiced by persons and entities performing or providing comparable management, supervision, labor and services on projects of similar size, complexity and cost.
 - 3.1.1 The General Contractor shall not damage, endanger, compromise or destroy any part of the Work or the Site, including by way of example, and without limitation: work being performed by others on the Site, monuments, stakes, bench marks and other survey points, utility services, and existing features, improvements or structures on the Site. Should the General Contractor damage, compromise or destroy any part of the Project or the Site, the General Contractor shall be fully and exclusively responsible for and bear all costs associated therewith.
 - 3.1.2 All services rendered by the General Contractor shall be performed by or under the immediate supervision of persons possessing expertise in the discipline of the service being rendered.
 - 3.1.3 The General Contractor shall, in the performance of its obligations under this Contract for Construction, cooperate and communicate with the City and all other persons or entities working for or with the City, as necessary for satisfactory and timely completion of the Project.
 - 3.1.4 The General Contractor understands and acknowledges that the Scope of Work referred to in this Contract for Construction may be only part of the Project and that the Project may include the construction of other structures or other construction activities on the same Site. The General Contractor shall conduct all its activities so as not to interfere with the construction of, or other construction activities on the Site.
 - 3.1.5 The General Contractor shall conduct all its activities so as not to interfere with ongoing business and other activities at the site. The General Contractor shall perform construction services and conduct all activities only in such locations and in such manner as specifically contemplated by the Construction Documents.
 - 3.1.6 The General Contractor shall obtain all licenses necessary to use any invention, article, appliance, process or technique, of whatever kind, and shall pay all royalties and license fees associated therewith. The General Contractor shall hold the City, its officers, agents and employees, harmless from and against any loss or liability for or on account of the infringement of any patent rights in connection with any invention, process, technique, article or appliance manufactured or used in the performance of this Contract for Construction, including its use by the City; unless such invention, process, technique, article or appliance is specifically named by the City in the specifications or plans as being acceptable for use in carrying out the Work. If, before using any invention, process, technique, article or appliance specifically named in the specifications or plans as acceptable for use in carrying out the Work, the

General Contractor has or acquires information that the same is covered by letters of patent, making it necessary to secure the permission of the patentee, or other, for the use of the same, the General Contractor shall promptly advise the City and the Professional. The City may direct that some other invention, process, technique, article or appliance be used. Should the General Contractor have reason to believe that the invention, process, technique, article or appliance so specified is an infringement of a patent, and fail to inform the City and the Professional, the General Contractor shall be responsible for any loss or liability due to the infringement.

3.2 Compliance With Governmental Requirements:

- (i) The General Contractor shall comply with all applicable laws, statutes, codes, building codes, rules, regulations and lawful orders of all governmental, public and quasi-public authorities and agencies having jurisdiction over the Work, the Project and the Site;
- (ii) The General Contractor shall prepare and file documents required to obtain and obtain all necessary governmental approvals and permits for construction of the Project, including building permit(s); and,
- (iii) The General Contractor shall give all notices required of it by governmental authorities relating to the Work, the Project, or the Site.
- (iv) This Construction Contract and all other contracts and subcontracts are subject to the provisions of Articles 3 and 5, Chapter 4, Title 40.1 of the Code of Virginia, relating to labor unions and the “right to work.” The General Contractor and its subcontractors, whether residents or nonresidents of the Commonwealth of Virginia, who perform any Work related to the Project, shall comply with all of said provisions.
- (v) By signing this Construction Contract, the General Contractor certifies that it does not and will not during the performance of the Contract knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986, which prohibits employment of illegal aliens.
- (vi) The provisions of all rules and regulations governing safety as adopted by the Safety Codes Commission of the Commonwealth of Virginia, as issued by the Department of Labor and Industry under Title 40.1 of the Code of Virginia, shall apply to all Work under this Contract. Inspectors from the Department of Labor and Industry shall be granted access to the Work for inspection without first obtaining a search or administrative warrant.
- (vii) The Virginia Uniform Statewide Building Code applies to the Work and is administered by the local Building Official. The Building Permit will be obtained by the General Contractor and paid for by the Contractor. All other permits, local license fees, business fees, taxes or similar assessments shall be obtained and paid for by the Contractor.
- (viii) The General Contractor, if not licensed as an asbestos abatement contractor or a roofing/flooring/siding (RFS) contractor in accordance with §54.1-514 of the Code of Virginia, shall have all asbestos-related Work performed by subcontractors who are duly licensed as asbestos contractors or RFS contractors, as appropriate for the Work.
- (ix) If the Contract Documents indicate that lead-based paint is present on existing materials, components or surfaces, the General Contractor shall conform to the following: (1) The requirements set forth in 59 Federal Register 45,672 (September 2, 1994) Proposed Rule - *Lead; Requirements for Lead-based Paint Activities (Proposed Rules)* in selecting and performing the means, methods and procedures for performing the Work. When the Final Rule, to be codified at 40 CFR 745, supersedes the Proposed Rule, the General Contractor shall be responsible for conforming to the Final Rule, as of the effective date set forth therein; (2) The requirements for employee protection contained in 29 CFR Part 1926, Subpart D, and the requirements for record-keeping contained in 29 CFR Part 1910; and (3) The Virginia Department of Labor and Industry’s Emergency Regulation published in the May 27, 1996 Virginia Register, requiring, among other things, that a permit be issued to the lead abatement contractor, or any subsequent regulation issued by DLI.
- (x) If the General Contractor violates laws or regulations that govern the Project, the General Contractor shall indemnify and hold the City harmless from and against any fines and/or penalties that result from

such violation. To the extent that such violation is the result of negligence or other actionable conduct of the General Contractor, the General Contractor shall indemnify and hold the City harmless against any third party claims, suits, awards, actions, causes of action or judgments, including but not limited to attorney's fees and costs incurred thereunder, that result from such violation.

- 3.3 **Safety:** Safety shall be a prime concern of the General Contractor at all times. The General Contractor shall be solely responsible for and have control over the means, methods, techniques, sequences and procedures for coordinating and performing construction, including Site safety and safety precautions and programs.
- 3.4 **Concurrent Records:** For any period in which it is engaged in activities on the Site, the General Contractor shall, concurrently with its performance, maintain detailed daily records of activities on the Site. Upon request, the City shall be provided copies of such records.
- 3.5 **As-Built Drawings:** The General Contractor shall maintain at the Site at least one copy of all drawings, specifications, addenda, approved shop drawings, change orders, submittals, and other modifications, in good order and accurately marked, depicting all changes as they occur during construction. The as-built drawings shall be available at all times to the City, the Professional(s), and the City's consultants, including quality control and testing agency personnel. The drawings shall be neatly and clearly marked in color during construction to record all variations made during construction, and the General Contractor shall include such supplementary notes and details necessary to clearly and accurately represent as-built construction.
- 3.6 **Quality Control And Testing:** Unless otherwise provided in this Contract For Construction, the City shall select the quality control and testing agencies and pay for the cost of specified measures and tests required by the Construction Documents. The General Contractor shall be responsible for the coordination of all tests and inspections and shall arrange for tests and inspections to be conducted as necessary to avoid any interference with the progress of Work. No claims for extension of time or additional compensation will be allowed on account of any testing, re-testing, inspection, re-inspection, or rejection of Work when defective or deficient Work is found. The General Contractor shall be responsible for any costs associated with testing, re-testing, inspection, or re-inspection which may be required as a result of defective or deficient Work.
- 3.7 **Incident Reporting:** The General Contractor shall immediately notify the City and Professional(s), both orally and in writing, of the nature and details of all incidents which may adversely affect the quality or progress of the Work including, but not limited to, union jurisdictional disputes, accidents, delays, damages to Work and other significant occurrences.
- 3.8 **Hazardous Substances Notice:** The General Contractor shall immediately notify the City and the Professional(s), both orally and in writing, of the presence and location of any physical evidence of, or information regarding, environmental contamination on the Site (including but not limited to Hazardous Substances and petroleum releases) of which it becomes, or reasonably should have become, aware. If the General Contractor encounters environmental contamination (including but not limited to Hazardous Substances and petroleum releases), the General Contractor shall (i) immediately stop performance of Work or that portion of the Work affected by or affecting such contamination; (ii) secure the contaminated area against intrusion; (iii) not disturb or remove the contamination; (iv) not proceed, or allow any subcontractor or supplier to proceed, with any Work or other activities in the area affected by such contamination until directed to do so by the City; and, (v) take any other steps necessary to protect life and health.
- 3.9 **City's Use of and Access to the Site:** The General Contractor shall perform the Work so as not to interrupt any ongoing business operations or other construction activities on the Site.
- 3.9.1 The General Contractor shall provide the City, Related Parties, and other consultants, trade contractors, subcontractors and suppliers, access to the Site for performance of their activities, and shall connect and coordinate its construction activities and operations with those of others. The General Contractor understands and acknowledges that the City or its Related Parties may need access to or use of certain areas of the Site on which Work is being or has been performed, prior to the General Contractor's achievement of Substantial Completion. The General Contractor agrees that no such occupancy, access or use shall constitute the City's acceptance of any Work.
- 3.9.2 Except as specifically contemplated by the Construction Documents, the General Contractor shall not enter any occupied area of the Site or Structure unless first approved and scheduled by the City. The

General Contractor understands and acknowledges that the City may incur damages if the operations of any condominium unit owners or their tenants (other than the City) are interrupted or impaired as a result of the Work.

- 3.10 **Site Control And Cleanup:** During construction, the General Contractor shall maintain good order on the Site. The General Contractor shall maintain the Site in a reasonably clean condition during performance of the Work and shall periodically remove from the Site all construction debris. Upon completion of the Work, the General Contractor shall remove from the Site all construction materials and waste, rubbish, other debris, equipment, sheds and similar items related to, produced by or required for its scope of the Work and shall thoroughly clean the Site of all debris, trash, excess materials and equipment. No final payment will be made to the General Contractor until satisfactory final clean-up is accomplished and inspection is made by the City and the Professional(s), accompanied by the General Contractor. If the City must engage in clean-up activities at any time during the construction period, the full cost of the clean-up shall be deducted from moneys due the General Contractor, and the General Contractor shall pay any deficiency amount to City.
- 3.11 **Commissioning:** The General Contractor shall, through the City's Representative, schedule and coordinate all equipment and systems start-ups and Project commissioning.
- 3.11.1 The General Contractor shall provide the City with operation and maintenance manuals and other operational documentation not less than twenty-eight (28) calendar days prior to the required date of Substantial Completion to allow adequate time for systems start-up and delivery and training prior to commissioning and occupancy of the Project.
- 3.11.2 The General Contractor shall meet with individual(s) designated by the City not less than twenty-eight (28) calendar days prior to the required date of Substantial Completion to familiarize and train them with respect to maintenance and use of the Project. The appropriate Professional(s) will attend and assist with such familiarization and training.
- 3.12 **Idling Reduction Requirement:** Contractors are required to comply with the City of Charlottesville's Idling Reduction Policy for Motor Vehicles and Equipment, policy number 100-12. This policy is available at www.charlottesville.org/purchasing under the Vendor Registration link.
- 3.13 OMITTED.

ARTICLE 4 GENERAL CONTRACTOR'S PERSONNEL, SUBCONTRACTORS, AND SUPPLIERS

- 4.1 **Project Staffing:** The General Contractor shall staff the Project with qualified individuals and entities responsible for its obligations and performance hereunder.
- 4.1.1 The General Contractor shall, in writing, on or before the Commencement Date specified in the Notice to Proceed issued by the City, name a representative (the "Builder's Representative") to serve as its primary communication contact with the City and the Professional(s).
- 4.1.2 The General Contractor shall employ persons skilled in the tasks assigned to them and shall contract with subcontractors and suppliers skilled in the tasks assigned to them and capable of working harmoniously with all trades, crafts and other individuals on the Project. The General Contractor shall use its best efforts to minimize the likelihood of any strike, work stoppage or other labor disturbance.
- 4.1.3 The General Contractor shall immediately remove from the Site, for the duration of the Project, any personnel, including personnel of any subcontractor, making an inappropriate racial, sexual or ethnic comment, statement or gesture toward any other individual.
- 4.1.4 The General Contractor shall immediately remove from the Site, for the duration of the Project, any personnel, including personnel of any subcontractor, who is incompetent or careless.
- 4.1.5 During the performance of this Construction Contract, the General Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation, national origin, age, disability or any other basis prohibited by 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 General Contractor shall be required to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. Also, the General Contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, shall be required to state that it is an equal opportunity employer. The General Contractor shall be required to include the provisions of this paragraph in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

4.1.6. During the performance of this contract the contractor shall be required:

(i) to provide a drug-free workplace for the contractor's employees; (ii) to 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; and (iii) to state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace. For the purposes of this paragraph, "drug-free workplace" means the Site for the performance of services or the provision of goods in connection with the specific contract resulting from this solicitation at which site the contractor's employees 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. The General Contractor shall include the provisions of this paragraph in every subcontract, so that the provisions will be binding upon each subcontractor.

4.1.7 The General Contractor shall not perform any construction work unless he (i) has obtained, and continues to maintain for the duration of such work, such workers' compensation coverage as may be required pursuant to the provisions of Chapter 8 (§65.2-800 et seq.) of Title 65.2 of the Code of Virginia, 1950, as amended and (ii) provides prior to the award of contract, on a form furnished by the department, agency, or institution of the Commonwealth or political subdivision thereof, evidence of such coverage. Contractor shall not allow any subcontractor to perform any work on a City construction project unless the subcontractor has obtained, and continues to maintain for the duration of such work, such worker's compensation coverage as may be required pursuant to the provisions of Chapter 8 (§65.2-800 et seq.) of Title 65.2 of the Code of Virginia, 1950, as amended. Contractor shall include the provisions of this paragraph within each of its subcontracts, so as to bind each subcontractor.

4.2 **Subcontractor / Supplier Contracts:** The General Contractor shall enter into written contracts with its subcontractors and suppliers, if any, and those written contracts shall be consistent with this Contract For Construction. It is the intent of the City and the General Contractor that the obligations of the General Contractor's subcontractors and suppliers, if any, inure to the benefit of the City and the General Contractor, and that the City be a third-party beneficiary of the General Contractor's agreements with its subcontractors and suppliers.

4.2.1 The General Contractor shall, as soon as practicable after signing the Contract for Construction, notify the City and the Professional in writing of the names of all subcontractors proposed for the principal parts of the Work, and of such others as the Professional may direct. Where the specifications establish qualifications or criteria for subcontractors, manufacturers or persons performing Work on the Project, the General Contractor shall be responsible for ascertaining that those proposed meet the criteria or qualifications. The General Contractor shall not employ or utilize any subcontractor that the City may, within a reasonable time, object to as unsuitable. Neither the City nor the Professional shall direct the General Contractor to contract with any particular subcontractor unless provided in the specifications or Invitation for Bids.

4.2.2 The General Contractor shall make available to each subcontractor and supplier, if any, prior to the execution of written contracts with any of them, a copy of the pertinent portions of this Contract For Construction, including those portions of the Construction Documents to which the subcontractor or supplier will be bound, and shall require that each subcontractor and supplier shall similarly make copies of applicable parts of such documents available to its respective subcontractors and suppliers.

- 4.2.3 The General Contractor shall engage each of its subcontractors and suppliers with written contracts which preserve and protect the rights of the City and include the acknowledgment and agreement of each subcontractor or supplier that the City is a third-party beneficiary of the contract. The General Contractor's agreements with its subcontractors and suppliers shall require that in the event of default under, or termination of, this Contract For Construction, and upon request of the City, the General Contractor's subcontractors and suppliers will perform services for the City.
- 4.2.4 The General Contractor shall include in its agreements with its subcontractors and supplier(s) a provision which contains the acknowledgment and agreement of the subcontractor or supplier that it has received and reviewed the applicable terms, conditions and requirements of this Contract For Construction that are included by reference in its written contract with the General Contractor, and that it will abide by those terms, conditions and requirements.
- 4.2.5 The City may select a particular subcontractor for a certain part of the Work and designate on the Invitation for Bids that the subcontractor shall be used for the part of the Work indicated and that the subcontractor has agreed to perform the Work for the subcontract amount stipulated on the bid form. The General Contractor shall include the stipulated amount, plus his Contractor markups, in the bid. In such case, the General Contractor shall be responsible for that subcontractor and its work, and the subcontractor shall be responsible to the General Contractor for its work, just as if the General Contractor had selected the subcontractor.
- 4.3 The General Contractor shall be fully responsible to the City for all acts and omissions of his agents and employees and all succeeding tiers of subcontractors and suppliers performing or furnishing any of the Work. Nothing in the Contract Documents shall create any contractual relationship between the City or the Professional and any subcontractor, supplier or other person, nor shall it create any obligation on the part of the City or Professional to pay for or to see to the payment of any money or monies due to any subcontractor, supplier or other person except as may otherwise be required by law.
- 4.4 The General Contractor shall be fully responsible for its invitees to and at the Site, and for those of its subcontractors, suppliers and their employees, including any acts or omissions of any such invitee.
- 4.5 The General Contractor agrees that it alone is responsible for all dealings with its subcontractors and suppliers, and their subcontractors, employees and invitees, including, but not limited to: the subcontractors' or suppliers' claims, demands, actions, disputes and similar matters, unless specifically provided otherwise by this Contract or by statute.
- 4.6 **Resolution Of Trade Disputes:** The General Contractor shall promptly resolve claims, complaints, labor disputes and disputes over assignment of work tasks by and among its subcontractors and suppliers.

ARTICLE 5 GOODS, PRODUCTS AND MATERIALS

- 5.1 **Quality Of Materials:** The General Contractor shall furnish goods, products, materials, equipment and systems which:
- (i) comply with the requirements of this Contract For Construction;
 - (ii) conform to applicable specifications, descriptions, instructions, drawings, data and samples;
 - (iii) are new (unless otherwise specified or permitted) and without damage;
 - (iv) are of quality, strength, durability, capacity or appearance equal to or higher than that required by the Construction Documents;
 - (v) are merchantable;
 - (vi) are free from defects; and,

(vii) beyond and in addition to those required by manufacturers' or suppliers' specifications where such additional items are required by the Construction Documents.

5.2 **Installation And Use Of Materials:** All goods, products, materials, equipment and systems named or described in the Construction Documents, and all others furnished as equal thereto shall, unless specifically stated otherwise, be furnished, used, installed, employed and protected in strict compliance with the specifications, recommendations and instructions of the manufacturer or supplier, unless such specifications, recommendations or instructions deviate from accepted construction practices, or the Construction Documents, in which case the General Contractor shall so inform the City and the Professional and shall proceed as directed by that Professional, unless otherwise directed by the City. The General Contractor shall coordinate and interrelate all trade contracts and subcontracts, to ensure compatibility of goods, products, materials, equipment and systems required by the Construction, and to ensure the validity of all warranties and guarantees.

5.3 **Unsuitable Materials:** With respect to goods, products, materials, equipment or systems which the General Contractor knows or should have known are unsuitable or unavailable at the time of Bid submission, no claim with respect to the unsuitability or unavailability of such goods, products, materials, equipment or systems will be entertained unless such a claim, stating proposed alternatives, was made in writing and submitted with the original Bid. Approval by the City and a Professional of substitute goods, products, materials, equipment or systems does not mean or imply final acceptance by the City and that Professional, should such items be defective or not as previously represented. Should the General Contractor furnish any approved goods, products, materials, equipment or systems different from or in addition to those required by the Construction Documents, which require supplemental materials or installation procedures different from or in addition to those required for specified items, the General Contractor shall provide such goods, products, materials, equipment or systems at no increase in the Construction Contract Price.

5.4 **Security For Work In Progress:** The General Contractor shall provide its own security for its Work in progress and for the goods, products, materials, equipment, systems, construction machinery, tools, devices and other items required, used or to be used for its scope of the Work.

ARTICLE 6 DOCUMENTS AND INFORMATION

6.1 **Information From City:** The City shall provide the General Contractor with information reasonably necessary to assist the General Contractor in performing its services including, if applicable:

- (i) the Site legal description and any required survey;
- (ii) all written and tangible material in its possession concerning conditions below ground at the Site;
- (iii) if the Project involves an existing structure, all available as-built drawings, record drawings, plans, specifications and structure system information with respect to such structure; and,
- (iv) the City's pertinent Project dates and key milestone dates.

6.2 **Resolution Of Questions:** The General Contractor shall resolve all questions concerning the Construction Documents with the Professional who has prepared the documents.

6.3 **Processing Of Documents:** When requested to do so by the City, the General Contractor shall process documents, and provide other reasonably required drawings, services and certifications, necessary to enable the City to (i) obtain financing or insurance for the Project; (ii) obtain approvals, permits and Certificates of Occupancy for the Project, which approvals are not otherwise required to be obtained by General Contractor; and, (iii) represent that the Work complies with requirements of governmental agencies having jurisdiction over the Project.

6.4 **Sufficiency Of City Information:** The furnishing of information by the City to the General Contractor shall not relieve the General Contractor of its responsibility to evaluate information and documents provided by the City. The General Contractor shall timely notify the City in writing of any additional information needed or services required from the City in order for the General Contractor to perform the Work.

**ARTICLE 7
SUBMITTALS**

- 7.1 **Submittal Schedule:** Within a reasonable time, but no later than fifteen (15) days after execution of the Contract for Construction, the General Contractor shall timely prepare and transmit to the designated Professional a schedule for provision of all anticipated shop drawings and other submittals. The schedule shall (i) include submittals required by the specifications; (ii) be in a format acceptable to the Professional; and, (iii) set forth specific dates for submission of the listed submittals. The General Contractor shall review and approve all submittals prior to submission to a Professional.
- 7.2 **Processing Of Submittals:** The General Contractor shall in timely fashion review, approve if appropriate, and forward shop drawings and other submittals to the Professional(s) for review and approval along with such detail and information as the Professional requires. No part of the Work dealt with by a submittal shall be fabricated or performed by the General Contractor, except at his own risk, until such approval has been given.
- 7.2.1 A Professional is responsible to the City, but not to the General Contractor, to verify that the submittals conform to the design concept and functional requirements of the plans and specifications, that the detailed design portrayed in shop drawings and proposed equipment and materials shown in submittals are of the quality specified and will function properly, and that the submittals comply with the Contract For Construction.
- 7.2.2 The General Contractor shall perform all Work in accordance with approved submittals. Approval of the General Contractor's submittals by a Professional shall not relieve the General Contractor from responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals.
- 7.2.3 The General Contractor shall furnish to the Professional for approval the name of the manufacturer, the model number, and other identifying data and information respecting the performance, capacity, nature and rating of any machinery and mechanical or other equipment which the Contractor contemplates incorporating in the Work. When Submittals are required for materials, the General Contractor shall furnish full information concerning the material or articles which it contemplates incorporating in the Work. When required samples shall be submitted for approval by the Professional, at the Contractor's expense, with all shipping charges prepaid. Machinery, equipment, material and articles installed or used without required approval(s) shall be at the risk of subsequent rejection.
- 7.2.4 Submittals shall be forwarded to the Professional sufficiently in advance of construction requirements to allow reasonable time for the Professional's review. Submittals shall be accompanied by a letter of transmittal which shall list the Project Title, the Submittals included, the specification section number applicable to each, and the date shown on each Submittal. Submittals shall be complete in every respect and shall be bound in sets. Each Submittal shall be clearly marked to show each item, component, and/or optional feature proposed to be incorporated into the Project. Cross reference to the plans or specifications shall be made as needed to identify the use for which the item or component is intended.
- 7.2.5 The General Contractor shall check all Submittals for compliance with the requirements of the Contract Documents. The Contractor shall be solely responsible for checking all dimensions and coordinating all materials and trades to ensure that the components or products proposed, individually or in combination, will fit in the space available and that they will be compatible with other components or products provided. The Contractor shall clearly note, in writing, any and all items which deviate from the requirements of the Contract Documents, and the reason(s) for deviation shall be included with the Submittal. Deviations shall be marked in bold face type or lettering and listed on a separate page or pages containing the heading "DEPARTURES FROM DRAWINGS AND SPECIFICATIONS." Submission of any Submittal to the Professional shall constitute the Contractor's certification that the equipment and material shown in the Submittal is that proposed to be incorporated into the Project, is in compliance with the Contract drawings, specifications and other requirements of the Contract Documents (unless otherwise indicated), and can be installed in the allocated spaces.
- 7.2.6 If a Submittal indicates a departure from the requirements of the Contract Drawings, Specifications or other requirements of the Contract Documents, then the Professional may reject the Submittal, or, if he

deems it to have merit, may recommend it to the City, who shall approve or reject it as the City, in its sole discretion, sees fit. Any departure from the Contract Documents must be further authorized by a Change Order, if a reduction or increase in the Contract Price is appropriate.

**ARTICLE 8
GENERAL CONTRACTOR'S INSPECTION OF
AND CORRECTION OF DEFECTIVE OR INCOMPLETE WORK**

- 8.1 **Rejection And Correction Of Work In Progress:** During the course of Project, the General Contractor shall inspect and promptly reject any Work (i) which does not conform to the Construction Documents; or (ii) which does not comply with any applicable law, statute, code, building code, rule or regulation of any governmental, public and quasi-public authorities and agencies having jurisdiction over the Site, the Work or the Project.
- 8.1.1 The General Contractor shall promptly correct or require the correction of all rejected Work, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The General Contractor shall bear all costs of correcting such Work, including additional testing and inspections and compensation for all services and expenses necessitated by such correction.
- 8.1.2 The General Contractor shall bear the cost of correcting destroyed or damaged Work, whether completed or partially completed, of the City or other trade contractors or subcontractors caused by the General Contractor's correction or removal of rejected Work.
- 8.2 **Covered Or Concealed Work:** If a portion of its scope of the Work has been covered, the General Contractor shall, if notified to do so by the City or a Professional, uncover the designated portion for observation and then replace it.
- 8.2.1 If the designated portion of the Work was covered contrary to the request of the City or the Professional, or to requirements specifically expressed in the Construction Documents, the General Contractor shall receive no additional compensation for the costs of uncovering and replacement or modification of the Construction Schedule.
- 8.2.2 If the designated portion of the Work was covered prior to a specific request by the City or the Professional that it remain uncovered, the General Contractor shall receive additional compensation for the costs of uncovering and replacement or modification of the Construction Schedule(s) only if the designated portion of the Work was in conformance with the Construction Documents.

**ARTICLE 9
CHANGE ORDERS AND CHANGES TO THE WORK**

- 9.1 **Change Order Requests:** Any party to the construction process may request changes to the Work, compensation or applicable schedules.
- 9.1.1 With respect to such requests for changes by the General Contractor, the General Contractor shall prepare and submit a change order request to the designated Professional.
- 9.1.2 With respect to requests for changes by parties other than the General Contractor, the General Contractor shall promptly review and respond to any such change order requests submitted by the Professional.
- 9.1.3 When requested to do so, the General Contractor shall prepare and submit to the Professional drawings, specifications or other data in support of a change order request.
- 9.1.4 Each change order shall detail time and monetary impacts of the change, whether the change order is considered alone or with all other changes that occur during the course of the Project.
- 9.2 **City-Directed Changes:** The City, by Construction Change Directive, and without invalidating or breaching the Contract, may direct the General Contractor to implement changes in the Work so long as the Work the City is requiring is not outside of the general scope of this Contract For Construction. The General Contractor, upon written direction from the City, shall proceed with such change.

- 9.2.1 The Professional, without the City's prior approval, may authorize or direct the General Contractor to make minor changes in the Work which are consistent with the intent of the Construction Documents and which do not involve a change in Project cost, time for construction, Project scope, or approved design elements, and the General Contractor shall promptly carry out such changes. Any such minor changes shall be implemented by a written field order and executed by the General Contractor.
- 9.2.2 Construction Change Directives may be utilized to order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, the Contract Price and Contract Time to be adjusted accordingly. A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order. Upon receipt of a Construction Change Directive, the General Contractor shall promptly proceed with the change in the Work involved and shall advise the Professional of the General Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining any proposed adjustment in the Contract Price or Contract Time. A Construction Change Directive signed by the General Contractor indicates the agreement of the General Contractor therewith. Such agreement shall become effective immediately and shall be recorded as a Change Order.
- 9.3 **Administration Of Changes:** The Professional will administer and manage all change order requests and change orders and will prepare required drawings, specifications and other supporting data as necessary in connection with minor changes, change order requests and change orders.
- 9.4 **Compensation For Changes:** With respect to all change order requests involving credit to the City or additional compensation to the General Contractor, the General Contractor shall (i) obtain from subcontractors and suppliers the best possible price quotations; (ii) review such quotations to ascertain whether they are reasonable; (iii) prepare an itemized accounting together with appropriate supporting data, including reasonable expenditures by, and savings to, those performing the scope of the Work involved in the proposed change; and, (iv) provide a reasonable price quotation to the designated Professional.
- 9.4.1 If price quotations for change order requests are determined by the Professional to be unreasonable, the General Contractor shall, in writing, justify said quotations or provide additional back-up materials. If after review of the additional information the Professional determines the quotation is unreasonable, the City may require the General Contractor to perform the subject Work on a time and material basis.
- 9.4.2 The General Contractor shall be allowed no additional compensation for any costs, fees or expenses incurred in performing services already required by this Contract for Construction, and shall not be entitled to additional reimbursement for its home office, other non-job site or indirect overhead expenses, or tools necessary for construction.
- 9.4.3 It is the responsibility of the General Contractor to review and approve all pricing of additional work required of its subcontractors and suppliers.
- 9.4.4 Under no circumstances may any change order(s) be used to increase the amount of this fixed price contract, without adequate consideration to the City, for any purpose, including, but not limited to, relief of the General Contractor from the consequences of an error in its bid.
- 9.4.5 The following may constitute allowable costs for changes in the Work, subject to 9.4.2, above: (1) Labor costs for employees directly employed in the change in the Work, including salaries and wages plus the cost of payroll charges and fringe benefits and overtime premiums, if such premiums are explicitly authorized by the City; (2) Materials incorporated into the change to the Work, including costs of transportation and storage, if applicable; (3) Equipment incorporated in the changed Work or equipment used directly in accomplishing the Work. If rented expressly for accomplishing the change, the cost shall be the rental rate according to the terms of the rental agreement, which the City shall have the right to approve in advance. If owned by the Contractor, the costs shall be a reasonable price based upon the life expectancy of the equipment and the purchase price of the equipment; (4) Costs of increases in premiums for the Standard Labor and Material Payment Bond and the Standard Performance Bond, provided coverage for the cost of the change in the Work results in such increased costs. At the City's request, the Contractor shall provide proof of his notification to the Surety of the change in the Work and of the Surety's agreement to include such change in its coverage. There shall

be no Contractor mark-up to the cost of the increase in the premium; (5) Contractor and Subcontractor overhead costs as follows: if a Subcontractor, at any tier, does all or part of the changed Work, the Subcontractor's markup on that Work for overhead and profit shall not exceed fifteen percent (15%) and the Contractor's markup of a Subcontractor's Work, and all intervening tiers of Subcontractors, shall not exceed a total of ten percent (10%); if the General Contractor does all or part of the changed Work, then its markup for overhead and profit on the changed Work it performs shall not exceed fifteen percent (15%). (6) Other costs, expressly agreed to by the City in writing that are directly attributable to the change in Work, with the exception of those set forth below.

- 9.4.6 Allowable costs for changes in the Work shall **exclude** the following: (1) Costs due to the negligence of the Contractor, any Subcontractor, Supplier, their employees or other persons for whom the Contractor is responsible, including, without limitation, costs for correction of defective Work, for improper disposal of material, for equipment wrongly supplied, for delay in performing the Work, or for delay in obtaining materials or equipment; (2) Home office expenses including payroll costs for the Contractor's officers, executives, administrators, project managers, accountants, counsel, engineers, timekeepers, estimators, clerks, and other similar administrative personnel employed by the Contractor, whether at the Site or in the Contractor's principal or branch office for general administration of the Work; these costs are deemed overhead included in the percentage markups allowable in 9.4.4, above. (3) Home and field office expenses, including, without limitation: expenses of home and branch offices, Contractor's capital expenses, interest on Contractor's capital used for the Work, charges for delinquent payments, small tools, incidental job costs, rent, utilities, telephone and office equipment and other general overhead expenses.
- 9.4.7 All Change Orders must state that the Contract Time for Completion or Completion Date is not changed, or that the Time for Completion/Completion Date is either increased or decreased by a specific number of days. The old Time for Completion/Completion Date, and if changed, the new Time for Completion/Completion Date must be stated on the face of each Change Order.
- 9.4.8 The acceptance by the General Contractor of any payment made by the City under a Change Order shall be and operate as a release to the City of all claims by the Contractor and of all liability owing to the Contractor for all things done or furnished in connection with the Work described in the Change order. The execution of any Change order by the City shall not be an acceptance of any Work or materials not in accordance with the Contract Documents, nor shall it relieve the Contractor of responsibility for faulty materials or workmanship, or operate to release the Contractor or his surety from any obligation arising under the Contract or any Performance or Payment Bond.
- 9.5 **Performance Of Changes:** Upon receipt of a field order, change directive, or change order, the General Contractor shall proceed to promptly perform the change in the Work. All changes in the Work shall be performed under applicable conditions of the Construction Documents.
- 9.6 **Disputes Regarding Changes:** If the General Contractor disputes a decision regarding: (i) whether a change has occurred; (ii) whether a change in the Work will result in adjustment of its compensation or applicable schedules; or (iii) the amount of any adjustment of compensation or applicable schedules, the General Contractor shall notify the City in writing of the dispute, as provided below. Once placed in dispute, the General Contractor shall nevertheless carry out the change, if directed so to do by City. The General Contractor will not prejudice any claim that it may have with respect to that change so long as the General Contractor notifies the City in writing; however, failure to timely notify the City in writing shall constitute the General Contractor's waiver of any claim resulting from the change.
- 9.6.1 In the event a change order request is approved by the City in the absence of an agreement with the General Contractor as to cost, time, or both, the appropriate Professional will: (i) receive and maintain all documentation pertaining thereto required of the General Contractor; (ii) examine such documentation on the City's behalf; (iii) take such other action as may be reasonably necessary or as the City may request; and, (iv) make a written recommendation to the City concerning any appropriate adjustment in the construction cost or time.
- 9.7 **Necessity For Signed Writing:** No act, omission or course of dealing shall alter the requirement that change orders must be in writing and signed by the City, and that change orders are the exclusive method for effecting any adjustment to the General Contractor's compensation or applicable schedules. The General Contractor

understands and agrees that neither its compensation nor applicable schedules can be changed by implication, oral agreement, or unwritten change order. The execution of a change order by the General Contractor shall constitute conclusive evidence of the General Contractor's agreement to the ordered changes in the Work, to the Construction Contract as thus amended, to the Contract Price as amended, and to the time for performance by the General Contractor. The General Contractor, by executing the change order, waives and forever releases any claim against the City for additional time or compensation, with respect to the changes specified therein.

- 9.8. **Consent of Surety:** The General Contractor shall notify and obtain the consent and approval of the General Contractor's surety with reference to all change orders, if such notice, consent or approval is required by the City, the Professional, the surety or by applicable law. The General Contractor's execution of the change order shall constitute the General Contractor's warranty to the City that the surety has been notified of, and consents to such change order, and the surety shall be conclusively deemed to have been notified of such change order and to have expressly consented thereto.
- 9.9 **Work Subject to Change Order:** Neither the General Contractor nor any subcontractor(s) shall commence any work which is, or by provisions of this Contract is required to be, the subject of a change order, unless and until the required Change Order has been fully executed by both the City and the General Contractor.

ARTICLE 10 FINANCIAL CLAIMS AND LIENS

- 10.1 **Notification Regarding Liens:** The General Contractor shall immediately notify the City and Professional(s), both orally and in writing, of the nature and details of any mechanics' liens, construction liens, builder's trust fund claims, or claims of any type made by anyone against the City, the Professional(s), the General Contractor or any subcontractor or supplier of any of them or against the Project whether or not such claims arise from the Work.
- 10.2 **Discharge of Liens:** The General Contractor shall take all action necessary to obtain the prompt discharge of any liens or claims filed against the Project. If any lien or claim filed against the Project is not discharged and released by the claimant, the General Contractor shall, within a reasonable period of time, but in no event more than fourteen (14) calendar days after request and at its own cost, promptly obtain discharge and release of such lien or claim by filing the appropriate bond. If the General Contractor fails to have any such lien or claim discharged and released, or fails to file the appropriate bond, the City shall have the right to pay all sums necessary to obtain such a discharge and release, and the General Contractor shall bear and be liable to the City for all expenses incurred by the City in so doing, including, without limitation, reasonable attorney's fees.

ARTICLE 11 CITY'S CONSULTANT(S), PROFESSIONAL(S) AND CONSTRUCTION ADMINISTRATION

- 11.1 **City's Designated Professional Representative:** Unless otherwise directed by the City, the Professional designated on Page 1 of this Contract for Construction shall act as the City's representative from the effective date of this Contract until one (1) year from the date the General Contractor achieves Substantial Completion.
- 11.2 The Professional will (i) be the City's design representative during performance of the Work; (ii) consult with and advise the City on all design and technical matters; (iii) be the City's representative in dealing with the General Contractor on all such matters; and, (iv) administer this Contract For Construction.
- 11.2.1 Unless otherwise directed by the City, the City and the General Contractor shall communicate with each other in the first instance through the designated Professional. The City's instructions, directions and other relevant communications or directives to the General Contractor will be issued through the designated Professional.
- 11.2.2 The designated Professional will act as initial interpreter of the requirements of this Contract For Construction and as the City's advisor on claims.
- 11.3 **Professional Site Visits:** The Professional will visit the Site with sufficient frequency for familiarization with the progress and quality of the Work and to inspect the Work for substantial compliance with (i) this Contract For Construction, including approved shop drawings and other submittals; (ii) the Construction Schedule; and,

(iii) applicable laws, statutes, codes, building codes, rules or regulations of all governmental, public and quasi-public authorities and agencies having or asserting jurisdiction over the Project.

- 11.4 **Professional Rejection Of Work:** The Professional may disapprove or reject Work which does not comply with (i) this Contract For Construction including approved shop drawings and other submittals; or (ii) applicable laws, statutes, codes, building codes, rules or regulations of any governmental, public and quasi-public authorities and agencies having or asserting jurisdiction over the Project.
- 11.5 **Professional Evaluations:** The Professional(s) will review and evaluate the results of all inspections, tests and written reports required by this Contract For Construction and by any governmental entity having or asserting jurisdiction over the Project. The Professional(s) will take appropriate action on test results, including acceptance, rejection, requiring additional testing or corrective work, or such other action deemed appropriate by the Professional(s). The Professional(s) will promptly reject Work which does not conform to and comply with testing requirements.
- 11.5.1 The Professional(s) may require inspection or testing of any Work in addition to that required by this Contract For Construction or governmental entities having or asserting jurisdiction over the Project when such additional inspections and testing is necessary or advisable, whether or not such Work is then fabricated, installed or completed. The Professional(s) will take appropriate action on all such special testing and inspection reports, including acceptance, rejection, requiring additional testing or corrective work, or such other action deemed appropriate by the Professional(s).
- 11.6 **Professional Submittal Activities:** The Professional will review and approve, reject or take other appropriate action on submittals (e.g., shop drawings, product data, samples, proposed equal materials or equipment and requested substitutions) within not more than fourteen (14) calendar days, and will not approve any submittals unless such submittals conform with (i) the Project design concept; (ii) this Contract For Construction; and, (iii) the City's budgeted Total Project Construction Cost. The Professional's review of submittals shall not constitute final acceptance of materials or equipment furnished or installed if such materials or equipment should be defective or not as represented by approved submittals or as otherwise required by the Construction Documents. The General Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing its scope of the Work.
- 11.7 **Professional Interpretations:** The Professional shall, when requested to do so in writing by the General Contractor, promptly and so as to cause no unnecessary delay, render written or graphic interpretations and decisions necessary for the proper execution of the Work. The Professional's interpretations and decisions relating to artistic effect shall be final, if not inconsistent with this Contract For Construction.
- 11.8 **Professional Change Order Activities:** The Professional will consult with and advise the City concerning, and will administer and manage, all change order requests and change orders on behalf of the City.
- 11.9 **Professional Pay Application Activities:** The appropriate Professional will review applications for payment, including such accompanying data, information and schedules as the Professional requires, to determine the amounts due to the General Contractor and shall authorize payment by the City to the General Contractor in writing. After the General Contractor's scope of the Work is determined to be finally complete and the Professional determines that the General Contractor has completed the Scope of the Work, the Professional will determine whether the General Contractor is entitled to final payment, and if so, the Professional will certify that determination to the City in writing.
- 11.10 **Professional Relationship To General Contractor:** The duties, obligations and responsibilities of the General Contractor under this Contract For Construction shall not be changed, abridged, altered, discharged, released, or satisfied by any duty, obligation or responsibility of the Professional. The General Contractor shall not be a third-party beneficiary of any agreement by and between the City and any Professional. The duties of the General Contractor to the City shall be independent of, and shall not be diminished by, any duties or obligations of any Professional to the City.

ARTICLE 12
INSPECTION, CORRECTION OF WORK, AND PROJECT CLOSE OUT

- 12.1 **Substantial Completion:** Substantial Completion of the General Contractor's Work shall be deemed to have occurred on the first day on which both of the following circumstances exist: (i) the General Contractor's Work passes, or has passed, a Substantial Completion inspection, and (ii) the General Contractor has produced all required Substantial Completion documentation and items.
- 12.1.1 The General Contractor shall accomplish Substantial Completion of its scope of the Work on or before the required date of Substantial Completion specified in this Construction Contract.
- 12.1.2 When the General Contractor believes that its Work, or a portion thereof which the City agrees to accept separately, is substantially complete, it shall notify the City and the Professional that its Work is ready for a Substantial Completion inspection.
- 12.1.3 At or prior to the substantial completion inspection, the General Contractor will prepare and furnish to the Professional a Declaration of Substantial Completion, which at a minimum must:
- (i) contain a blank for entry of the date of Substantial Completion, which date will fix the commencement date of warranties and guaranties and allocate between the City and the General Contractor the responsibilities for security, utilities, damage to the Work and insurance;
 - (ii) include a list of items to be completed or corrected prior to final payment and state the time within which the General Contractor will complete or correct listed items; and,
 - (iii) contain signature lines for the City, the General Contractor and the Professional.
- 12.1.4 Upon receipt of notification from the General Contractor the appropriate Professional will coordinate with the City and the General Contractor a date for inspection of the Work to determine whether the Work is substantially complete.
- 12.1.5 At inspection(s) to determine whether the General Contractor's Work is substantially complete, the Professional will:
- (i) inspect the General Contractor's Work;
 - (ii) list additional items to be completed or corrected; and,
 - (iii) determine, in consultation with the City, whether Substantial Completion of the General Contractor's Work has occurred.
- 12.1.6 If the General Contractor's Work is determined not to be substantially complete, the General Contractor shall continue to prosecute the Work until the Work is substantially complete and the inspection process shall be repeated at no additional cost to the City until the Work is determined to be substantially complete.
- 12.1.7 On or prior to the date of Substantial Completion, the General Contractor shall deliver to the appropriate Professional keys, permits, the certificate of occupancy, and other necessary and customary documents and items pre-requisite for the City's occupancy and use of the Work for its intended purpose. The Professional will obtain and review Substantial Completion documentation and items, and will inform the General Contractor of any deficiencies.
- 12.1.8 When the City, the General Contractor and the appropriate Professional agree that the General Contractor's Work has passed the Substantial Completion inspection and the General Contractor has produced the required Substantial Completion documentation and items, they shall each sign the Declaration of Substantial Completion declaring the Work substantially complete and establishing the actual date of Substantial Completion. The Declaration of Substantial Completion shall also include a list of and time line for the completion of Work needing completion and correction.

- 12.2 **Partial Occupancy or Use:** The City may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate written agreement with the General Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the City and General Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage (if any), security, maintenance, heat, utilities, damage to the Work, and Insurance, and if the City and the General Contractor have also agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. Consent of the General Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work at the time of partial occupancy or use shall be determined by written agreement between the City and the Contractor, or if no agreement is reached, by decision of the Professional. When the General Contractor considers a portion of the Work partially occupied or used by the City to be substantially complete, the General Contractor shall prepare a list and submit it to the Professional as provided by Section 12.1
- 12.3 **Final Completion:** Final Completion of the General Contractor's Work shall be deemed to have occurred on the first day on which both of the following circumstances exist: (i) the General Contractor's Work passes, or has passed a Final Completion inspection, and (ii) the General Contractor has produced all required Final Completion close-out documentation and items.
- 12.3.1 The General Contractor shall accomplish Final Completion of its scope of the Work on or before the required date of Final Completion specified in this Construction Contract.
- 12.3.2 When the General Contractor believes its scope of the Work is finally complete, the General Contractor shall notify the City and the appropriate Professional that the Work is ready for a Final Completion inspection.
- 12.3.3 Upon receipt of such notification from the General Contractor, the Professional will coordinate with the City and the General Contractor a date for inspection of the Work to determine whether the Work is finally complete.
- 12.3.4 At the Final Completion inspection to determine whether the General Contractor's Work is finally complete, the Professional will:
- (i) inspect the General Contractor's Work;
 - (ii) determine whether the General Contractor has satisfactorily completed or corrected all items on the list included with the Declaration of Substantial Completion;
 - (iii) determine whether the General Contractor's Work complies with (a) this Contract For Construction; (b) applicable laws, statutes, codes, building codes, rules or regulations of all governmental, public and quasi-public authorities and agencies having jurisdiction over the Project; and, (c) applicable installation and workmanship standards;
 - (iv) determine whether required inspections and approvals by the official(s) having or asserting jurisdiction over the Project have been satisfactorily completed; and,
 - (iv) determine, in consultation with the City, whether the General Contractor's Work is finally complete.
- 12.3.5 If the General Contractor's Work is not finally complete, the General Contractor shall continue to prosecute the Work until the Work is finally complete and the inspection process shall be repeated at no additional cost to the City until the Work is finally complete.
- 12.3.6 On or prior to the date of Final Completion, the General contractor shall deliver to the appropriate Professional the following Final Completion close-out documentation and items:

- (i) all operating and instruction manuals not previously produced during commissioning and required maintenance stocks;
- (ii) two (2) sets of as-built drawings and markups;
- (iii) certification and affidavit that all insurance required of the General Contractor beyond final payment, if any, is in effect and will not be canceled or allowed to expire without notice to the City;
- (iv) written consent of the surety(ies), if any, to final payment;
- (v) full, final and unconditional waivers of mechanics or construction liens, releases of builder's trust fund or similar claims, and release of security interests or encumbrances on the Project property from each contractor, subcontractor, supplier or other person or entity who has, or might have a claim against the City or the real property which is the subject of this Construction Contract;
- (vi) full, final and unconditional certification and affidavit that all of the General Contractor's obligations to contractors, subcontractors, suppliers and other third parties for payment for labor, materials or equipment related to the Project have been paid or otherwise satisfied;
- (vii) all written warranties and guarantees relating to the labor, goods, products, materials, equipment and systems incorporated into the General Contractor's scope of the Work, endorsed, countersigned, and assigned as necessary;
- (viii) affidavits, releases, bonds, waivers, permits and other documents necessary for final close-out of Work;
- (ix) a list of any item(s) due but unable to be delivered and the reason for non-delivery; and,
- (x) any other documents reasonably and customarily required or expressly required herein for full and final close-out of the General Contractor's Work.

12.3.7 The appropriate Professional will review and determine the sufficiency of all Final Completion close-out documentation and items required for Final Completion which are submitted by the General Contractor, and will immediately inform the General Contractor of any deficiencies and omissions.

ARTICLE 13 GENERAL CONTRACTOR'S WARRANTIES AND GUARANTEES

13.1 **One-Year Warranty:** In addition to the warranties and guarantees set forth elsewhere in this Contract For Construction, for a period of one (1) year after the date of Final Completion, or the date of acceptance by the City, whichever is later, the General Contractor shall, upon request by the City or the Professional, promptly correct all failures or defects in the Work.

13.1.1 The General Contractor shall schedule, coordinate and participate in a walk-through inspection of the Work one (1) month prior to the expiration of the one-year correction period, and shall notify the City, the Professional, and any necessary subcontractors and suppliers of the date of the walk-through inspection, and request their participation therein. The purpose of the walk-through inspection will be to determine if there are defects or failures which require correction.

13.1.2 Should the General Contractor fail to promptly correct any failure or defect, the City, a Related Party, or any successor in interest or assignee of either, may take whatever action(s) it deems necessary to remedy the failure or defect and the General Contractor shall promptly reimburse the City or Related Party for any expenses or damages incurred as a result of the General Contractor's failure to correct the failure or defect.

13.1.3 Nothing contained in this Section 13.1 shall be construed to establish a period of limitation with respect to the General Contractor's obligations under this Contract For Construction. This Section 13.1 relates

only to the General Contractor's specific obligations with respect to the Work, and has no relationship to the time within which the General Contractor's contractual obligations under this Contract For Construction may be enforced, nor to the time within which proceedings may be commenced to establish the General Contractor's liability with respect to any contractual obligations set forth within this Section 13.1 or contained elsewhere within this Construction Contract.

- 13.2 **Express Warranties And Guarantees - General Contractor:** In addition to the warranties and guarantees set forth elsewhere herein, the General Contractor expressly warrants and guarantees to the City:
- (i) that the Work complies with the Construction Documents as well as all applicable laws, statutes, codes, building codes, rules and regulations of all governmental, public and quasi-public authorities and agencies having jurisdiction over the Project;
 - (ii) that all goods, products, materials, equipment and systems incorporated into the Work conform to applicable specifications, descriptions, instructions, drawings, data and samples and shall be and are (a) new (unless otherwise specified or permitted) and without apparent damage or defect; (b) of quality equal to or higher than that required by the Construction Documents; and, (c) merchantable; and
 - (iii) that all management, supervision, labor and services required for the Work is and shall be in compliance with the requirements of this Contract For Construction, and that the Work is and shall be performed in a workmanlike manner.
- 13.3 **Express Warranties And Guarantees - Subcontractors And Suppliers:** The General Contractor shall require that each of its subcontractors and suppliers provide written warranties, guarantees and other undertakings to the City and the General Contractor in a form identical to the warranties, guarantees and other undertakings set forth in this Contract For Construction which warranties, guarantees and undertakings shall run to the benefit of the City, Related Parties, and the successors in interest and assigns of each, as well as the General Contractor.
- 13.4 **Non-Exclusivity And Survival:** The warranties and guarantees set forth in this Article, shall be in addition to all other warranties, whether express, implied or statutory, and they shall survive the City's payment, acceptance, inspection of or failure to inspect the Work, and review of the Construction Documents.
- 13.5 **Commencement Of Obligations:** Unless otherwise specified, all of the General Contractor's warranty and guaranty obligations, including the time period(s) for all written warranties and guarantees of specifically-designated equipment required by the Construction Documents, shall begin on the actual date of Substantial Completion or the date of acceptance by the City, whichever is later.

ARTICLE 14 CITY'S DUTIES, OBLIGATIONS AND RESPONSIBILITIES

- 14.1 **City's Representative:** The City shall designate a Representative to serve as the City's primary communication contact with the General Contractor. The name and address of the City's Designated Representative shall be as set forth on Page 1 of the Contract for Construction.
- 14.2 **City's General Duties**
- 14.2.1 The City shall timely compensate the General Contractor in accordance with this Contract For Construction.
 - 14.2.2 Unless otherwise specifically required to be provided by the General Contractor within the scope of Work, the City shall secure and pay for all Project testing.
 - 14.2.3 The City shall review documents prepared by the General Contractor in a timely manner and in accordance with schedule requirements. Review by the City shall be solely for the purpose of determining whether such documents are generally consistent with the City's intent. No review of such documents shall relieve the General Contractor of any of its responsibilities with respect thereto.

- 14.2.4 The City shall not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, nor shall the General Contractor, for any of the foregoing purposes, be deemed the agent of the City.
- 14.2.5 The General Contractor shall be responsible to provide and pay for extensions of water, gas, and electrical energy for means of using such utilities.
- (i) Acceptance by the General Contractor of the use of water, gas and electrical energy furnished by the City constitutes a release from the General Contractor to the City of all claims and liability for any damages or losses which may be incurred by the General Contractor as a result of water, gas and electrical energy outages or voltage variations or surges, and the General Contractor's agreement to indemnify and hold the City harmless from such claims and liability asserted by any subcontractor(s).

ARTICLE 15 GENERAL CONTRACTOR'S COMPENSATION

- 15.1 **Unit Prices:** If any portion of the Contract Price is determined by the application of unit prices, the number of units contained in the General Contractor's Compensation Schedule is an estimate only, and the compensation to the General Contractor shall be determined by the actual number of units incorporated in, or required by, the Work.
- 15.2 **Schedule Of Values:** Within the time designated within this Contract for Construction, the General Contractor shall prepare and present to the City and the Professional the General Contractor's schedule of values, apportioning the Construction Contract Price among the different elements of the scope of the Work, for purposes of periodic and final payment. The General Contractor's Schedule of Values shall be presented in the format, and with such detail and supporting information, requested of the General Contractor by the Professional or City. The General Contractor shall not imbalance or artificially inflate any element of its Schedule of Values. If the Schedule of Values is determined to be inappropriate, or if any supporting documentation or data is deemed to be inadequate, the Schedule of Values shall be returned to the General Contractor for revision or for additional supporting documentation or data. Upon the Professional and City's acceptance of the Schedule of Values, as evidenced by the Professional's signature, the Schedule of Values shall be used to process and pay the General Contractor's payment requests and shall be deemed to constitute a reasonable, balanced basis for payment of the Contract Price to the General Contractor. The Schedule of Values shall not be changed without written change order authorized by the City.
- 15.3 **Invoicing Procedures:** In accordance with the procedures and requirements set forth in this Article, the General Contractor shall invoice the City and the City shall pay the General Contractor the Construction Contract Price.
- 15.3.1 Not less than once every thirty (30) calendar days following the Commencement Date, but no more frequently than once per calendar month, the General Contractor shall submit invoices to the City requesting payment in accordance with the Schedule of Values for labor and services rendered during the preceding thirty (30) calendar days. Each invoice shall contain such detail and be backed up with whatever supporting information the City or the Professional requests. At a minimum the invoice shall:
- (i) state the total Construction Contract Price;
 - (ii) state the amount due for labor, materials and equipment provided during the preceding 30 days; and with respect to amounts invoiced for materials or equipment necessary for the Project and properly stored at the Site (or elsewhere if offsite storage is approved in writing by the City), be accompanied by written proof that the City has title to such materials or equipment and that such material and equipment is fully insured against loss or damage;
 - (iii) provide an itemized statement or other general breakdown of the various phases or parts of the General Contractor's Scope of Work, as related to the Construction Contract Price;
 - (iv) state the value of the various phases or parts actually performed during the period covered by the invoice;

- (v) state any previously invoiced amounts and credit payments made;
- (vi) state the total amount due, less any retainage; and,
- (vii) have attached such lien waivers, or other documentation verifying the General Contractor's payment to subcontractors and suppliers as the City or Professional may request, in their sole discretion.

15.4 **Payment Procedures:** The General Contractor's invoices, and any other requests for payments authorized by this Contract, must be approved by the Professional and must meet the minimum requirements set forth in section 15.3, above, as condition(s) precedent to the City's obligation to pay. Payments issued by the City shall be deemed timely if postmarked at least two (2) business days before the Payment Date identified in Paragraph 15.4.1 below, or any alternative payment due date stated in this Article.

15.4.1 The required payment date shall be either: (i) the date on which payment is due under the terms of this Construction Contract; or (ii) if such date is not established by the Contract, not more than forty-five days after goods or services are received or not more than forty-five days after an invoice in a form acceptable to the City is rendered, whichever is later. Separate payment dates may be specified for contracts under which goods or services are provided in a series of partial deliveries or executions, to the extent any such contract specifically provides for separate payment for such partial delivery or execution. In the event that any invoice contains a defect or impropriety which would prevent payment by the Payment Date, the City shall notify the General Contractor in writing of such defect or impropriety. Any disputed amounts determined by the City to be payable to the General Contractor shall be due thirty (30) days from the date the dispute is resolved.

15.4.2 The City's signature to this Construction Contract constitutes its certification that, as of the date of signature, public funds are available and have been appropriated in the amount specified in the original Contract documents as and for the Contract Price. Payment and performance obligations of the City are expressly conditioned upon the availability of and appropriation by the City of public funds therefor in each subsequent fiscal year. When public funds are not appropriated or are otherwise unavailable to support continuation of performance by the City in a subsequent fiscal period, this contract and the City's obligations hereunder shall automatically expire, without liability or penalty to the City, and the General Contractor shall be reimbursed for the reasonable value of any non-recurring costs incurred but not amortized in the price of the products, supplies or services delivered under this Construction Contract. Within a reasonable time following City Council's adoption of a budget, the City shall provide the Contractor with written notice of any non-appropriation or unavailability of funds affecting this Contract.

15.4.3 If Contractor is an individual, then he or she shall register as a vendor with the City of Charlottesville and provide the City's Department of Finance with his Social Security Number *on or before* commencement of performance of construction services under this Contract. If Contractor is a proprietorship, partnership, or corporation, then Contractor shall register as a vendor with the City of Charlottesville and provide its federal employer identification number(s) to the City's Department of Finance *on or before* its commencement of performance of construction services under this Contract.

15.4.4 Unless otherwise specified within the Contract Documents, the City will make progress payments to the contractor, in installments based upon an estimated percentage of completion. With each installment, the contractor shall be paid at least ninety-five percent (95%) of the total amount earned, as determined and approved by the Professional, withholding the balance as retainage, to assure faithful performance of the contract. Amounts withheld may be included in the final payment to the contractor. Where the General Contractor utilizes a subcontractor in connection with a City construction contract, and the subcontract provides for progress payments, then the General Contractor shall be subject to the same percentage limitations with respect to progress payments made to subcontractors.

15.4.5 The General Contractor shall have the option to use an escrow account procedure for utilization of the City's retainage funds, when contracting directly with the City for contracts involving \$200,000 or more of public funds, where portions of the contract price are to be retained, where such contracts are for: construction of highways, roads, streets, bridges, parking lots, demolition, clearing, grading, excavating, paving, pile driving, drainage structures and the installation of water, gas, sewer lines and pumping

stations. In the event a Contractor elects to utilize the escrow account procedure, then any subcontract for such public project which provides for progress payments shall be subject to the same escrow account procedures.

- (i) The Contractor shall indicate its election to use the escrow account procedure, by completing the escrow agreement form and contract included in the Bid Documents for this Project. The form and contract shall be submitted to the City within fifteen (15) calendar days after the Contractor is notified of the award of the contract. If the escrow agreement form and contract are not submitted within the 15 day period, then the Contractor shall forfeit its right to the use of the escrow account procedure.
- (ii) In order to have retained funds paid to an escrow agent, the Contractor, the escrow agent, and the surety shall execute an escrow agreement form. The Contractor's escrow account shall be a trust company, bank or savings institution with its principal office located in the Commonwealth of Virginia.
- (iii) This escrow account procedure shall not apply to public contracts for construction of railroads, public transit systems, runways, dams, foundations, installation or maintenance of power systems for the generation and primary and secondary distribution of electric current ahead of the customer's meter, the installation or maintenance of telephone, telegraph or signal systems for public utilities or the construction or maintenance of solid waste or recycling facilities and treatment plants.

15.5 **City's Right To Refuse Payment:** The Professional's approval of the General Contractor's invoice shall not preclude the City from exercising any of its remedies under this Contract. In the event of a dispute, payment shall be made on or before the Payment Date for amounts not in dispute, subject to any set-offs claimed by the City. The City shall have the right to refuse to make payment of any invoice, and, if necessary, may demand the return of a portion or all of the amount previously paid to the General Contractor due to:

- (i) the General Contractor's failure to perform its scope of the Work in compliance with the requirements of this Contract For Construction or any other agreement between the parties;
- (ii) the General Contractor's failure to correctly and accurately represent the work performed in a payment request, or otherwise;
- (iii) the General Contractor's performance of its scope of the Work at a rate or in a manner that, in the City's opinion, is likely to result in the Project or any portion of the Project being inexcusably delayed;
- (iv) the General Contractor's failure to use funds previously paid the General Contractor by the City, to pay General Contractor's Project-related obligations including, but not limited to, the General Contractor's subcontractors, materialmen, and suppliers;
- (v) claims made, or claims likely to be made, against: (a) the City, (b) the property which is the subject of this Construction Contract, or (c) the Professional. The General Contractor's failure to attach to any invoice the lien waivers or other documentation required by section 15.3.1 (vii) of this Construction Contract shall constitute *prima facie* evidence of such claims likely to be made;
- (vi) loss caused by the General Contractor or the General Contractor's subcontractors, or suppliers; and,
- (vii) the General Contractor's failure or refusal to perform any of its material obligations to the City.

15.6 **General Contractor's Right To Refuse Performance For Non-Payment:** If within thirty (30) calendar days from the applicable Payment Date, the City, without cause or basis under this Contract, fails to pay the General Contractor any amounts then due and payable to the General Contractor, the General Contractor shall have the right, in addition to all other rights and remedies contained herein, to cease performance of its scope of the Work until receipt of proper payment, after first providing fourteen (14) calendar days' advance written notice to the City of its intent to cease work.

- 15.7 **Correction Of Past Payments:** All prior payments, whether based on estimates or otherwise, may be corrected and adjusted in any subsequent payment and shall be corrected and adjusted in the final payment. In the event that any invoice contains a defect or impropriety which would prevent payment by the Payment Date, the City shall notify the General Contractor in writing of such defect or impropriety. Any disputed amounts determined by the City to be payable to the General Contractor shall be due thirty (30) calendar days from the date the dispute is resolved.
- 15.8 **Interest On Outstanding Amounts Due:** No interest shall accrue when payment is delayed due to a dispute between the City and the Contractor, or a dispute as to the accuracy or completeness of any request for payment received. This exception to the accrual of interest shall apply only to that portion of a delayed payment which is actually the subject of the dispute and shall apply only for the duration of such disagreement. No interest shall accrue on any retainage which is withheld by the City to assure performance of this Contract.
- 15.9 **Invoice Warranties And Guarantees:** The General Contractor expressly warrants and guarantees to the City that:
- (i) title to all goods, products, materials, equipment and systems covered by an invoice will pass to the City;
 - (ii) all goods, products, materials, equipment and systems covered by an invoice are free and clear of liens, claims, security interests or encumbrances; and,
 - (iii) no goods, products, materials, equipment or systems covered by an invoice have been acquired by the General Contractor, or its subcontractors or suppliers, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the General Contractor, or its subcontractors or suppliers.
- 15.10 **General Contractor's Signature:** The signature of the General Contractor on any invoice constitutes the General Contractor's certification to the City that (i) the General Contractor's services listed in the invoice have progressed to the level indicated and have been performed as required by the Contract; (ii) the General Contractor has paid its subcontractors and suppliers, if any, their proportional share of all previous payments received from the City; and, (iii) the amount requested is currently due and owing.
- 15.11 **Taxes:** The General Contractor shall incorporate into the Contract Price, and shall pay, all sales, consumer, use and similar taxes for goods, products, materials, equipment and systems incorporated into its scope of the Work which were legally required at the time of execution of this Contract For Construction, whether or not yet effective or merely scheduled to go into effect. The General Contractor shall secure, defend, protect, hold harmless, and indemnify the City or Related Parties from and against any and all liability, loss, claims, demands, suits, costs, fees and expenses (including actual fees and expenses of attorneys, expert witnesses, and other consultants) relating to any taxes assessed or imposed upon, incurred by or asserted against the City and Related Parties by any taxing authority with respect to such taxes. The General Contractor shall cooperate with and assist the City in securing qualified refunds of any sales or use tax paid by the City or General Contractor on goods, products, materials, equipment or systems. Any refund secured shall be paid to the City.
- 15.12 **Compensation of General Contractor's Subcontractors and Suppliers.** Within seven days after receipt of amounts paid to the General Contractor by the City, for work performed by a subcontractor, the General Contractor shall take one of the following two actions: (i) pay the subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the subcontractor; or (ii) notify the City and the subcontractor, in writing, of the contractor's intention to withhold all or a part of the subcontractor's payment, specifying the factual basis and reason for the nonpayment. The General Contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment requirements with respect to each lower-tier subcontractor.
- 15.12.1 The City shall have no obligation to pay, and shall not be responsible for payments to the General Contractor's subcontractors or suppliers. However, the City reserves the right, but shall have no duty, to make payment jointly to the General Contractor and to any of its subcontractors or suppliers in the event that the City becomes aware that the General Contractor fails to pay or unreasonably withholds payment from one or more of those entities. Such joint check procedure, if utilized by the City, shall

create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the City to repeat the procedure in the future.

- 15.13 **Final Payment:** Prior to becoming entitled to receive final payment, and as a condition precedent thereto, the General Contractor must achieve Final Completion. The City shall, subject to its rights set forth in this Contract for Construction, make final payment of all sums due the General Contractor within fourteen (14) calendar days of the Professional's execution of a final approval for payment.

ARTICLE 16 SCHEDULE REQUIREMENTS

- 16.1 **Construction Schedule:** The General Contractor shall submit to the City and to the Professional a Construction Schedule, which shall include all pertinent dates and periods for timely completion of the Work.

16.1.1 Unless otherwise directed and approved by the City, the General Contractor shall prepare the Construction Schedule as a critical path schedule with separate divisions for each major portion of the Work or operations. The Construction Schedule shall include and properly coordinate dates for performance of all divisions of the Work, including completion of off-Site requirements and tasks, so that the Work can be completed in a timely and orderly fashion consistent with the required dates of Substantial Completion and Final Completion.

16.1.2 The Construction Schedule shall include

- (i) the required Commencement Date, and the required dates of Substantial Completion and Final Completion;
- (ii) any guideline and milestone dates required by the City;
- (iii) any applicable subcontractor and supplier sub-schedules;
- (iv) a submittal schedule which allows sufficient time for review of documents and submittals;
- (v) the complete sequence of construction by activity, with dates for beginning and completion of each element of construction; and,
- (vi) required decision dates;
- (vii) the critical path method (CPM) schedule shall be drawn or plotted with activities grouped or zoned by Work area or subcontract, as opposed to a random (or scattered) format. It shall be time-scaled on a weekly basis, and it shall be drawn or plotted at a level of detail and logic which will schedule all salient features of the Work, including not only the actual construction Work for each trade, but also the submission of shop drawings and other submittals for approval, approval of shop drawings by the Professional, placing of orders for materials, the manufacture and delivery of materials, the testing and installation of materials and equipment, and all Work activities to be performed. Failure to include any element of Work shall not excuse the General Contractor from completing all required Work within the time for completion established by the Contract Documents and any interim deadlines established therein. The General Contractor shall allow sufficient time in the CPM schedule for adverse weather anticipated and for the Professional to conduct whatever associated reviews or inspections as may be required under the Professional's contract with the City. If the Professional and the Contractor are unable to agree as to what constitutes sufficient time, the City shall determine the appropriate duration for such review or inspection activities.
- (viii) Each Work activity shall be assigned a time estimate by the General Contractor. One day shall be the smallest time unit utilized.
- (ix) The CPM schedule shall identify and describe each activity, state the duration of each activity, the calendar dates for the early and late start and the early and late finish of each activity, and shall clearly highlight all activities on the critical path. Total Float and free Float shall be

indicated for each activity. Float time shall not be considered for the exclusive use or benefit of either the City or the General Contractor, but must be allocated in the best interest of completing the Work within the time established by the Contract document. Extensions of the time for completion, when granted by Change Order, will be granted only when equitable time adjustment exceeds the total Float in the activity or path of activities affected by the change.

- (x) The CPM schedule shall also show what part of the Contract Price (expressed in U.S. dollars) is attributable to each activity on the schedule, the sum of which for all activities shall equal the total Contract Price.
 - (xi) The CPM schedule shall also show the planned workforce (crew size and number of crews) and the major pieces of equipment required for each activity on the schedule.
 - (xii) Acceptance of the schedule by the City does not indicate agreement with, nor any responsibility for, the proposed or actual duration of any activity shown on the accepted schedule. The General Contractor shall update the latest accepted CPM schedule as often as necessary to finish within the time for completion specified within the Contract Documents.
- 16.1.3 By reviewing the Construction Schedule, the City and the Professional do not assume any of the General Contractor's responsibility that the Construction Schedule be coordinated or complete, or for timely and orderly completion by the required dates of Substantial Completion and Final Completion, and any milestone dates required by the City, and review and acceptance of the Construction Schedule by the City and a Professional shall not relieve the General Contractor of any of its responsibilities established under this Contract.
- 16.1.4 The General Contractor shall review and compare, on a weekly basis, the actual status of the Work against the Construction Schedule. The General Contractor shall discuss, on a weekly basis, the status of the Work with the Professional.
- 16.1.5 The General Contractor shall periodically, but no less frequently than once per month prepare a revised Construction Schedule, showing actual progress of the Work through the revision date, projected completion of each remaining activity, activities modified since previous submittal, major changes in scope, and other identifiable changes. In addition, a revised Construction Schedule shall be prepared by the General Contractor whenever the General Contractor anticipates that performance of the Work will be delayed or in fact has been delayed. Each updated Construction Schedule shall be accompanied by a narrative report which: (i) states and explains any modifications of the critical path schedule, if any, including any changes in logic; (ii) defines problem areas and lists areas of anticipated delays; (iii) explains the anticipated impact the problems and delays will have on the schedule and scheduled activities; (iv) reports corrective action taken or proposed; and, (v) states how problems anticipated by projections shown on the schedule will be resolved to avoid delay in delivering the Work by the required dates of Substantial Completion and Final Completion, and any other milestone dates established by this Contract.
- 16.1.6. The General Contractor, in submitting its bid, acknowledges that it has taken into consideration normal weather conditions. In addition to the specified anticipated days of adverse weather noted elsewhere in the Contract Documents, the Contractor shall anticipate one day of adverse weather impact for each day of actual adverse weather during the months of January, February, March and December (“adverse weather impact days”). Upon commencement of on-site Work and continuing throughout construction, the General Contractor shall keep a daily record of weather conditions, and shall record the occurrence of actual adverse weather days and any resultant impact to normally scheduled work. To be counted as an adverse weather delay day, adverse weather must prevent work on critical activities for fifty percent (50%) or more of a scheduled work day. The General Contractor shall submit to the Professional a written adverse weather report for each calendar month, to be submitted to the Professional within five (5) calendar days following the last day of the reporting month being reported. Failure to submit the required written report within the time specified shall constitute a waiver by the General Contractor of any and all claims for delay due to adverse weather conditions occurring during the month for which the report was required to be submitted.

- 16.1.7 The General Contractor's critical path schedule must reflect anticipated adverse weather days, and adverse weather impact days, for all weather dependent activities.
- 16.1.8 The date established by the Contract Documents for Substantial Completion must be used in all schedules as the date on which Substantial Completion will be achieved. The General Contractor may plan for an early completion; however, extensions of time, damages for delay, and all other matters between the City and the Contractor will be determined using the contractually required Substantial Completion date, not an early Substantial Completion date planned by the General Contractor.
- 16.2 **Delay In Performance:** If at any time the General Contractor anticipates that performance of the Work will be delayed or in fact has been delayed, the General Contractor shall: (i) immediately notify the designated Professional of the probable cause of and effect from the delay, and possible alternatives to minimize the delay; and (ii) take all corrective actions reasonably necessary to deliver the Work by the required dates of Substantial Completion and Final Completion, and other milestone dates established by this Contract.
- 16.3 **Modifications To Time For Performance:** The General Contractor shall determine and promptly notify the City and the Professional(s) in writing when it believes adjustments to the required dates of Substantial Completion or Final Completion, or other milestone dates established by this Contract, are necessary. No such adjustments shall be effective unless approved in writing by the City and Professional(s).
- 16.3.1 If the General Contractor wishes to make a claim for an increase in the time for performance, written notice shall be given to the City and to the Professional. The General Contractor's claim shall include an estimate of cost and of probable effect of delay on progress of the Work.
- 16.3.2 If the total number of actual weather days, plus adverse weather impact days, exceeds the anticipated adverse weather days specified in the Contract Documents, then the excess days may be used as a basis to determine whether the General Contractor is entitled to a time extension. If adverse weather conditions are the basis for a claim for additional time, any claim for such extension shall be documented by data substantiating that weather conditions were abnormal for the period of time, and that the weather conditions could not have been reasonably anticipated and had an adverse effect on the scheduled construction (e.g., that adverse weather conditions persisted for a time period exceeding the Contract Allowance for adverse weather days, etc.). All of the evidence and data supporting the request (including both historical data and the recordings at the Site during the time of the delay) must be furnished to the City before any consideration will be given to a claim for an extension of time. Any claim for an extension of time under this paragraph must be supported by a delay in completion of the entire Project shown on the critical path of the accepted Schedule required by the Project. Extensions may be granted only for delays in completion of the Project, not for that portion of any delay that consumes only "float" time. A notice of claim for extension of time based on abnormal weather must be submitted to the City within the time specified in Paragraph 25.2 of these General Terms and Conditions; thereafter, the General Contractor shall have twenty-one (21) days from the last day of the calendar month in which the occurrence of bad weather that is the subject of the claim took place to submit all evidence and supporting data required by this paragraph. The provisions of this paragraph shall be read together with Paragraph 4 of the Special Terms and Conditions applicable to this contract, regarding the General Contractor's obligations to keep records and submit monthly reports tracking adverse weather conditions. For the purposes of compliance with Paragraph 25.2 of these General Conditions, a notice of claim based on adverse weather days received by the City within five (5) business days (i.e., Monday-Friday) of an adverse weather event occurrence shall be deemed submitted "at the time of occurrence" of that event.
- 16.4 **Early Completion:** General Contractor may attempt to achieve Substantial Completion on or before the required date of Substantial Completion. However, such planned early completion shall be for the General Contractor's sole convenience and shall not create any additional General Contractor rights or City obligations under this Contract For Construction, nor shall such early completion unilaterally change the required dates of Substantial Completion or Final Completion. The City shall not pay the General Contractor any additional compensation for achieving Substantial Completion or Final Completion prior to the required dates nor will the City owe the General Contractor any compensation, should the City cause the General Contractor not to achieve, or should the City decline to accept, Substantial Completion or Final Completion earlier than the dates established by this Contract.

- 16.5 **Modification Dates Of Substantial Completion Or Final Completion:** The General Contractor may propose modifications to the required dates of Substantial Completion or Final Completion. The City may (in its sole discretion), but is not required to accept General Contractor's proposal. Modification(s) of the required dates of Substantial Completion or Final Completion shall be accomplished only by duly authorized and accepted written change order(s) stating the new date(s) with specificity and reciting that all references in this Contract For Construction to the required dates of Substantial Completion or Final Completion shall thereafter refer to the date(s) as modified, and all rights and obligations, including the General Contractor's liability for actual damages, delay damages and liquidated damages, shall be determined in relation to the dates, as modified.
- 16.6 **Document Review:** The General Contractor shall provide documents to the City and the Professional for review in accordance with schedule requirements and with sufficient lead time to allow the City and the Professional reasonable time for review.
- 16.7 **Bar Graph Schedule:** For contracts with a price of \$100,000 or less, the City may elect to use of a Bar Graph Schedule, by notifying the Contractor, in writing, of that election (notice provided in bid documents or other contract documents, e.g. special conditions, shall suffice). Where a bar graph schedule is required, it shall be time-scaled in weekly increments, shall indicate the estimated starting and completion dates for each major element of the Work by trade and by area, level or zone, and shall schedule dates for all salient features, including but not limited to the placing of orders for materials, submission of shop drawings and other submittals for approval, approval of shop drawings by the Professional, the manufacture and delivery of material, the testing and installation of materials, supplies and equipment, and all Work activities to be performed by the Contractor. It shall be the General Contractor's sole responsibility to submit a schedule, and to keep the schedule updated, to provide for accomplishing Substantial Completion of the Work, and any interim deadlines, by the date(s) established within the Contract Documents. The General Contractor shall allow sufficient time in the schedule for adverse weather anticipated, and for the Professional to conduct whatever associated reviews or inspections as may be required under the Professional's contract with the City. If the Professional and the Contractor are unable to agree as to what constitutes sufficient time, the City shall determine the appropriate duration for such review or inspection activities.

ARTICLE 17 LIQUIDATED DAMAGES

- 17.1. **Time Is Of The Essence:** The parties hereto mutually understand and agree that time is of the essence in the performance of this Contract For Construction and that the City will incur damages if the General Contractor's scope of the Work is not completed in accordance with the required dates of Substantial Completion and Final Completion. The General Contractor shall at all times carry out its duties and responsibilities as expeditiously as possible and shall begin, perform and complete its services so that: (i) the Work progresses in accordance with the Construction Schedule; (ii) the Work is substantially completed by the required date of Substantial Completion; and (iii) the Work is finally complete by the date of Final Completion.
- 17.2 **Failure To Timely Achieve Completion:** The parties hereto mutually understand and agree that the City will sustain substantial monetary and other damages in the event of a failure or delay by the General Contractor in the completion of its scope of the Work. If the General Contractor inexcusably fails to achieve Substantial Completion by the date established by this Contract, then the General Contractor shall pay to the City, as liquidated damages for delay and not as a penalty, the daily amount specified in this Contract for Construction, for each and every day after the required date of Substantial Completion until actual Substantial Completion. This liquidated damages provision shall apply and remain in full force and effect in the event that General Contractor is terminated by City for default and shall apply until Substantial Completion has been achieved by any other contractor(s) hired to complete the Work. If the General Contractor inexcusably fails to achieve Final Completion by the required date of Final Completion established in this Contract, the General Contractor shall pay to the City, as liquidated damages for delay and not as a penalty, the daily amount specified in this Contract for Construction, for each and every day after the required date of Final Completion until actual Final Completion.
- 17.3 **Compensable or Excusable Delays:**
- (i) If the General Contractor is delayed at any time in the progress or performance of its scope of the Work by: (a) acts or omissions of the City ; (b) major changes ordered by the City in the Scope of Work; or (c) any other cause which the City determines may justify the compensation of the General Contractor

for the delay (individually and together referred to as “Compensable Delays”), then the General Contractor's compensation shall be equitably adjusted to cover the General Contractor's actual and direct increased costs attributable to such Compensable Delay.

- (ii) If the General Contractor is delayed at any time in the progress or performance of its scope of the Work by: (a) acts or omissions of the City; (b) major changes ordered by the City in the Scope of Work; (c) fire; (d) unusual delays in transportation; (v) adverse unusual weather conditions not reasonably anticipated by the General Contractor; (e) unavoidable casualties; (f) causes beyond the General Contractor's control which the City agrees in writing are justifiable; or (g) any other cause which the City determines may justify the delay (individually and together referred to as “Excusable Delay”), then the Construction Schedule shall be extended for a period equal to the length of such Excusable Delay, but only if:
 - (1) the General Contractor gives notice of its delay claim to the City within the time specified in Section 25.2 of these General Terms and Conditions. For the purposes of compliance with Paragraph 25.2 of these General Conditions, a notice of claim received by the City within five (5) business days (i.e., Monday-Friday) after the beginning of such Excusable Delay shall be deemed submitted “at the time of occurrence” of the qualifying event. Following submission of the required notice of claim, the General Contractor shall have twenty-one (21) days from the last day of the calendar month in which the occurrence of the event that forms the basis of the claim took place to submit all evidence and supporting data that may be required by the City.
 - (2) the delay is not in any way caused by default or collusion on the part of the General Contractor, or by any cause which the General Contractor could reasonably control or circumvent; and
 - (3) the General Contractor would have otherwise been able to timely perform all of its obligation under this Contract, but for such delay.
- (iii) Any delay which does not qualify as a Compensable Delay or Excusable Delay under this Contract shall be deemed and designated an “Unexcused Delay.”
- (iv) Delay caused by labor disputes, picketing, employee boycotts, or the like, which directly or indirectly involves employees of the General Contractor, or its subcontractors and suppliers, is not the responsibility of the City and will result in time extensions only if agreed to in writing by the City, at its sole discretion, at the time such events arise. The General Contractor shall notify the City in writing of any delay it attributes to labor disputes, picketing, employee boycotts, or the like, which directly or indirectly involves employees of the General Contractor, or its subcontractors and suppliers, immediately upon becoming aware thereof.

17.4 **City's Right To Withhold Payment:** When it reasonably believes (i) that Substantial Completion will be inexcusably delayed; or (ii) that the General Contractor will inexcusably fail to achieve Final Completion by the date of Final Completion, the City shall be entitled, but not required, to withhold from any amounts otherwise due the General Contractor the daily amount specified as and for liquidated damages for each calendar day of the unexcused delay. If and when the General Contractor overcomes the delay in timely achieving Substantial Completion or Final Completion, or any part thereof, for which the City has withheld payment, the City shall promptly release to the General Contractor those funds withheld, but no longer applicable, as liquidated damages.

ARTICLE 18 CONCEALED AND UNFORESEEN CONDITIONS

18.1 **Notification Regarding Unusual Conditions:** If (i) the General Contractor encounters concealed or unforeseen conditions, of an unusual nature, which may affect the performance of the Scope of Work; or (ii) the site conditions encountered vary from those indicated by the Construction Documents; and, (iii) such conditions are not ordinarily found to exist or differ materially from those generally recognized as inherent in work of the character provided by the General Contractor, the General Contractor shall promptly, but in no event later than three (3) business days (i.e., Monday-Friday) after first encountering such conditions, notify the Professional and the City before conditions are disturbed, to give the Professional and the City an opportunity to observe the

condition in its undisturbed state. The General Contractor may also choose to designate this notice as a notice of claim pursuant to Paragraph 25.2 of these General Conditions.

18.1.1 The conditions will be promptly investigated and, if they differ substantially and cause a material increase or decrease in the General Contractor's cost of, or time required for, performance of its scope of the Work, the General Contractor's compensation or time for performance or both will be equitably adjusted.

18.1.2 Following receipt of the General Contractor's Notice any adjustments agreed to by the City with respect to the General Contractor's compensation or extensions of time attributable to unforeseen site conditions must be made by change order. Within fourteen (14) calendar days after the City notifies the General Contractor of the results of its investigation pursuant to Paragraph 18.1.1, the General Contractor shall (i) submit a proposed change order request (if the City has determined that an equitable adjustment should be granted) or (ii) submit evidence and supporting documentation in support of any claim that the General Contractor may wish to pursue arising out of the circumstances that formed the basis of the notice given by the General Contractor pursuant to Paragraph 18.1.

18.1.3 The General Contractor's failure to notify the Professional and City as required by this Article shall constitute a waiver of any claims, of any nature whatsoever, arising out of or relating to such concealed or unknown condition.

ARTICLE 19 GENERAL CONTRACTOR'S RECORDS

19.1 **Preparation Of Records:** The General Contractor shall, concurrently with performance of its services, prepare written records substantiating and documenting all services rendered, construction performed and all goods furnished.

19.2 **Retention Of Records:** Except as otherwise specifically provided in this Construction Contract, the General Contractor shall keep and retain records performing to this Project, including, without limitation, copies of all specifications, submittals, correspondence, minutes, memoranda, tape recordings, videos, accounting records, documents reflecting the unit price of construction and other writings, electronic messages, transmissions or recordings, and other items which document the Project, its design, and its construction. The General Contractor shall maintain all such records for a period of five (5) years after the date of Final Completion, or for any longer period of time as may be required by law or good construction practice. If the General Contractor receives notification of a dispute or the commencement of litigation regarding the Project within this five (5) year period, the General Contractor shall continue to maintain all Project records until final resolution of the dispute or litigation.

19.3 **Access To Records:** Upon the request of the City, the General Contractor shall make its records available to the City (including, without limitation, the City's authorized or designated representatives), and to the representatives or agents of any state, federal or other regulatory authority requesting such records, during normal business hours. The City, as well as any state, federal or other regulatory authority, shall have the right to inspect, examine, review and copy the General Contractor's records at the copying party's reasonable expense. Failure by the General Contractor to keep or provide access to records required by this Contract shall be reason to exclude the related costs from amounts which might otherwise be payable by the City to the General Contractor under this Contract.

ARTICLE 20 PROPRIETARY DOCUMENTS AND CONFIDENTIALITY

20.1 **Nature And Use Of Information:** All information, documents, and electronic media furnished by the City to the General Contractor (i) belong to the City; (ii) are proprietary records of the city; (iii) are furnished solely for use on the Project; (iv) shall be kept confidential by the General Contractor; and (v) shall not be used by the General Contractor on any other project or in connection with any other person or entity, unless disclosure or use thereof in connection with any matter other than services rendered to the City hereunder is specifically authorized in writing by the City in advance. The City hereby grants to the General Contractor a limited license to use and reproduce applicable portions of the Construction Documents necessary for execution of the Scope of Work. All copies made under this license shall bear the statutory copyright notice, if any, shown on the documents.

- 20.2 **City Ownership Of Information:** All information, documents, and electronic media prepared by or on behalf of the General Contractor for the Project shall be and remain the sole property of the City free of any retention rights of the General Contractor. The General Contractor hereby grants to the City an unconditional right to use, for any purpose whatsoever, any information, documents or electronic media prepared by or on behalf of the General Contractor for the Project, free of any copyright claims, trade secret rights or other proprietary rights with respect to such documents.
- 20.3 **Disclosure Of Information:** The General Contractor shall not disclose any information it receives from the City to any other person or entity except to the extent necessary to allow it to perform its duties under this Contract For Construction.
- 20.4 **Instructions To Employees:** Because it is difficult to separate proprietary and confidential information from that which is not, the General Contractor shall instruct its employees and agents to regard all information which is not in the public domain as proprietary and confidential.
- 20.5 **Non-Publication:** Submission or distribution of documents to meet official regulatory requirements or for other required purposes in connection with the Project is not to be construed as publication in derogation of the City's common law copyrights or other reserved rights.

ARTICLE 21 GENERAL INSURANCE REQUIREMENTS

- 21.1 **General Insurance Requirements:** Unless otherwise required, each Required Insurance policy:
- (i) shall be issued by an insurance carrier authorized to do business within the Commonwealth of Virginia and rated A – VIII or better by A. M. Best Company or equivalent rating from an alternate recognized ratings agency, and otherwise acceptable to the City;
 - (ii) shall be kept in force throughout performance of the General Contractor's services;
 - (iii) shall be an occurrence policy;
 - (iv) shall include completed operations insurance;
 - (v) shall contain a cross liability or severability of interest clause or endorsement. Insurance covering the specified additional insured shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance;
 - (vi) where additional insured required, such policy shall not have a restriction on the limits of coverage provided to the City as an additional insured. The City shall be entitled to protection up to the full limits of the Contractor's policy regardless of the minimum requirements specified in the Contract.
- Each insurance policy required by this Agreement shall be endorsed to include the following clauses ("Required Endorsements"):
- (i) Should any of the insurance policies be canceled before the expiration date thereof, the issuing insurance company will endeavor to mail written notice of such cancellation to the City at least 30 days in advance; and
 - (ii) The City of Charlottesville, its officers, agents, employees, representatives and volunteers are added as additional insureds as respects the operations and activities of (or on behalf of) the named insured, performed under contract with the City of Charlottesville.
- 21.2 **Proof Of Insurance:** Prior to performance of any services on the Project, the General Contractor shall (i) have all required insurance coverage in effect; and (ii) deliver to the City certificates of insurance for all lines of coverage which provides that the coverage evidenced thereby shall not be substantially modified or canceled without 30 days prior written notice to the City; and (iii) deliver to the City endorsements to the policies which

require the City and its officials, officers, and employees and agents be named as “additional insured”. Policies which require this endorsement include:

Commercial General Liability and Auto Liability coverage (if required by contract).

Such endorsements must be approved by the City, acceptable endorsements include ISO forms CG 20 10 10 01 and CG 20 26 07 04, among others; and (iv) upon the request of the City, provide any other documentation satisfactory to the City in its sole discretion, evidencing the required insurance coverage, including but not limited to a copy of the insurance policy and evidence of payment of policy premiums. The General Contractor shall require each of its subcontractors and suppliers to have coverage per the requirements herein in effect, prior to the performance of any services by such subcontractors and suppliers. Further, the General Contractor shall ensure that all Required Insurance coverages of its subcontractors and suppliers is and remains in effect during performance of their services on the Project and certifies by commencement of the Work that his insurance and that of subcontractors is in effect and meets the requirements set forth herein. The City shall have no responsibility to verify compliance by the General Contractor or its subcontractors and suppliers.

- 21.3 **Effect Of Insurance:** Compliance with insurance requirements shall not relieve the General Contractor of any responsibility to indemnify the City for any liability to the City, as specified in any other provision of this Contract For Construction, and the City shall be entitled to pursue any remedy in law or equity if the General Contractor fails to comply with the contractual provisions of this Contract For Construction. Indemnity obligations specified elsewhere in this Contract shall not be negated or reduced by virtue of any insurance carrier's denial of insurance coverage for the occurrence or event which is the subject matter of the claim, or by any insurance carrier's refusal to defend any named insured.
- 21.4 **Waiver Of Subrogation:** The General Contractor hereby releases and discharges the City of and from all liability to the General Contractor, and to anyone claiming by, through or under the General Contractor, by subrogation or otherwise, on account of any loss or damage to tools, machinery, equipment or other property, however caused.

ARTICLE 22 GENERAL BOND REQUIREMENTS

- 22.1 **General Bond Requirements:** The General Contractor shall be required to provide performance and payment bonds, and the penal sum of each bond shall be in an amount not less than the Contract Price, as adjusted by any change order(s). Each bond shall:
- (i) be in a form approved by the City and the City Attorney, be made payable to the City, and be filed with the City;
 - (ii) incorporate by reference the terms of this Contract For Construction;
 - (iii) be executed by a company certified by the Secretary of the United States Department of Treasury pursuant to the Act of July 30, 1947 (61 Stat. 646, as amended; 6 U.S.C. 6-13);
 - (iv) be executed by a company licensed and authorized to do business in the Commonwealth of Virginia;
 - (v) be accompanied by a power of attorney certifying that the person(s) executing the bond have the authority to do so;
 - (vi) be, in the case of a performance bond, conditioned upon the faithful performance of the contract in strict conformity with the plans, specifications and conditions of the contract;
 - (vi) be, in the case of a payment bond, for the protection of claimants who have and fulfill contracts to supply labor or materials to the General Contractor, or to any subcontractors, in the prosecution of the Work which is the subject of this Contract for Construction;
 - (vii) be, in the case of a payment bond, conditioned upon the prompt payment for all labor or materials supplied to the General Contractor, or to any subcontractors, in the prosecution of the Work which is the subject of this Contract for Construction.

22.2 **Delivery Of Bonds:** The General Contractor shall deliver any required bond(s) and power(s) of attorney to the City prior to commencement of the Work.

22.3. **Subcontractor Bonds.** Nothing in this Article shall preclude the General Contractor from requiring each subcontractor to furnish a payment bond with surety thereon in the sum of the full amount of the subcontract conditioned upon the payment to all persons who have and fulfill contracts which are directly with the subcontractor for performing labor or furnishing materials as required by the subcontract.

ARTICLE 23 CITY'S RIGHT TO STOP WORK

23.1 **Cease And Desist Order:** If the General Contractor fails to perform, refuses to perform, or fails to correct defective Work as required, or if the General Contractor persistently fails to carry out the Work in accordance with the Contract, the City may, by written notice, order the General Contractor to cease and desist performing the Work until the cause for the order has been eliminated to the satisfaction of the City. Upon receipt of such instruction, the General Contractor shall immediately cease and desist as instructed by the City and shall not proceed further until the cause for the City's order has been corrected, until the cause no longer exists, or until the City instructs the General Contractor in writing to resume performance of the Work.

23.1.1 The General Contractor shall not be entitled to an adjustment in the time for performance, or the Contract Price, as a result of any order to cease and desist, because any such stoppage is considered to be the fault of the General Contractor.

23.1.2 The right of the City to stop the Work shall not give rise to a duty on the part of the City to exercise this right for the benefit of the General Contractor or any other individual or entity.

23.1.3 In the event the City issues instructions to cease and desist, and in the further event that the General Contractor fails and refuses within seven (7) calendar days to provide adequate assurance to the City that the cause of such instructions will be eliminated or corrected, then the City shall have the right, but not the obligation, to carry out the Work or any portion of the Work with its own forces, or with the forces of another contractor, and the General Contractor shall be responsible for the cost incurred by the City to carry out the Work.

23.1.4 The rights set forth herein are in addition to, and without prejudice to, any other rights or remedies the City may have against the General Contractor.

ARTICLE 24 TERMINATION OR SUSPENSION OF CONTRACT FOR CONSTRUCTION

24.1 **Termination For Cause By City:**

24.1.1 The City may terminate this Contract For Construction for cause if the General Contractor breaches this Contract For Construction, through any act or omission, by:

- (i) refusing, failing, or being unable to properly manage or perform the Work required for the Project;
- (ii) refusing, failing or being unable to maintain applicable schedules, or to supply the Project with sufficient numbers of workers, properly skilled workers, or proper materials;
- (iii) refusing, failing or being unable to make prompt payment to subcontractors or suppliers;
- (iv) disregarding laws, ordinances, rules, regulations or orders of any public authority or quasi-public authority having jurisdiction over the Site, the Work or the Project;
- (v) refusing, failing or being unable to substantially perform in accordance with the terms of this Contract For Construction (including, without limitation, failure to comply with any required insurance provisions), or as otherwise defined elsewhere herein.

(vi) Each of the foregoing items shall be deemed a material breach and default of this Contract.

24.1.2 Upon the occurrence of any of the events described in Paragraph 24.1.1, the City may give notice to the General Contractor setting forth the nature of the default, requesting cure within seven (7) calendar days from the date of notice, and notifying the General Contractor that failure to cure within the 7 day period shall entitle the City to immediately terminate the Contract. At any time thereafter, if the General Contractor fails to initiate the cure and continue to cure the default, the City, without prejudice to any other rights or remedies, may take any or all of the following actions:

- (i) complete all or any part of the General Contractor's scope of the Work, including supplying workers, material and equipment which the City deems expedient to complete the General Contractor's scope of the Work;
- (ii) contract with other builder(s) to complete all or any part of the General Contractor's scope of the Work, including supplying workers, material and equipment which the City deems expedient to complete the General Contractor's work;
- (iii) take such other action as is necessary to correct such failure; and,
- (iv) give notice to the General Contractor of immediate termination.

24.1.3 If the City terminates this Contract for cause, the City may also, without prejudice to any other rights and remedies:

- (i) take possession of all materials, tools, construction equipment and machinery on the Site owned or leased by the General Contractor;
- (ii) directly pay the General Contractor's subcontractors and suppliers any compensation due to them from the General Contractor;
- (iii) finish the General Contractor's Work by whatever means the City may deem expedient; and,
- (iv) require the General Contractor to assign the General Contractor's right, title and interest in General Contractor's subcontracts or orders to the City.

24.1.4 If the City terminates this Contract for cause and takes possession of materials, tools, construction equipment and machinery on the Site owned or leased by the General Contractor, then the General Contractor's compensation shall be increased by fair payment, either by purchase or rental at the election of the City, for any materials, tools, construction equipment and machinery items retained, subject to the City's right to recover from the General Contractor its damages resulting from the termination of the Contract.

24.1.5 If the City terminates this Contract for cause and a court of competent jurisdiction subsequently determines the termination was without cause, then said termination shall be deemed a termination for convenience as set forth in Paragraph 24.3.

24.2 Termination For Cause By General Contractor:

24.2.1 The General Contractor may terminate this Contract For Construction for cause if the City materially breaches this Contract For Construction by:

- (i) refusing, failing or being unable to make payment to the General Contractor in accordance with the requirements of this Construction Contract, without just cause;
- (ii) disregarding laws, ordinances, rules, regulations or orders of any Public authority or quasi-public authority having jurisdiction over any Project;

- (iii) refusing, failing or being unable to substantially perform in accordance with the terms of this Contract For Construction.

24.2.2 Upon the occurrence of any of the events described in Paragraph 24.2.1, the General Contractor may give notice to the City setting forth the nature of the default and requesting cure within seven (7) calendar days from the date of notice. If the City fails to cure the default within seven (7) calendar days, the General Contractor, without prejudice to any rights or remedies, may give notice to the City of immediate termination.

24.3 **Termination For Convenience:** The City may terminate this Contract for Construction, at any time, for its convenience, upon thirty days' advance written notice to the General Contractor. In the event of such termination the Contractor shall be compensated for services and work performed prior to the effective date of termination.

24.3.1 Upon receipt of written notice from the City of a termination for the City's convenience, the General Contractor shall cease operations as directed by the City in the notice; take any actions necessary, or any actions that the City may direct, for the protection and preservation of the Work; and, except for Work directed to be performed prior to the effective date of termination, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders. In case of a termination for the City's convenience, the General Contractor shall be entitled to receive payment for Work executed in accordance with the Contract Documents prior to the effective termination date, in accordance with the approved Schedule of Values and Certificate(s) of Payment, and the General Contractor shall also be entitled to receive reasonable compensation for the actual cost of demobilization incurred by the Contractor as a direct result of such termination. The General Contractor shall not be entitled to compensation or damages for lost profits, or for any other type of contractual compensation or damages other than those provided by the preceding sentence. Upon payment of the amounts specified in this paragraph, the City shall have no further obligations to the General Contractor, of any nature whatsoever. In no event shall a termination for the convenience of the City terminate the obligations of the Contractor's surety on its payment or performance bond(s).

24.4 **General Contractor's Compensation When General Contractor Terminates For Cause:** If this Contract For Construction is terminated by the General Contractor pursuant to Paragraph 24.2 then the City shall pay the General Contractor specified amounts due for Work actually performed prior to the effective termination date. In addition, unless otherwise expressly agreed by the City and the General Contractor in writing, then the City shall pay the following additional amounts to the General Contractor:

- (i) reasonable direct costs incurred by the General Contractor in preparation for performance of the terminated portion of its scope of Work, plus a fair and reasonable allowance for costs incurred by the General Contractor in the process of effectuating the termination, and a fair and reasonable allowance for costs of overhead incurred by the General Contractor specifically in contemplation of its performance of the terminated portion of its scope of Work.
- (ii) reasonable costs of settling and paying claims arising out of the termination of subcontracts or supplier orders. These costs shall not include amounts paid in accordance with other provisions hereof.

24.5 **General Contractor's Compensation When City Terminates For Cause:** If this Contract For Construction is terminated by the City for cause, no further payment shall be made to the General Contractor until Final Completion of the Project. Upon Final Completion the General Contractor shall be paid the remainder of the Contract Price less all costs and damages incurred by the City as a result of the default of the General Contractor, including liquidated damages applicable thereto.

24.6 **Limitation On Termination Compensation:** Regardless of the reason for termination or the party terminating, the total sum paid to the General Contractor shall not exceed the Contract Price, as properly adjusted and reduced by the amount of payments previously made and any penalties or deductions incurred pursuant to any other provision of this Contract, and shall in no event include any duplication of payment(s).

24.7 **General Contractor's Responsibility Upon Termination:** Regardless of the reason for termination or the party terminating, if this Contract For Construction is terminated, the General Contractor shall, unless notified otherwise by the City,

- (i) immediately stop work;
- (ii) reduce its staff, services and outstanding Commitments in order to minimize the cost of termination;
- (iii) terminate outstanding orders and subcontracts;
- (iv) settle the liabilities and claims arising out of the termination of subcontracts and orders; and,
- (v) transfer title and deliver to the City such completed or partially completed Work, and, if paid for by the City, materials, equipment, parts, fixtures, information and such contract rights as the General Contractor has.

24.8 **Lack Of Duty To Terminate:** The right to terminate or suspend the Work shall not give rise to a duty on the part of either the City or the General Contractor to exercise that right for the benefit of the City, General Contractor or any other persons or entities.

24.9 **Limitation On Termination Claim:** If the General Contractor fails to file a claim within sixty (60) days from the effective date of termination, the City shall not be obligated to pay the General Contractor any amount other than that owed to the General Contractor for services actually performed and expenses actually incurred prior to the effective termination date.

24.10. **Availability and Appropriation of Funds.** Payment and performance obligations of the City, beyond those appropriated in the initial fiscal year of this Contract, are expressly conditioned upon the availability of and appropriation by the City of public funds therefor in each subsequent fiscal year. When public funds are not appropriated or are otherwise unavailable to support continuation of performance by the City in a subsequent fiscal period, this contract and the City’s obligations hereunder shall automatically expire, without liability or penalty to the City.

ARTICLE 25 APPLICABLE LAW AND DISPUTE RESOLUTION

25.1 **Applicable State Law:** This Contract For Construction shall be deemed to be entered into in the Commonwealth of Virginia and the City of Charlottesville, Virginia. The Contract shall, in all aspects, be governed by and interpreted under the laws of the Commonwealth of Virginia.

- (i) as required by Va. Code §2.2-4311, during performance of this contract, the General Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, sexual orientation, 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 General Contractor. The General Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. The General Contractor, in all solicitations or advertisements for employees placed by or on behalf of the General Contractor, shall state that such General Contractor is an equal opportunity employer. Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirement of this section. The General Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order of over \$10,000 so that the provisions will be binding upon each subcontractor or vendor.
- (ii) as required by Va. Code §2.2-4312, during performance of this contract, the General Contractor shall (i) provide a drug-free workplace for its 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; and (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. For the purposes of this paragraph, “drug-free workplace” means a site for the performance of work done in connection with the contract awarded to the Contractor in accordance with this procurement transaction, where the

Contractor's employees are prohibited from engaging in the unlawful manufacture, sale distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of services in connection with the contract.

- 25.2 **Contract Claims, Submission to City.** Contractual claims, whether for money or other relief, shall be submitted to the City in writing no later than sixty (60) days after final payment; however, written notice of the General Contractor's intention to file any such claim shall have been given by the General Contractor to the City at the time of the occurrence or beginning of the work upon which the claim is based. Nothing herein shall preclude the City from requiring submission of an invoice for final payment within a certain time after completion and acceptance of the Work. Pendency of claims shall not delay payment of any amounts agreed by the parties to be due in the final payment.
- 25.3 **Administrative Appeals to City.** The City has established an administrative appeals process for resolution of the following types of claims: protests of a decision to award a contract; award of a contract; appeals from refusals to allow a withdrawal of bids; appeals from disqualifications of bidders (including, without limitation, refusals to pre-qualify bidders and decisions to debar a contractor); appeals from determinations of non-responsibility; and appeals from decisions on disputes arising during the performance of a contract. The established procedure is as follows:
- 25.3.1 All administrative appeals shall be directed to the City's Director of Finance within ten (10) days of the time the bidder or contractor knows or should have known of the matter being disputed, protested or appealed, except that (i) appeals from disqualifications (e.g., refusal to pre-qualify, decision to debar) may be filed within thirty (30) days of the receipt of notice of the action taken, and (ii) appeals from decisions on disputes arising during the performance of a contract may be initiated at any time within six (6) months of the final decision on the claim. The appeal shall be in writing, and shall set forth in detail the factual circumstances forming the basis for the appeal.
- 25.3.2 The Director of Finance, or his/her designee, shall conduct an investigation and shall render a written decision within ten (10) days of receiving an appeal. In the course of investigation the Director of Finance may request additional written details, may request meetings of the parties involved, and may schedule a hearing at which the parties involved shall appear in person and present further information. No such hearing shall affect any bidder or contractor's right to request a hearing before the City's Administrative Appeals Board if the bidder or contractor is not satisfied with the ultimate decision of the Director of Finance.
- 25.3.3 Within five (5) days of receipt of the decision of the City's Director of Finance, a bidder or contractor may contact the City Attorney, in writing, to request a hearing before the City's Administrative Appeals Board. The written request for a hearing shall clearly identify the decision being appealed and shall clearly set forth the factual circumstances forming the basis for the appeal. A hearing before the Administrative Appeals Board shall be scheduled to be held either within ten (10) days following the receipt by the City Attorney's Office of the written request for an appeal, or as soon thereafter as the schedules of the members of the Administrative Appeals Board reasonably permit.
- (i) A hearing before the Administrative Appeals Board shall be conducted in accordance with the Virginia Freedom of Information Act, i.e., unless allowed by law to be closed, hearings before the Administrative Appeals Board shall be conducted as public meetings.
 - (ii) Any party to the appeal (i.e., either the bidder/contractor or the City, or both) may be represented by an attorney. Each party shall be provided a reasonable period of time in which to state its position and to present pertinent information. Each party shall be entitled to present witnesses in support of its position, and to cross-examine any witnesses called by the other party. Nevertheless, the hearing shall be conducted as an informal proceeding rather than a judicial-type trial. Although formal, legal rules of evidence shall not apply, the Board shall be free to limit or exclude evidence it deems to be irrelevant or redundant, as well as to limit testimony and argument, as may be necessary to reasonably expedite the appeal proceedings.
 - (iii) Following the hearing, the Board shall issue a written decision on the appeal, containing its findings of fact and its conclusions, within thirty (30) days after the conclusion of the hearing. The Board's findings of fact shall be final and conclusive and shall not be set aside unless they

are fraudulent, arbitrary or capricious; so grossly erroneous as to imply bad faith; or in the case of a denial of pre-qualification, if the findings were not based upon the criteria for denial of pre-qualification.

- (iv) Any party to the administrative procedure, including the City, shall be entitled to institute judicial review of the Board's decision, if such action is brought within thirty (30) days of receipt of the written decision. Any such legal action shall be subject to the applicable provisions of the Virginia Code, Title 11, Chapter 7, Article 3.

25.4. **Court Actions:** Except as expressly prohibited by law:

- (i) all legal actions hereunder shall be litigated and prosecuted only in the state or federal court districts located in Charlottesville, Virginia, and only in such courts which have subject matter jurisdiction with respect to the matter in controversy. Notwithstanding the foregoing, any final judgment may be enforced in other jurisdictions in any manner provided by law;
- (ii) the choice of jurisdiction and venue described in the preceding paragraph shall be mandatory and not permissive in nature, thereby precluding the possibility of litigation or trial in any jurisdiction or venue other than that specified herein;
- (iii) the parties waive any right to assert the doctrine of forum *non conveniens* or to object to venue; and,
- (iv) the parties waive any right to a jury trial, and agree that all legal actions shall be tried, both as to factual and legal issues, only to the Court.

25.5 **Mutual Discussion:** In case of any dispute, claim, question or disagreement arising from or relating to the Project or arising out of this Contract For Construction or the breach thereof, the parties shall first attempt resolution through mutual discussion.

25.6 **Arbitration Preclusion:** In case of a dispute relating to the Project, or arising out of this Contract For Construction, no party to this Contract For Construction shall be required to participate in or be bound by, any arbitration proceedings.

ARTICLE 26 DAMAGES AND REMEDIES

26.1 **General Contractor's Repair:** The General Contractor shall, at its expense, promptly correct, repair, or replace all goods, products, materials, systems, labor and services which do not comply with the warranties and guarantees set forth in this Contract For Construction, or any other applicable warranty or guarantee.

26.2 **General Contractor's Reimbursement:** The General Contractor shall promptly reimburse the City for any expenses or damages incurred by the City as a result of (i) the General Contractor's failure to substantially perform in accordance with the terms of this Contract For Construction; (ii) deficiencies or conflicts in the Construction Documents attributable to the General Contractor or of which the General Contractor was or should have been aware; (iii) breach of the warranties and guarantees set forth in this Contract For Construction or any other applicable warranty or guarantee; or (iv) other acts or omissions of the General Contractor.

26.3 **General Indemnity:** To the fullest extent permitted by law the General Contractor shall secure, defend, protect, hold harmless, and indemnify the City from and against any and all liability, loss, claims, demands, suits, costs, fees and expenses (including actual fees and expenses of attorneys, expert witnesses, and other consultants), by whomsoever brought or alleged, and regardless of the legal theories upon which premised, including, but not limited to, those actually or allegedly arising out of bodily injury to, or sickness or death of, any person, or property damage or destruction (including loss of use), which may be imposed upon, incurred by or asserted against the City allegedly or actually arising out of or resulting from the General Contractor's services, including without limitation, any breach of contract or negligent act or omission (i) of the General Contractor; or (ii) of the General Contractor's subcontractors or suppliers, or (iii) of the agents, employees or servants of the General Contractor or its subcontractors or suppliers.

- 26.3.1 To the fullest extent permitted by the law of the Commonwealth of Virginia, the General Contractor, for itself and for its subcontractors and suppliers, and the respective agents, employees and servants of each, expressly waives any and all immunity or damage limitation provisions available to any agent, employee or servant under any workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts, to the extent such statutory or case law would otherwise limit the amount recoverable by the City or the City's Related Parties pursuant to the indemnification provision contained in the paragraph above.
- 26.4 **Royalties, Patents and Copyrights:** The General Contractor shall pay all royalties and license fees. To the fullest extent permitted by law, the General Contractor shall defend, protect, hold harmless, and indemnify the City from and against any and all liability, loss, claims, demands, suits, costs, fees and expenses (including actual fees and expenses of attorneys, expert witnesses, and other consultants), by whomsoever brought or alleged, for infringement of patent rights, copyrights, or other intellectual property rights. The General Contractor shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer is expressly required by the Contract Documents or where the copyright or patent violation(s) are contained in drawings, specifications or other documents prepared by the owner or Professional. However, if the General Contractor has reason to believe that a required design, process or product is an infringement of a copyright or patent, the General Contractor shall be responsible for such loss unless such information is promptly given to the City.
- 26.5 **Non-Exclusivity Of City's Remedies:** The City's selection of any one or more remedies allowed by this Contract for breach hereof shall not limit the City's right to invoke any other remedy available to the City at law or by virtue of any other provision of this Contract.
- 26.6 **Waiver Of Damages:** The General Contractor shall not be entitled to, and hereby waives any monetary claims and damages, of any nature whatsoever, arising from or related to any of the following: lost income, lost profits, lost financing, loss of reputation, lost business opportunities, loss of management or employee productivity or of the services of such persons; unabsorbed overhead, and principal office expenses (including, without limitation, the compensation of personnel stationed there, for losses of financing, business and reputation and for loss of profit). Nothing contained in this paragraph shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.
- 26.7 **Interest:** The City is entitled to interest on all amounts due from the General Contractor that remain unpaid thirty (30) days after the amount is deemed due, whether as a result of a resolution of a dispute or otherwise. Such interest shall be calculated and shall accrue at a rate of one percent (1%) per month.

ARTICLE 27 ADA COMPLIANCE AND NON-VISUAL ACCESS TO DOCUMENTS

- 27.1 **Americans With Disabilities Act Compliance:** If the City requests a formal report or work product, the Contractor is required to deliver the report to comply with the Americans with Disabilities Act (ADA) and, as may be applicable, the Rehabilitation Act of 1973. The formal report shall be provided in a .PDF; HTML or other text-based format in which optical character recognition is provided, and in which any photographs, images, diagrams, maps, etc. are marked by adequate "alt tags" and "long description tags," to the end that the contents of the report will be readable by a screen reader for the sight impaired.
- 27.2 **Section 508 Compliance:** All information technology which, pursuant to this Contract, is purchased or upgraded by or for the use of the City of Charlottesville (the "City") shall comply with Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended. If requested, the Contractor must provide a detailed explanation of how compliance with Section 508 of the Rehabilitation Act is achieved and a validation of concept demonstration. The requirements of this paragraph along with the Non-Visual Access to Technology Clause shall be construed to achieve full compliance with the Information Technology Act, §2.2-3500 through 2.2-3504 of the Code of Virginia.
- 27.3 **Non-Visual Access To Technology:** All information technology which, pursuant to this Contract, is purchased or upgraded by or for the use of the City of Charlottesville shall comply with the following nonvisual access standards from the date of purchase or upgrade until the expiration of this Contract:

- i. Effective, interactive control and use of the Technology shall be readily achievable by non visual means;
- ii. The Technology equipped for nonvisual access shall be compatible with information technology used by other individuals with whom any blind or visually impaired user of the Technology interacts;
- iii. Nonvisual access technology shall be integrated into any networks used to share communications among employees, program participants or the public; and
- iv. The technology for nonvisual access shall have the capability of providing equivalent access by nonvisual means to telecommunications or other interconnected network services used by persons who are not blind or visually impaired.

Compliance with the forgoing nonvisual access standards shall not be required if the City determines that (i) the Technology is not available with nonvisual access because the essential elements of the Technology are visual and (ii) nonvisual equivalence is not available, or (iii) exclusion of the technology access clause is otherwise justified in accordance with applicable laws.

Installation of hardware, software, or peripheral devices used for nonvisual access is not required when the Technology is being used exclusively by individuals who are not blind or visually impaired, but applications programs and underlying operating systems (including the format of the data) used for the manipulation and presentation of information shall permit the installation and effective use of nonvisual access software and peripheral devices.

If requested, the Contractor must provide a detailed explanation of how compliance with the forgoing nonvisual access standards is achieved and a validation of concept demonstration.

The requirements of this Paragraph shall be construed to achieve full compliance with the Information Technology Access Act, 2.2-3500 through 2.2-3504 of the Code of Virginia.

IV.

SPECIAL TERMS AND CONDITIONS FOR CONSTRUCTION CONTRACTS

- A. **ANTITRUST**: By entering into a contract, the contractor conveys, sells, assigns, and transfers to the City of Charlottesville 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 Charlottesville under said contract.
- B. **APPLICABLE LAWS & COURTS**: This procurement transaction, and any resulting contract, shall in all aspects be governed by the laws of the Commonwealth of Virginia, notwithstanding conflicts of laws provisions and any litigation with respect thereto shall be brought in the courts of the Commonwealth. The City and the contractor are encouraged to resolve any issues in controversy arising from the award of the contract or any contractual dispute using. The contractor shall comply with all applicable federal, state and local laws, rules and regulations.
- C. **ASSIGNMENT OF CONTRACT**: A contract shall not be assignable by the contractor in whole or in part without the written consent of the City.
- D. **BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION**: The City's SAP electronic solution offers vendor self-service registration. Vendors are not required to register prior to bidding, however, purchase orders cannot be issued and payment to vendors cannot be processed to a non registered vendor. Go to www.charlottesville.org/purchasing to register. Complete instructions are included on the vendor registration page.
- E. **DEBARMENT STATUS**: By submitting their bids, bidders certify that they are not currently debarred by the Commonwealth of Virginia 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. **ETHICS IN PUBLIC CONTRACTING**: Per *Code of Virginia, 2.2-4367*: By submitting a bid, the bidder certifies that their bid is made without collusion of fraud and that they have not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer or subcontractor in connection with their bid, 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.
- G. **INSURANCE**: By signing and submitting a bid under this solicitation, the bidder certifies that if awarded the contract, it will have the following insurance coverage at the time the contract is awarded. All insurance coverage will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission.

Worker's Compensation, Disability Benefit, or similar employee benefit act coverage, and Employer's Liability Insurance for the Contractor's employees engaged in the Work under this Contract, in accordance with statutory requirements of the Commonwealth of Virginia. All Contractor's employees engaged in Work under this contract shall be covered under this insurance, regardless of any waiver or exclusion allowed by law. The Contractor shall require each of his subcontractors to provide Worker's Compensation and Employer's Liability Insurance for all of the Subcontractor's employees engaged on such subcontracts. The amount of Employer's Liability Insurance for the Contractor and each of his Subcontractors shall be not less than:

\$100,000 per employee for Bodily Injury.
 \$100,000 per employee for disease
 \$500,000 per policy for disease

The Worker's Compensation shall specifically include coverage in the state of Virginia, and the Employer's Liability Insurance policy shall include coverage for "all states" or "other states"

Commercial General Liability Insurance – Policy shall cover claims for Bodily Injury, Property Damage, Personal and Advertising Injury, Products and Completed Operations, which may arise from operations under the Contract, whether such operations be performed by the Contractor or by any Subcontractor or Independent Contractor, or by anyone directly or indirectly employed by any of them. Such insurance shall include Contractual Liability Insurance covering the requirements outlined in the General Conditions. **This insurance shall name the City and its officials, officers, and employees and agents as “additional insureds” by endorsement to the Commercial General Liability policy.** Such policy shall not have a restriction on the limits of coverage provided to the City of Charlottesville as an additional insured. The City of Charlottesville shall be entitled to protection up to the full limits of the Contractor’s policy regardless of the minimum requirements specified in this contract. If endorsements to the Commercial General Liability insurance policies cannot be made, then separate policies providing such protection shall be purchased by the Contractor. The Policy shall have the following minimum limits:

- \$2,000,000 Each Occurrence Limit
- \$4,000,000 General Aggregate Limit
- \$2,000,000 Personal and Advertising Injury Limit
- \$4,000,000 Products and Completed Operations Aggregate Limit
- \$5,000 Medical Expense Limit

This insurance shall include the following provisions and /or endorsements:

The General Aggregate limit shall apply on a “per project” and on a “per location” basis; Coverage shall apply to all liability arising from all premises and operations conducted by the Contractor, Subcontractors and independent contractors; The Contractor agrees that liability arising from Products and Completed Operations will be covered. Such liability shall be covered for a period of at least three years after completion of the Work.

The Contractor shall require each of his Subcontractors to procure and maintain Commercial General Liability Insurance of the type specified in these Contract Documents in the minimum amounts required by the Owner and the Contractor (which shall be the amounts required by this paragraph unless otherwise agreed in writing by Owner), during the term of their subcontracts.

Commercial Automobile Liability Insurance, which includes contractual liability coverage and coverage for all owned, hired, non-owned and borrowed vehicles used to complete the work as specified in the scope of service. Limits shall not be less than One Million Dollars (\$1,000,000) per accident for bodily injury and property damage, or One Million Dollars (\$1,000,000), combined single limit. Such policy shall not have a restriction on the limits of coverage provided to the City of Charlottesville. The City of Charlottesville shall be entitled to protection up to the full limits of the Contractor’s policy regardless of the minimum requirements specified in this contract.

Umbrella or Excess Liability Coverage policy will be written on an occurrence basis and shall *follow form*, without exclusions, to the underlying Commercial General Liability and Auto Liability policies which (i) includes premises/operations, product/completed operations, contractual liability, independent contractors, personal/advertising injury; (ii) includes coverage for all owned, hired and non-owned vehicles; (iii) has coverage limits of not less than Five Million Dollars (\$5,000,000) per occurrence and aggregate. The City of Charlottesville shall be entitled to protection up to the full limits of the Offeror’s policy regardless of the minimum requirements specified in this contract.

All insurance coverage:

1. shall be issued by an insurance carrier authorized to do business within the Commonwealth of Virginia and rated A – VIII or better, by A. M. Best Company or equivalent rating from an alternate recognized ratings agency, and otherwise acceptable to the City;
2. shall be kept in force throughout performance of services;
3. shall be an occurrence based policy;
4. shall include completed operations coverage;
5. shall contain a cross liability or severability of interest clause or endorsement. Insurance covering the specified additional insured shall be primary and non-contributory, and all other insurance carried by the additional insureds shall be excess insurance;

6. where additional insured required, such policy shall not have a restriction on the limits of coverage provided to the City as an additional insured. The City shall be entitled to protection up to the full limits of the bidder's policy regardless of the minimum requirements specified in the Contract.

Proof Of Insurance: Prior to performance of any services or delivery of goods, the Bidder shall (i) have all required insurance coverage in effect; (ii) the Bidder shall deliver to the City certificates of insurance for all lines of coverage, or other evidence satisfactory to the City in its sole discretion. **(See Attachment A for a Sample C.O.I. and Guide to the Acord Form)**. The Bidder shall be responsible that such coverage evidenced thereby shall not be substantially modified or canceled without 30 days prior written notice to the City; and (iii) the Bidder shall deliver to the City endorsements to the policies which require the City and its officials, officers, employees, agents and volunteers be named as "additional insured". Policies which require this endorsement include: Commercial General Liability and Auto Liability. Such endorsements must be approved by the City, and (iv) upon the request of the City, provide any other documentation satisfactory to the City in its sole discretion, evidencing the required insurance coverage, including but not limited to a copy of the insurance policy and evidence of payment of policy premiums. The Bidder shall require each of its subcontractors and suppliers to have coverage per the requirements herein in effect, prior to the performance of any services by such subcontractors and suppliers. Further, the Bidder shall ensure that all Required Insurance coverages of its subcontractors and suppliers is and remains in effect during performance of their services on the Project and certifies by commencement of the Work that this insurance and that of subcontractors is in effect and meets the requirements set forth herein. The City shall have no responsibility to verify compliance by the Bidder or its subcontractors and suppliers.

Effect Of Insurance: Compliance with insurance requirements shall not relieve the Bidder of any responsibility to indemnify the City for any liability to the City, as specified in any other provision of this contract, and the City shall be entitled to pursue any remedy in law or equity if the Bidder fails to comply with the contractual provisions of this contract. Indemnity obligations specified elsewhere in this Contract shall not be negated or reduced by virtue of any insurance carrier's denial of insurance coverage for the occurrence or event which is the subject matter of the claim, or by any insurance carrier's refusal to defend any named insured.

Waiver Of Subrogation: The Bidder agrees to release and discharge the City of and from all liability to the Bidder, and to anyone claiming by, through or under the Bidder, by subrogation or otherwise, on account of any loss or damage to tools, machinery, equipment or other property, however caused.

Sovereign Immunity: Nothing contained within this IFB shall effect, or shall be deemed to affect, a waiver of the City's sovereign immunity under law. No contract awarded as a result of this procurement transaction shall contain any provisions requiring the City to waive or limit any sovereign or governmental immunity to which it may be entitled.

Right to Revise or Reject: The City reserves the right, but not the obligation, to revise any insurance requirement not limited to limits, coverages and endorsements, or reject any insurance policies which fail to meet the criteria stated herein. Additionally, the City reserves the right, but not the obligation, to review and reject any insurer providing coverage due to its poor financial condition or failure to operate legally.

- H. **OWNERSHIP OF DOCUMENTS:** All information, documents, and electronic media furnished by the City to the Contractor belong to the City, are furnished solely for use in connection with the Contractor's performance of Services required by this Agreement, and shall not be used by the Contractor on any other project or in connection with any other person or entity, unless disclosure or use thereof in connection with any matter other than Services rendered to the City hereunder is specifically authorized in writing by the City in advance. All documents or electronic media prepared by or on behalf of the Contractor for the City are the sole property of the City, free of any retention rights of the Contractor. The Contractor hereby grants to the City an unconditional right of use, for any purpose whatsoever, documents or electronic media prepared by or on behalf of the Contractor pursuant to this Agreement, free of any copyright claims, trade secrets, or any other proprietary rights with respect to such documents.
- I. **PERMITS AND FEES:** All bids submitted shall have included in price the cost of any business or professional licenses, permits or fees required by the City of Charlottesville or the Commonwealth of Virginia. The bidder must have all necessary licenses to perform the services in Virginia and, if practicing as a corporation, be authorized to do business in the Commonwealth of Virginia.

- J. PRECEDENCE OF TERMS: 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.
- K. QUALIFICATIONS OF BIDDERS: The City may make such reasonable investigations as deemed proper and necessary to determine the ability of the bidder to perform the services/furnish the goods and the bidder shall furnish to the City all such information and data for this purpose as may be requested. The City reserves the right to inspect bidder's physical facilities prior to award to satisfy questions regarding the bidder's capabilities. The City further reserves the right to reject any bid if the evidence submitted by, or investigations of, such bidder fails to satisfy the City that such bidder is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.
- L. AUDIT: The contractor shall retain all books, records, and other documents relative to this contract for five (5) years after final payment, or until audited by the City of Charlottesville, whichever is sooner. The City, its authorized agents, and/or City auditors shall have full access to and the right to examine any of said materials during said period.
- M. FORCE MAJEURE: Neither party shall hold the other responsible for damages or delay in performance caused by acts of God, strikes, lockouts, pandemics, civil unrest or similar events beyond the control of the other.
- N. LIQUIDATED DAMAGES: Contractor and the City recognize that time is of the essence in accordance with Article 17.1 of the General Terms and Conditions for the Construction contract, and that the City will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the City if the Work is not completed on time. Accordingly, instead of requiring any such proof, the City and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. Substantial Completion: Contractor shall pay Owner \$1,000.00 for each calendar day that expires after the time (as duly adjusted pursuant to the Contract) specified for the Substantial Completion Date until the Work is substantially complete.
 2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500.00 for each calendar day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Substantial Completion and Final Completion are not additive and will not be imposed concurrently.

V.

**SUPPLEMENTAL TERMS AND CONDITIONS
FOR CONSTRUCTION CONTRACTS**

ARTICLE 1	LAWS, CODE AND WORK STANDARD
ARTICLE 2	DIFFERING SITE CONDITIONS
ARTICLE 3	KNOWLEDGE OF CONDITIONS AFFECTING THE WORK
ARTICLE 4	WORK OUTSIDE REGULAR HOURS
ARTICLE 5	PROTECTION OF WORK AND WORK SITE SAFETY
ARTICLE 6	CLEAN-UP
ARTICLE 7	COMPLAINTS
ARTICLE 8	EXISTING UTILITIES
ARTICLE 9	PRE-CONSTRUCTION CONFERENCE
ARTICLE 10	MEETINGS
ARTICLE 11	PUBLIC RELATIONS
ARTICLE 12	CARE OF EXISTING STRUCTURES
ARTICLE 13	RIGHT OF OCCUPANCY
ARTICLE 14	DEMOLITION AND REMOVAL
ARTICLE 15	TEMPORARY FACILITIES AND SERVICES
ARTICLE 16	PROTECTION OF PROPOERTY AND THE PUBLIC
ARTICLE 17	EROSION AND SEDIMENT CONTROL
ARTICLE 18	PROTECTION OF BRICK, COBBLESTONE, CONCRETE, ASPHALT AND TURF SURFACES
ARTICLE 19	DISRUPTION OF SERVICES
ARTICLE 20	ACCIDENT PREVENTION AND SAFETY
ARTICLE 21	TEMPORARY FACILITIES
ARTICLE 22	TEMPORARY TOILETS
ARTICLE 23	WASTE USED IN CONSTRUCTION
ARTILCE 24	ELECTRICITY
ARTICLE 25	OFFICES AND STORAGE
ARTICLE 26	RESTORATION – SPECIFICATIONS AND REFERENCES
ARTICLE 27	PAVEMENT RESTORATION
ARTICLE 28	TESTING SERVICES AND QUALITY ASSURANCE
ARTICLE 29	EXCAVATIONS
ARTICLE 30	PRE-CONSTRUCTION VIDEO

All work is to be constructed in accordance with all City of Charlottesville Standards and Design Manual, City of Charlottesville Code of Ordinances Virginia Department of Transportation Road and Bridge Specification and Standards, VDOT Work Area Protection Manual (most current addition), applicable laws, statutes, building codes, rules and regulations and all documents referenced in these standards.

The contract documents shall provide additional construction standards to be used in conjunction with the aforementioned references. Individual projects may have supplemental details and specifications. When in conflict, City of Charlottesville standards shall govern.

ARTICLE 1 LAWS, CODE AND WORK STANDARDS

The Contractor is also alerted that various "Standards" are used herein for reference and criteria and that they should obtain copies for their general use and protection. Abbreviated titles are used throughout these Specifications and although most of them are widely known, their complete titles are given below in order to avoid any misunderstanding.

AASHTO	American Association of State Highway and Transportation officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
VDH	Virginia Department of Health
VDOT	Virginia Department of Transportation
VESCH	Virginia Erosion and Sediment Control Handbook

The above list shall not be considered complete, as there are other "Standards" used, however in most cases complete titles have been given.

Wherever "Standards" are indicated herein for reference, the referenced portion shall have the same force and effect as if it were included herein in its entirety, latest revision of publication.

ARTICLE 2 DIFFERING SITE CONDITIONS

- (a) The Contractor shall promptly and before the conditions are disturbed, but in any event no later than three (3) calendar days after discovery of the relevant conditions, give a written notice to the Department of unknown physical conditions at the site, of an unusual nature, that differ materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract.
- (b) The Department shall investigate the site conditions after receiving the notice. If the Utilities Operations Manager or Gas Utility Engineer determines that the conditions do materially so differ and cause an increase or decrease in the cost or time required for performing any part of the work under this contract, whether or not changed as a result of the conditions, an equitable adjustment, excluding loss of anticipated profits, shall be made under this paragraph and the contract shall be modified in writing accordingly.
- (c) No adjustment resulting in a benefit to the Contractor will be allowed, including time, unless the Contractor gives the timely written notice required.
- (d) No adjustment resulting in a benefit to the Contractor will be allowed if the Contractor's written notice is submitted after final payment under this contract.
- (e) Failure to agree upon any adjustment shall be a dispute under the General Terms and Conditions Article 25 Applicable Law and Dispute Resolution.

**ARTICLE 3
KNOWLEDGE OF CONDITIONS AFFECTING THE WORK**

As evidenced by its submission of a bid and the signing of a contract to perform the work, the Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to:

- (1) Conditions bearing upon transportation, disposal, handling, and storage of materials
- (2) The availability of labor, water, electric power, and roads
- (3) Uncertainties of weather, river stages, or similar physical conditions at the site
- (4) The conformation and conditions of the ground
- (5) The character of equipment and facilities needed prior to and during work performance
- (6) The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface obstacles to be encountered. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the City.

The City assumes no responsibility for any conclusions or interpretations made by the Contractor. The City will not be bound by any understanding reached or representation made concerning interpretation of contract provisions or conditions affecting the work unless the understanding or representation is expressly stated in the Contract.

**ARTICLE 4
WORK OUTSIDE REGULAR HOURS**

The regular day work hours are 7:00 a.m. to 5:00 p.m. and the regular day work week is Monday through Friday, except City Scheduled holidays and special events.

**ARTICLE 5
PROTECTION OF WORK AND WORK SITE SAFETY**

Contractor shall use all due care and diligence and shall furnish material and equipment as necessary to protect all work performed against all loss or damage until such time as the City accepts the work. The Contractor must provide for the safe maintenance of the work for after hours, holidays, and weekends (safety barricades and lights, trench cover, temporary street lights). The Contractor shall use due care, diligence, shall furnish material and equipment, as necessary to protect all adjacent properties, pedestrians and vehicle traffic.

Any such loss or damage resulting from the Contractor's failure to use due care and diligence hereunder shall be repaired or replaced by the Contractor in a manner satisfactory to the City at the Contractor's expense.

Contractor shall designate a person to be available, by phone or pager, after hours, weekends and holidays to handle complaints regarding the above, and shall identify that person for the City.

**ARTICLE 6
CLEAN-UP**

Contractor shall keep all job sites clean and orderly insofar as is reasonable for the type of work performed, and shall leave all job sites clear and clean of equipment, materials, and debris at the conclusion of the work, to the satisfaction of the City.

The Contractor shall sweep the street after backfill to the satisfaction of the City. The Contractor shall promptly repair all road, street, or sidewalk pavement disturbed during the work and prior to reopening to public use.

**ARTICLE 7
COMPLAINTS**

All complaints received from persons and property owners of any nature whatsoever, including complaints for property damage, bodily injury, and death, shall be reported to the Project Manager immediately. Complaints that require action by the contractor shall be completed by the Contractor within 48 hours of notice from the Project Manager or his representative.

**ARTICLE 8
EXISTING UTILITIES**

There are or may be other utilities located within the Project. It is the responsibility of the Contractor to become aware of the locations of all underground utilities. The Contractor shall notify Miss Utility at least forty-eight (48) hours prior to construction to allow the utility companies to mark and locate buried utilities if applicable.

It shall be the responsibility of the Contractor to protect all underground utilities and hand dig \pm 2 ft. of known and or marked locations of buried utilities. It shall be the responsibility of the Contractor to replace or repair any damage occurring during construction at the Contractor's expense.

**ARTICLE 9
PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference will be held during the period after the award of the Contract and before the mobilization phase of the Project.

The Department will discuss requirements of such matters as project coordination and review, construction schedules, progress schedules, and reports, Contract Change Orders, Insurance, Safety, Accommodation to Traffic, and other items pertinent to the Project.

All parties to this conference should be prepared to discuss any problems anticipated with the execution of the work under this Contract.

**ARTICLE 10
MEETINGS**

Project Meetings

Project progress meetings shall be held once every month at a site and time mutually agreeable to the Department and Contractor if deemed necessary by the Department. The Department will establish if a monthly meeting is necessary during the pre-construction conference.

Meetings shall be conducted by the Department and shall be attended by principals or their designated representatives, of the Contractor and major subcontractors. Minutes of such meetings shall be recorded and distributed by the Department.

At the request of either the Department or Contractor, additional meetings shall be held as required for the proper execution of the work.

Contractors and Subcontractors Meetings

The Department shall have the right to call together at reasonable times designated by them, representatives of the Contractor and subcontractors who shall meet at the office of the Contractor, at the job site, or elsewhere as specified by the Department, to report as to the condition of the work under their charge, or on any other matters pertinent to the conduct of the Work.

- a) Such representatives shall be empowered to make at these meetings, definite decisions binding upon their respective employers, regarding all matters pertaining to the work under this Contract.

- b) The Contractor shall furnish to the Department, in writing, the names, addresses and telephone numbers of Contractor's and principal subcontractors' personnel to be contacted in the event of an out-of-hours emergency at the construction site. The Contractor shall also maintain a similar list readily visible from the outside of the field office or in the possession of the Contractor's superintendent on the job site.

ARTICLE 11 PUBLIC RELATIONS

Maintenance of good relations with the general public, owners and tenants of private property both abutting the work or on private easements, and other utility companies is of paramount concern to the City. The Contractor must do everything in its power to maintain these good relations. This includes but is not limited to:

- advance written notice of work to adjacent owners;
- maintenance of a clean work area; and material storage;
- prompt restoration of disturbed work areas;
- compliance with City permit conditions; traffic control plan for vehicles and pedestrians
- protection of other utilities.

ARTICLE 12 CARE OF EXISTING STRUCTURES

All existing fences, underground pipes, cables, conduits, curbing, curb and gutter, sidewalks or other structures in the vicinity of the work, shall be supported and protected from injury by the Contractor in a manner approved by the City during the construction and until completion of the work. The Contractor shall be liable for all damage done to such structures, as above provided, and shall save and keep the City harmless from any liability expenses for injuries, damages or repairs to same.

It is the intent of this section to have the work area left clean and restored as nearly as possible to its pre-construction condition. Any trees, shrubs or vegetation that are damaged as a result of contractor work will be repaired or replaced at Contractor's expense, as deemed appropriate by the City.

ARTICLE 13 RIGHT OF OCCUPANCY

The City shall have the right prior to the completion of the Project to use such portions of the system as have, in the opinion of the City, been completed to such a degree as to permit such usage, provided that such usage does not hamper the Contractor from completing the contract. The Contractor shall make every effort to assist the City to use such available and useful portions of the system. The use and occupancy of any portion of the system shall not be construed as acceptance of the complete system and will not constitute a waiver of any of the provisions of the contract.

ARTICLE 14 DEMOLITION AND REMOVAL

Demolition includes selective wrecking of existing above or below ground structures and appurtenances as specified by the City.

Related Documents

Drawings and general provisions of Contract, including General Conditions and Division-1 Specifications sections, apply to work of this section.

Job Conditions

Condition of Structures: The City assumes no responsibility for actual condition of structures to be demolished and removed.

Conditions existing at time of inspection for bidding purposes will be maintained by the City insofar as practicable.

Storage or sale of removed items on site will not be permitted.

Explosives: Use of explosives will not be permitted.

Protections: Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent properties, structures, other facilities, and persons.

Provide, install, and maintain safety barriers in accordance with the requirements and provisions of the current local, state and federal regulations.

Damages: Contractor will promptly repair damages caused to adjacent facilities by demolition operations at the Contractor's expense.

Submittals

The Contractor shall provide two (2) copies of the proposed Progress Schedule including alteration of utility services in a timely manner that facilitates advance coordination and notifications.

Pollution Controls

Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection. The use of water on the job site may be subject to all City water conservation policies in place at the time of construction.

Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

Clean adjacent areas impacted by dust, dirt and debris caused by demolition operations, as directed by the Department. Return adjacent areas to their existing condition prior to the start of work.

Demolition

Using methods required to complete work within limitations of governing regulations, proceed with demolition in a systematic manner.

Demolish and remove structure(s) to make way for new construction indicated or specified, or as may become necessary to accomplish desired results. No extra charge may be made for demolition of work not specifically indicated or specified unless, in the Department's opinion, it is beyond the scope of the Contract Documents.

Demolition shall be accomplished with care so that existing pipes will be undamaged. Work shall be done with extreme care to prevent risk or harm to persons or property. Clear away accumulated debris to the extent that it will not interfere with work, safety, or passage.

Disposal of Demolished Materials and Debris

General: Remove all debris, rubbish, and other materials resulting from demolition operations and dispose of properly.

The Contractor shall be responsible for satisfying any and all erosion control requirements for any land disturbing activities, including but not limited to on-site or offsite borrow, on-site or offsite stockpiling or disposal of waste materials.

Removal

Transport materials removed from area and dispose of at a location as provided by the Contractor, and according to federal, state, and local regulations governing said disposal.

**ARTICLE 15
TEMPORARY FACILITIES AND SERVICES**

The Contractor shall be responsible for arranging and providing general services and temporary facilities as specified herein as otherwise required for proper and expeditious prosecution of work. The Contractor shall pay all costs for such general services and temporary facilities, except as otherwise specified, until Final Acceptance of Work and shall remove same at completion of Work.

- a) The Contractor shall be responsible for placing door hanger notifications on the front door of all residences directly affected by the construction and “Sidewalk Safety” signs at each location with working crews at least 1 week prior to the start of any work at that location. The door hanger notifications shall be furnished by the Department.
- b) All such services and facilities shall comply with applicable Federal, State, and Local regulations.

**ARTICLE 16
PROTECTION OF PROPERTY AND THE PUBLIC**

Construct all fences, barricades and protective facilities required for the protection of the public in accordance with state regulations and for the protection of existing buildings and improvements. Furnish and install all signs, lights, reflectors, and all such protection facilities as may be required.

Contractor shall save the City harmless from all claims arising from the use of public streets, sidewalks, and adjoining premises for construction purposes.

Contractor shall keep all access roads and walks clear of debris, materials, construction plant and equipment during construction operations. Contractor shall repair streets, drives, curbs, sidewalks, walkways, fences, poles, property boundary markers and the like where disturbed by construction operations and leave them in as good a condition after completion of the work as before the operations started.

**ARTICLE 17
EROSION AND SEDIMENT CONTROL**

Comply with all requirements of the *Virginia Erosion and Sediment Control Handbook*, latest edition.

Structures: Provide temporary drainage and erosion control facilities during the construction period as required, removing same as permanent work is completed and stabilized.

**ARTICLE 18
PROTECTION OF THE BRICK, COBBLESTONE, CONCRETE, ASPHALT AND TURF SURFACES**

The Contractor at all times will take every precaution necessary to protect any brick cobblestone, concrete asphalt, or turf surfaces from chipping, marring, staining, and any other damage.

**ARTICLE 19
DISRUPTION OF SERVICES**

At no time will the Contractor deny potable water service to any structure without 48-hour notice to the occupants and then for a period no longer than seven (7) hours for a water main shutdown or five (5) hours for a water service shutdown without the written permission of the Department.

Gutters and drains shall be kept open at all times for surface drainage. No damming or ponding water in waterways will be permitted, except to a limited extent where the City shall consider the same necessary or allowable.

**ARTICLE 20
ACCIDENT PREVENTION AND SAFETY**

The Contractor shall be responsible for enforcement of all safety and health requirements of the Occupational Safety and Health Act of 1970, as amended. Copies of the applicable rules and regulations may be obtained from the Occupational Safety and Health Administration of the United States Department of Labor. The Contractor agrees to perform all work in a safe and careful manner. The Contractor shall furnish and require the use of safety devices necessary to comply with standards of the Occupational Safety and Health Administration, the Virginia Department of Transportation, and the City of Charlottesville. The Contractor shall be solely responsible for the compliance with all pertinent safety requirements of federal, state, and local regulatory agencies. Under this contract, personnel may be required to enter confined spaces to perform certain items of work. Before entering, the Contractor shall be in compliance with all applicable safety regulations, included but not limited to the United States Department of Labor Occupational Safety and Health Administration 29 CFR Parts 1910. When someone enters, or works in, a confined space and the air within a confined space shall be tested with a combination oxygen deficiency meter-explosion meter to determine oxygen content and explosion potential). A test for the presence of toxic gases shall also be performed. The work area must be ventilated mechanically by the use of an air blower, before entry and during occupancy, to insure that an adequate quantity of oxygen is supplied to the work area. The Contractor agrees to perform all work in a safe and careful manner, to furnish and use and require its employees to use safety devices and equipment as necessary, and to comply with all laws, rules, codes and regulations applicable to the safe performance of the work. . Failure to do so will result in a suspension of work and no work will be allowed to continue until the safety inadequacies are corrected.

**ARTICLE 21
TEMPORARY FACILITIES**

During the course of this Project it may be necessary for the Contractor to establish temporary facilities to perform duties under the agreement. The City reserves the right to determine suitable areas and locations for said temporary facilities, but the contractor shall bear all other costs.

**ARTICLE 22
TEMPORARY TOILETS**

Provide suitable toilet facilities for use of workers at the site, including those of other contractors. Chemical toilets shall be provided where work is in progress and of quantity required to conveniently serve the reasonable needs of personnel. Chemical toilets and their maintenance shall meet requirements of State Health Regulations and ordinances. Chemical toilets shall be locked after each shift. Chemical toilets shall be removed from the site within one (1) week of the Substantial Completion date.

**ARTICLE 23
WATER USED IN CONSTRUCTION**

The City will furnish water for general construction and testing from a designated City fire hydrant; however, all water used must be paid for and reported to the City.

The use of water on the job site may be subject to all City water conservation policies in place at the time of construction.

The Contractor must use City water for all purposes related to this construction contract and is not authorized to withdraw water for non-related uses.

Failure of the Contractor to account for water could result in a citation being issued against them in accordance with the rules and regulations of the City.

All temporary piping, valves, backflow preventers, hoses, equipment, and other items required for handling water shall be furnished by the Contractor. Under no circumstance shall the Contractor utilize a water source until the Department has approved such source for use.

Care shall be exercised in the use of water and provisions shall be made to protect the water supply from contamination and from indiscriminate use by unauthorized persons. Backflow prevention devices or approved methods shall be used at times when water is used from hydrants.

ARTICLE 24 ELECTRICITY

The Contractor shall make necessary arrangements and supply and pay for all temporary electric service and street lighting required during the entire construction period. Temporary electric service shall be of sufficient capacity and characteristics to supply proper current for various types of construction tools, motors, welding machines, lights, heating plant, air conditioning system, pumps and other items required.

Provide all temporary wiring, panel boards, outlets, switches, fuses, controls and accessories. Locate plug-in boards so that a 50-foot extension cord will reach all work requiring electricity.

Remove temporary service and lighting when no longer required and return site to its original condition.

ARTICLE 25 OFFICES AND STORAGE

The Contractor and subcontractors shall, for their own use, provide and maintain such temporary office facilities as they may require and such watertight storage sheds with floors as may be required for storage of their materials which might be damaged by weather.

Materials stored in the open at the Project shall be stored on planks or other dunnage as necessary to protect from contact with the ground and prevent ponding water.

ARTICLE 26 RESTORATION-SPECIFICATIONS AND REFERENCES

The work specified in this section includes the restoration of pavements in public and private streets, the restoration of public and private properties in easements and the restoration of lands within rights-of-way.

All paving materials are to meet the requirements of the Virginia Department of Transportation (VDOT) Road and Bridge Specifications or the Technical Specifications in the absence of specifications.

All topsoil, soil conditioners, seeds, sod and plants shall be installed per plans and specifications or per recommendation by City Arborist, Agricultural Agent, and Erosion Control personnel.

All concrete sidewalks are to meet the requirements of the City plans and specifications or standards or the VDOT Road and Bridge Specifications.

All curb and gutter are to meet the requirements of the City plans and specifications or standards or the VDOT Road and Bridge Standards.

Upon Completion of construction, the contractor shall remove from the site and dispose legally of at his own expense all surplus material, earth, rock, unsuitable material, rubbish and refuse resulting from the work.

ARTICLE 27 PAVEMENT RESTORATION

The Contractor will be required to restore the surface and the base of all roads and streets disturbed due to Contractor's operations under this contract. The Contractor shall be responsible for replacing all pavement markings.

If backfilled cut is left open to traffic, the stabilized base is to be placed and kept in a satisfactory condition by the Contractor until cut is patched.

ARTICLE 28
TESTING SERVICES AND QUALITY ASSURANCE

Description

The City shall provide third party laboratory testing services and field inspection for all asphalt, and soil work.

Selection and Payment

- (a) The City shall employ and pay for services of an independent testing laboratory to perform all geotechnical and construction materials testing and inspections.
- (b) Employment of a testing laboratory shall in no way relieve the Contractor of obligation to perform work in accordance with all other requirements of the contract documents.
- (c) All first-time costs shall be borne by the City.
- (d) The Contractor shall pay for the cost of any retests or additional testing resulting from the failure of initially installed work to pass minimum testing requirements.

City Responsibilities

Prior to the start of work, the City shall provide the Contractor the testing laboratory name, address, telephone number and names of full-time registered engineer or geologist and the responsible company officer.

Limits on Testing Laboratory Authority

- (a) Laboratory may not revoke or alter requirements of contract documents.
- (b) Laboratory may not approve or accept any portion of the Work.
- (c) Laboratory may not perform construction activities.

Contractor Responsibilities

- (a) Support testing agency field work as needed and cooperate with testing agency field personnel at all times.
- (b) Promptly correct irregularities and defects and help coordinate retesting. Directly schedule all retesting work providing a minimum of 24 hours' notice to the testing agency.
- (c) Pay for any retests or additional testing resulting from the failure of initially installed work to pass minimum testing requirements.
- (d) Supply Department with copies of tickets for all stone supplied. The tickets shall have a notation from the stone supplier that the material is for the specific project name and address.

ARTICLE 29
EXCAVATIONS

All excavations of every description and of whatever substances encountered within the grading limits shall be performed to the grades, slopes, and elevations indicated. All excavated materials which are not considered suitable for fill and any surplus of excavated material which is not required for fill shall be disposed of by the Contractor. Excavations shall extend a sufficient distance away from the walls to permit erection and removal of forms and installation of drains and other permanent work. Excavations shall be carefully made to the depths indicated, with the bottoms level, free of loose material, and free of all loam, organic material and other unsuitable material as hereinafter specified. All excavations shall be approved by the Department prior to the placing of any concrete. Excavations carried below the required depth, other than that specified for occasional rock outcropping, shall be backfilled with trench stabilization material. Any water that accumulates in the excavations shall be promptly removed. The excavation of no material other than Rock will be paid for as "Rock Excavation". The quantity of rock will be determined by the cubic yard using the minimum widths of trench as one dimension, the length as one dimension and the average depth not to exceed, the cover, plus the outside diameter of the pipe, plus the authorized depth of the bedding material.

ARTICLE 30
PRE-CONSTRUCTION VIDEO

Prior to construction, a video recording will be prepared by the Contractor of the entire project site. The video recording will be complete with audio. The video recording shall extend at least 50 feet beyond the limits of the project and visually concentrate on the condition of pavement, concrete curbs, aprons and sidewalks, building foundations, driveways, landscaping, and fencing. The video recording shall be submitted in a digital video disc (DVD) format. The date(s) on which the recording(s) was/were made will be marked on the DVD in permanent marker.

VI.

CONSTRUCTION DRAWINGS

The Construction Drawings for the Project include:

<u>Sheet Number</u>	<u>Drawing Number</u>	<u>Title</u>
1	G0.01	Cover
2	C1.01	Site Plan & Details
3	S0.01	General Structural Notes
4	S0.02	Structural Plans and Details
5	I0.01	Legends, Symbols and Abbreviations
6	I0.02	Pump Control Panel Elevation & Layout Network Architecture & DC Power
7	I0.03	PLC Inputs and Outputs
8	I0.04	VFD Connections
9	I0.05	Instrumentation Plan

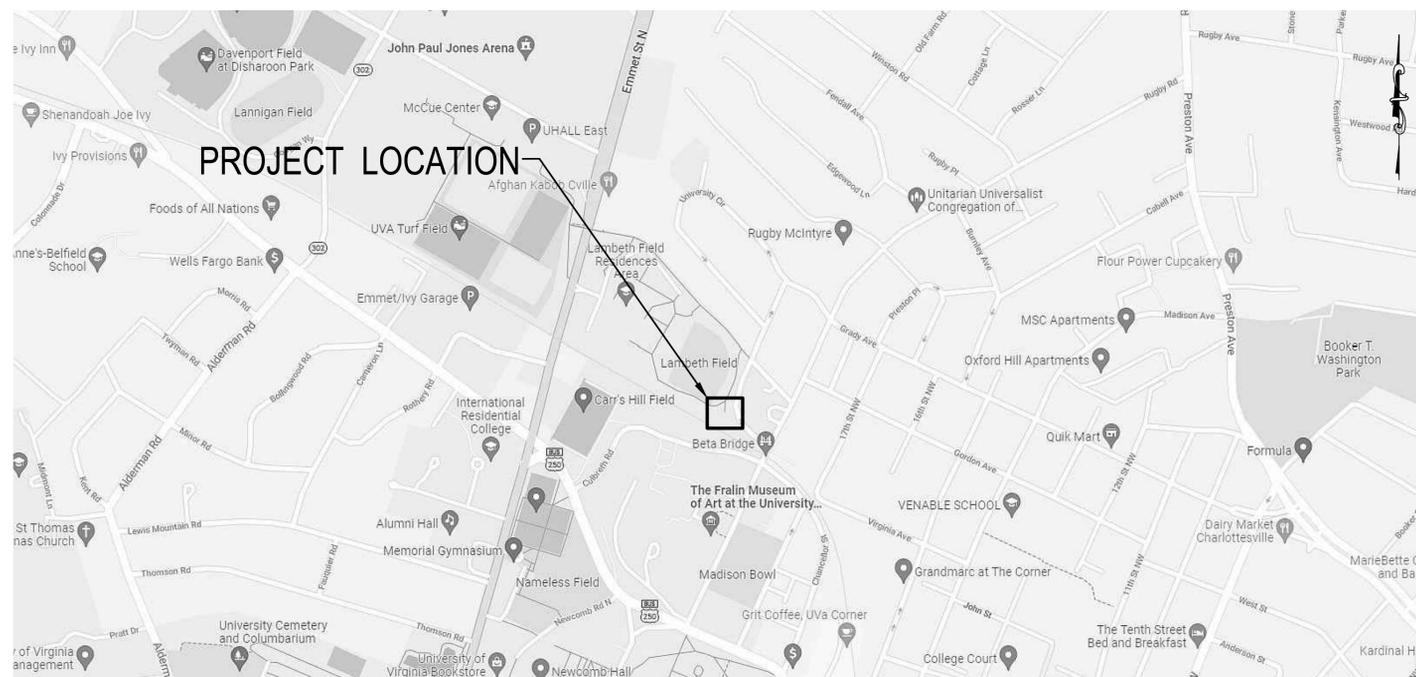
The Construction Drawings for the Project are supplemented by the following City Standard Details:

<u>Standard Number</u>	<u>Title</u>
W1.0	Pipe Trench Universal Standard Subgrade - Typical



LOCATION MAP
NO SCALE

CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES LAMBETH PUMP STATION IMPROVEMENTS



VICINITY MAP
NO SCALE

JANUARY 2022

DRAWING TITLE	SHEET NUMBER
COVER	1
SITE PLAN & DETAILS	2
GENERAL STRUCTURAL NOTES	3
STRUCTURAL PLANS AND DETAILS	4
LEGENDS, SYMBOLS AND ABBREVIATIONS	5
PUMP CONTROL PANEL ELEVATION & LAYOUT NETWORK	6
ARCHITECTURE & DC POWER	7
PLC INPUTS AND OUTPUTS	8
VFD CONNECTIONS	9
INSTRUMENTATION PLAN	



CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

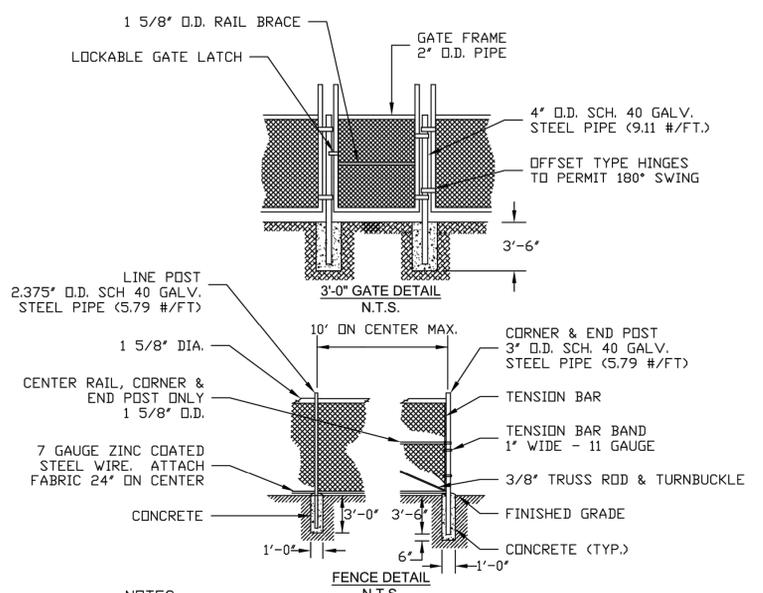
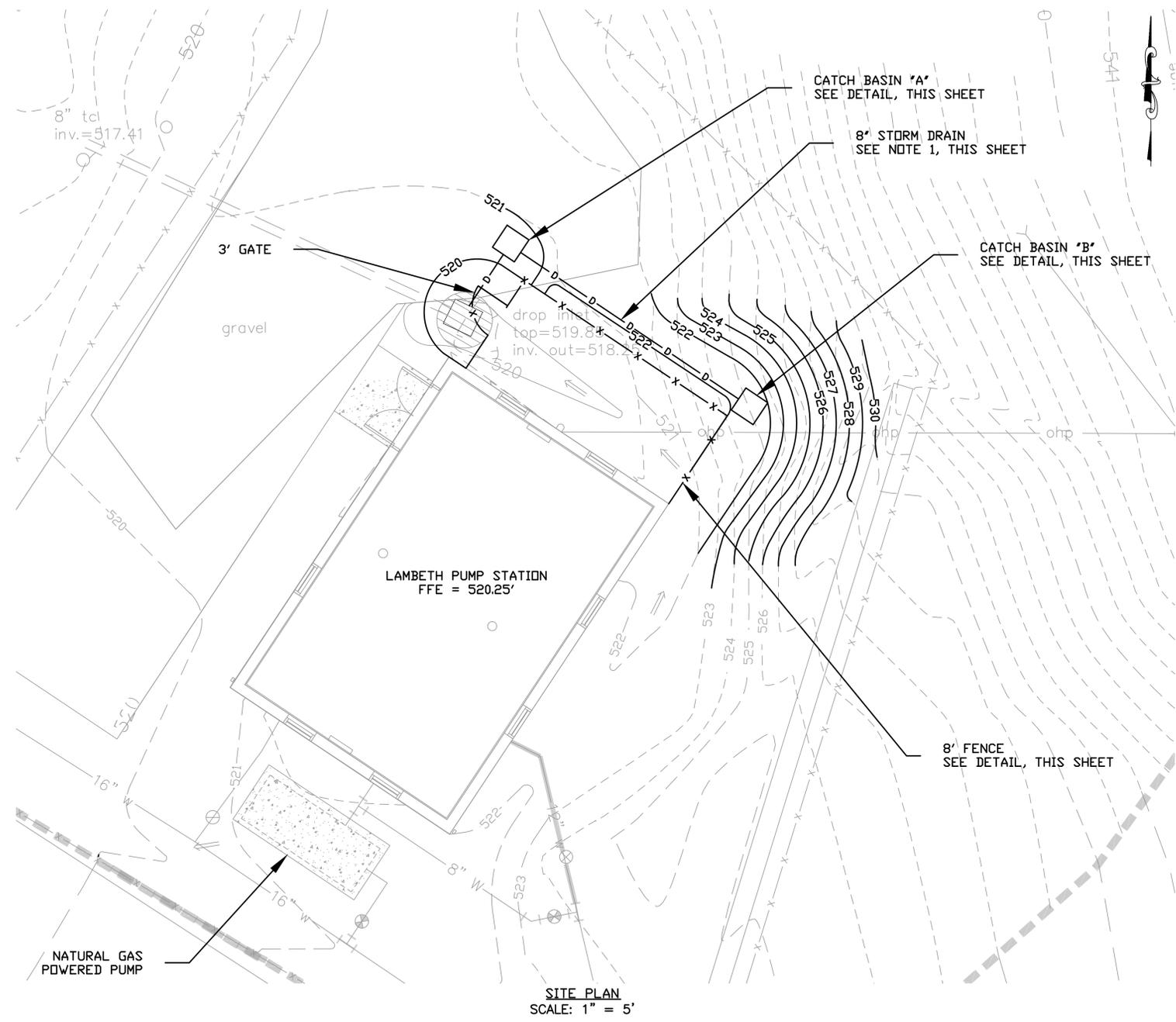
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DATE: **1/31/22**

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

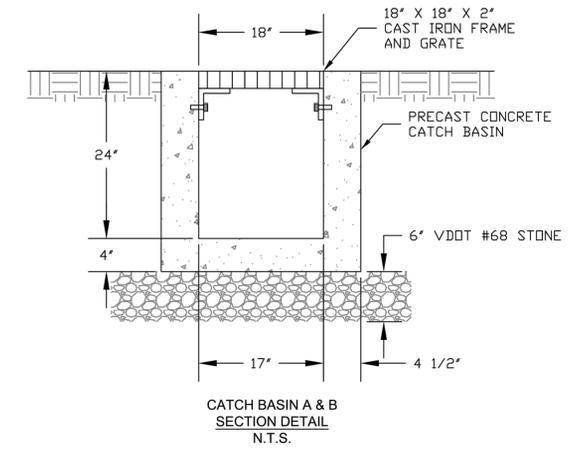
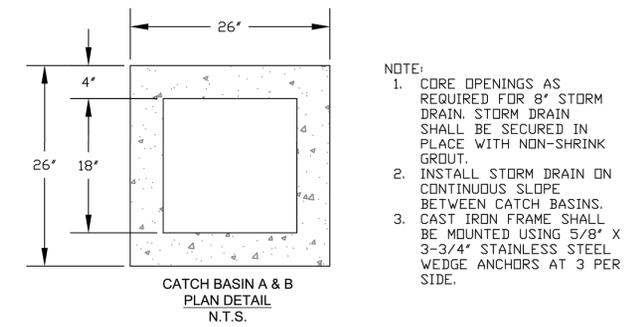
COVER

REV	DATE	DESCRIPTION

DRAWING	SHEET
G0.01	1

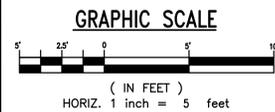


- NOTES:**
- FENCE HEIGHT SHALL BE 8'-0".
 - FENCE POSTS, FABRIC AND APPURTENANCES SHALL BE BLACK IN COLOR TO MATCH EXISTING SITE FENCE.



DRAINAGE BASIN DETAIL SCHEDULE		
CATCH BASIN	RIM ELEVATION	INVERT ELEVATION
"A"	520.50'	518.50'
"B"	521.50'	519.50'

- NOTES:**
- STORM DRAIN SHALL BE SDR-26 PVC.
 - FOR CONCRETE SLAB AND PREFABRICATED ALUMINUM CANOPY SEE SHEETS 3 AND 4.



CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

DES: GWF SCALE: AS SHOWN
DRAWN: JES HORIZ: N/A
CHECK: GWF VERT: N/A
DATE: 1/31/22

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

SITE PLAN & DETAILS

DRAWING
C1.01

SHEET
2

REV	DATE	DESCRIPTION

GENERAL STRUCTURAL NOTES

GENERAL:

- FIELD VERIFY DIMENSIONS, LOCATIONS AND ELEVATIONS SHOWN ON DRAWINGS FOR EXISTING STRUCTURES. BRING DISCREPANCIES TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- THE SIZES AND LOCATIONS OF EQUIPMENT PADS AND PEDESTALS, AS WELL AS EQUIPMENT-RELATED FLOOR AND WALL OPENINGS, ARE DEPENDENT ON THE ACTUAL EQUIPMENT PROVIDED. VERIFY AND COORDINATE SUCH ITEMS. DO NOT ALTER DIMENSIONS ON THESE DRAWINGS WITHOUT APPROVAL OF THE ENGINEER. STRUCTURAL DRAWINGS MAY NOT SHOW ALL EQUIPMENT PADS AND OTHER EQUIPMENT SUPPORTS REQUIRED. REFER TO DRAWINGS BY OTHER DISCIPLINES.
- SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DO NOT OBTAIN DIMENSIONAL INFORMATION FROM DIRECT SCALING OF THE DRAWINGS.

FOUNDATION:

- SHALLOW FOUNDATIONS, SUCH AS COLUMN SPREAD FOOTINGS, MUST BEAR UPON UNDISTURBED SOIL OR COMPACTED ENGINEERED FILL WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 1500 PSF. OBTAIN THE SERVICES OF A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF VIRGINIA WHO IS RESPONSIBLE FOR VERIFICATION OF THE SPECIFIED MINIMUM ALLOWABLE BEARING CAPACITY AT EACH FOOTING.
- SHALLOW FOUNDATION ELEVATIONS SHOWN ON THE DRAWINGS ARE MINIMUM EXCAVATION DEPTHS. EXCAVATE FURTHER AS REQUIRED TO REMOVE UNSATISFACTORY SOILS TO A LAYER WITH THE MINIMUM SPECIFIED ALLOWABLE BEARING CAPACITY. WHERE REQUIRED, PROVIDE COMPACTED ENGINEERED FILL TO ACHIEVE THE REQUIRED SUBGRADE ELEVATIONS. NOTIFY THE ENGINEER OF ANY CONDITIONS THAT REQUIRE CHANGES IN FOUNDATION ELEVATIONS.
- PLACE SHALLOW FOUNDATIONS ON THE SAME DAY THAT THE BEARING SURFACE IS INSPECTED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER. ANY BEARING SURFACE NOT PLACED ON THE SAME DAY OF INITIAL INSPECTION MUST BE RE-INSPECTED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER ON THE DAY CONCRETE IS PLACED.
- KEEP EXCAVATIONS DRY.
- REMOVE UNSATISFACTORY SOILS BELOW SLABS-ON-GROUND TO A COMPETENT SOIL STRATUM AND REPLACE WITH COMPACTED ENGINEERED FILL.
- MINIMUM DEPTH BELOW GRADE FOR BOTTOM OF FOUNDATIONS FOR FROST PROTECTION IS 18 INCHES.

CONCRETE

- PROVIDE NORMAL-WEIGHT CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 PSI, UNLESS NOTED OTHERWISE.
- EXTERIOR CONCRETE MUST BE AIR ENTRAINED.
- DETAIL AND CONSTRUCT REINFORCED CONCRETE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE ACI 301, "SPECIFICATION FOR STRUCTURAL CONCRETE", AND AS SPECIFIED HEREIN.
- DETAIL REINFORCING STEEL IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE ACI 315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" AND ACI SP-66, "ACI DETAILING MANUAL."
- PROVIDE REINFORCING STEEL CONFORMING TO ASTM A615, GRADE 60, DEFORMED BARS.
- PROVIDE WELDED WIRE REINFORCEMENT CONFORMING TO ASTM A1064. LAP ENDS ONE MESH SPACING PLUS 8 INCHES.
- UNLESS NOTED OTHERWISE ON THE DRAWINGS, PROVIDE CONCRETE COVER FOR REINFORCING STEEL AS FOLLOWS:
 - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH, FILL, OR #57 STONE: 3"
 - ALL OTHER CONCRETE: 2"
- SUBMIT REINFORCING STEEL DETAILS AND JOINT LAYOUT (SHOP DRAWINGS) AND RECEIVE APPROVAL FROM THE ENGINEER BEFORE PROCEEDING WITH FABRICATION.
- CHAMFER ALL EXPOSED CONCRETE EDGES 3/4" UNLESS NOTED OTHERWISE.
- LAP LENGTH FOR #4 BARS IS 14" UNLESS NOTED OTHERWISE.
- PROVIDE JOINTS ONLY AS DETAILED ON THE DRAWINGS AND ON APPROVED SHOP DRAWINGS. DO NOT PROVIDE ADDITIONAL JOINTS NOR OMIT ANY JOINTS EXCEPT BY WRITTEN AUTHORIZATION FROM THE ENGINEER. APPROVED ADDITIONAL JOINTS MUST NOT RESULT IN ADDITIONAL EXPENSE TO THE OWNER.
- CONTROL JOINTS SHOWN ON PLANS INDICATE REQUIRED LOCATIONS OF CRACK CONTROL IN THE SLAB-ON-GROUND.
- PROVIDE CONSTRUCTION JOINT INTERFACE CLEAN AND FREE OF LAITANCE. WHERE INDICATED ON THE DRAWINGS, INTENTIONALLY ROUGHEN CONSTRUCTION JOINTS TO A FULL AMPLITUDE OF 1/4 INCH. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, CONSTRUCTION JOINTS MUST BE PREWETTED AND STANDING WATER REMOVED.
- SIZE AND LOCATE ANCHOR BOLTS AND EQUIPMENT PADS OR PEDESTALS TO SUIT EQUIPMENT FURNISHED.
- COLD WEATHER PLACEMENT OF CONCRETE MUST BE IN ACCORDANCE WITH ACI 306R, ACI 306.1, AND THE SPECIFICATIONS.
- HOT WEATHER PLACEMENT OF CONCRETE MUST BE IN ACCORDANCE WITH ACI 305R, ACI 305.1, AND THE SPECIFICATIONS.

ADHESIVE ANCHORS:

- PROVIDE THE FOLLOWING ANCHOR SYSTEM, OR APPROVED EQUAL, BULK-MIXED ADHESIVES ARE NOT PERMITTED:
 - ANCHORAGE TO CONCRETE MASONRY
 - HILTI HIT-HY 270 MASONRY ADHESIVE ANCHORING SYSTEM WITH HILTI HAS-R THREADED ROD.
 - PROVIDE MESH SLEEVE AT HOLLOW MASONRY LOCATIONS.
 - ANCHORAGE TO CONCRETE
 - HILTI HIT-HY 200-R ADHESIVE ANCHORING SYSTEM WITH HILTI HAS-R THREADED ROD.
- PROVIDE TYPE 316 STAINLESS STEEL ANCHORS.
- PROVIDE ADHESIVE ANCHORS WITH A MINIMUM EDGE DISTANCE OF 4 INCHES TO ANY FREE EDGE OF MASONRY, OR EDGE DISTANCE INDICATED ON DRAWINGS, WHICHEVER IS GREATER.
- PROVIDE ADHESIVE ANCHORS WITH TRAINED QUALIFIED PERSONNEL, IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
- PROVIDE THOROUGHLY CLEANED ANCHOR HOLES PRIOR TO ADHESIVE INJECTION, AS REQUIRED BY THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. PROTECT DRILLED AND CLEANED ANCHOR HOLES FROM CONTAMINATION UNTIL THE ADHESIVE IS INSTALLED.
- PROVIDE ANCHORS CLEAN, OIL-FREE, AND FREE OF LOOSE RUST, PAINT, OR OTHER COATINGS.
- PROVIDE INSTALLED ADHESIVE ANCHORS SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES.
- ARRANGE FOR AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE ENGINEER MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
- PERSONNEL INSTALLING HORIZONTAL OR OVERHEAD ADHESIVE ANCHORS MUST BE QUALIFIED PER ACI 318-14.
- DO NOT DAMAGE EXISTING REINFORCING STEEL IN THE CONCRETE OR MASONRY DURING ANCHOR INSTALLATION, UNLESS OTHERWISE NOTED ON THE DRAWINGS. PRIOR TO ANCHOR INSTALLATION, DETERMINE LOCATION OF EXISTING REINFORCING STEEL BY NON-DESTRUCTIVE MEANS AND NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN REINFORCING STEEL AND ANCHOR LOCATION PRIOR TO FABRICATION OF MATERIALS.
- DESIGN BASIS FOR ADHESIVE ANCHORS IS INDICATED ABOVE. SUBSTITUTIONS WILL BE CONSIDERED, BUT PRODUCT MUST MEET OR EXCEED ALL CRITERIA OF THE SPECIFIED ANCHOR. SUBSTITUTION REQUESTS MUST BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO USE. PROVIDE PRODUCT DATA AND CALCULATIONS DEMONSTRATING THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURES AND INSTALLATION TEMPERATURE.

ALUMINUM

- FABRICATE ALL STRUCTURAL ALUMINUM IN ACCORDANCE WITH THE SPECIFICATIONS OF THE ALUMINUM ASSOCIATION (AA) ADM1-2015, "ALUMINUM DESIGN MANUAL".
- WELD ALL ALUMINUM IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS) D1.2, "STRUCTURAL WELDING CODE - ALUMINUM".
- COAT ALL ALUMINUM IN CONTACT WITH CONCRETE AND OTHER DISIMILAR METALS WITH BITUMINOUS PAINT ON THE CONTACT SURFACE.
- PROVIDE TYPE 316 OR TYPE 304 STAINLESS STEEL BOLTS FOR CONNECTING ALUMINUM MEMBERS.

DELEGATED DESIGN

- DESIGN AND DETAILING RESPONSIBILITY FOR THE FOLLOWING ENGINEERED SYSTEMS AND COMPONENTS IS DELEGATED TO A QUALIFIED PROFESSIONAL ENGINEER, SELECTED AND HIRED BY THE CONTRACTOR. THESE SYSTEMS AND COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO:
 - ALUMINUM CANOPY AND ITS CONNECTIONS TO THE EXISTING STRUCTURE AND FOUNDATION
- FIELD VERIFY GEOMETRY OF EXISTING PUMP STATION BUILDING AND COORDINATE WITH CANOPY MANUFACTURER TO ENSURE CANOPY IS DIMENSIONALLY COMPATIBLE WITH EXISTING BUILDING.
- DELEGATED ENGINEERED SYSTEMS AND COMPONENTS MUST SATISFY 2018 IBC LOAD COMBINATIONS.
- COORDINATE WITH THE CONTRACT DOCUMENTS FOR PROFESSIONAL LICENSURE AND SEALING REQUIREMENTS, DESIGN CRITERIA, DETAILS OF THE SYSTEMS AND COMPONENTS, SUBMITTAL REQUIREMENTS, AND CALCULATION REQUIREMENTS.

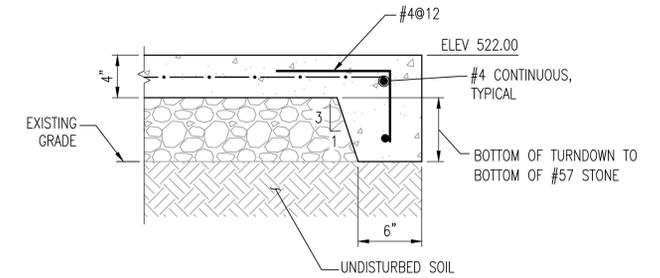
CODES AND STANDARDS

- INTERNATIONAL BUILDING CODE IBC (2018), INCLUDING THE MODIFICATIONS MADE BY LOCAL JURISDICTION
- AMERICAN CONCRETE INSTITUTE ACI-318 (2014), "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
- AMERICAN CONCRETE INSTITUTE ACI-530 (2013), "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" AND ACI-530.1 (2013), "SPECIFICATION FOR MASONRY STRUCTURES".
- AMERICAN SOCIETY OF CIVIL ENGINEERS ASCE 7 (2016), "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"

DESIGN LOADS:

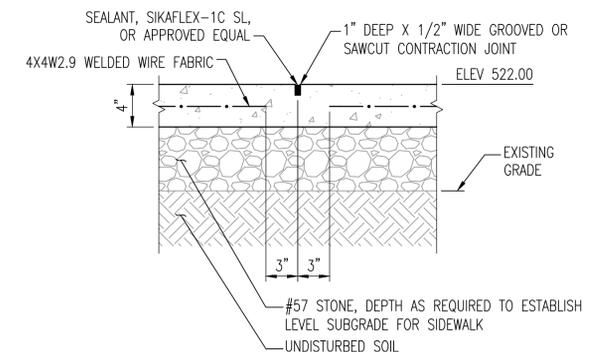
ALL LOADS INDICATED BELOW ARE UNFACTORED LOADS.

- DEAD LOADS:
 - ACTUAL WEIGHT OF THE STRUCTURE, EARTH AND EQUIPMENT.
- LIVE LOADS:
 - EXTERIOR SLAB-ON-GROUND: 100 PSF
- ROOF SNOW LOAD (FOR PROPOSED CANOPY):
 - GROUND SNOW LOAD (PG): 30 PSF
 - FLAT-ROOF SNOW LOAD (PF): 21 PSF
 - IMPORTANCE FACTOR (IS): 0.8
 - EXPOSURE FACTOR (CE): 1.0
 - THERMAL FACTOR (CT): 1.2
 - SNOW DRIFT LOAD: PER ASCE 7-16
- WIND LOAD (FOR PROPOSED CANOPY):
 - BASIC WIND SPEED, VULT: 101 MPH
 - RISK CATEGORY: I
 - WIND EXPOSURE CATEGORY: B
 - INTERNAL PRESSURE COEFFICIENT: 0.0 (OPEN STRUCTURE)
 - COMPONENTS AND CLADDING: IN ACCORDANCE WITH ASCE 7-16
- SEISMIC LOAD (FOR PROPOSED CANOPY):
 - RISK CATEGORY: I
 - SEISMIC IMPORTANCE FACTOR (IE): 1.0
 - MAPPED SPECTRAL RESPONSE ACCELERATIONS:
 - SS = 0.214 G AND S1 = 0.058 G.
 - SITE CLASS: D
 - SPECTRAL RESPONSE COEFFICIENTS:
 - SDS = 0.228 G
 - SD1 = 0.093 G

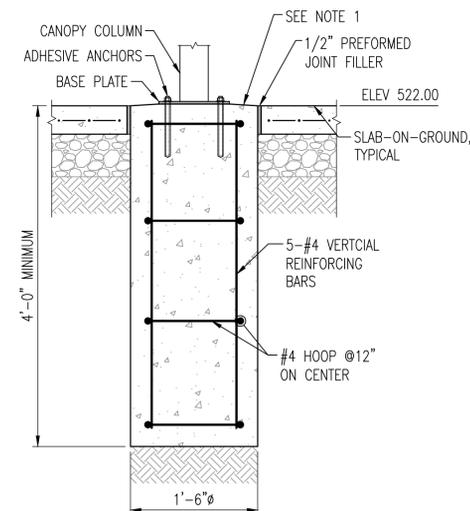


NOTE:
1. DISCONTINUE REINFORCING AT CONTRACTION JOINTS.

SECTION A
S0.01 1-1/2" = 1'-0"
REF: S0.02



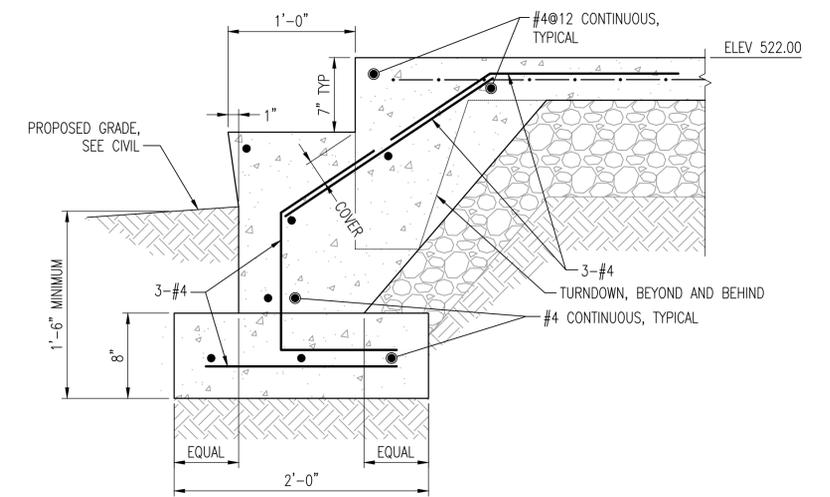
TYPICAL CONCRETE SLAB-ON-GROUND
NO SCALE



NOTES:

- SLOPE TOP OF FOUNDATION AWAY FROM COLUMN BASE PLATE AND TO JOINT.
- ANCHORS ROD SIZES AND PATTERN SHALL BE DESIGNED BY CANOPY MANUFACTURER AND SUBMITTED TO ENGINEER FOR REVIEW.
- THE FOLLOWING ARE THE MAXIMUM ALLOWABLE LOADS ON THE COLUMN FOUNDATIONS. IF LOADS ON THE FOUNDATION ARE ANTICIPATED TO EXCEED THE VALUES BELOW, CONTACT THE ENGINEER.
 - UPLIFT = 1.0 KIPS
 - GRAVITY = 1.6 KIPS
 - SHEAR AT COLUMN BASE = 0.6 KIPS

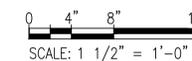
TYPICAL CONCRETE CANOPY COLUMN FOUNDATION
NO SCALE



NOTE:
1. TURNDOWN REINFORCING NOT SHOWN FOR CLARITY, CONTINUE TURNDOWN REINFORCING THROUGH STEPS.

SECTION B
S0.01 1-1/2" = 1'-0"
REF: S0.02

GRAPHIC SCALE:



REV	DATE	DESCRIPTION



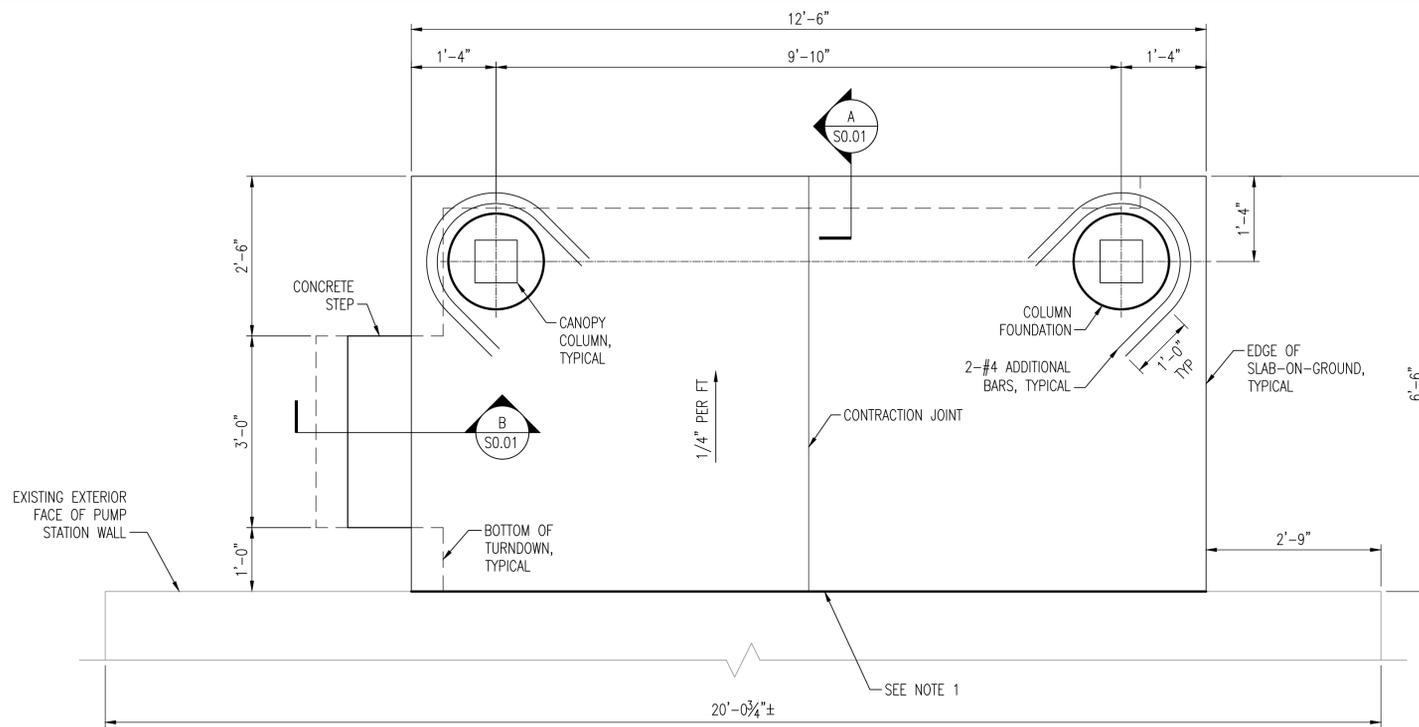
CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

DES: CMD	SCALE: N/A
DRAWN: CMD	HORIZ: N/A
CHECK: BAE	VERT: N/A
DATE: 1/31/22	

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

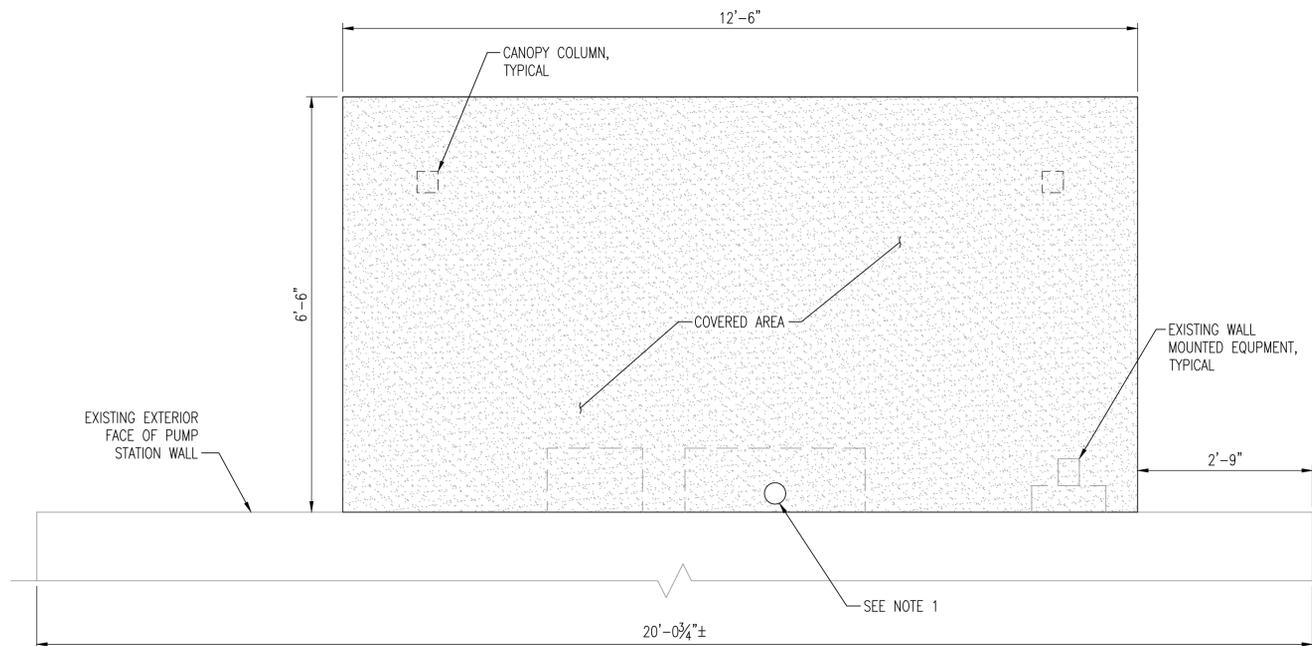
GENERAL STRUCTURAL NOTES

DRAWING
S0.01
SHEET
3



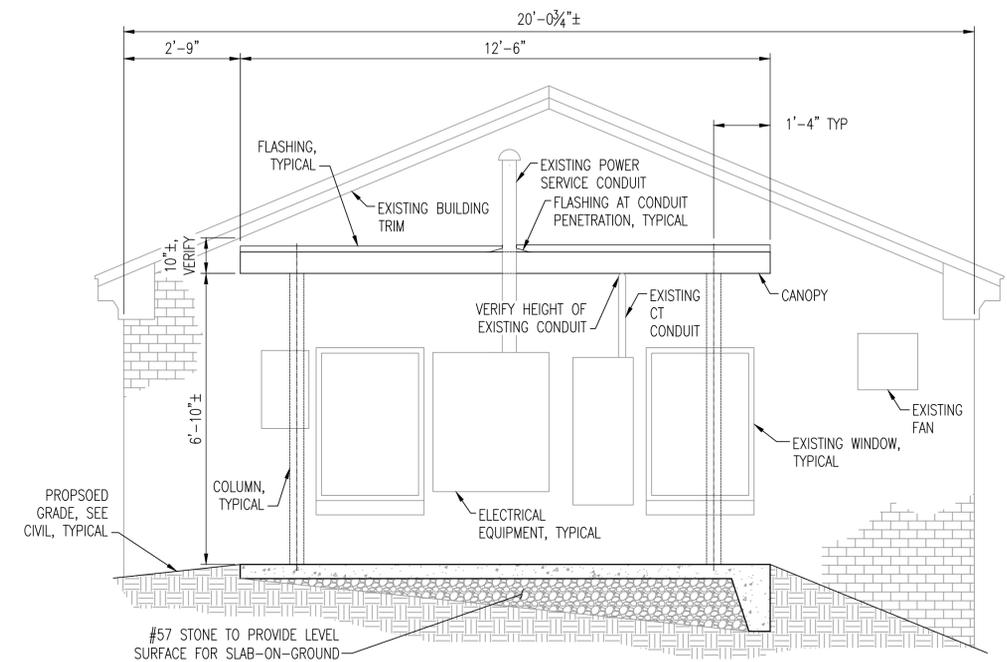
NOTE:
1. POUR SLAB-ON-GROUND UP AGAINST OUTSIDE FACE OF EXISTING BUILDING WALL. USE 1/2" PREFORMED JOINT FILLER.

SLAB-ON-GROUND PLAN
SCALE: 3/4" = 1'-0"



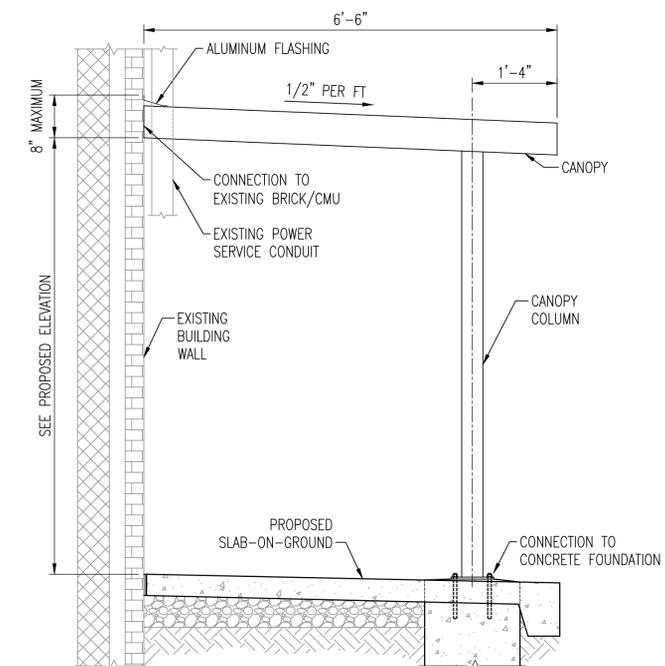
NOTE:
1. FIELD VERIFY SIZE OF EXISTING POWER SERVICE CONDUIT THAT WILL PENETRATE THE CANOPY DECK. PROVIDE FLASHING AT PENETRATION. CONDUIT RUNS VERTICALLY 1"± OFF FACE OF EXISTING WALL. COORDINATE LOCATIONS OF CANOPY MEMBERS WITH CONDUIT LOCATION.

CANOPY PLAN
SCALE: 3/4" = 1'-0"



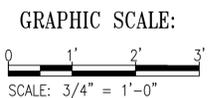
NOTES:
1. COLUMN FOUNDATIONS AND CONCRETE STEP NOT SHOWN FOR CLARITY.
2. FIELD VERIFY GEOMETRY OF EXISTING PUMP STATION BUILDING AND COORDINATE WITH CANOPY MANUFACTURER TO ENSURE CANOPY IS DIMENSIONALLY COMPATIBLE WITH EXISTING BUILDING.

NORTH ELEVATION AT EXTERIOR FACE OF EXISTING BUILDING WALL
NO SCALE



NOTES:
1. DESIGN OF CANOPY CONNECTION TO CONCRETE FOUNDATION, CONNECTION TO EXISTING BUILDING WALL, AND FLASHING AT EXISTING WALL ARE DELEGATED TO CANOPY MANUFACTURER.
2. FIELD VERIFY GEOMETRY OF EXISTING PUMP STATION BUILDING AND COORDINATE WITH CANOPY MANUFACTURER TO ENSURE CANOPY IS DIMENSIONALLY COMPATIBLE WITH EXISTING BUILDING.
3. EXISTING WALL MOUNTED EQUIPMENT NOT SHOWN FOR CLARITY.

TYPICAL CANOPY SECTION
NO SCALE



GENERAL SHEET NOTES

1. SEE DRAWING S0.01 FOR GENERAL NOTES, DELEGATED DESIGN NOTES, AND TYPICAL DETAILS.



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CHECK:	BAE	VERT:	N/A
DATE:	1/31/22		

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

STRUCTURAL PLANS AND DETAILS

DRAWING
S0.02

SHEET
4

REV	DATE	DESCRIPTION

GENERAL NOTES

- CONTRACTOR SHALL COORDINATE EQUIPMENT LOCATIONS SUCH AS NOT TO CAUSE INTERFERENCE WITH NEW AND/OR EXISTING EQUIPMENT.
- ENCLOSURE DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS. ENCLOSURES SHALL BE SIZED TO ACCOMMODATE EQUIPMENT, CONTROLS AND COMPONENTS AS SHOWN, SPECIFIED AND REQUIRED FOR AN OPERABLE SYSTEM.
- CIRCUITS SHOWN SHALL BE INSTALLED IN CONDUIT SIZES AS INDICATED IN THE GENERAL CIRCUIT/CONDUIT TAG IDENTIFICATION SCHEDULE.
- ALL DISCRETE OUTPUTS SHALL BE PROVIDED WITH INTERPOSING RELAYS.
- CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS ABOVE SUSPENDED CEILINGS AND FURRED WALLS SHALL BE INSTALLED PARALLEL TO THE BEAMS AND WALLS.
- ALL REQUIRED BOXES MAY NOT BE INDICATED ON CONTRACT DRAWINGS. PROVIDE PULL BOXES AND JUNCTION BOXES FOR INSTALLATION OF WIRING IN ACCORDANCE WITH CONTRACT SPECIFICATIONS.
- ALL INDICATION AND CONTROL WIRING IN JUNCTION BOXES SHALL BE WIRED TO NUMBERED TERMINAL STRIPS AND IDENTIFIED AS TO START AND END OF RUN.
- IN CONTROL PANELS, PROVIDE PERMANENT LABEL AT EACH CIRCUIT BREAKER AND FUSE WITH CIRCUIT, AMP RATING, AND/OR EQUIPMENT BEING FED.
- ALL CONTROL, MONITORING, INSTRUMENTATION, AND SIGNAL CONDUCTORS SHALL BE STRANDED COPPER.
- ALL WIRING SHALL CONFORM TO THE FOLLOWING:

1	LINE AND LOAD CIRCUITS (AC OR DC POWER)	BLACK
2	NEUTRAL/GROUND CONDUCTORS	WHITE
3	AC CONTROL CIRCUITS	RED
4	DC CONTROL CIRCUITS (+)	BLUE
5	DC CONTROL CIRCUITS (-)	BLUE/BLACK
6	INTERLOCK CONTROL CIRCUITS ON THE PANEL ENERGIZED FROM EXTERNAL SOURCE	YELLOW
7	EQUIPMENT GROUNDING CONDUCTORS	GREEN

ABBREVIATIONS

- AI = ANALOG INPUT
- AMP = AMPERE
- AO = ANALOG OUTPUT
- AUTO = AUTOMATIC
- AUX = AUXILIARY
- ATS = AUTOMATIC TRANSFER SWITCH
- COMM = COMMUNICATION
- CP = CONTROL PANEL
- CPT = CONTROL POWER TRANSFORMER
- CR = CONTROL RELAY
- DI = DISCRETE INPUT
- DO = DISCRETE OUTPUT
- DP = DIFFERENTIAL PRESSURE
- DPDT = DOUBLE POLE-DOUBLE THROW
- DV = DISCHARGE VALVE
- EF = EXHAUST FAN
- E-NET = ETHERNET
- E-STOP = EMERGENCY STOP
- ETM = ELAPSE TIME METER
- ETR = EXISTING TO REMAIN
- EX = EXISTING
- F/B = FEEDBACK
- F/C = FIBER/COPPER
- FM = FLOW METER
- FO = FIBER OPTIC
- FPP = FIBER OPTIC PATCH PANEL
- F-STAT = FREEZE-STAT
- CFI = GROUND FAULT INTERRUPTER
- GND = GROUND
- HMI = HUMAN MACHINE INTERFACE
- HOA = HAND-OFF-AUTO
- HX = HEAT EXCHANGER
- I/O = INPUT/OUTPUT
- ISB = INTRINSICALLY SAFE BARRIER
- ISR = INTRINSICALLY SAFE RELAY
- J-BOX = JUNCTION BOX
- L = LINE
- LLS = LEAD-LAG-STANDBY
- LOR = LOCK OUT RELAY
- L/R = LOCAL/REMOTE
- LS = LIMIT SWITCH
- MAX = MAXIMUM
- MCC = MOTOR CONTROL CENTER
- MFR = MANUFACTURER
- MIN = MINIMUM
- MMS = MANUAL MOTOR STARTER
- MPR = MOTOR PROTECTION RELAY
- MOD = MOTOR OPERATED DAMPER
- MOV = MOTOR OPERATED VALVE
- N = NEUTRAL
- NC = NORMALLY CLOSED
- NEMA = NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
- NO = NORMALLY OPEN
- NTS = NOT TO SCALE
- OIT = OPERATOR INTERFACE TERMINAL
- OL = OVERLOAD
- PC = PERSONAL COMPUTER
- PCP = PUMP CONTROL PANEL
- PCS = PLANT CONTROL SYSTEM
- PIO = POINT I/O
- PLC = PROGRAMMABLE LOGIC CONTROLLER
- PS = POWER SUPPLY
- PSCP = PUMP STATION CONTROL PANEL
- PSI = POUNDS PER SQUARE INCH
- PVCC = PVC COATED
- QTY = QUANTITY
- RAS = RETURN ACTIVATED SLUDGE
- RCT = REPEAT CYCLE TIMER
- RGS = RIGID GALVANIZED STEEL
- RIO = REMOTE I/O
- RL = RADAR LEVEL
- RTD = RESISTANCE TEMPERATURE DEVICE
- RTU = REMOTE TELEMETRY UNIT
- RVSS = REDUCED VOLTAGE SOFT STARTER
- SCADA = SUPERVISORY CONTROL AND DATA ACQUISITION
- SF = SUPPLY FAN
- SPD = SURGE PROTECTIVE DEVICE
- SV = SUCTION VALVE
- TEMP = TEMPERATURE
- TR = TIMING RELAY
- TSH = TEMPERATURE SWITCH HIGH
- TSP = TWISTED SHIELDED PAIR
- TST = TWISTED SHIELDED TRIAD
- T-STAT = THERMOSTAT
- TVSS = TRANSIENT VOLTAGE SURGE SUPPRESSOR
- TYP = TYPICAL
- UL = ULTRASONIC LEVEL
- UON = UNLESS OTHERWISE NOTED
- UPS = UNINTERRUPTIBLE POWER SUPPLY
- VAC = VOLTS/ALTERNATING CURRENT
- VCP = VENTILATION CONTROL PANEL
- VDC = VOLTS/DIRECT CURRENT
- VFD = VARIABLE FREQUENCY DRIVE

ELEMENTARY WIRING SYMBOLS

- CONTROL RELAY
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- TIMING RELAY
- NORMALLY OPEN TIMED CLOSED CONTACT
- NORMALLY CLOSE CONTACT TIMED OPEN
- FUSE
- CIRCUIT BREAKER
- PUSH BUTTON, NORMALLY OPEN
- PUSH BUTTON, NORMALLY CLOSED
- EMERGENCY STOP PUSH BUTTON, NORMALLY OPEN
- EMERGENCY STOP PUSH BUTTON, NORMALLY CLOSED
- PUSH-TO-TEST PILOT LIGHT
R=RED, G=GREEN, A=AMBER, W=WHITE
- PLC OUTPUT VIA INTERPOSING RELAY
- MOTOR
- MOTOR OPERATED DAMPER
- TERMINAL BLOCK
- THERMOSTAT, CLOSE ON RISING/TEMPERATURE
- THERMOSTAT, OPEN ON RISING/TEMPERATURE
- LIMIT SWITCH, NORMALLY OPEN
- LIMIT SWITCH, NORMALLY CLOSED
- FLOAT SWITCH, NORMALLY OPEN
- FLOAT SWITCH, NORMALLY CLOSED
- PRESSURE SWITCH, NORMALLY CLOSED, PRESSURE OPEN
- PRESSURE SWITCH, NORMALLY OPEN, PRESSURE CLOSE
- FLOW SWITCH, NORMALLY OPEN
- FLOW SWITCH, NORMALLY CLOSED
- INTRINSICALLY SAFE RELAY
- INTRINSICALLY SAFE BARRIER

- MANUAL MOTOR STARTER WITH OVERLOAD AND SELECTOR SWITCH
- OVERLOAD
- GROUND
- SOLENOID VALVE
- ELAPSED TIME METER
- CONTROL POWER TRANSFORMER
- NEW CONTROL WIRING
- NEW FIELD CONTROL WIRING
- COMMUNICATION SIGNAL

PLAN SYMBOLS

- FIELD MOUNTED DEVICE/INSTRUMENT TAG
- THERMOSTAT, HIGH TEMP.
- FREEZE/STAT
- CONTROL ENCLOSURE
- HOME RUN CONDUIT/CABLE
- CONDUIT TAG. SEE TAG IDENTIFICATION SCHEDULE

INSTRUMENTATION IDENTIFICATION SCHEDULE

	FIRST LETTER		SUCCEEDING LETTER		
	VARIABLE	MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		AUTOMATIC
B	BREAKER		USER'S CHOICE	CLOSE OR STOP	BYPASS
C	COMMUNICATIONS			CONTROL	
D	DENSITY	DIFFERENTIAL		OPEN OR START	
E	VOLTAGE (EMF)		PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	RATIO	FAIL	FAIL	FAIL
G	GAUGING		GLASS		LOCAL/MANUAL/HAND
H	HAND				HIGH OR OPEN
I	CURRENT		INDICATE		INTERMEDIATE
J	POWER	SCAN			
K	TIME	TIME RATE		CONTROL STATION	
L	LEVEL		LIGHT		LOW OR CLOSE
M	MOTOR	MOMENTARY		MOTOR	MIDDLE
N	USER'S CHOICE		INPUT	FORWARD	ON OR OPERATE
O				OFF	OVERLOAD
P	PRESSURE	PNEUMATIC	POINT (TEST)	POSITION	
Q	QUANTITY OR EVENT	TOTALIZE		EMERGENCY/ABNORMAL	
R	RADIOACTIVITY		RECORD OR PRINT	REMOTE	RUN
S	SPEED OR FREQUENCY	SUM	SWITCH	SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY			VALVE OR DAMPER	VFD / VALVE
W	WEIGHT OR FORCE		WELL		
X	MOD, LIGHT OR VALVE		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	INTERLOCK			RELAY OR COMPUTE	RESET
Z	POSITION			DRIVE OR ACTUATOR	

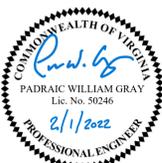
INSTRUMENT, EQUIPMENT AND CONTROL DEVICE EXAMPLES

- FE = FLOW ELEMENT
- FIT = FLOW INDICATING TRANSMITTER
- PE = PRESSURE ELEMENT
- PIT = PRESSURE INDICATING TRANSMITTER
- PI = PRESSURE INDICATOR
- PSH = PRESSURE SWITCH HIGH
- TSH = TEMPERATURE SWITCH HIGH
- ZSC = POSITION SWITCH CLOSED
- ZSO = POSITION SWITCH OPEN
- FS = FLOW SWITCH
- LSL = LEVEL SWITCH LOW
- LSH = LEVEL SWITCH HIGH

GENERAL CIRCUIT/CONDUIT TAG IDENTIFICATION

TAG	CONDUIT SIZE	CONDUCTORS	NOTES
C-X (Y)	3/4" (X=2 THRU 18) 1" (X=19 THRU 30) 2" (X=31 THRU 100)	X-#16, 1-#16G	STRANDED COPPER CONDUCTORS (Y) DENOTES ADDITIONAL SPARES
P-X (Y)	3/4" (X=2 THRU 14) 1" (X=15 THRU 24) 2" (X=25 THRU 80)	X-#14 (MIN.), 1-#14G (MIN.)	STRANDED COPPER CONDUCTORS (Y) DENOTES ADDITIONAL SPARES #16 GA. MINIMUM. PROVIDE LARGER GA. WIRE AS REQUIRED FOR SUPPLIED LOAD.
TSP-X (Y)	3/4" (X=1,2) 1" (X=3,4) 2" (X=5 THRU 16)	X-#18 TWISTED SHIELDED PAIR	STRANDED COPPER CONDUCTORS (Y) DENOTES ADDITIONAL SPARES
TST-X (Y)	3/4" (X=1,2) 1" (X=3,4) 2" (X=5 THRU 16)	X-#18 TWISTED SHIELDED TRIAD	(Y) DENOTES ADDITIONAL SPARES
ETH-X(Y)	1" (X=1 THRU 4)	X-# OF CAT6 CABLES	(Y) DENOTES ADDITIONAL SPARES
FO-X	1" (X=2-18) 2" (X=18-48)	X-# OF MULTIMODE FIBER OPTIC STRANDS	COORDINATE CONDUIT AND INSTALLATION REQUIREMENTS WITH F.O. CABLE MANUFACTURE CABLE SIZES AND BEND RADIUS REQUIREMENTS
M-X	CONDUIT SIZE AS REQUIRED	X-MANUFACTURER SUPPLIED CABLE	CABLE AS PROVIDED OR RECOMMENDED BY EQUIPMENT MANUFACTURER. COORDINATE CONDUIT AND INSTALLATION REQUIREMENTS WITH MANUFACTURER.
AC-X (Y)	1" (X=1,2)	X-ANTENNA CABLE	(Y) DENOTES ADDITIONAL SPARES

TOTAL CONDUCTORS REQUIRED = X + Y



CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES

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DRAWN:	HCA	HORIZ:	
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DATE:	1/31/22		

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

LEGENDS SYMBOLS AND ABBREVIATIONS

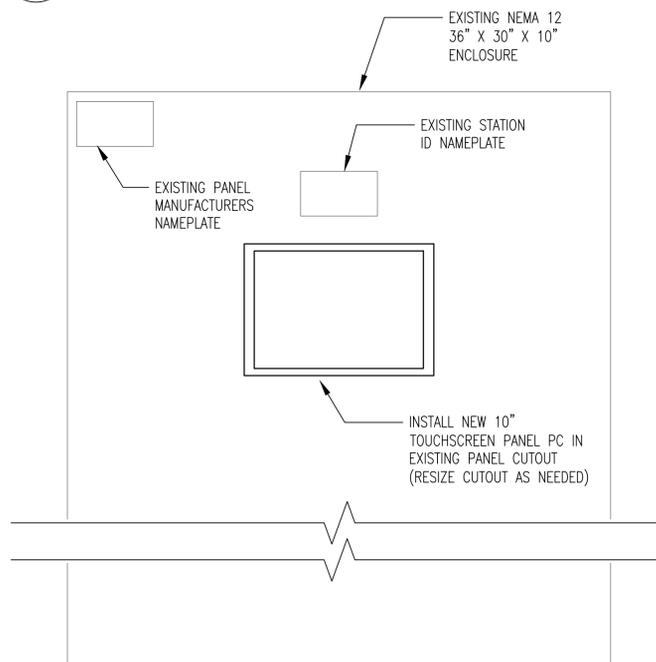
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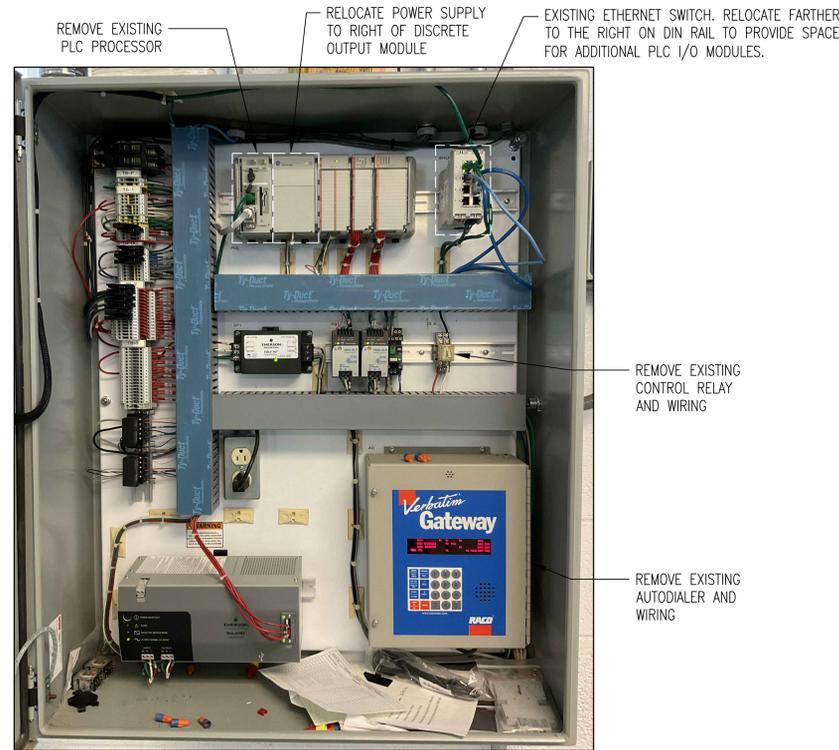
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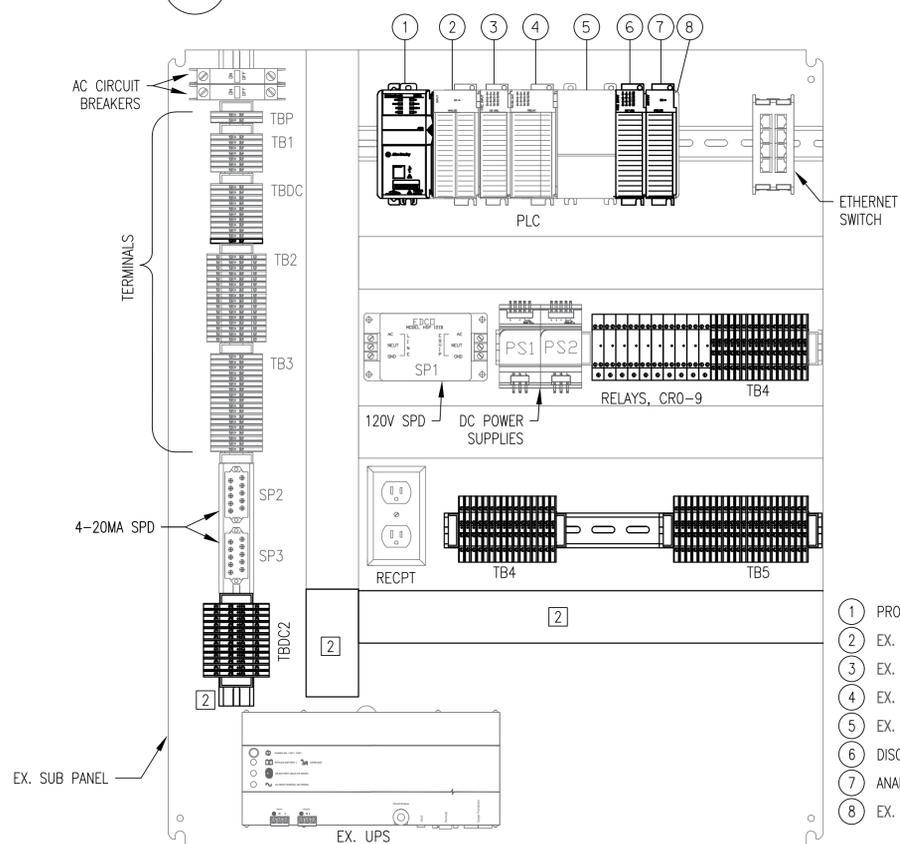
1
10.02 SCALE: NTS
PUMP CONTROL PANEL EXTERIOR ELEVATION
CHANGES TO EXISTING COMPONENTS



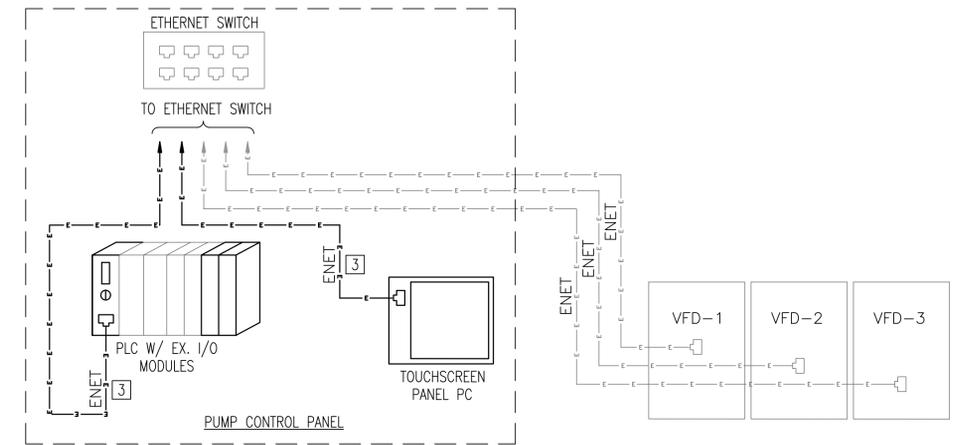
2
10.02 SCALE: NTS
EXISTING PUMP CONTROL PANEL
EXTERIOR ELEVATION - NEW WORK



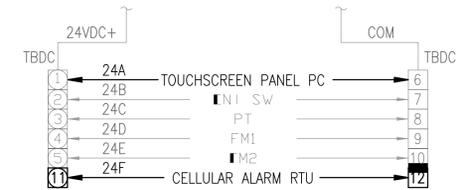
3
10.02 SCALE: NTS
PUMP CONTROL PANEL INTERIOR ELEVATION
CHANGES TO EXISTING COMPONENTS



4
10.02 SCALE: NTS
EXISTING PUMP CONTROL PANEL
INTERIOR LAYOUT - NEW WORK



5
10.02 SCALE: NTS
NETWORK ARCHITECTURE



6
10.02 SCALE: NTS
COMPONENT DC POWER CONNECTIONS

GENERAL NOTES

1. SEE SHEET 5 SYMBOLS, ABBREVIATIONS AND LEGENDS.
2. THE CONTRACTOR SHALL PROVIDE WIRING AND TERMINAL NUMBERS ON SUBMITTAL DRAWINGS.
3. DESIGN IS BASED ON AS BUILT DRAWINGS AND INFORMATION PROVIDED. CONTRACTOR TO FIELD VERIFY PRIOR TO PROCEEDING WITH WORK.
4. EXISTING EQUIPMENT AND WIRING IS SHOWN IN HALF TONE.

SPECIFIC NOTES

1. A. INSTALL NEW WIRING/CABLE AS REQUIRED TO ACCOMMODATE RELOCATION OF EQUIPMENT. NO SPLICING PERMITTED.
B. CONTRACTOR SHALL RETURN EXISTING REMOVED PLC, OIT AND AUTODIALER TO OWNER
2. EXTEND DIN RAIL AND WIREWAY. MATCH EXISTING.
3. CAT 6 SHIELDED TYPE ETHERNET CABLE.
4. RETAIN EXISTING NETWORK ADDRESSING. TOUCHSCREEN PANEL PC TO BE ASSIGNED ADDRESS PREVIOUSLY ASSIGNED TO TOUCHSCREEN OIT.
5. NETWORK SYSTEM ARCHITECTURE SHOWN REPRESENTS GENERAL ARRANGEMENT OF PROPOSED AND EXISTING EQUIPMENT. THIS DIAGRAM IS INTENDED TO PROVIDE A CONCEPTUAL UNDERSTANDING OF THE SYSTEM. ALL EQUIPMENT, CONNECTIONS AND HARDWARE ARE NOT SHOWN ON THIS DIAGRAM. CONTRACTOR SHALL PROVIDE EQUIPMENT, HARDWARE, SOFTWARE AND CONFIGURATION AS SPECIFIED AND AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR IS RESPONSIBLE FOR PLC, TOUCHSCREEN PANEL PC AND VFD CONFIGURATION PROGRAMMING. OPERATIONAL PROGRAMMING OF PLC AND TOUCHSCREEN PANEL PC BY OTHERS.



CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

DES: HCA SCALE: N/A
DRAWN: HCA HORIZ:
CHECK: PWG VERT:
DATE: 1/31/22

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

PUMP CONTROL PANEL ELEVATION & LAYOUT
NETWORK ARCHITECTURE & DC POWER

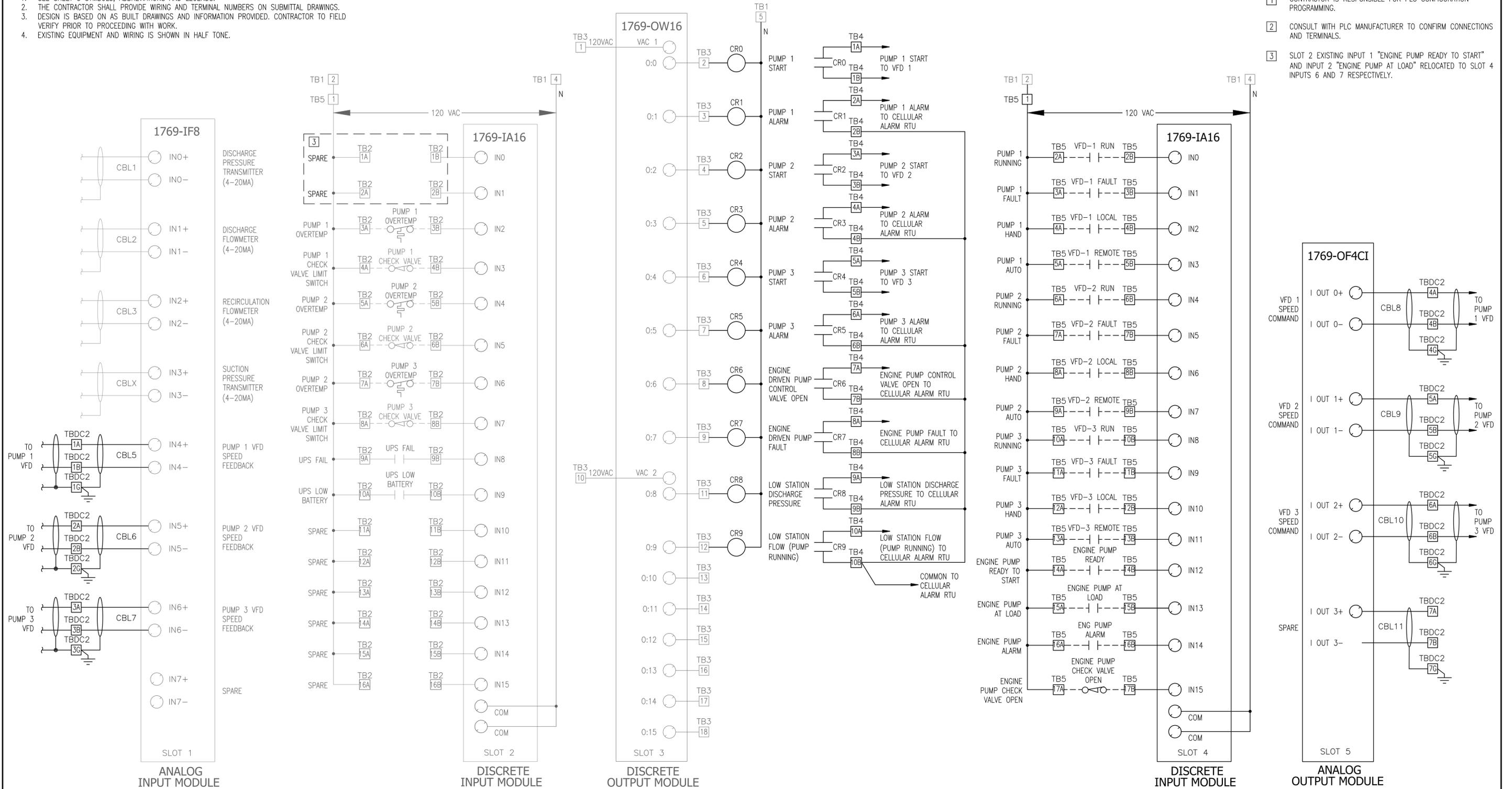
REV	DATE	DESCRIPTION	DRAWING	SHEET
			10.02	6

GENERAL NOTES

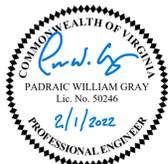
- SEE SHEET 5 SYMBOLS, ABBREVIATIONS AND LEGENDS.
- THE CONTRACTOR SHALL PROVIDE WIRING AND TERMINAL NUMBERS ON SUBMITTAL DRAWINGS.
- DESIGN IS BASED ON AS BUILT DRAWINGS AND INFORMATION PROVIDED. CONTRACTOR TO FIELD VERIFY PRIOR TO PROCEEDING WITH WORK.
- EXISTING EQUIPMENT AND WIRING IS SHOWN IN HALF TONE.

SPECIFIC NOTES

- CONTRACTOR IS RESPONSIBLE FOR PLC CONFIGURATION PROGRAMMING.
- CONSULT WITH PLC MANUFACTURER TO CONFIRM CONNECTIONS AND TERMINALS.
- SLOT 2 EXISTING INPUT 1 "ENGINE PUMP READY TO START" AND INPUT 2 "ENGINE PUMP AT LOAD" RELOCATED TO SLOT 4 INPUTS 6 AND 7 RESPECTIVELY.



1 PLC INPUTS & OUTPUTS
SCALE: NTS



CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

DES:	HCA	SCALE:	N/A
DRAWN:	HCA	HORIZ:	
CHECK:	PWG	VERT:	
DATE:	1/31/22		

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

PLC INPUTS AND OUTPUTS

DRAWING
10.03

SHEET
7

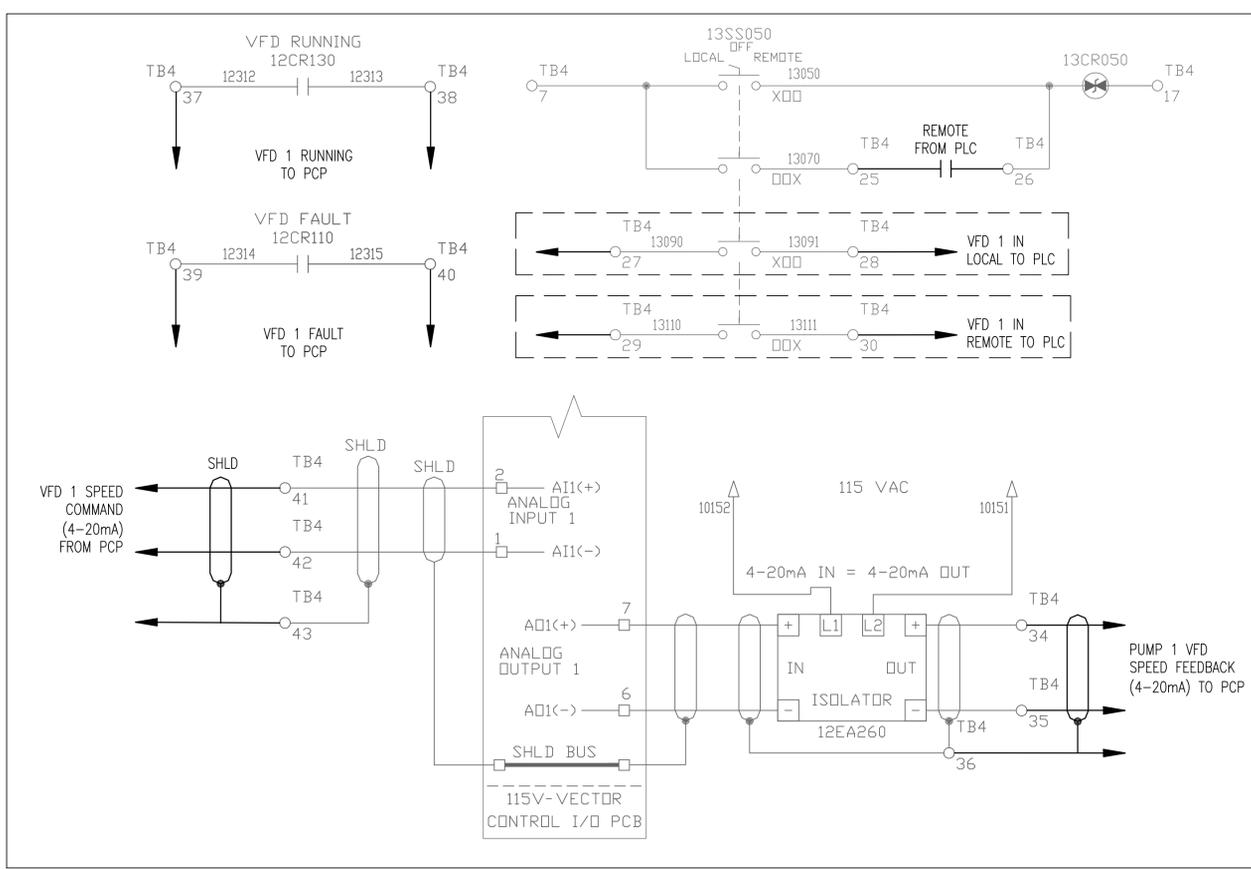
REV	DATE	DESCRIPTION

GENERAL NOTES

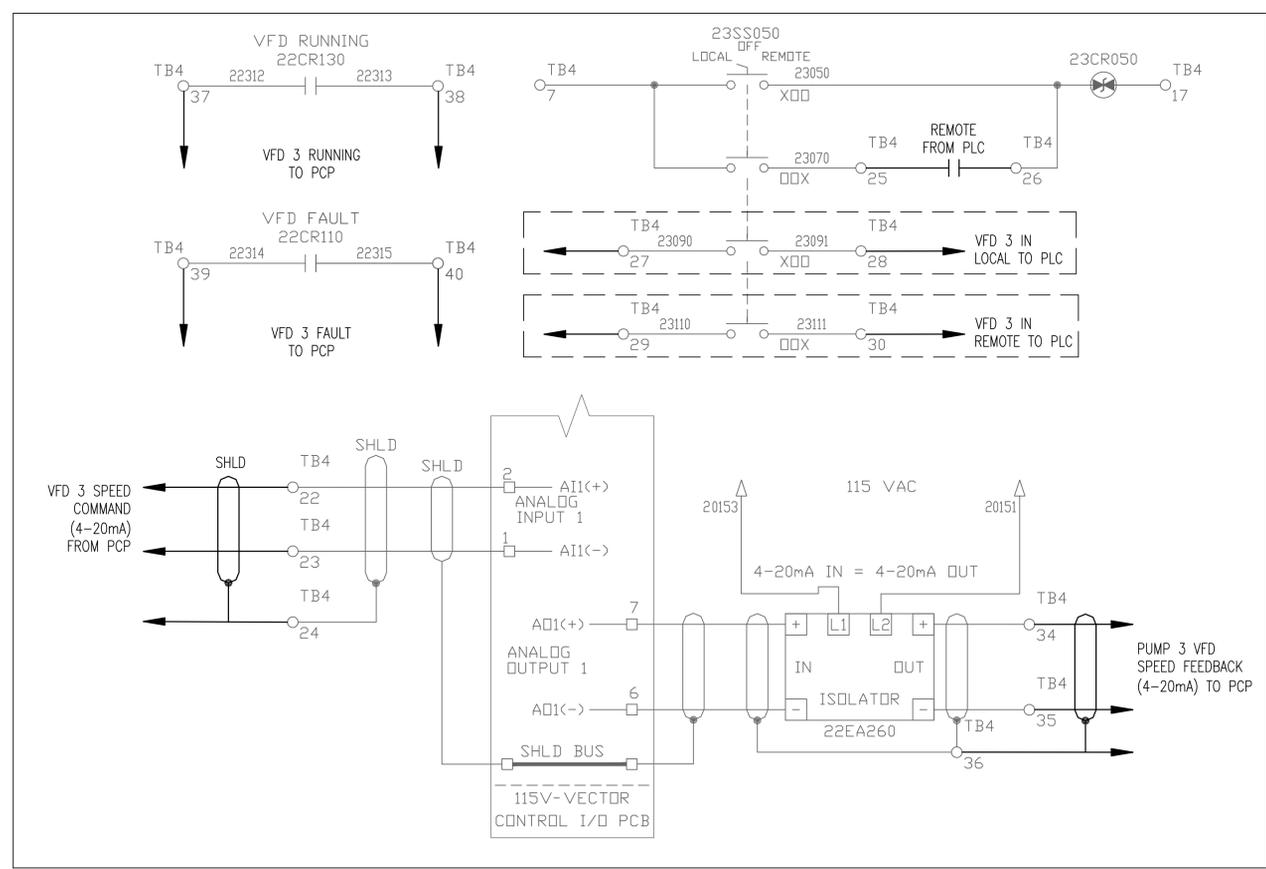
1. SEE SHEET 5 SYMBOLS, ABBREVIATIONS AND LEGENDS.
2. THE CONTRACTOR SHALL PROVIDE WIRING AND TERMINAL NUMBERS ON SUBMITTAL DRAWINGS.
3. DESIGN IS BASED ON AS BUILT DRAWINGS AND INFORMATION PROVIDED. CONTRACTOR TO FIELD VERIFY PRIOR TO PROCEEDING WITH WORK.
4. EXISTING EQUIPMENT AND WIRING IS SHOWN IN HALF TONE.

SPECIFIC NOTES

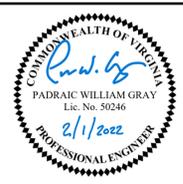
- 1 CONTRACTOR IS RESPONSIBLE FOR ALL VFD CONFIGURATION AND PROGRAMMING
- 2 CONSULT WITH VFD MANUFACTURER TO CONFIRM FIELD WIRING CONNECTIONS AND TERMINALS.
- 3 PRIOR TO PROCEEDING WITH WORK, CONTRACTOR SHALL SUBMIT DETAILED WIRING AND INTERFACE DRAWINGS OF EXISTING VFD'S FOR REVIEW AND APPROVAL. DRAWINGS SHALL INCLUDING ALL REVISIONS TO BE PERFORMED AS PART OF THIS PROJECT.



1 VFD 1 CONNECTIONS [1][2][3]
10.04 SCALE: NTS (TYPICAL FOR VFD 2)



2 VFD 3 CONNECTIONS [1][2][3]
10.04 SCALE: NTS



CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

DES: HCA SCALE: N/A
DRAWN: HCA HORIZ:
CHECK: PWG VERT:
DATE: 1/31/22

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

VFD CONNECTIONS

REV	DATE	DESCRIPTION

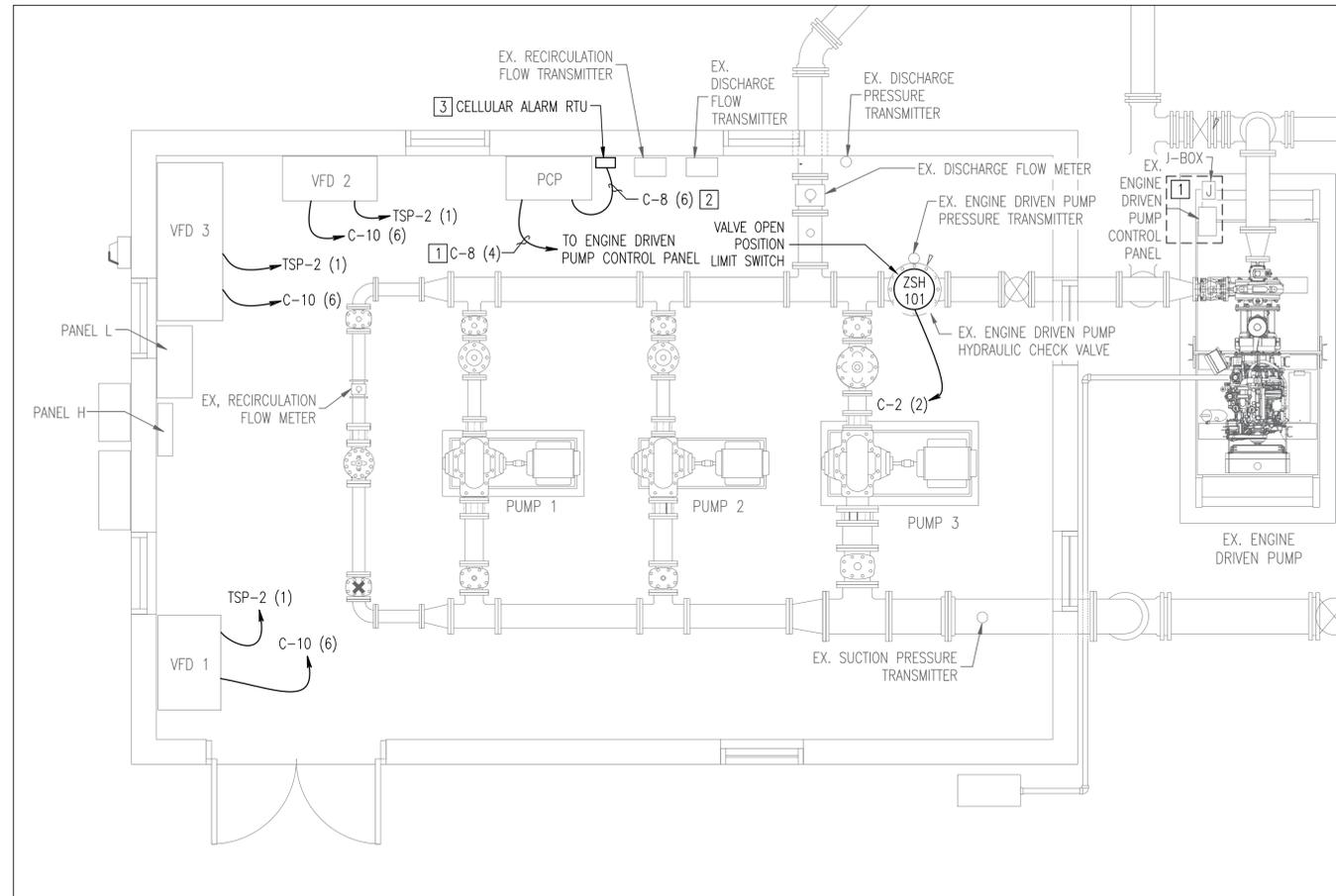
DRAWING	SHEET
10.04	8

GENERAL NOTES

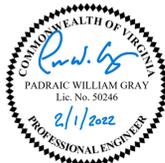
1. SEE SHEET 5 SYMBOLS, ABBREVIATIONS AND LEGENDS.
2. DESIGN IS BASED ON AS BUILT DRAWINGS AND INFORMATION PROVIDED. CONTRACTOR TO FIELD VERIFY PRIOR TO PROCEEDING WITH WORK.
3. EXISTING EQUIPMENT AND WIRING IS SHOWN IN HALF TONE.
4. UNLESS OTHERWISE NOTED ALL CONDUITS/CONDUCTORS SHALL BE ROUTED TO THE PCP.

SPECIFIC NOTES

- 1 RE-USE EXISTING CONDUIT BETWEEN PUMP CONTROL PANEL AND JUNCTION BOX AT ENGINE DRIVEN PUMP. REMOVE EXISTING CONDUCTORS ROUTED TO JUNCTION BOX AT ENGINE DRIVEN PUMP AND INSTALL NEW CONDUCTORS. ROUTE ALL CONDUCTORS FROM PCP THROUGH JUNCTION BOX AND INTO ENGINE DRIVEN PUMP CONTROL PANEL WITH NO SPLICES OR TERMINATIONS. COORDINATE TERMINATION OF CONDUCTORS AT ENGINE DRIVEN PUMP CONTROL PANEL WITH MANUFACTURERS REPRESENTATIVE.
ENGINE DRIVEN PUMP MANUFACTURER'S REPRESENTATIVE:
GREGG JACKSON
XYLEM/DEWATERING SOLUTIONS
CELL: (804) 928-5537
EMAIL: gregg.jackson@xylemnc.com
- 2 REMOVE EXISTING CONDUCTORS. INSTALL ALL NEW POWER AND SIGNAL CONDUCTORS. NEW SIGNAL CONDUCTORS SHALL BE 22 AWG MINIMUM. SIZE POWER CONDUCTORS PER MANUFACTURERS REQUIREMENTS.
- 3 A. REMOVE EXISTING CELLULAR ALARM RTU AND INSTALL NEW UNIT. COORDINATE TERMINATION OF CONDUCTORS AT CELLULAR ALARM RTU WITH MANUFACTURERS REPRESENTATIVE.
B. CONTRACTOR SHALL RETURN REMOVED CELLULAR ALARM RTU TO OWNER.
C. CONTRACTOR IS RESPONSIBLE FOR CELLULAR ALARM RTU CONFIGURATION AND PROGRAMMING. COORDINATE WITH MANUFACTURERS REPRESENTATIVE.
- 4 A. 24VDC CONTROL WIRING SHALL BE RUN IN SEPARATE CONDUITS FROM OTHER WIRING.
B. 120VAC CONTROL WIRING SHALL BE RUN IN SEPARATE CONDUITS FROM OTHER WIRING.
C. ANALOG SIGNAL WIRING SHALL BE RUN IN SEPARATE CONDUITS FROM OTHER WIRING.



1 INSTRUMENTATION PLAN 4
10.05 SCALE: 3/8" = 1'-0"



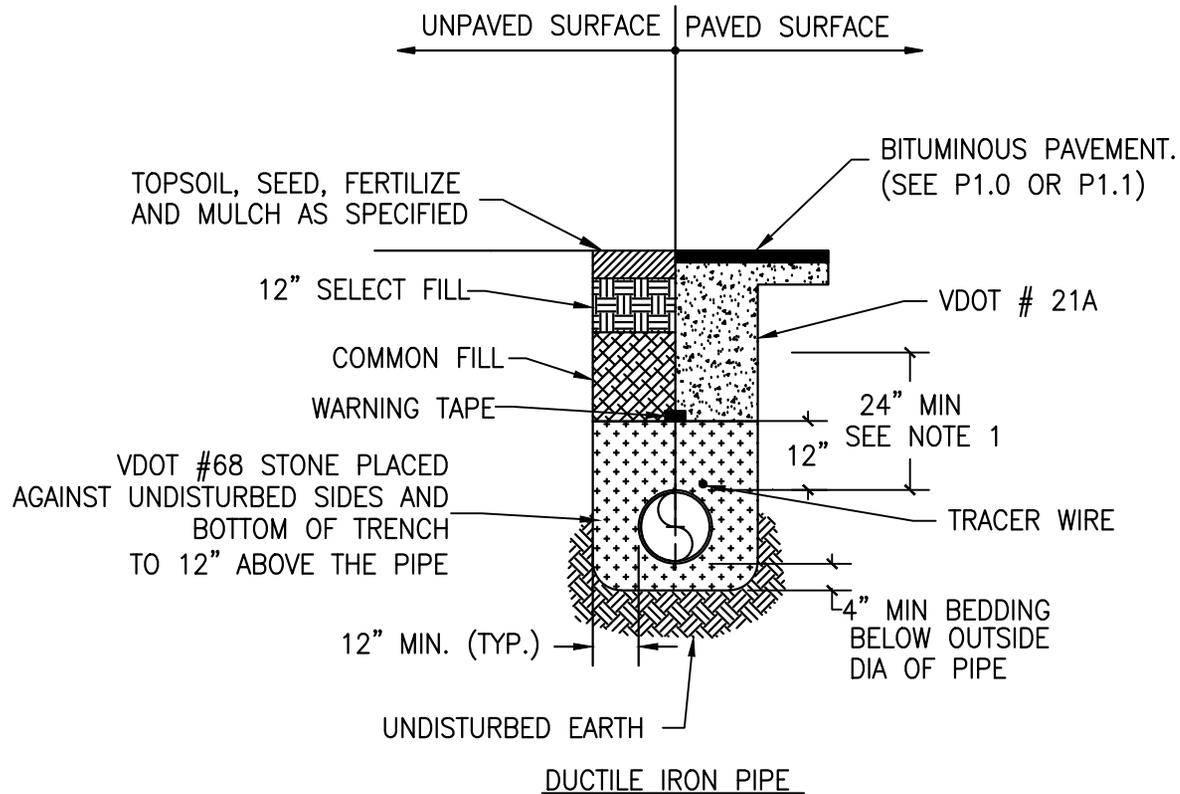
CITY OF CHARLOTTESVILLE DEPARTMENT OF UTILITIES
305 4TH. STREET N.W.,
CHARLOTTESVILLE, VIRGINIA 22911

DES:	HCA	SCALE:	AS SHOWN
DRAWN:	HCA	HORIZ:	
CHECK:	PWG	VERT:	
DATE:	1/31/22		

LAMBETH PUMP STATION
IMPROVEMENTS PROJECT

INSTRUMENTATION PLAN

REV	DATE	DESCRIPTION	DRAWING	SHEET
			10.05	9



NOTES:

1. MAINTAIN VERTICAL TRENCH WALLS FROM BOTTOM OF TRENCH TO 24" ABOVE CROWN OF PIPE. TRENCH WIDTH IN THIS AREA: PIPE O.D. + 24".
2. FOR EXCAVATIONS OVER 5 FT. DEEP, SLOPE TRENCH WALLS AS REQUIRED AND/OR PROVIDE OTHER SAFETY MEASURES IN ACCORDANCE WITH OSHA GUIDELINES.
3. ROCK SHALL BE REMOVED TO A MINIMUM OF 6-INCH CLEARANCE AROUND THE BOTTOM AND 12-INCH MINIMUM CLEARANCE TO THE SIDES OF PIPE.
4. ALL BEDDING AND BACKFILL SHALL BE PLACED IN 6" LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY PER ASTM D698.
5. "PAVED SURFACES" INCLUDE ALL PREVIOUSLY PAVED SURFACES OR SURFACES TO BE PAVED.



CITY OF CHARLOTTESVILLE

JAN.	2022
REVISION	DATE

CITY STANDARDS	
PIPE TRENCH UNIVERSAL STANDARD SUBGRADE – TYPICAL	
SCALE: N.T.S.	STANDARD NUMBER: W 1.0

VII.

ATTACHMENTS

ATTACHMENT A	SAMPLE C.O.I AND GUIDE TO THE ACORD FORM
ATTACHMENT B	PRICING SCHEDULE/BID FORM
ATTACHMENT C	VENDOR DATA SHEET
ATTACHMENT D	CERTIFICATION OF NO COLLUSION
ATTACHMENT E	WORKERS COMPENSATION CERTIFICATE OF COVERAGE
ATTACHMENT F	ANTI-DRUG/ALCOHOL PROGRAM
ATTACHMENT G	ESCROW AGREEMENT
ATTACHMENT H	TECHNICAL SPECIFICATIONS

SAMPLE C.O.I. and GUIDE TO THE ACORD FORM

Explanation: The Sample C.O.I. and Guide to the Acord Form below is for informational purposes only. Bidders are not required to submit a C.O.I or Endorsement(s) with their bid response. Prior to performance of any services or delivery of goods, the Bidder shall (i) have all required insurance coverage in effect; (ii) the Bidder shall deliver to the City certificates of insurance for all lines of coverage. The Bidder shall be responsible that such coverage evidenced thereby shall not be substantially modified or canceled without 30 days prior written notice to the City; and (iii) the Bidder shall deliver to the City Endorsements to the policies which require the City and its officials, officers, employees, agents and volunteers be named as “additional insured”.

Sample C.O.I. and Guide to the Acord Form



CERTIFICATE OF LIABILITY INSURANCE

DATE (MMDDYYYY)
07/01/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Insurance Agency/ Broker 123 Main St., Anytown, VA 21234	CONTACT NAME: John Doe, Agent PHONE (A/C No., Ext): (123)456-7890 FAX (A/C No.): (123)456-7890 ADDRESS:
---	--

INSURED XYZ Contractor 456 South St., Anytown, VA 21234	INSURER(S) AFFORDING COVERAGE INSURER A: Insurance Company 1 123456 INSURER B: Insurance Company 2 567890 INSURER C: Insurance Company 3 112233 INSURER D: INSURER E: INSURER F:
---	--

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

LINE	TYPE OF INSURANCE	ADDITIONAL INSURED	POLICY NUMBER	POLICY EFF. DATE (MMDDYYYY)	POLICY EXP. DATE (MMDDYYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY	<input checked="" type="checkbox"/> X	123456	12-1-2014	12-1-2015	EACH OCCURRENCE \$ 1,000,000
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR					PERMITS TO RENTED PREMISES (Per occurrence) \$
A	<input checked="" type="checkbox"/> ANY AUTO	<input checked="" type="checkbox"/> X	567890	12-1-2014	12-1-2015	COMBINED SINGLE LIMIT (Per accident) \$ 1,000,000
	<input type="checkbox"/> ALL OWNED AUTOS					BODILY INJURY (Per person) \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB	<input checked="" type="checkbox"/> X	112233	12-1-2014	12-1-2015	EACH OCCURRENCE \$ 1,000,000
	<input type="checkbox"/> EXCESS LIAB					AGGREGATE \$ 2,000,000
C	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	<input type="checkbox"/> N/A	ABC123	12-1-2014	12-1-2015	<input checked="" type="checkbox"/> WC STATE \$ 100,000
	<input type="checkbox"/> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in WA)					E.L. EACH ACCIDENT \$ 100,000
D	Professional Liability		XYZ456	12-1-2014	12-1-2014	Per claim \$1,000,000 Aggregate \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

The City of Charlottesville and its officers, employees, agents and volunteers are named as additional insured with respect to General Liability for work and completed operations as required by written contract.

CERTIFICATE HOLDER City of Charlottesville 325 4th St. NW Charlottesville, VA 22903	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>John Doe, Agent</i>
---	--

ACORD 25 (2010/05) The ACORD name and logo are registered marks of ACORD

PRODUCER - Insurance agency /broker who issues certificate

NAMED INSURED - Must be legal name of contracting party.

Must include the types of insurance required by contract.

POLICY FORM - Should be "occurrence"

ADDITIONAL INSURED - City of Charlottesville must be named and endorsed (separate document) as additional insured

CERTIFICATE HOLDER - Must be City of Charlottesville

POLICY EFFECTIVE DATE - prior to or same as effective date of contract

LIMITS OF INSURANCE - Must be the same or greater than contract requirements

POLICY NUMBER - Must match the number on the separate endorsement document

ATTACHMENT B	PRICING SCHEDULE/BID FORM
---------------------	----------------------------------

IFB:	LAMBETH PUMP STATION IMPROVEMENTS/22-85	Issuing Department/ Agency: City of Charlottesville Department of Utilities
Project:	LAMBETH PUMP STATION IMPROVEMENTS	

All costs required to complete all the work in accordance with the Contract Documents shall be included in the unit prices as required. Any contract resulting from this IFB will be a fixed unit price contract for the Lambeth Pump Station Improvements Project. This is a Unit Price Contract and only work actually completed and accepted by the City will be paid for by the City.

Quantities are estimated and will vary with actual projects. In the case of error in the extension of prices, the unit price shall govern.

The explanation for the Contract Item can be found in Specification Section 012800 – Measurement and Payment.

Contract Item No.	Description	Estimated Quantity	Unit	Unit Price	Total Price
1	Lambeth Pump Station Improvements	1	L.S.		

TOTAL FOR ALL BID ITEMS:

Words

Figures

ELECTION OF ESCROW ACCOUNT PROCEDURE FOR RETAINAGE:

If determined to be the successful low bidder(s), the below signed elects to use the Escrow Account Procedure for retainage.

Write "Yes" or "No" on above line

If the successful bidder elects to use the Escrow Account Procedure for Retainage, the "Escrow Agreement" Form (Attachment G) shall be executed and submitted to the City of Charlottesville within fifteen (15) calendar days after notification. If the "Escrow Agreement" form is not submitted within the fifteen (15) day period, the Contractor shall forfeit his rights to the use of the Escrow Account Procedure.

The Bidder acknowledges the receipt of the following addenda:

Addendum No. ____ Dated _____

Name And Address Of Firm:

_____ Zip Code: _____

E-mail Address: _____

Class: _____ Specialty Codes: _____

Virginia Contractor License No. _____

Date: _____

By: _____
(Signature In Ink)

Name: _____
(Please Print)

Title: _____

Fax Number: (____) _____

Telephone Number: (____) _____

State Corporation Commission

ID Number _____

A complete bid package will include the following:

1. Attachment B – Pricing Schedule/Bid Form
2. Bid Bond
3. Attachment C – Vendor Data Sheet
4. Attachment D – Certification of No Collusion
5. Attachment E – Workers Compensation Certificate of Coverage

Note: The following information is required as part of your response to this solicitation. Failure to complete and provide this sheet may result in finding your bid nonresponsive.

1. Qualification: The vendor must have the capability and capacity in all respects to satisfy fully all of the contractual requirements.

2. Vendor's Primary Contact:

Name: _____ Phone: _____

3. Years in Business: Indicate the length of time you have been in business providing this type of good or service:

_____ Years _____ Months

4. Indicate below a listing of at least four (4) current or recent accounts, either commercial or governmental, that your company is servicing, has serviced, or has provided similar goods. Include the length of service and the name, address, and telephone number of the point of contact.

A.	Company: _____	Contact: _____
	Phone: _____	Email: _____
	Dates of Service: _____	\$ Value: _____

B.	Company: _____	Contact: _____
	Phone: _____	Email: _____
	Dates of Service: _____	\$ Value: _____

C.	Company: _____	Contact: _____
	Phone: _____	Email: _____
	Dates of Service: _____	\$ Value: _____

D.	Company: _____	Contact: _____
	Phone: _____	Email: _____
	Dates of Service: _____	\$ Value: _____

I certify the accuracy of this information.

Signed: _____ Title: _____ Date: _____

CERTIFICATION OF NO COLLUSION

The undersigned, acting on behalf of _____, does hereby certify in connection with the procurement and bid to which this Certification of No Collusion is attached that:

This bid is not the result of, or affected by, any act of collusion with another person engaged in the same line of business or commerce: nor is this bid the result of, or affected by, any act of fraud punishable under Article 1.1 of Chapter 12 of Title 18.2 Code of Virginia, 1950 as amended (&&18.2-498.1 atseq.)

Signature of Company Representative

Name of Company

Date

ACKNOWLEDGEMENT

STATE OF VIRGINIA

CITY OF CHARLOTTESVILLE, to wit:

The foregoing Certification of No Collusion bearing the signature of _____ and dated _____ was subscribed and sworn to before the undersigned notary public by _____ on _____.

Notary Public

My commission expires:_____

CODE OF VIRGINIA

&18.2-498.4. Duty to provide certified statement. A. The Commonwealth, or any department or agency thereof, and any local government or any department or agency thereof, may require that any person seeking, offering or agreeing to transact business or commerce with it, or seeking, offering or agreeing to receive any portion of the public funds or moneys, submit a certification that the offer or agreement or any claim resulting thereon is not the result of, or affected by, any act of collusion with another person engaged in the same line of business or commerce, or any act of fraud punishable under this article.

B. Any person required to submit a certified statement as provided in paragraph A above who knowingly makes a false statement shall be guilty of a Class 6 felony. (1980, c.472)

ATTACHMENT E	WORKERS' COMPENSATION CERTIFICATE OF COVERAGE
---------------------	--

Section 2.2-4332, Code of Virginia, requires construction contractors and subcontractors to obtain and maintain workers' compensation insurance while performing work on behalf of the City of Charlottesville.

Evidence of coverage must be provided prior to commencement of Work.

This form must be completed and returned to the City.

The undersigned organization stipulates that it:

- A. has workers' compensation insurance and is in compliance with the Workers' Compensation statutes of the Commonwealth of Virginia. Yes No
Insurance Company _____
Policy expiration date _____
- B. is self insured for workers' compensation. Yes

IFB:	LAMBETH PUMP STATION IMPROVEMENTS/ 22-85
Project:	LAMBETH PUMP STATION IMPROVEMENTS

Signed by: _____
Title: _____
Firm Name: _____
Address: _____

AFFIDAVIT

STATE OF

COUNTY / CITY OF

, TO-WIT:

I, _____, being first duly sworn, do depose and say:
(Contractor official)

- (1) I am over the age of eighteen and understand the obligation of an oath.
- (2) I am _____(name, title) of the _____(contracting firm)and in such capacity I have personal knowledge of the facts and statements set forth in this affidavit and each fact and statement as set forth herein is true to the best of my knowledge and belief;
- (3) That the _____ (contracting firm) has in place a drug and alcohol training and testing program for its employees that meets the requirement of D.O.T. Regulations 382 and 40;
- (4) That the drug-testing laboratory retained by the above named contractor is _____(laboratory name) which is certified by DHHS/NIDA;
- (5) That the contractor named above has retained _____ (name) as their Medical Review Officer to review the results of its drug-testing program;
- (6) That the contractor named above has named _____(name) as their Substance Abuse Professional.
- (7) That all employees covered by D.O.T. 382 receive random for-cause and post-accident drug testing pursuant to such regulations;
- (8) That upon 48 hours' notice, _____(Contractor official) shall deliver to Project Manager all drug training and testing records as requested for the purpose of monitoring the drug training and testing program for compliance with D.O.T. Regulations.

The Affiant

(Contractor official)

Sworn and subscribed to before me by _____ (the Affiant)
on this _____ day of _____, 2006.

My commission expires: _____
Notary Public - Seal

ATTACHMENT G	CITY OF CHARLOTTESVILLE, VA ESCROW AGREEMENT
---------------------	---

THIS AGREEMENT ("Agreement"), made and entered into this ____ day of _____, 20____ by,
between and among the City of Charlottesville ("City"), _____ ("Contractor"), and

(Name of Bank)

(Address of Bank)

a trust company, bank, or savings and loan institution with its principal office located in the Commonwealth of Virginia (hereinafter referred to as "Bank" or "Escrow Agent"), and

("Surety") provides:

I.

The City and the Contractor have entered into the Construction Agreement ("Contract") with respect to City Project No. and Name: _____ ("the Contract"). This Agreement is pursuant to, but in no way amends or modifies, the Contract. Payments made hereunder or the release of funds from escrow shall not be deemed approval or acceptance by the City of performance by the Contractor or Surety.

II.

In order to assure full and satisfactory performance by the Contractor of its obligations under the Contract, the City may, pursuant to the Contract Documents, retain certain amounts otherwise due the Contractor. The Contractor has, with the approval of the City, elected to have these retained amounts held in escrow by the Bank. This Agreement sets forth the terms of the escrow. The Bank shall not be deemed a party to, bound by, or required to inquire into the terms of, the Contract or any other instrument or agreement between the City and the Contractor.

III.

The City may from time to time pursuant to this Agreement pay to the Bank amounts retained by the City under the Contract. Except as to amounts actually withdrawn from escrow by the City, the Contractor shall look solely to the Bank for payment of funds retained under the Contract and paid by the City to the Bank.

The risk of loss by diminution of the principal of any funds invested under the terms of this Agreement shall be solely upon the Contractor.

Funds and securities held by the Bank pursuant to this Agreement shall not be subject to levy, garnishment, attachment, lien, or other process whatsoever. Contractor agrees not to assign, pledge, discount, sell or otherwise transfer or dispose of his interest in the escrow account or any part thereof, except to the Surety.

IV.

Upon receipt of checks or warrants drawn by the City's Director of Finance and made payable to it as escrow agent, the Bank shall promptly notify the Contractor, negotiate the same and deposit or invest and reinvest the proceeds in "Approved Securities" within the meaning of this Agreement in accordance with the written instruction of the Contractor. In no event shall the Bank invest the escrowed funds in any security that is not an "Approved Security."

V.

The following securities, and none other, are Approved Securities for all purposes of this Agreement:

- (1) United States Treasury Bonds, United States Treasury Notes, United States Treasury Certificates of Indebtedness or United States Treasury Bills,
- (2) Bonds, notes and other evidences of indebtedness unconditionally guaranteed as to the payment of principal and interest by the United States,
- (3) Bonds or notes of the City,
- (4) Bonds of any political subdivision of the Commonwealth of Virginia, if such bonds carried, at the time of purchase by the Bank or deposit by the Contractor, a Standard and Poor's or Moody's Investors Service rating of at least "A", and
- (5) Certificates of deposit issued by commercial Banks located within the Commonwealth, including, but not limited to, those insured by the Bank and its affiliates,
- (6) Any bonds, notes, or other evidences of indebtedness listed in Section (1) through (3) may be purchased pursuant to a repurchase agreement with a Bank, within or without the City, having a combined capital, surplus and undivided profit of not less than \$25,000,000 provided the obligation of the Bank to repurchase is within the time limitations established for investments as set forth herein. The repurchase agreement shall be considered a purchase of such securities even if title, and/or possession of such securities is not transferred to the Escrow Agent, so long as the repurchase obligation of the Bank is collateralized by the securities themselves, and the securities have on the date of the repurchase agreement a fair market value equal to at least 100 percent of the amount of the repurchase obligation of the Bank, and the securities are held by a third party, and segregated from other securities owned by the Bank.

No security is an Approved Security hereunder if it matures more than five years after the date of its purchase by the Bank or deposit by the Contractor.

VI.

The Contractor may from time to time withdraw the whole or any portion of the escrowed funds by depositing with the Bank Approved Securities in an amount equal to, or in excess of, the amount so withdrawn. Any securities so deposited or withdrawn shall be valued at such time of deposit or withdrawal at the lower of par or market value, the latter as determined by the Bank. Any securities so deposited shall thereupon become a part of the escrowed fund.

Upon receipt of a direction signed by the City's Director of Utilities, the Director of Finance or designee shall authorize the Bank to pay the principal of the fund, or any specified amount thereof, to the account of the City of Charlottesville. Such payment shall be made in cash as soon as is practicable after receipt of the direction.

Upon receipt of a direction signed by the City's Director of Utilities, the Director of Finance or designee shall authorize the Bank to pay and deliver the principal of the fund, or any specified amount thereof, to the Contractor, in cash or in kind, as may be specified by the Contractor. Such payment and delivery shall be made as soon as is practicable after receipt of the direction.

VII.

For its services, hereunder the Bank shall be entitled to a reasonable fee in accordance with its published schedule of fees or as may be agreed upon by the Bank and the Contractor. Such fee and any other costs of administration of this Agreement shall be paid from the income earned upon the escrowed fund, and, if such income is not sufficient to pay the same, by the Contractor.

VIII.

The net income earned and received upon the principal of the escrowed fund shall first be paid or applied to pay the Bank's fee and any other costs of administration and such income shall be deemed a part of the principal of the fund. After all of the Bank's fees and other costs of administration have been paid from such income, the net income earned thereafter may then be paid over to Contractor in installments.

IX.

The Surety undertakes no obligation hereby but joins in this Agreement for the sole purpose of acknowledging that its obligations as surety for the Contractor's performance of the Contract are not affected hereby.

WITNESS the following signatures, all as of the day and year first above written.

CITY OF CHARLOTTESVILLE

CONTRACTOR: _____

BY: _____
COO/CFO

BY: _____
Officer, Partner, or Owner (Seal)

SURETY:

By: _____
President(Seal)

ATTEST:

Secretary

By: _____
Attorney-in-Fact

AFFIDAVIT AND ACKNOWLEDGEMENT OF ATTORNEY-IN-FACT

COMMONWEALTH OF VIRGINIA

(or, alternatively, Commonwealth or State of _____)

CITY / COUNTY OF _____

I, the undersigned notary public, do certify that _____ personally appeared before me in the jurisdiction aforesaid and made oath that he is the attorney-in-fact of _____, the Surety, that he is duly authorized to execute on its behalf the foregoing bond pursuant to the Power of Attorney noted above, and on behalf of said Surety, acknowledged the aforesaid bond(s) as its act and deed.

Given under my hand this _____ day of _____.

(SEAL)
Notary Public

My Commission expires:

APPROVED:

City Attorney/Designee Date

ATTACHMENT H	TECHNICAL SPECIFICATIONS
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DIVISION 01 – GENERAL
 Section 012800 - Measurement and Payment

DIVISION 03- CONCRETE
 Section 033000 - Cast-in-Place Concrete

DIVISION 10 - SPECIALTIES
 Section 107316 - Prefabricated Aluminum Canopy

DIVISION 26 - ELECTRICAL
 Section 260000 - Electrical Systems
 260533 - Raceways and Fittings

DIVISION 31 - EARTHWORK
 Section 312300 - Excavation and Fill

DIVISION 32 - EXTERIOR IMPROVEMENTS
 Section 329200 - Turfs and Grasses

DIVISION 40 - PROCESS INTERCONNECTIONS
 Section 406113 - Control Systems Integrator
 406300 - Control Systems Hardware

SECTION 012800 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

- A. The Contractor shall receive and accept the compensation provided in the Bid and the Contract as full payment for furnishing all labor, materials, tools, equipment and services for performing all operations necessary to complete the Work under the Contract, and also in full payment for all loss or damages arising from the nature of the Work, or from any discrepancy between the actual quantities of work and the quantities herein estimated by the Owner, or from action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the Work until the final acceptance by the Owner.
- B. The prices stated in the Bid include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the Work as shown on the Contract Drawings and specified herein. The basis of payment for an item at the lump sum price in the Proposal shall be in accordance with the description of that item in this section.
- C. The Contractor's attention is called to the fact that the quotations for the various items of the Work are intended to establish a total price for completing the Work in its entirety. Should the Contractor feel that the cost for any item of work has not been defined by a Bid Form Pay Item, he shall include the cost for that work in some other applicable bid item, so that his proposal for the Work reflects his total price for completing the Work in its entirety.
- D. Items listed in the Bid will be paid for only at the written direction and authorization of the Owner. Payment under this section will be made for materials furnished and placed in addition to those shown or beyond the limits indicated or reasonably inferred by the Contract Documents. Measurement and payment will be in accordance with the Bid and will include, but not necessarily be limited to, furnishing, hauling, placing and installing of materials and the furnishing of such manpower and equipment as required to accomplish the work as directed in writing by the Owner.
- E. Alterations
 - 1. The Owner reserves the right to change the alignment, grade, form, length, dimensions or materials of the Work under the Contract, whenever conditions or obstructions are met that render the changes desirable or necessary. All such alterations shall be paid for under the total lump sum bid or at a unit price bid for these items of work, except as follows:

- a. In the case that such alterations make the Work less expensive to the Contractor, a proper deduction shall be made from the contract prices and the Contractor shall have no claim on this account for damages or for anticipated profits on the work that may be dispensed with.
- b. In the case such alterations make the Work more expensive to the Contractor, a proper addition shall be made to the contract prices.
- c. Any additions or subtractions to the contract prices shall be proposed by the Contractor and then reviewed and approved by the Owner.
- d. In case the overall quantity of water main or pavement increases or decreases greater than 25% of the bid quantity, unit prices may be renegotiated.

F. Owner May Increase or Decrease Quantities

1. The Owner reserves the right to increase or decrease the quantity of material to be furnished or work to be done under the Contract whenever they deem it advisable or necessary. Such increase or decrease shall in no way violate or invalidate the Contract.
2. For the unit price items included in the bid, the Contractor will be paid for the actual amount of the authorized work done or material furnished under each item of the Proposal, at the unit price bid for that item. In case the quantity of any item is increased, the Contractor shall not be entitled to compensation over and above the unit price bid for each item. In case the quantity is decreased, the Contractor shall have no claim for damages on account of loss of anticipated profits because of such decrease.

G. Except as modified herein, measurement and payment shall be in accordance with the General Terms and Conditions – Section 000800.

1.2 MEASUREMENT

- A. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place and accepted by the Owner, in accordance with the General Terms and Conditions. A representative of the Contractor shall witness all field measurements.

1.3 PAYMENT

- A. Payments during the course of the Work for unit price items will be made on the basis of actual amount of the work item installed at the end of the pay period. Determination of the amount of the work item installed shall be made by the

Contractor and reviewed and approved by the Owner. Payments during the course of the Work for lump sum items will be made on the basis of percentage of completion of the work items listed in the Schedule of Values for each lump sum or unit price item. The Schedule of Values shall be prepared by the Contractor and submitted to the Owner within 15 days of the execution of the Contract and shall serve as a breakdown of lump sum bid items for the purpose of arriving at a basis for the monthly estimate. The Schedule of Values shall add up to 100% of the total bid.

1.4 BID ITEMS

A. Contract Item No. 1: Lambeth Pump Station Improvements

1. Payment for Lambeth Pump Station Improvements shall be made at the lump sum price bid for all work associated with the Lambeth Pump Station Improvements.
2. Periodic payment shall be made by estimating the progress of the construction components.
3. The lump sum price bid shall include all labor, materials, tools, equipment and services for the site work including, but not limited to:
 - bonds,
 - insurance,
 - mobilization and demobilization,
 - preconstruction video and progress photographs,
 - permits,
 - meetings,
 - shop drawings,
 - sequence of construction work plan,
 - construction schedule,
 - Utility Protection Plan,
 - COVID Response Plan,
 - excavation and backfill,
 - grading,
 - erosion and sediment control,
 - concrete slab and stairs,
 - erecting and removing forms,
 - placing reinforcing,
 - pouring concrete,
 - prefabricated aluminum canopy and appurtenances,
 - storm drain structures and piping,
 - topsoil, seed and straw,
 - fence and gate,

- electrical and instrumentation elements,
- replacing programmable logic controller,
- limit switch assembly,
- testing, and
- any other incidental items required for the proper installation of the Lambeth Pump Station Improvements work.

1.5 PAYMENT FOR MATERIALS NOT INCORPORATED INTO THE WORK

A. Storage of Materials

1. No payment for stored materials relative to the project shall be made.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture.
- C. Manufacturer's Data: Submit manufacturer's data with installation instructions for all materials, including but not limited to, admixture, curing compound materials, and joint materials.

1.3 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94 requirements for production facilities and equipment.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. Comply with ACI 301.
- B. Comply with ACI 117.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A615, Grade 60, deformed.
- B. Plain-Steel Welded-Wire Reinforcement: ASTM A1064, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 CONCRETE MATERIALS

- A. Cementitious Materials:
 - 1. Portland Cement: ASTM C150, Type I/II.
 - 2. Fly Ash: ASTM C618, Class C or F.
 - 3. Slag Cement: ASTM C989, Grade 100 or 120.
 - 4. Blended Hydraulic Cement: ASTM C595, Type IS, Portland blast-furnace slag cement.

- B. Normal-Weight Aggregate: ASTM C33, 1-inch nominal maximum aggregate size.
- C. Air-Entraining Admixture: ASTM C260.
- D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C494, Type A.
 - 2. Retarding Admixture: ASTM C494, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C494, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.
- E. Water: ASTM C94.

2.4 RELATED MATERIALS

- A. Joint Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber, or ASTM D1752, cork or self-expanding cork.
- B. Elastomeric Joint Sealant: ASTM C920, Type S, Class 25, Use T.

2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.

2.6 CONCRETE MIXTURES

- A. Normal-Weight Concrete:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.45.
 - 3. Cementitious Materials: Use fly ash, pozzolan, slag cement, and blended hydraulic cement as needed to reduce the total amount of Portland cement, which would otherwise be used per ACI 318.
 - a. Slump Limit: 4 inches plus or minus 1 inch.

4. Air Content: 6% plus or minus 1.5%

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94, and furnish batch ticket information.
 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 STEEL REINFORCEMENT INSTALLATION

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Control Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness.

3.5 CONCRETE PLACEMENT

- A. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- B. Consolidate concrete with mechanical vibrating equipment according to ACI 301.

3.6 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections exceeding 1/2 inch.

3.7 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Slip-Resistive Broom Finish: Apply a slip-resistive finish to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 305.1 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Tests: Perform according to ACI 301.
 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture.

END OF SECTION 033000

SECTION 107316 – PREFABRICATED ALUMINUM CANOPY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Prefabricated Aluminum Canopy
 - 2. All related items including attachment to other work and existing elements and flashing at existing building and at any penetrations.

1.3 FIELD MEASUREMENT

- A. Confirm dimensions prior to preparation of shop drawings.

1.4 ACTION SUBMITTALS

- A. Shop Drawings:
 - 1. Include plans, elevations, sections, details, mounting heights, and attachment to other work and existing building elements.
 - 2. Detail fabrication and assembly of canopy.
- B. Delegated-Design Submittal: For aluminum canopy and all attachments to other work or existing elements, submit analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products like those required for this Project and whose products have a record of successful in-service performance.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - a. Mapes Architectural Canopies, (888) 273-1132
 - b. SkyScape Architectural Canopies, (866) 916-0718
 - c. Mitchell Metals, LLC., (770) 766-5521
 - d. Aluma-Shield, (704) 926-6981
- B. Warranty:
 - 1. Canopy installer shall warrant the installation and workmanship for a period of one (1) year from the date of final completion of the project.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to protect them and permit easy access for inspection and identification.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, licensed in the Commonwealth of Virginia to design aluminum canopy and all attachments to other work or existing elements.
- B. Structural Performance of Canopy: Prefabricated aluminum canopy shall withstand the effects of gravity and environmental loads specified on the drawings.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes including differential movements relative to the existing building.

2.2 METALS

- A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. All exposed surfaces must be free of sharp or jagged edges.
- B. Aluminum:
 - 1. Extruded Bar and Tube: ASTM B221, alloy 6063-T5/T52.
 - 2. Extruded Structural Pipe and Tube: ASTM B429, alloy 6063-T6.
 - 3. Plate and Sheet: ASTM B209, alloy 6063-T832
 - 4. Decking: 6063-T6 Mill Finish.

2.3 FASTENERS

- A. General: Provide Type 304 or Type 316 stainless-steel fasteners.

2.4 MISCELLANEOUS MATERIALS

- A. Flashing: Required materials shall be provided.

2.5 FINISHES

- A. Powder coating shall be factory applied and quality controlled by the canopy manufacturer, color to be determined by owner.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Confirm dimensions and elevations shown on shop drawings prior to beginning installation.
- B. Confirm that surrounding area and other work is ready for the canopy installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Installation shall be in strict accordance with manufacturer's shop drawings. Particular attention shall be given to protecting the finish during handling and erection.
- B. Take extreme care to protect and eliminate all damage to installed decking components during installation. This includes, but is not limited to, standing, walking, or performing other work, while on finished decking.

3.3 POST INSTALLATION

- A. Touch up factory-applied finishes to restore damaged or soiled areas per manufacturer's guidelines.

END OF SECTION 107316

SECTION 260000 - ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide AC power as required. See contract drawings for details.
- B. Provide all labor, materials, equipment and services for installation of a complete operating system including all equipment, conduits conductors, etc.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 26 05 33 Raceways and Boxes
- B. Division 40 Specifications

1.03 SYSTEM REQUIREMENTS

- A. The electrical system shall be designed after a thorough site investigation. Arrange components logically for easy maintenance.

1.04 CRITERIA

- A. Electrical Systems shall be in accordance with the required and advisory portions of:
 - 1. NFPA 70, National Electric Code
 - 2. NECA 1, Standard Practices for Good Workmanship in Electrical Contracting
 - 3. NETA, Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
 - 4. UL Underwriters Laboratory

1.05 COMPLIANCE VERIFICATION

- A. Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection.

1.06 SUBMITTALS

- A. Submit shop drawings and manufacturer's product data. Manufacturer's data shall include specifications, installation instructions and general recommendations for all materials required. Include data substantiating that proposed materials comply with contract specifications.

PART 2 – PRODUCTS

2.01 JUNCTION BOXES

- A. All junction boxes shall be NEMA 12 unless otherwise noted on contract drawings.
- B. Junction boxes shall have the following features:
 - 1. Smooth continuously welded seams.
 - 2. Heavy gauge continuous piano hinge.
 - 3. Oil resistant door gasket.
 - 4. External mounting tabs on the top and bottom of enclosure.
 - 5. Finish and construction shall be manufacturer's standard.
 - 6. Junction boxes housing terminal blocks shall be provided with:
 - a. Document pocket mounted on the interior of door.
 - b. Subpanel constructed of 14-gauge steel, minimum, with white enamel paint finish, intermediate stiffeners and stainless steel hardware.
- C. Junction boxes shall be as manufactured by Hoffman Engineering or approved equal.

2.02 CONDUCTORS AND CABLES

- A. Insulated Single Conductor Cables
 - 1. Secondary wiring within buildings shall be soft drawn copper 98% conductivity with 600-volt insulation and shall be manufactured in accordance with requirements of the NEC, UL, ASA, NEMA, and ICEA.
 - 2. Wire and cable shall be delivered to job site in full coils or reels, each bearing a tag containing UL approval stamp, name of manufacturer, trade name, code, type of wire, and month and year of manufacture.
 - 3. Conductor insulation shall be NEC type "THHN/THWN" for field wires

and type MTW for control panel wires. Wire insulation shall be adequately color coded for identification, unless otherwise indicated. Conductor size shall be as defined by standard American Wire Gauge (AWG) numbers or circular mils where indicated. Panel control wiring shall be MTW type.

4. All control, signal and power conductors shall be stranded.
5. Minimum size for 120 VAC and 24 VDC control circuits shall be #16 unless otherwise noted. All wires shall meet the minimum size rating for connected load and distances per code requirements.

B. Bare Single Conductor Cables

1. Bare copper ground wire shall be soft drawn copper 98% conductivity and shall conform to ASTM B-3 and Federal Standard QQ-W-343.
2. All bare conductors #2 and smaller shall be solid.

C. Termination and Splicing Fittings

1. No splices will be permitted for control, signals or power, unless specifically approved by the Engineer.
2. If splices are approved by the Engineer, materials shall be as follows:
 - a. Fittings for termination or splicing stranded wire shall be solderless and designed for stranded wire set screw pressure fittings or indent compression type fittings. Thomas and Betts, Brundy, Square D, or equivalent.
 - b. Splices (junctions which occur below grade (including those in NEMA 4 junction boxes)) shall be 3M "Scotch-cast" insulated.
 - c. Splices in branch circuit and control wiring #10 and smaller shall be made with insulated spring connectors, Ideal "Wirenuts" or equivalent.

D. Pulling Compound

1. Pulling compound shall be UL approved, "Y-ER-EASE", or equivalent. Soap, grease or any substance other than specified shall not be permitted.
2. Wire pulls shall not exceed manufacturers' recommended maximum tensile.

PART 3 – EXECUTION

3.01 GENERAL

- A. Exposed low voltage circuits shall be run in galvanized metallic raceways. Metallic cable assemblies, type MI cable, type AC cable and type MC cable are not acceptable.
- B. Unless otherwise noted, use Schedule 80 PVC conduit in all vaults, direct buried and wet locations and galvanized rigid steel conduit in all other locations. Support conduit per NEC.
- C. All wiring shall use stranded copper conductors with insulations suitable for dry and wet locations. Instrumentation cable shall be twisted pair overall foil shielded with drain wire and insulation shall be rated for 300V or 600V. Shield shall be grounded at one end only, at the control panel.
- D. Instrumentation and 24 Volt DC signal wiring shall be segregated from 120 Volt AC power wiring.
- E. Identify each wire with a numbered label corresponding to the wire numbers appearing on the as-built wiring diagrams. Provide labels at each end.
- F. Design circuits and components to be loaded to no more than 80% of rated ampacity.
- G. Test the installation per the recommendations of NETA ATS.

3.02 RACEWAYS, CONDUCTORS AND CABLES

- A. All wire shall be installed in raceways as indicated above or on drawings.
- B. Do not install wire in raceways until after concrete work is completed. Raceways, in which moisture has collected, must be swabbed out before pulling in wire.
- C. Openings for raceways penetrating poured concrete floors or masonry walls shall be core-drilled. Openings shall be sealed watertight with grout and finished to match existing finish.
- D. Wiring exposed to temperatures higher than 30 degrees Celsius shall have insulation properly rated for temperatures it must withstand.

3.03 WIRE IDENTIFICATION

- A. Each wire shall be labeled and numbered with a plastic heat-shrink label around the wires at each termination of the wires at relays, terminal boards and other devices.

- B. Wire numbers shall correspond to wire numbers on the wiring and schematic diagrams.

END OF SECTION

SECTION 250533 - RACEWAYS AND FITTINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Requirements of Section 260000 – Electrical Systems - apply to work specified under this section.
- B. Requirements of this section of specification apply to and form part of individual electrical sections of the specification.

1.02 SCOPE

- A. Work includes labor, materials, equipment and services for installation of complete raceway system.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260 00 – Electrical Systems
- B. Division 40 Specifications

1.04 SUBMITTALS

- A. Submit shop drawings and manufacturer's product data, in accordance with provisions of Section 260000 - Electrical Systems. Manufacturer's data shall include specifications, installation instructions and general recommendations for each type of raceway and fitting required. Include data substantiating that proposed materials comply with specified requirements for each type of raceway.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Raceways shall be UL listed and bear the UL label, unless otherwise indicated.

2.02 RIGID METAL CONDUIT (RMC) RACEWAY

- A. RMC raceway shall also be known as galvanized rigid steel raceway (GRS). RMC raceway shall be steel, zinc coated for corrosion protection and shall comply UL 6, Federal Specification WWC-581 and ANSI Specification C80.1. Threads shall be protected from corrosion as soon as possible after they are cut by plated or painted finish.

2.03 LIQUID TIGHT/FLEXIBLE METAL CONDUIT (LT/FMC) RACEWAY

- A. LT/FMC raceway for feeder and branch circuits of general wiring systems shall be constructed of galvanized steel core with thermoplastic jacket and integral copper ground wire and shall comply with UL 360 and Federal Specification WWC-566, Type 1. Liquid tight jacket shall conform to NEMA RN1. Provide Anamet Type U.A., or equivalent.

2.04 COUPLINGS AND FITTINGS FOR STEEL RACEWAYS

- A. Couplings shall be steel finished with coatings inside and outside of zinc or cadmium.
- B. Couplings for RMC, except where encased in concrete or in hazardous locations, shall be threaded (solid or split). Where encased in concrete or within masonry, couplings for RMC raceway shall be solid (not split in half or down one side) threaded steel fittings only.
- C. Provide type "A" insulating bushings by OZ/Gedney, or equivalent, on RMC raceway terminations.
- D. Box connectors for LT/FMC raceway shall comply with Federal Specification WF 406B and shall be liquid tight with insulated throat as manufactured by Sepco, or equivalent. Provide straight or 90-degree connectors suitable for use in its intended application.
- E. Fittings shall be compatible with raceway and box accommodated. Fittings for RMC shall be threaded and shall conform to Federal Specification W-C-408. Fittings for LT/FMC shall meet Federal Specification W-F-406, Type I, Class 3, style as required.
- F. Expansion fittings for use with RMC raceway shall be type AX or EX by OZ/Gedney, or equivalent. Expansion/deflection fittings for use with RMC shall be type DX by OZ/Gedney, or equivalent. Type of fitting shall be properly chosen for type of movement anticipated.

2.05 CONDUIT OUTLET BODIES AND DEVICE BOXES

- A. Conduit outlet bodies and device boxes shall conform to UL 514, Federal Specification W-C-586b and ANSI Specifications C80.4 and C33.84.
- B. Conduit outlet bodies and device boxes shall be hot-dipped zinc galvanized iron alloy.
- C. Conduit outlet bodies and device boxes shall be provided complete with threaded hubs, neoprene gaskets and cast covers.

2.06 WIREWAY

- A. Wireway raceway shall be NEMA 12 and shall be furnished complete with covers and associated assemblies, (including: adapters, elbows, three-way junction, four-way junction, and telescopic hangers to accommodate installation of wiring using "Lay-in" methods.
- B. Oil-tight, dust-tight wireway (NEMA 12) shall conform to UL 870, and shall not be less than 14-gauge steel, except that end flanges shall not be less than 10-gauge steel. Wireway shall be constructed without knockouts and shall be provided with corrosion-resistant phosphatizing primer and ANSI-49 grey epoxy finish. Wireway shall be gasketed and provided with quick release cover latches. Square D "JIC", or equivalent.

2.07 ELBOWS AND OFFSETS

- A. Preformed elbows and offsets shall conform to same standards as respective raceway.

2.08 MISCELLANEOUS

- A. Cable Supports shall be OZ/Gedney type "S", or equivalent.
- B. Wall entrance seals shall consist of hot-dipped galvanized sealing gland assembly capable of providing seal around conduit to withstand 50-foot head of water without leakage. Shell of seal shall have at least two cast collars at right angle to sleeve that is embedded in concrete. Entrance seals shall be OZ/Gedney suitable for use with new or existing construction as applicable.
- C. Conduit seals shall be as manufactured by Crouse-Hinds, Appleton, or equivalent.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install wiring in raceways, unless otherwise indicated.
- B. Provide labeling in accordance with Section 260000 – Electrical Systems

3.02 RACEWAY METHODS

- A. The Contractor shall use the types of conduit for raceways in locations as follows:
 - 1. Galvanized Rigid Steel conduit shall be used inside of buildings and outside of buildings above grade.
 - 2. Schedule 80 PVC conduit in buried locations. Schedule 80 PVC conduit shall transition to RGS after 90-degrees up elbow such that PVC conduit is not exposed.

- B. LT/FMC raceway shall be used:
 - 1. In short lengths not to exceed three (3) feet for connection to motor terminal boxes, dry type transformers, engine generators, and vibrating equipment. Where such equipment is exposed to weather in damp or wet locations, LT/FMC raceway shall be employed.
 - 2. In lengths, as required by NEC, between outlet boxes and recessed lighting fixtures.
- C. Concealed raceway run below finish grade shall be Schedule 80 PVC.
- D. RMC raceways turning from slab to enter and turning from below waterproofing membrane of slab on grade to enter building shall be provided with polyvinylchloride coated RMC elbows.

3.03 INSTALLATION REQUIREMENTS

- A. Raceways and associated fittings shall not be used as grounding means, all raceways shall contain ground wire bonded to boxes.
- B. Provide cable supports in conduit raceway risers, as required, by NEC or as indicated.
- C. Raceway sizes shall be in accordance with NEC, except as follows:
 - 1. Minimum 3/4", except that 1/2" may be used for control and signal wiring between outlet boxes as indicated.
- D. Raceways shall be installed exposed, except where indicated.
- E. Raceway shall be installed with no interference with other trades. Raceways shall be supported at interval, as required, by NEC but not greater than 10 feet. Raceway supports shall be in accordance with the following:
 - 1. Exposed raceways shall be run parallel on wall or ceiling, and shall follow contours of surface to which they are attached. Support raceways employing steel two-hole pipe clamps securely fastened to surface to which raceway is attached.
 - 2. Suspended raceways shall be supported by hangers used only for raceway support. Hanger rods shall not penetrate air ducts or equipment of other trades. Raceways shall not be supported from ducts, pipes or hangers provided under other divisions for support of pipes, ducts, or suspended ceilings.

3. Parts and hardware used for support of equipment, conduits, and fittings shall be galvanized steel for dry locations and galvanized PVC coated steel for exterior locations.
- F. No raceway shall pass through beams. Raceway passing from heated to unheated spaces, conditioned spaces to unconditioned spaces, exterior spaces, refrigerated spaces, cold section plenums of air conditioning units, shall be suitably sealed by means of "Duxseal" or sealing fittings to prevent accumulation of condensation.
- G. Cap raceways immediately after installation to prevent entrance of debris and moisture.
- H. Raceways installed indoors shall be galvanized rigid steel.
- I. Provide No. 14 AWG zinc-coated steel or 1/8" polypropylene pull cord having not less than 200-pound test strength in empty raceways. Provide minimum of 2 feet of slack pull cord at each end of raceway.
- J. Provide expansion fittings or expansion/deflection fittings in each raceway crossing building expansion joint or as required by installation to accommodate expansion, contraction or deflection of raceway.

END OF SECTION

SECTION 312300 – EXCAVATION AND FILL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including the General Terms and Conditions for Construction Contracts, Special Terms and Conditions for Construction Contracts, and the Supplemental Terms and Conditions for Construction Contracts.
- B. The following technical specifications are related to this specification:
 - 1. Section 311100 – Clearing and Grubbing
 - 2. Section 312500 – Erosion and Sediment Controls
 - 3. Section 321200 – Flexible Paving
 - 4. Section 329200 – Turf and Grasses

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Excavation
 - 2. Dewatering
 - 3. Rock removal
 - 4. Fill materials

1.3 DEFINITIONS

- A. Excavation is the removal of soil and rock below grade for the purpose preparing an area for a structure or the construction of a trench to install a utility pipe or conduit.
- B. Dewatering is the removal of water from an excavation or the lowering of the water table to below the bottom of an excavation.
- C. Rock shall mean only boulders and pieces of concrete or masonry exceeding 0.5 cubic yards in volume, solid ledge rock, or bedrock, which requires for its removal drilling and blasting, wedging, sledging, barring, or breaking up with a powered-operated tool.
- D. Backfill is the granular materials used for bedding pipe, supporting structure foundations, replacing unsuitable materials, or pavement support.
- E. “In-the-dry” shall mean a soil subgrade that is stable with no ponded water, mud, or muck, and is able to support construction equipment without rutting or disturbance.
- F. Pipe Envelope is the limits of the granular fill placed around the pipe including, the bedding, trench walls and 12-inches above the top of the pipe.
- G. Structures refers to all buildings, wet wells, manholes, and below-grade vaults.

1.4 ACTION SUBMITTALS

- A. The following shop drawings shall be submitted by the contractor:
1. Compaction Test Reports.
 2. For the monitoring and/or removal of rock, the following shall be submitted:
 - a. A Conceptual Construction Plan describing the proposed construction and the efforts to be implemented to secure the safety of structures and utilities. The Plan shall include a blasting plan.
 - b. A Pre-Construction Survey to determine the existing condition of any property or structure which may be impacted by the construction. In addition to identifying any defects, cracks or irregularities of a structure, the contents of the structure shall also be identified, and their condition documented. Each property report the following information shall be provided:
 - i. Owner's name and address
 - ii. Date and time of survey
 - iii. All photographs
 - iv. Measurements and sketches
 - c. A Post-Construction Survey to re-examine the condition of structures and document all defects, cracks or irregularities. Each property report shall contain the same information as the Pre-Construction Survey, and a comparison of the reports' assessments.
 - d. A Vibration Monitoring Plan describing the locations of each instrument and the methods used for monitoring.
 - e. A Blasting Schedule including the date, time and location of proposed blasts. The contractor shall publish the Schedule in a local daily newspaper at least 10 days, but no more than 20 days before the start of the blasting program. In addition, the contractor shall provide the Schedule to all public utilities, and property owners potentially impacted.
 3. Dewatering Plans including the layout, number, depth and material construction of dewatering well to be employed.
 4. For each fill material proposed for incorporation into the work, the contractor shall submit the following test results:
 - a. Gradation test in accordance with ASTM D422, AASHTO T27, of VTM-25, as noted.
 - b. Moisture-density test in accordance with ASTM D698 or ASTM D1557.
 - c. Atterberg Limits (liquid limit, plastic limit, and plasticity index) in accordance with ASTM D4318 or VTM-7 as noted.
 - d. Unified Soil Classification System identity in accordance with ASTM D2487.
 - e. At the discretion of the City, the contractor may furnish a certification of conformity to VDOT Road and Bridge Specifications requirements from the material manufacturer in lieu of testing. Confirm acceptability of such a certification for each material before submitting.

1.5 INFORMATIONAL SUBMITTALS

- A. The following information shall be submitted by the contractor:
1. Utility Protection Plan stating how all existing utilities will be protected; and the safety of the public, construction personnel, inspectors and the City's representatives will be assured during construction; and the steps to be taken when utilities are disturbed.
 2. Vibration Control Consultant having five (5) years of experience, evidence of the satisfactory completion of at least five (5) monitoring programs, and three (3) examples of pre- and post-construction survey reports.
 3. Vibration equipment specifications describing the characteristics of all ground monitoring instruments to be used.
 4. Daily vibration monitoring records.
 5. Current certifications of calibration for all seismic instruments, indicating dynamic shake-table calibration by a vibration test facility.
 6. Blasting Contractor license and documentation showing at least five (5) years of experience and evidence of the satisfactory completion of at least five (5) blasting programs.
 7. Blasting Plan including the location of charges, charge specifications, soil type in the area, and blast dampening measures.
 8. All required Federal, State and local blasting permits.
 9. Licensed professional engineer registered in the Commonwealth of Virginia to prepare dewatering and drainage system designs and submittals.
 10. Licensed professional engineer registered in the Commonwealth of Virginia to prepare excavation support system designs.

1.6 QUALITY ASSURANCE

- A. Consult the Approved Products List for materials required in this specification:
- B. Materials will be tested and observed as described in the following paragraphs. Free access to the work for selection of test materials and observations shall be granted to the testing agency.
1. Materials to be used in the work shall be tested by a certified independent testing laboratory engaged by the Contractor and acceptable to the City to demonstrate conformance with the requirements of these Specifications.
 2. Testing methods shall comply with the latest applicable ASTM or VDOT Standards specified.
 3. During the placement of bedding, backfill, and fill, the soils testing laboratory shall perform in-place soil density testing to confirm that fill material has been compacted in accordance with the requirements of this Section. The City may designate areas where soil density testing will not be required.
 4. At least one (1) density and moisture content test for each 1,000 square feet of surface area for each compacted lift of fill at construction areas.
 5. At least one (1) density and moisture content test for each 400 linear feet of installed pipe.

6. Materials that have been previously tested may be subjected to further testing from time to time and may be rejected if it is determined that they do not conform to the requirements of these Specifications. Rejected materials shall be removed from the Work immediately when so directed by the City, notwithstanding the results of previous testing.
- C. A Vibration Control Meeting shall be conducted by the contractor with the Vibration Control Consultant, Blasting Contractor, and the City and its representatives to discuss the rock excavation and monitoring procedures. All procedural approvals given by the City shall be subject to trial in the field and shall not relieve the contractor of the responsibility to satisfactorily complete the work.
 - D. Referenced Standards, in addition to those provided within this specification, shall include the following:
 1. ASTM A36 – Specification for Carbon Structural Steel.
 2. ASTM A328 – Specification for Steel Sheet Piling.
 3. American Association of State Highway & Transportation Officials (AASHTO) – Standard Specifications for Transportation Materials and Methods of Sampling and Testing.
 4. Virginia Department of Transportation (VDOT) – Road and Bridge Specifications.
 5. Virginia Department of Transportation (VDOT) – Materials Division, Virginia Test Methods (VTM).

1.7 DELIVERY, STORAGE AND HANDLING

- A. Granular materials stored on-site shall be kept separated, in neat piles and out of the path of drainage ways.

1.8 COORDINATION (NOT USED)

PART 2 – PRODUCTS

2.1 FILTER FABRIC

- A. Filter fabric shall conform to the following requirements.
 1. Minimum grab strength of 120 lbs. per ASTM D1682.
 2. Apparent opening size to be equal to or greater than the U.S. Standard Sieve No. 100 (0.210 mm) per ASTM D4751.
 3. Percent open area not to exceed 30 percent. The “percent open area” is defined as the ratio of the sum of 20 or more individual open areas (times 100) to the sum of the corresponding 20 or more individual total areas.
 4. Coefficient of permeability shall not be less than 0.2 cm/sec.

2.2 GEOTEXTILE FABRIC

- A. Geotextile fabric shall conform to the following requirements.
1. Minimum tensile strength of 360 lbs. per ASTM D4632.
 2. Minimum puncture strength of 150 lbs. per ASTM D4833.
 3. Apparent opening size to be equal to or greater than the U.S. Standard Sieve No. 40 per ASTM D4751.
 4. Fabric material shall be woven polypropylene or polyester.

2.3 GRANULAR MATERIALS

- A. Riprap shall conform to VDOT Road and Bridge Specifications Section 204.02b and shall be sound, durable stone of igneous or metamorphic origin, and shall be free from seals, cracks, or structural defects.
- B. Gravel or crushed stone shall be open-graded coarse aggregate with clean, hard, tough, and durable pieces free from adherent coatings and deleterious amounts of friable, thin, elongated, or laminated pieces, soluble salts, or organic materials. Coarse aggregate shall conform to VDOT Road and Bridge Specifications Section 203 and the following requirements.
1. VDOT No. 1: Grade B or better stone conforming to the following gradation when tested in accordance with AASHTO T27.

Sieve	% Passing by Weight
4"	Min. 100
3-1/2"	90-100
2-1/2"	25-60
1-1/2"	Max. 15
3/4"	Max. 5

2. VDOT 10 ("Fine aggregate"): Rock Dust shall be crushed from Grade A stone or gravel and shall conform to the requirements of VDOT Road and Bridge Specifications Section 203. The material shall conform to the following gradations when tested in accordance with AASHTO T27.

Sieve	% Passing by Weight
3/8"	Min. 100
No. 4	85-100

No. 100	10-30
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3. VDOT 21A: Structural fill shall consist of gravel stone or slag screenings; fine aggregate and crushed coarse aggregate; sand-clay-gravel mixtures; or combinations of these materials. It shall be free of organic material, loam, wood, trash, snow, ice, frozen soil, and other objectionable material and shall conform to the following requirements:

Sieve	% Passing by Weight
2"	100
1"	94 - 100
3/8"	63 - 72
No. 10	32 - 41
No. 40	14 - 24
No. 200	

4. VDOT No. 21B: Structural fill shall consist of gravel stone or slag screenings; fine aggregate and crushed coarse aggregate; sand-clay-gravel mixtures; or combinations of these materials. It shall be free of organic material, loam, wood, trash, snow, ice, frozen soil, and other objectionable material and shall conform to the following requirements:

Sieve	% Passing by Weight
2"	100
1"	85-95
3/8"	50-69
No. 10	20-36
No. 40	Max. 59-19
No. 200	4-7

5. VDOT No. 25: Crusher run aggregate shall be crushed from stone, slag or gravel, and shall contain all of the sizes produced when the original aggregate is reduced

through a series of crushers to the maximum size specified. The material shall conform to the following gradation when tested in accordance with AASHTO T27.

Sieve	% Passing by Weight
1-1/2"	Min. 100
3/4"	95 ± 5
No. 4	32 ± 18

6. VDOT No. 57: Grade B or better stone conforming to the following gradation when tested in accordance with AASHTO T27.

Sieve	% Passing by Weight
1-1/2"	Min. 100
1"	95-100
1/2"	25-60
No. 4	Max. 10
No. 8	Max. 5

7. VDOT No. 68: Grade B or better stone conforming to the following gradation when tested in accordance with AASHTO T27.

Sieve	% Passing by Weight
1"	Min. 100
3/4"	90-100
3/8"	30-65
No. 4	5-25
No. 8	Max. 10
No. 16	Max. 5

- C. Screened gravel shall be hard, durable, rounded, or sub-angular particles of proper size and gradation and shall be free from sand, loam, clay, excess fines, and other deleterious materials. Screened gravel shall be graded within the following limits:

Sieve Size	% Finer by Weight
5/8"	100
1/2"	40 to 100
3/8"	15 to 45
No. 10	0 to 5

- D. Common fill shall consist of uniformly graded mineral soil, substantially free of clay, organic material, loam, wood, trash, snow, ice, frozen soil, and other objectionable material which may be compressible, or which cannot be compacted properly. Common fill shall not contain rocks larger than 4 inches in any dimension, broken concrete, masonry, rubble, asphalt pavement, or other similar materials.
1. Common fill shall have a maximum 75 percent passing the No. 40 sieve and a maximum of 20 percent passing the 200 sieve.
 2. Soft, wet, plastic soils that may be expansive, and clay soils having natural in-place water content in excess of 30 percent, shall not be used.
 3. Soils containing more than 5 percent (by weight) fibrous organic materials or having a plasticity index (PI) greater than 30 shall not be used.
 4. Rocks larger than 2 inches in any dimension shall not be permitted within 12 inches of finished grade.
- E. Select fill shall be as specified for common fill, except that the material shall contain no stones and shall have a plasticity index less than 20. Select fill used immediately above/around the pipe may contain no stones greater than 1 inch.
- F. Sand shall conform to VDOT Road and Bridge Specifications Section 202, Grade A for fine aggregate.
- G. Impervious fill shall consist of on-site clayey sandy silt or imported material with a permeability coefficient (K-value) less than 1×10^{-7} that can be readily spread and compacted. Low permeability fill shall not be placed under sidewalks or paved areas.

PART 3 – EXECUTION

3.1 GENERAL - DEWATERING

- A. Control surface water and groundwater such that excavation to final grade is made in-the-dry, and bearing soils are maintained undisturbed. Prevent softening, or instability of, or disturbance to, the sub-grade due to water seepage.
- B. Provide adequate protection against flotation for all work.
- C. The anticipated subsurface soil/water conditions shall be considered when selecting methods of excavation and temporary dewatering and drainage systems. Where groundwater levels are above the proposed bottoms of excavations, a pumped dewatering system shall be evaluated for pre-drainage of the soils prior to excavation to final grade and for maintenance of the lowered groundwater level until construction has been completed to such an extent that the foundation, structure, pipe, or fill will not be floated or otherwise damaged. Type of dewatering system, spacing of dewatering units, and other details of the work are expected to vary with soil/water conditions at a particular location. Excavation support system designs shall be prepared by a licensed professional engineer registered in the Commonwealth of Virginia.

3.2 SURFACE WATER CONTROL

- A. Control surface water runoff to prevent flow into excavations. Provide temporary measures such as dikes, ditches, and sumps.

3.3 EXCAVATION DEWATERING

- A. Provide and maintain adequate equipment and facilities to promptly remove and properly dispose of all water entering excavations. Excavations shall be kept in-the-dry, so as to maintain an undisturbed sub-grade condition throughout construction below grade, including backfill and fill placement.
- B. Pipe shall not be installed in water or be allowed to be submerged prior to backfilling. Pipe that becomes submerged shall be removed and the excavation dewatered and restored to proper conditions prior to reinstalling the pipe.
- C. Excavations for foundations and structures shall be maintained in-the-dry for a minimum of 4 days after concrete placement. In no event shall water be allowed to enter an excavation and rise to cause unbalanced pressure on foundations and structures until the concrete or mortar has set at least 24 hours.
- D. Dewatering and drainage operations shall at all times be conducted in such a manner as to preserve the natural, undisturbed bearing capacity of the sub-grade at the bottom of the excavation. If the sub-grade becomes disturbed for any reason, the unsuitable sub-grade material shall be removed and replaced with compacted granular fill to

restore the bearing capacity of the sub-grade to its original undisturbed condition. Costs of such removal and restoration shall be the responsibility of the contractor.

- E. Dewatering and drainage operations shall be conducted in a manner that does not cause loss of ground or disturbance to the pipe bedding or soil that supports overlying or adjacent structures.
- F. Provide diesel or gasoline powered standby pumping units ready for immediate use to serve the system in case of failure of normal pumping units.
- G. The contractor shall prevent flotation by maintaining a positive and continuous operation of the dewatering system. The contractor shall be fully responsible and liable for all damages that may result in failure of this system.
- H. The contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc., in order to prevent adverse effects on groundwater or surface water quality.
- I. If for any reason the dewatering system is found to be inadequate, the contractor shall at their own expense make such additions, changes and/or replacements as necessary to provide a satisfactory dewatering system.
- J. Removal of dewatering equipment shall be accomplished after the system is no longer required. The contractor shall remove the material and equipment constituting the system.

3.4 DISPOSAL OF DRAINAGE

- A. All water discharged from temporary dewatering and drainage systems shall be disposed of in accordance with the Erosion and Sediment Control Plan.

3.5 PREPARATION

- A. A Utility Protection Plan (UPP) shall be submitted to the City at least fourteen (14) days prior to the start of construction. The UPP shall include these minimum requirements:
 - 1. A step-by-step process for addressing utility protection from the initial call to VA811 to obtain a ticket through final backfill.
 - 2. Written affirmation by each construction employee that they have received the following training:
 - a. UPP Policy
 - b. Personal Protective Equipment
 - c. Basic Work Zone Safety Training
 - d. Flagger Certification

Employee training records, including the date on which the training of each topic occurred, the employee's signature attesting to taking the training, and their

Construction Manager's signature confirming the employee's attendance at the training, shall be provided to the City for each employee working on the project.

3. Written confirmation that at least one (1) Construction Manager responsible for the on-site crews has passed the computer-based training and testing administered through the VA811 website.
4. The frequency of in-office and jobsite safety training meetings.
5. A Test Hole Manifest Form which shall be completed for each utility crossing the proposed pipeline. The entire jobsite crew shall be required to check the utility markings to be encountered during that day's construction with the Test Hole Manifest Forms. The Test Hole Manifest Form shall include:
 - a. Name of Utility(i.e. water, sewer, gas, stormwater, electrical power, communication, etc.)
 - b. Location (Station)
 - c. Utility Diameter
 - d. Utility Depth
 - e. Utility Material (i.e. steel cast iron, ductile iron, concrete, etc.)
 - f. Date
 - g. Effective VA811 Ticket Number
6. A Corrective Action Report Form which shall be completed each time a violation of the Virginia Underground Utility Damage Prevention Act occurs. The completed form shall be provided to the City within 24 hours of the occurrence. The Corrective Action Report Form shall include the following:
 - a. Occurrence Date and Time
 - b. Location
 - c. Details of the Occurrence
 - d. Recommended Corrective Action
 - e. Name of Site Supervisor
 - f. On-site Crew Members

The City has the right to require additional corrective action to further protect existing utilities and public safety and/or to modify the UPP requirements.

- B. Contact VA811 before beginning excavations and allow required time for marking. Before excavating within 20 feet of utility poles and after pipeline stake out, coordinate construction with the appropriate utility company. Immediately notify the City of any conflict of new Work with existing utilities that may require relocation of new Work or of existing utilities. All necessary support of utility poles shall be the sole responsibility of the Contractor at no additional expense to the City.
- C. Prior to excavation, other utilities and underground facilities shall be located to confirm location, proper depth, and clearances. Care shall be taken in excavating to prevent damage to underground structures, utilities, and adjacent properties. When

approaching and crossing such installations, a combination of installation methods may be used. Trenching equipment shall not be used within 2 feet of existing utilities.

D. Test holes.

1. Perform exploratory excavation work (test holes) for the purpose of verifying the location, size and material of underground utilities and structures and to check for unknown utilities and structures, prior to commencing excavation work. Contractor shall immediately notify the City if such exploratory work yields information that may alter the design or installation of the pipeline.
2. Test holes shall be backfilled as soon as the desired information has been obtained. Backfilled surfaces shall be stabilized in accordance with approved erosion and sediment control plans. Test holes in asphalt pavement shall be patched with a thickness equal to existing adjacent areas.

3.6 EXCAVATION SUPPORT

- A. Furnish, install, monitor, and maintain excavation support (e.g., shoring, sheeting, bracing, trench boxes, etc.) as required by Federal, State, or local laws, ordinances, regulations, and safety requirements. Support the sides of excavation to prevent any movement which could in any way reduce the width of the excavation below that necessary for proper construction and protect adjacent structures from undermining, settlement, or other damage. Take care to prevent the formation of voids outside of sheeting. If voids occur behind sheeting, immediately backfill and compact the voids with common fill material. Voids in locations that cannot be properly compacted upon backfilling shall be filled with 2000 psi concrete or flowable fill.
- B. Install excavation supports outside the neat lines of foundations. Supports shall be plumb and securely braced and tied in position. Excavation support shall be adequate to withstand all pressures to which the supports will be subjected. Any movement or bulging of supports shall be corrected to provide the necessary clearances, dimensions, and structural integrity.
- C. Excavation supports left in place.
1. Excavation supports are required to remain in place if installed below the foundation and within a zone extending from the edge of the foundation and then outward and downward at 1H:1V below the pipe springline.
 2. The City may direct that certain excavation supports remain in place, or be cut off at any specific elevation. If the Contractor believes that such a directive increases Contractor's cost and would thereby entitle Contractor to a change in contract cost, Contractor shall notify the City in accordance with the applicable article(s) in the Contract General Conditions pertaining to changes in the Work.
 - a. The right of the City to direct that certain excavation supports remain in place shall not be construed as creating any obligation to give such direction, nor shall failure to give such direction relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence, or otherwise growing out of a failure on the part of the Contractor

to leave in place sufficient excavation supports to prevent any movement of the ground or damage to adjacent structures.

- D. Excavation supports shall be carefully removed in such manner so as not to endanger the Work or other adjacent structures, utilities, or property. All voids left or caused by withdrawal of supports shall be immediately filled with sand and compacted.
- E. Excavation support systems shall be inspected during and after installation and monthly thereafter by the support system design engineer. The support system design engineer shall submit a written report to the Contractor for each inspection describing recommendations, if any.

3.7 EXCAVATION BELOW GRADE

- A. If the bottom of any excavation is taken out below the limits shown on the Drawings, specified, or directed by the City, it shall be refilled at the Contractor's expense with 4-inch layers of compacted granular fill or other material approved by the City.
- B. If the subgrade is damaged by water, remove the unsuitable material and replace it with compacted granular fill or other approved material at Contractor's own expense so that the condition of the subgrade meets with the approval of the City before any work is placed.
- C. If, in the opinion of the City, the material, in its undisturbed natural condition at or below the normal grade of the excavation as indicated on the Drawings, is unsuitable for the work being performed, it shall be removed to such depth and width as directed and be replaced with suitable material for which compensation will be made at the unit prices established in the Contract.

3.8 STRUCURE EXCAVATION

- A. Excavation shall be made to the grades shown on the Drawings and to such widths as will give suitable room for construction of the structures for bracing, shoring, and dewatering. The bottom of the excavations shall be rendered firm and dry and, in all respects, acceptable to the City.
- B. Excavation and dewatering shall be accomplished by methods that preserve the undisturbed state of subgrade soils. Exposed soil and rock sub-grades shall be proof rolled with at least two coverages of the compaction equipment. Subgrade soils that become soft, loose, "quick," or otherwise unsatisfactory for support of structures as a result of inadequate excavation dewatering, proof rolling, or other construction methods shall be removed and replaced by granular fill at the Contractor's expense.
- C. Dewatering shall be such as to prevent boiling or detrimental under-seepage at the base of the excavation as specified.
- D. Excavation equipment shall be satisfactory for carrying out the Work in accordance with the requirements specified. In no case shall the earth be plowed, scraped, or dug

with machinery so near to the finished subgrade as to result in excavation of or disturbance of material below grade. Equipment used for excavation to final subgrade shall furnish an undisturbed subgrade surface.

- E. During final excavation to subgrade level, take whatever precautions are required to prevent disturbance and remodeling. Material that has become softened and mixed with water shall be removed. Hand excavation of the final 3 to 6 inches may be required to obtain a satisfactory undisturbed bottom. The City will be the sole judge as to whether the work has been accomplished satisfactorily.

3.9 EXCAVATION AND BACKFILLING FOR UNDERSLAB TRENCHES

- A. Excavation for all pipelines beneath structures shall be carried out with the excavating equipment operating from above the subgrade for the structure. The excavation shall be carried out in-the-dry and in a manner that will preserve the undisturbed state of the subgrade soils. The excavations may be completed with shoring and bracing at the Contractor's option with no additional cost to the City.

3.10 TRENCH EXCAVATION AND BACKFILLING

- A. Excavation for all trenches required for the installation of pipes shall be made to the depths indicated on the Drawings and in such a manner and to such widths as will give suitable room for laying the pipe within the trench, for bracing and shoring, and dewatering. Render the bottom of the excavations firm and dry and in all respects acceptable to the City.
- B. Pavement, when encountered, shall be cut along straight lines before excavating. All excavations in concrete shall be precut in neat straight lines with a pavement breaker or saw. In sidewalks the excavation shall be a minimum of one "block" in size. If the sidewalk is combined with the curb, the curbing shall also be removed.
- C. Rock shall be removed to a minimum 6-inch clearance around the bottom and 12-inch minimum clearance on the sides of all pipe being laid.
- D. Excavation of earth material below the bottom of a trench shield (trench box) shall not exceed the limits established by ordinances, codes, laws, and regulations.
 - 1. When using a trench shield for installing rigid pipe, any portion of the shield extending below mid-diameter shall be raised above this point prior to moving the shield ahead to install the next pipe.
 - 2. When using a trench shield for installing flexible pipe (PVC, PE, etc.), the bottom of the shield shall not extend below mid-diameter at any time.
 - 3. When a shield is removed or moved ahead, extreme care shall be taken to prevent the movement of pipe or the disturbance of the pipe bedding. Pipe that has been disturbed shall be removed and reinstalled at Contractor's own expense.

- E. Where pipelines are to be constructed in fill areas, all fill material to a level 2 feet above the “top of pipe” elevation shall be placed and compacted to 95 percent dry density as determined by ASTM D698 prior to excavating pipe trench.
- F. Backfill excavations as promptly as work permits, removing bracing and shoring as backfilling progresses.
- G. In rock excavations, granular fill as noted on the Detail Drawings shall be placed and compacted in 6-inch lifts to a minimum depth of 12 inches above top of pipe. Compaction shall be to 95 percent of maximum dry density as determined by ASTM D698.
- H. In earth excavations, backfill as noted on the Detail Drawings shall be placed and compacted in 6-inch lifts to a minimum depth of 12 inches above top of pipe. Compaction shall be to 95 percent of maximum dry density as determined by ASTM D698. Pipe bedding shall be as shown on the Detail Drawings.
- I. Where the pipes are laid in unpaved areas, the remainder of the trench shall be filled with common fill in lifts not to exceed 1 foot and thoroughly compacted by rolling or tamping to prevent subsequent settling. The top 1-foot lift shall be select common fill. The backfill shall be mounded three (3) inches above the existing grade or as directed. Wherever a loam or gravel surface exists prior to excavation, it shall be removed, conserved, and replaced to the full original depth as part of the Work. In some areas it may be necessary to remove excess material during the clean-up process so that the ground may be restored to its original level and condition. If storage of loam, gravel, or topsoil is not preferred, replace it with material of equal quality and in equal quantity at Contractor’s own expense.
- J. Where the pipes are laid in streets or other paved areas, the remainder of the trench shall be backfilled with VDOT #21A crushed stone in 1-foot layers thoroughly compacted by rolling or tamping. The top 1-foot lift below the bottom of the specified paving shall be compacted in 6-inch layers.
- K. Along the length of all pipeline to the top of the pipe envelope, construct impervious dams or bulkheads of manufactured materials, clay or concrete in the trench bottom at 300-foot intervals or at manholes and structures, whichever is less, to obstruct the free flow of groundwater after construction is completed. Install impervious dams at all points where a pipe trench enters an excavated area where a permanent under-drain system is installed.

3.11 MISCELLANEOUS EXCAVATION

- A. Perform all miscellaneous excavations as required to complete the Work. Make all excavations necessary to permit the placing of loam and plants, for constructing roadways, and any other miscellaneous earth excavation required under the Contract.

3.12 ROCK AND BOULDER EXCAVATION AND DISPOSAL

- A. Rock excavation may be performed by jack hammering, expansive chemical splitting, or other similar processes. Blasting will not be permitted without written authorization by the City. The City must approve all rock excavation processes prior to any rock excavation.
 - 1. All blasting operations required for the purpose of rock excavation, including but not limited to permit acquisition, employee training/certification, explosives handling/storage and charge detonation, shall be performed in accordance with 29 CFR 1926, Subpart U – Blasting and the Use of Explosives.
 - 2. The Contractor shall be responsible for securing any and all required permits and for providing trained and certified blasting personnel.
 - 3. Blasting mats shall be required for all blasting operations. Blasting operations shall not be performed within 15 feet, or a distance otherwise determined by the City, of any existing water, gas, fuel, and/or sanitary sewer pipe or drainage structures.
 - 4. Any and all damage resulting from blasting operations shall be the responsibility of the Contractor, and shall be promptly repaired to the satisfaction of the City and at no cost to the City, utility, or property owner.
- B. Excavation is unclassified.
- C. Fragmented rock with dimensions not exceeding 4 inches in any direction may be mixed with common fill and used as common fill.
- D. Unused rock and boulders shall be removed and disposed off-site.

3.13 BACKFILLING - COMMON FILL

- A. Common fill may be used as trench backfill, as embankment fill, or in other areas as designated by the City. Material conforming to the requirements of common fill shall be placed in lifts having a maximum thickness of one (1) foot measured before compaction.
- B. Common fill shall be compacted to at least 95 percent of maximum density as determined by ASTM D698.
- C. Materials placed in fill areas shall be deposited to the lines and grades shown on the Drawings making allowance for settlement of the material and for the placing of loam.
- D. The surfaces of filled areas shall be graded to smooth true lines, strictly conforming to grades indicated on the Plans. No soft spots or uncompacted areas will be allowed in the Work.
- E. No compacting shall be done when the material is too wet either from rain or from excess application of water. At such times, work shall be suspended until the

previously placed and new materials have dried sufficiently to permit proper compaction.

3.14 BACKFILLING - STRUCTURAL FILL

- A. Structural fill shall be placed in lifts having a maximum thickness of 6 inches in open areas and 4 inches in confined areas including points where piping joins structures, measured before compaction. Each lift of fill shall be compacted to at least 95 percent of maximum dry density determined by ASTM D698 using methods approved by the City. The limits of structural fill adjacent to structures shall extend as shown on the Drawings.
- B. Structural fill shall not be placed on a frozen surface or one covered by snow or ice, nor shall snow, ice, or frozen earth be incorporated in the compacted fill.
- C. Structural fill shall be compacted by at least 4 coverages of all portions of the surface of each lift by compaction equipment. "One coverage" is defined as the condition obtained when all portions of the surface of the fill material have been subjected to the direct contact of the compactor.

3.15 BACKFILLING - GRANULAR FILL

- A. Place granular fill within pipe trenches and under structures as shown on the Drawings.
- B. Granular fill shall be placed in lifts having a maximum thickness of one (1) foot measured before compaction. Each lift shall be compacted to at least 95 percent of maximum dry density determined by ASTM D698.
- C. Granular fill shall be compacted by at least four (4) coverages of each lift with vibratory compaction equipment acceptable to the City.

3.16 EARTH EMBANKMENTS

- A. Prior to placing embankment fill materials, all organic materials (including peat and loam) and loose inorganic silt material (loess) shall be removed from areas beneath the embankments. If the sub-grade slopes are excessive, the sub-grade shall be stepped to produce a stable, horizontal surface for the placement of embankment materials. The existing sub-grade shall then be scarified to a depth of at least six (6) inches. Adjust the moisture content of the scarified zone to slightly above optimum, and compact the sub-grade.
- B. Embankment fill shall consist of common fill material and shall be placed and compacted in even lifts of 12 inches (compacted thickness) and compacted to at least 90 percent of maximum dry density as determined by ASTM D698.
- C. Rock may not be used in embankment fill.

3.17 IMPERVIOUS FILL

- A. Impervious fill shall be placed in controlled, even lifts having a maximum thickness (measured before compaction) of six (6) inches. Compaction shall be sufficient to attain a permeability of less than 1×10^{-7} cm/sec.
- B. Moisture content of impervious fill to be compacted shall be maintained at or near its optimum moisture content (-2 to +3 percent).

3.18 DISPOSAL OF SURPLUS MATERIAL

- A. Excess excavated materials shall be removed from the site and disposed of in accordance with Federal, State and local regulations. Materials shall be neatly piled so as to inconvenience as little as possible the public and adjoining property owners until used or otherwise disposed of as specified.
- B. Erosion and sediment control measures shall be installed as appropriate.
- C. Suitable excavated material meeting the specified requirements may be used for fill embankments or backfill on the different parts of the Work as required.
- D. Surplus materials shall become the property of the Contractor and shall be removed and disposed off-site.

3.19 GRADING

- A. Grading in preparation for placing of loam, planting areas, paved walks and drives, and appurtenances shall be performed in all places that are indicated on the Drawings, to the lines, grades, and elevations shown, and shall be performed in such a manner that the requirements for formation of embankments can be followed. All material encountered, of whatever nature within the limits indicated, shall be removed and disposed of in accordance with these specifications. During the process of grading, the sub-grade shall be maintained in such condition that it will be well drained at all times.
- B. If at the time of grading it is not possible to place any material in its final location, it shall be stockpiled in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. The City reserves the right to make minor adjustments or revisions in lines or grades if found necessary as the Work progresses.
- D. Stones or rock fragments larger than four (4) inches in their greatest dimension will not be permitted in the top 12 inches of the finished sub-grade of all fills or embankments.
- E. In cuts, all loose or protruding rocks on the bank slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the Drawings.

3.20 RIPRAP FOR SLOPE STABILIZATION

- A. Prepare sub-grade for riprap. Remove vegetation, brush, tree stumps, or other objectionable material. Cut or fill to the required lines and grades. Any fills required shall be of the same type as, and compacted to, a density approximating that of the surrounding undisturbed material.
- B. Before installing riprap, install geotextile filter fabric as shown on the Drawings and in accordance with the geotextile manufacturer's instructions.
- C. Place riprap as soon as practicable after embankment construction. Limit lag between placement of embankment and riprap protection to the least time possible, and prevent mixture of soil with riprap material.
- D. Place riprap as shown on the Drawings and in conformance to the requirements of VDOT Road and Bridge Specifications Section 418 – Riprap. Place stones so that the weight of the stones is carried by the underlying material and not by the adjacent stones. Place large stones at the bottom of the slope. Fill spaces between stones with spalls of suitable size to construct a solid, stable slope, free from large voids and defects.

3.21 VIBRATION MONITORING

- A. Where construction activity involving vibration is performed, vibration monitoring shall be required. The Contractor shall employ a Vibration Control Consultant to monitor and analyze results from seismographic recordings and to provide advice in order to eliminate the occurrence of damage due to construction operations. Initial tests of construction activity shall be monitored under the supervision of the vibration consultant who will determine the maximum vibration limitations and maintain the vibration effects at or below the limitation levels at existing structures or utilities.
- B. After completion of the tests, the Vibration Control Consultant shall monitor and record ground motion caused by all subsequent vibration, and provide the Engineer with daily monitoring records. Should data indicate that limiting levels have been exceeded; the Contractor shall take necessary measures to reduce vibrations to acceptable levels. Should conditions warrant, the City reserves the right, at any time, to require the Contractor to submit a revised Plan to reduce the vibrations. Nothing presented in these specifications shall in any way relieve the Contractor of any responsibility for any and all damage to existing structures, utilities, or the work. Any damage incurred as a result of the Contractor's construction operations shall be repaired by the Contractor at their sole cost to the complete satisfaction of the property owner and City.
- C. The Vibration Control Consultant's monitoring instruments shall be located immediately adjacent to the nearest structure(s) and at other locations as designated on the approved Monitoring Plan. The record shall consist of the seismographic records identified by instrument number, location of each instrument, date, time and location of vibration origin, and all other data necessary to control the operations. These

records, as a formal report, shall be submitted to the City on a weekly basis and provided in tabulated form at all other times.

3.22 GROUND MOTION MONITORING

- A. The seismographs shall be capable of providing a permanent record of the three components of ground motion in terms of "particle velocity", with velocity transducers having a flat response over a range of at least 6 to 200 Hertz, and in addition shall be capable of internal dynamic calibration.
- B. Peak Particle Velocity shall be the measure of the level of ground vibration and is defined as the maximum of any one of the three mutually perpendicular components of motion. Vibrations shall be limited such that the maximum peak particle velocity as measured shall not exceed the recommendation of the Vibration Control Consultant, as approved by the City, and shall be related to Paragraph 3.09 U.S. BUREAU OF MINES CRITERIA.

3.23 ROCK EXCAVATION

- A. Rock excavation by jack hammering, expansive chemical splitting, or other similar processes.
 - 1. All blasting operations required for the purpose of rock excavation, including but not limited to permit acquisition, employee training/certification, explosives handling/storage and charge detonation, shall be performed in accordance with 29 CFR 1926, Subpart U – Blasting and the Use of Explosives.
 - 2. The Contractor shall be responsible for securing any and all required permits and for providing trained and certified blasting personnel. Prior to blasting, the Contractor shall submit to the City for approval a written blasting procedure that includes addressing the protection of existing subsurface utilities and structures.
 - 3. Blasting mats shall be required for all blasting operations. Blasting operations shall not be performed within 15 feet, or a distance otherwise determined by the City, of any existing water, gas, fuel, and/or sanitary sewer lines or drainage structures. The Contractor shall provide the City with charge specifications and soil type in the area adjacent to these utilities for review and approval prior to initiating any blasting operations.
 - 4. Any and all damage resulting from blasting operations shall be the responsibility of the Contractor, and shall be promptly repaired to the satisfaction of the City and at no cost to the City, utility, or property owner.
- B. Fragmented rock with dimensions not exceeding four (4) inches in any direction may be mixed with common fill and used as common fill.
- C. Unused rock and boulders shall be removed and disposed off-site.
- D. Where encountered, the Contractor shall excavate rock (as defined below), to the lines and grades indicated on the Drawings or as directed by the City, and shall dispose of

the excess and unsuitable excavated material and furnish suitable material for backfill in place of the excavated rock.

- E. The word “rock” wherever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding one-half (½) cubic yards in volume, solid ledge rock, or bedrock which, in the opinion of the City, requires for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft, weathered, decomposed or disintegrated rock which can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone and no rock beyond the maximum limits of excavation, which may fall into the excavation, will be considered as “rock”.
- F. Rock excavation methods employing the use of explosives, or employing mechanical or chemical methods other than the use of explosives, shall be submitted to the City for approval. The Contractor is responsible for operating in a safe manner, for producing smooth and sound rock surfaces at the lines of excavation, and for controlling damage and vibration.

3.24 EXCESS ROCK EXCAVATION

- A. Rock, below normal subgrade, which is shattered due to drilling and blasting, shall be removed. Any and all excess rock excavation, whether resulting from over-breakage or other causes, which is below the normal elevation of subgrade shall be backfilled, at the Contractor’s expense.
- B. If rock is excavated within a pipe trench beyond the limits of payment, the excess rock excavation, whether resulting from over-breakage or other causes shall be appropriately backfilled.

3.25 EXPLOSIVES

- A. The Contractor shall keep explosives on the site only in such quantity as may be needed for the work under way and only during such time as they are being used. No on-site overnight storage of explosives shall be permitted. The City shall be notified in advance of daily storage and use of explosives. Explosives shall be stored in a secure manner and away from all tools. Caps of detonators shall be safely stored at least 100 feet from the explosives when not secured in approved containers on approved vehicles during daily blasting operations. Upon completion of daily construction, all explosives and appurtenances remaining on site shall be promptly removed from the premises. In addition to observing all City of Charlottesville ordinances and State and Federal laws relating to the transportation, storage, handling and use of explosives, the Contractor shall conform to any further regulations which the City may deem necessary. Should any of the above-mentioned laws, ordinances, or regulations require a licensed blaster to perform or supervise the work, said blaster shall, at all times, have his license on-

site and shall permit examination thereof by the City or other regulatory authorities having jurisdiction.

3.26 BLASTING CONTROL

- A. The City reserves the right to observe the drilling and loading of shot holes for test blasting and any excavation blasting to verify that they are in accordance with the submitted plans. The Contractor shall inform the City with ample notice before the start of these operations.
- B. The Contractor shall at all times be responsible for any damage caused by vibrations or fly rock due to blasting or any of his other operations.
- C. All blasts shall be designed to prevent fly rock. It shall be the Contractor's responsibility to ensure that no hazards exist to people or structures in the area. Blasting mats shall be used at all times.
- D. Blasting shall be performed only with such quantities and strengths of explosives and in such manner as will break the rock approximately to the lines and grades shown leaving the rock not to be excavated in an unshattered condition. Controlled blasting techniques shall be used for all perimeter surfaces when blasting to final grades or lines. Controlled blasting is excavation of rock in which the various elements of the blast (hole size, depth, spacing, burden, charge size, explosive charge weight per delay, distribution, delay sequence) are carefully balanced and controlled to provide a distribution of charge that will excavate the rock to the required contours to minimize overbreak and fracturing of the rock beyond the contour line. Smooth wall blasting, pre-splitting, cushion blasting and line drill are examples of operations included in the term "controlled blasting". Where the nature of the rock is such that excessive overbreak beyond these limits may occur, the City may require that no blasting be done and that mechanical means be used for rock excavation.
- E. All necessary precautions shall be taken to preserve the material below and beyond the established lines of all excavation in the soundest possible condition. The Contractor is responsible for taking proper account of the geology and formation competency to prevent damage to foundation or perimeter rock, or structures resulting from permanent blast-induced rock movements or blast-induced gas pressures. The City will inspect an excavation following the blast and cleanup to determine acceptability.

The may require a change in the controlled blasting technique, perimeter hole spacing, and/or loading density if unsatisfactory results are obtained.

- F. Where concrete is to be placed directly upon or against rock surfaces, the excavation shall be sufficient at all points to provide for minimum dimensions of concrete shown

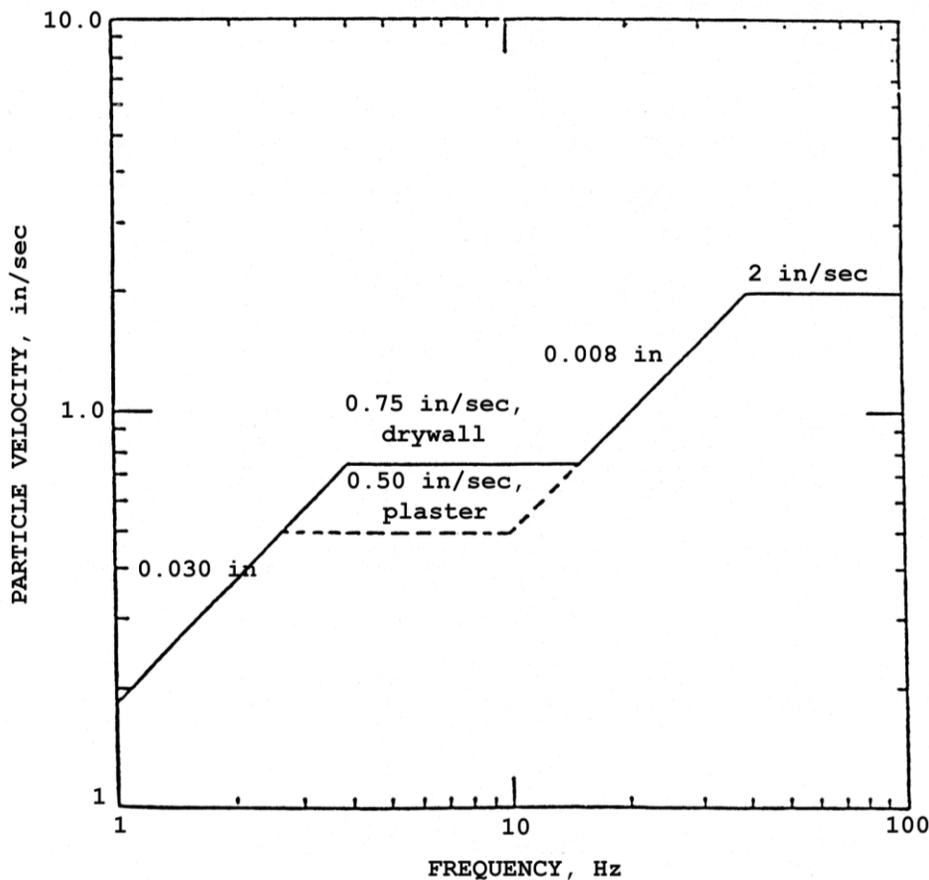
on the Drawings, and the required minimum dimensions of concrete shall be exceeded as little as possible.

G. The Contractor shall only employ competent personnel qualified by training and experience to blast, particularly in potentially high damage areas near any above and below ground structures, underground vaults, manholes, roadways and utilities. The Contractor shall maintain close supervision of the blasting personnel and ensure that the blasting operations comply with all Federal, State, and City authority blasting regulations, explosive manufacturer's instructions and the requirements of the vibration limitations.

H. Blasting shall not be performed closer than 15 feet to existing water, gas, sewer, fiber optic, or conduit utilities unless such facilities have been completely exposed, definitely located, and then backfilled prior to the blast. In any case, blasting shall be no closer than 2 feet from definitely located existing utilities, 10-inch or smaller diameter and no closer than 5 feet from utilities larger than 10-inch diameter.

3.27 U.S. BUREAU OF MINES CRITERIA

U.S. Bureau of Mines Criteria from Report RI-8507 (November 1980):



END OF SECTION 312300

SECTION 329200 – TURF AND GRASSES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including the General Terms and Conditions for Construction Contracts, Special Terms and Conditions for construction Contracts, and the Supplemental Terms and Conditions for Construction Contracts.
- B. The following technical specifications are related to this specification:
 - 1. Section 311100 – Clearing and Grubbing
 - 2. Section 312300 – Excavation and Backfill
 - 3. Section 312500 – Erosion and Sediment Controls

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Topsoil
 - 2. Fertilizing
 - 3. Seeding
 - 4. Mulching

1.3 DEFINITIONS (NOT USED)

1.4 ACTION SUBMITTALS

- A. The following shop drawings shall be submitted by the contractor:
 - 1. Seed mixture
 - 2. Fertilizer literature
 - 3. Fertilizing and seeding schedules
- B. Samples of all materials shall be submitted for inspection upon request by the City.

1.5 INFORMATIONAL SUBMITTALS

- A. The following information shall be submitted by the contractor:
 - 1. An affidavit for seed conforming to Section 244.02 (c) of the Virginia Department of Transportation Road and Bridge Specifications, latest edition.
 - 2. Manufacturer's certificate of compliance for the specified seed mix. The certificates shall include the guaranteed percentages of purity, weed content and germination of the seed, and net weight and date of shipment.

1.6 QUALITY ASSURANCE

- A. Consult the Approved Products List for materials required in this specification.

1.7 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be stored in a dry location prior to application.
- B. Fertilizer shall be delivered to the site in original, unopened containers each showing the manufacturer's guaranteed analysis.
- C. Seed shall be furnished in sealed bags or containers bearing the date of the last germination, which shall be within a period of six (6) months prior to planting.

1.8 COORDINATION

- A. The placement of topsoil, fertilizer, seed and mulch shall only be conducted after rough and final grading have been completed, and rocks and vegetative materials have been removed.

PART 2 – PRODUCTS

2.1 TOPSOIL

- A. Topsoil shall be fertile, friable, natural topsoil obtained from a well-drained site that is free of flooding. It shall be free of subsoil or slag and free of stones, lumps, clay, vegetation, and other extraneous matter.
 - 1. Topsoil shall be delivered to the site having a pH between 6.0 and 7.0 and shall contain not less than three (3) percent organic matter as determined by loss of ignition of moisture-free samples dried at 100 degrees Celsius.
 - 2. Topsoil shall not be placed while in a frozen or muddy condition.

2.2 FERTILIZER

- A. Fertilizer shall be commercially mixed free flowing granules or pelleted, 10-10-10 (N-P₂O₅-K₂O) grade for lawn and naturalized areas. At least 40% of the Nitrogen shall be in slowly available (organic) form.

2.3 SEED

- A. Seed shall be labeled in accordance with the USDA Rules and Regulations under the Federal Seed Act and shall comply with the requirements of the Virginia Erosion and Sediment Control Handbook.
- B. Seed shall be from the same or previous year's crop; each variety of seed shall have a purity of not less than 85 percent, a percentage of germination not less than 90%, shall have a weed content of not more than 1% and contain no noxious weeds.
- C. Seed mix for use in all areas shall be:

Common Name	Mix Percentage
Kentucky 31 Tall Fescue	70%
Perennial Ryegrass	30%

2.4 MULCH

- A. Mulch and mulch tacking agent shall be as specified in Section 312500 – Erosion and Sediment Controls.
- B. Mulch for hydroseeding shall be a specially processed cellulose fiber containing no growth or germination inhibiting factors. The fiber shall be uniformly suspended to form a homogeneous slurry when mixed with water and agitated.
 - 1. Each package shall not contain in excess of ten (10) percent moisture and shall be marked by the manufacturer to show the air-dry weight content.

PART 3 – EXECUTION

3.1 GENERAL

- A. Previously established grades shall be maintained in a true and even condition.
- B. In order to prevent unnecessary erosion of newly topsoiled and graded slopes and siltation of drainage ways, the contractor shall apply seed and mulch as soon as practical or when the work within 1,000 square feet of disturbed ground surface has been satisfactorily completed.
- C. When newly graded areas cannot be topsoiled and seeded due to seasonal or weather conditions and will remain exposed for more than 30 days, the contractor shall protect those areas against erosion and washouts. Prior to application of topsoil, any materials applied for erosion control shall be thoroughly incorporated into the subgrade or removed.
- D. On slopes, the contractor shall provide against washouts by an approved method. Any washout that occurs shall be regraded and reseeded at the contractor's expense until the turf is established.
 - 1. On slopes greater than 2H:1V shall be protected by erosion control matting.
- E. Fertilizing and seeding shall be accomplished between April 1 to May 31 or August 16 to October 15. Seeding at any other time shall only be undertaken upon approval of the City.

3.2 APPLICATION

- A. Topsoil shall be placed to a minimum compacted depth of six (6) inches on all disturbed areas.

1. Topsoil shall be carefully prepared by scarifying or harrowing and hand raking after placement. All stiff clods, lumps, roots, stones and other foreign matter shall be removed and disposed of by the contractor.
 2. The topsoil shall be rolled with a hand roller weighing not more than 100 pounds per foot of width. During rolling, all depressions shall be filled with additional topsoil and the surface regraded and rolled until a smooth and even finished grade is created.
- B. Fertilizer shall be applied at a rate of 40 pounds per 1,000 square feet and lightly worked in per the manufacturer's directions.
1. Fertilizer application may be performed hydraulically in one operation with hydroseeding and fiber mulching.
- C. Seed shall be applied at a rate of 20 pounds per 1,000 square feet and within 5 days following topsoil preparation.
1. Slopes whose vertical height is less than 20 feet but more than five (5) feet shall be seeded in two (2) equal treatments. Slopes whose vertical height is five (5) feet or less may be seeded in one operation.
- D. Mulch shall be applied at a rate of 40 pounds per 1,000 square feet.

3.3 MAINTENANCE AND ACCEPTANCE

- A. The contractor shall maintain seeded areas, reseeding if and when necessary, until a good, healthy, uniform growth is established with no bare spots.
- B. The contractor is responsible for cleaning all structures and paved areas of unwanted deposits and overspray of the hydroseed mixture.

END OF SECTION 329200

SECTION 406113 - STATION CONTROL SYSTEMS INTEGRATOR

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the requirements for the Contractor to obtain the services of one Instrumentation and Controls Subcontractor who shall be responsible for the coordination and integration of the instrumentation and control system improvements. This Subcontractor shall be referred to as the Control Systems Integrator (CSI). The CSI shall have total responsibility for the detailed design, procurement, configuration, testing, installation, start-up and implementation of the pump station instrumentation and control system improvements including instrumentation, hardware, software and control equipment as specified herein. Single source responsibility is required.
- B. The CSI shall furnish all instrumentation, software and controls specified unless otherwise noted.
- C. It is the Contractor's and the CSI's responsibility to perform all testing, startup and demonstration efforts and to coordinate this work with the City's designated Programming Engineer. It is the Engineer of Record's (EOR) responsibility to coordinate and oversee the startup and demonstration. The City and its consultants are only obligated to witness these activities.
- D. Although specification references are made herein, other specification Sections may be referenced from those Sections. It shall be the Contractor's and the CSI's responsibility to obtain and follow applicable specification Sections for this project.

1.02 ABBREVIATIONS

CSI	Control Systems Integrator
FAT	Factory Acceptance Test
I&C	Instrumentation and Control
I/O	Input / Output
OIT	Operator Interface Terminal
PC	Personal Computer
PCP	Pump Control Panel
PLC	Programmable Logic Controller
Pre-SAT	Preliminary Site Acceptance Test
RTU	Remote Terminal Unit
SAT	Site Acceptance Test
VFD	Variable Frequency Drive

1.03 CSI REQUIREMENTS AND RESPONSIBILITIES

- A. The CSI shall furnish equipment, materials, software and appurtenances in accordance with the requirements of the Project specifications and drawings.
- B. The CSI shall coordinate with equipment manufacturers to obtain information and submittals from manufacturers as required to execute the work requirements of this Project.
- C. The CSI shall be responsible for providing, installing, configuration, testing and startup of equipment and components outlined as their responsibility in the Project specifications and drawings. It will be the responsibility of the CSI to configure the PLC and Industrial Panel PC and to verify successful two-way data communication over the local network between the PLC and Industrial Panel PC.
- D. The licensed programming software required for PLC configuration programming shall be the property of the CSI and shall be the latest programming software standards and firmware version of Allen Bradley, RSLogix 5000.
- E. The SCADA software required to be installed in the Industrial Panel PC shall be VTScada 200-Development Runtime–Upgrade with three months of SupportPlus.
- F. The CSI shall furnish the City a licensed copy of both the PLC programming software and the Industrial Panel PC SCADA software. This software will be used by the City’s designated Programming Engineer for programming the operation control logic in the PLC and the graphics in the Industrial Panel PC.
- G. The CSI shall provide a \$2000.00 allowance to provide a laptop computer to be specified by the City during construction.
- H. Once installation and configuration programming are completed by the CSI, the City’s designated Programming Engineer will be responsible for programming the operation control logic in the PLC and the graphics in the Industrial Panel PC. Operational programming is limited to the station specific logic and graphics programming for the PLC and Industrial Panel PC. This programming will be done as an addition to the basic configuration files provided by the CSI.
- I. The CSI shall coordinate wiring termination points, configuration and programming of the Cellular Alarm RTU with the RACO manufacturer’s representative:

Contact Ralph Royall: 510-594-4226, royall@racoman.com
- J. The CSI shall coordinate wiring termination points, configuration and programming of the Engine Driven Pump Control Panel with the Xylem/Godwin manufacturer’s representative.

Contact Gregg Jackson: 804-928-5537, gregg.jackson@xylem.com

- K. The CSI shall configure and connect field devices to the I/O points as shown on the Project drawings. Where I/O points are not used, label as spare and wire to terminal blocks as shown on the Project drawings.

1.04 QUALITY ASSURANCE

A. References

- 1. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

ANSI - American National Standards Institute
ASME - The American Society of Mechanical Engineers
ASTM - The American Society for Testing Materials
NEMA - National Electric Manufacturers Association
UL - Underwriters Laboratories, Inc.
ISA - Instrument Society of America
IEEE - Institute of Electrical and Electronic Engineers
NEC - National Electrical Code

B. Quality Control

- 1. All components shall be new and of the most current and proven design. All components shall be suitable for the intended application and shall be installed and wired in strict accordance with the manufacturer's requirements.
- 2. CSI
 - a. The CSI shall be regularly engaged in the business of instrumentation and controls and shall be responsible for the furnishing, coordination and the installation of the equipment and specified herein.
 - b. The CSI shall demonstrate the requisite resources of in-house staff, facilities and finances to complete the project in the schedule specified. These resources shall include personnel who are direct payroll employees of the CSI to engineer, design, implement, stage, and test the hardware and software system included in this Project. In-house personnel shall include but not be limited to engineering, drafting, analog and digital control systems and wiring design, construction, wiring, labeling, software

configuration, programming, project management, quality control, and field engineering disciplines.

- c. The CSI shall assign a specific person to be the CSI Project Manager for this project. The Project Manager shall be a direct employee of the CSI, shall be assigned to this specific project, and shall be skilled and experienced in project management, and in the type of work described herein. The Project Manager shall be assigned for the period of the Project. Should it become necessary to replace the CSI's project manager, the Contractor shall submit to the City the credentials of the person assigned as their replacement.
- d. The CSI facilities shall include hardware and software owned by the CSI Subcontractor for development and support of any system software, and any testing and demonstration equipment to be utilized on the project.

1.05 SUBMITTALS

- A. Unless the CSI has been previously approved by the City, submit a CSI qualifications package for the proposed CSI for this project. The qualifications package shall include the following information: Company background, experience in municipal water pumping station applications, project plan for this project, information on the CSI's Facilities, three letters of reference summarizing the CSI's performance on similar projects.
- B. Prior to obtaining any material, fabrication, or installation in connection with this Section, detailed shop drawings on all equipment and material shall be submitted and approved. Submittal requirements for equipment are listed in individual equipment specification sections referenced in this specification section. Requirements listed in this specification section are in addition to requirements listed in other specification sections.
- C. If deviations are proposed, the CSI shall follow the procedures listed in Section 40 63 00. Should the City elect to not accept a proposed deviation, the Contractor shall be obligated to provide the original design specified.
- D. Drawings
 - 1. Coordination Drawings
 - a. Submit coordination drawings for review and approval by the Engineer/City.

- b. Coordination drawings shall be prepared by the CSI and shall include the following, as a minimum:
 - 1) Interconnection wiring diagrams showing Pump Control Panel and field wiring to components and panels. Indication of field wiring to components shall include terminations in intermediate terminal boxes, field devices and instrumentation, control panels and equipment. Diagrams shall include terminal numbers for terminations to equipment.
 - 2) Control panel wiring diagrams for equipment control panels modified by the CSI.
 - 3) Drawings shall be prepared by the CSI and shall be developed on a computer aided drafting (CAD) system. The CAD system shall be AutoCAD, latest version as approved by the City. Drawings shall be printed on 24" high x 36" wide reproducibles. One set of reproducible drawings shall be submitted with the required number of sets of prints. Reproducibles and prints shall be full size 24" x 36".
 - 4) Coordination drawings shall include wiring interconnections, terminations and terminal numbers for connections between equipment and devices and panels.

2. Record Drawings

- a. The Contractor will keep one copy of all Specifications, Drawings, Addenda, Change Orders and approved submittals at the site, in good order and annotated to show all changes made during the construction process. These shall be available to the Engineer and the City and shall be delivered to the City in both hard copy and digital (PDF) format upon completion of the project.

E. Operations & Maintenance Manuals

- 1. The Contractor shall furnish for the Engineer's review three (3) Operation and Maintenance Manual draft copies, one copy of which shall be provided to the City for review and comment. The Engineer shall reconcile the City's comments with their comments prior to approval. The final manual shall be approved by the Engineer and the City.
- 2. The Contractor shall furnish to the Engineer (for the City's use) three copies of the approved Operation and Maintenance Manual at least fourteen (14) calendar days prior to startup.
- 3. Manuals shall include operation and maintenance information on all systems and items of equipment. The data shall consist of: catalogs,

brochures, bulletins, charts, schedules, approved submittals corrected to as-built conditions and assembly drawings describing location, operation, maintenance, lubrication, operating weight, and other information necessary for the City to establish an effective operating and maintenance program. The following data shall also be included:

- a. Title page giving name and location of facility, project drawings numbers, where shown and Specification Section where described.
 - b. Table of Contents.
 - c. Approved submittals of each piece of equipment.
 - d. Manufacturer's cuts and dimension drawings of each piece of equipment and details of all replacement parts.
 - e. Manufacturer's maintenance and operation instructions for all equipment and apparatus, and complete listing of nameplate data.
 - f. Complete piping and interconnecting drawings.
 - g. Complete parts list with parts assembly drawing (preferably by exploded view).
 - h. Instructions with easily understood schematics or diagrams for troubleshooting, disassembling and assembling the equipment for overhaul or repair.
4. All items listed above that are of a sheet size of 8-1/2 inches by 11 inches or can be folded (no more than twice) to this size shall be bound in 2-inch maximum loose-leaf three-ring d-post type binders with clear plastic-pouch covers. The contents shall be fully indexed. All sheets shall have reinforced holes.
 5. Submittal drawings 24 inches by 36 inches in size shall be folded to approximately 12 inches by 9 inches with drawing title box exposed along either edge. Submittal drawings descriptive of a single item of equipment shall be grouped together. All submittal drawings shall be placed in accordion-type folders and fully indexed on the outside of the folders in a neat and uniform manner.
 6. All submittal drawings included in the binders and/or folders shall be those copies previously submitted for review and approval and shall bear the Engineer stamp of approval and comments as originally noted thereon.

7. Subsequent to the Engineer of Record approval, the Contractor shall submit two complete sets of manuals, one paper and one searchable pdf, to the Engineer.
8. Startup will not be undertaken until approved Operation and Maintenance Manuals have been submitted.
9. Partial approvals of the final manual will not be made.
10. The final approved Operations and Maintenance Manual shall also be provided on compact disk (CD).

F. Testing, Startup and Demonstration Plan

1. The CSI shall develop a testing and demonstration plan for the equipment, controls and instrumentation that are furnished by the CSI. The plan shall consist of two main components, 1) testing and 2) start-up/demonstration. Both the testing and startup/demonstration shall include site testing of component devices and pieces of equipment individually and as integrated systems. The plan shall be incorporated into the testing and startup/demonstration plan to be submitted by the Contractor.
2. The CSI shall develop a Site Acceptance Test (SAT) Check List. The SAT Check List is used to show field test results verifying that all components, equipment, controls and systems conform to the plans and specifications. Notify the Engineer of Record and the City a minimum of 14 calendar days in advance to schedule the SAT.
3. CLOSEOUT SUBMITTALS – The following items shall be submitted to the City for approval prior to the Start-Up and Demonstration Test:
 - a. Certified SAT report
 - b. O&M Manuals
 - c. As-Built Drawings
4. Start-Up and Demonstration Plan of the components, equipment and systems shall include details of staff to be used, testing equipment to be used, listing of equipment and systems to be tested, and a detailed description for testing. Testing shall include final testing of calibrated ranges and actuation settings of instrumentation and field devices, testing of panel mounted controls and control stations, and testing of interlocks, status indication and alarms between panels and systems.
5. For the purposes of preparing the Start-Up and Demonstration Plan, the CSI shall assume that a minimum of six persons employed by the City will be witnessing the tests. The Contractor shall notify the City in writing a

minimum of fourteen (14) calendar days prior to performing startup and demonstration of operation of the equipment and systems.

PART 2 – PRODUCTS
NOT USED

PART 3 - EXECUTION

3.01 CSI COORDINATION AND MEETING REQUIREMENTS

A. General

1. The CSI shall perform the detailed integration and coordination of the equipment, hardware, instrumentation equipment and systems furnished in accordance with this specification. Work shall be performed by the CSI's own staff and related equipment manufacturer's engineers where applicable, including submittal drawings, operations and maintenance manuals, as-built shop drawings, equipment testing, operational demonstrations, and other applicable documentation.

2. Coordination with other equipment manufacturers: The CSI shall be responsible for coordinating with the other equipment manufacturers to obtain technical data to be used for coordination of wiring interfaces.

3. Initial Coordination Meeting

The CSI shall be responsible for scheduling and holding an initial coordination meeting with the Contractor, and City to review the scope of the project, and the project schedule. The meeting shall be attended by the CSI project manager, the City's Designated Programming Engineer and all other parties that are involved in the integration of the control system. The Contractor shall provide written notice of the meeting date at least fourteen (14) calendar days prior to the requested date and shall have submitted the testing and demonstration plan prior to the meeting date.

3.02 FACILITY SHUTDOWN COORDINATION AND SEQUENCING

- A. Work under this contract will require the existing pump station to be temporarily out of service to execute required instrumentation and control system improvements. The CSI shall coordinate all shutdowns with the City through the Contractor.

- B. Sequence of work:

1. During facility shutdowns the Engine Driven Pump shall be operated by the Contractor to maintain water system pressure.

2. All work on or related to the Engine Driven Pump, performed as part of this Project, shall be completed and tested prior to any facility shutdown.
3. Prior to any shutdown, the Engine Driven Pump shall be tested for proper operation and functionality.
4. Prior to returning the facility to service, all work required during the facility shutdown shall be tested as completely as possible.

3.03 TESTING REQUIREMENTS

A. Site Acceptance Testing (SAT)

1. The CSI shall submit for review a detailed SAT Procedure document including the SAT Check List detailing the procedures, methodology and equipment required to be used for the SAT.
2. The SAT shall begin after receipt of approved shop drawings and installation of the system components at the site. These shall include:
 - a. “As-built” drawings for the Pump Control Panel modifications.
 - b. “As-built” drawings for the VFD panel modifications.
 - c. All control and signal wires have been pulled, labeled, connected, tested, and verified.
 - d. All wiring terminations are completed and verified at the Pump Control Panel, VFD panels, Engine Driven Pump control panel and Cellular Alarm RTU.
 - e. All network cables are pulled, labeled, connected, and connections tested.
 - f. All network devices are installed, connected, and communications verified.
 - g. All equipment, controls and instrumentation components are installed and operational.
3. The CSI shall perform a complete inspection of all equipment, controls and instrumentation components wiring and terminations to verify compliance with as-built drawings and documentation.
4. The CSI shall perform operational testing of the PLC, Industrial Panel PC, VFD’s and Cellular Alarm RTU by verifying components, wiring, configuration, and communications. Simulate all pump station control

conditions, verify successful station control operations and that data is detected by the PLC and displayed on the Industrial Panel PC. The City's Designated Programming Engineer shall participate in this testing.

5. The CSI shall actuate all field devices as practical or simulate signals at the furthest point possible from the PLC. The Contractor shall be available to operate equipment and test status feedback as required.
6. The SAT shall be performed by the CSI in witness of the City. The Contractor shall schedule the SAT with the Engineer of Record (EOR). The SAT Check List, upon successful conclusion of the SAT, shall be signed by both the CSI and the witness.
7. The SAT is a "Pass/Fail" test. Upon SAT failure, the witness may, at their discretion, declare that the SAT has failed and end the testing procedure. In the event of a SAT failure, the CSI shall correct all deficiencies and reschedule the SAT with the City. This process shall be repeated until the SAT is considered successful by the City.

3.04 WORK COORDINATION

CSI shall coordinate work with Contractor so work performed by different trades will not be in conflict.

3.05 INSTRUMENTATION

The CSI shall coordinate and supervise the installation of instrumentation equipment furnished by the CSI as specified.

3.06 FIELD QUALITY CONTROL

- A. Installation: The CSI shall provide onsite supervision and advice to the installing contractor to ensure that equipment is installed in accordance with the specifications and the manufacturer's requirements.
- B. Inspections & Field Calibrations
 1. Any and all testing equipment required for this project shall be owned by the CSI so as to be immediately available for this project.
 2. Calibrate instrumentation and place each system into operation. The validity of all process inputs and outputs for each system shall be checked and corrected during the system commissioning. Final adjustment and calibration shall be performed for all equipment prior to initiation of final testing.

C. Field Demonstrations

1. Demonstrate the control features of all instrumentation and control equipment, to verify that they perform the required control functions and logic as shown on the Project Drawings or as specified. Control features shall include relay energization, initiation of alarm conditions, resets, interlocks, set point activation, and other functions.
2. Equipment shall be field demonstrated to operate satisfactorily in the presence of the City and shall be conducted in accordance with the CSI's testing and demonstration plan. Field demonstrations shall be performed after successful installation, calibration and testing of all instrumentation and control equipment.
3. The Contractor shall provide the necessary test equipment, process media, materials, supplies, and qualified test personnel to perform the field demonstrations as specified herein.
5. Field instrumentation control signals that are required to demonstrate the operation of associated instrumentation and control equipment may be simulated upon approval of the City.
6. In the event of failure of the field demonstration, the Contractor shall perform the necessary corrections and re-demonstrate, at the Contractor's own cost and expense, for the affected equipment as directed by the City.

3.07 TRAINING

- A. Provide the City with manufacturers "PLC-General Maintenance" factory authorized classroom training course on the PLC components and software provided by the CSI under this Contract.
 1. Provide training courses for two city personnel.
- B. Operator training on the Cellular Alarm RTU shall be provided at no charge by the manufacturer's representative. The CSI shall coordinate this training with the City and the manufacturer's representative.
- C. Provide the City with manufacturers "Operational Configuration Level 1" factory authorized online training on the VTScada HMI software provided by the CSI under this Contract.
 1. Provide training courses for two city personnel.

END OF SECTION

SECTION 406300 - CONTROL SYSTEMS HARDWARE

PART 1 - GENERAL

1. ABBREVIATIONS

CSI	Control Systems Integrator
I/O	Input / Output
OIT	Operator Interface Terminal
PC	Personal Computer
PCP	Pump Control Panel
PLC	Programmable Logic Controller
RTU	Remote Terminal Unit
VFD	Variable Frequency Drive
UL	Underwriters Laboratory

1.02 SCOPE

- A. The CSI shall be capable of performing the installation, calibration, configuration, programming and other functions that are required for and incidental to providing upgrades to the pump station control system. The CSI shall provide all labor, tools, equipment and software as required to perform the functions as specified.
- B. The requirements of this section include all labor, materials, equipment and services necessary for and incidental to the complete and satisfactory upgrades to the Pump Control Panel (PCP) and associated equipment and field devices.
- C. The current control system consists primarily of a PLC with logic based software, I/O cards for field and control wiring interface and an OIT for operator interface and monitoring. The PLC is used for processing I/O for monitoring and control of the station as well as repeating I/O for transmission to the City's Cellular Alarm RTU. The existing OIT will be replaced with an Industrial Panel PC.
- D. The CSI shall be responsible for furnishing the specified components of the control system, including an upgraded PLC processor, additional I/O modules, an Industrial Panel PC with 10" touchscreen and associated components in the PCP, an upgraded Cellular Alarm RTU as well as field devices as specified herein.
- E. The CSI shall be responsible for the configuration programming of the PLC and the Industrial Panel PC. Operational programming of the PLC and Industrial Panel PC shall be the responsibility of the City's designated Programming Engineer.

1.03 QUALITY ASSURANCE

A. Qualifications of Manufacturer:

1. All equipment furnished under this Section shall be furnished by manufacturers who meet the quality, workmanship, and experience requirements as specified in the General Provisions, Division 26 and Division 40 of the Project Specifications.
2. All PLC equipment and software specified under this section shall be furnished by a single manufacturer who shall have at least five years experience in the design, production, assembly, and field service of equipment of like size and type and shall be fully compatible with the existing PLC components.
3. Materials and installation shall be in accordance with the latest revision of the following:
 - a. Underwriters Laboratories (UL)
 - b. National Electrical Manufacturer's Association (NEMA)
 - c. Institute of Electrical and Electronics Engineers (IEEE)
 - d. National Electric Code (NEC)
 - e. International Society of Automation (ISA)

1.04 SUBMITTALS

- A. Provide manufacturers descriptive information on all equipment and components provided. Equipment literature shall indicate operational ranges, ratings, certifications, limitations, installation recommendations and warranties.
- B. Provide scaled detail drawings for all upgrades to the existing PCP. Drawings shall be complete with a Bill of Materials (quantity, description, manufacturer and part number), electrical circuit diagrams, and I/O diagrams showing terminals, wire numbers and configuration of field devices.
- C. Provide scaled drawings showing mounting details, locations, interconnections, equipment terminations and other information pertaining to field modifications and installations.
- D. Submittals shall include the following for the PCP:
 1. Interconnection diagrams including terminal identification for all field connected devices.
 2. Symbol list and legend for all symbols used in the submittal.

3. Power requirements and connection information for all components requiring external power.
4. Interconnection cable for external connections (e.g. shielded No. 16-2 AWG).
5. Identification of all conductors to be terminated in the field.
6. Identification numbers for all spare conductors, input/output modules, and terminals.
7. Submittals shall include a system schematic diagram showing all equipment/modules, devices, power connections and data links for the complete system. Diagrams shall include device identification, terminal numbers and communication port identifiers, cable and cable connectors.
8. Submittals for PLC hardware and components, Industrial Panel PC and all hardware and components shall include catalog data, installation and maintenance instructions, and detailed schematics on cabling and wiring connections.
9. Elevation views of interior panel layout, including equipment, wiring and terminals.

E. Provide catalog data for the following:

1. Equipment dimensions, including shipping splits, stub-up locations and shipping weights.
2. PLC system components
3. Industrial Panel PC
4. Cellular Alarm RTU
5. Engine Driven Pump Hydraulic Check Valve Position Limit Switch
6. Relays and timers
7. All Major Components
8. Wiring Diagrams.

F. Each submittal shall be provided with a table of contents and detailed list.

G. Any deviations from the specifications and Project Drawings shall be noted at the front of the submittal package and the data sheets on the equipment or components in question shall include all information and details necessary to support its conformance with the specifications and Project Drawings.

H. Each data sheet shall be marked with the tag number for the device and the data sheet shall be marked with the part number or model number of the specific item to be provided under this project. Data sheets not marked as provided above may be cause

for rejection of the shop drawing submittal.

I. Operations and maintenance manuals shall be as specified herein.

1. O&M manuals shall include the following information as a minimum:
 - a. System Specifications
 - b. Electrical Power Requirements
 - c. Assembly and Installation Procedures
 - d. Power-up Procedures
 - e. Troubleshooting Procedures
 - f. Explanation of internal fault diagnostics
 - g. Shut-down Procedures
 - h. Recommended Spare Parts List
 - i. Manufacturer's troubleshooting guide and instructions for PLC components, Industrial Panel PC and Cellular Alarm RTU.

1.05 WARRANTY

- A. The warranty shall provide (a) a minimum of next-day, on-site service for emergency failures, and (b) replacement of the defective component within one week, if repairs cannot be affected within that time. A five calendar day response time, on-site service, is required for non-critical failures. Work under the warranty shall be provided by the CSI responsible for the system installation. This warranty shall cover a period of one year from the date of final acceptance of the project unless otherwise specified. The City shall be the sole determiner of the severity of a failure and whether the failure is an emergency or non-critical failure.

PART 2 - PRODUCTS

2.01 ELECTRICAL

- A. Wires within control panel: All wiring shall be made in horizontal and vertical runs, and groups of wires to and from common points shall be made in PVC wire ducts and adequately supported. Analog and discrete signal wiring shall be in separate wire ducts, or if required to be in the same duct they shall be separated with vertical dividers.
 1. Panel Wiring:
 - a. Type MTW or TFFN stranded copper.
 - (1) Color coding shall match existing.
 - (2) Rated for 600 Volts, 105 degrees C. Sized for current to be carried, but not less than No. 16 AWG.

- b. Twisted-Shielded Pair (TSP) = Wire size minimum is 18 AWG.
 - c. Ethernet wiring shall be CAT-6 Shielded
2. Special Signal Circuits:
- a. Manufacturer's standard cables or recommend cables.
3. Wire Identification:
- a. Wire IDs shall be numbered and tagged at each end of termination.
 - b. Tags shall be legible with machine printed markings and numbers. Numbers shall be arranged and sized for easy identification without removing wire from terminal strip. Each wire shall be marked with unique numbers, identical on both ends.
 - c. Tags shall be on heat shrinkable irradiated polyolefin that will not smudge or fade when printed. Adhesive or taped on tags are not acceptable. Handwritten markings will not be allowed.
 - d. Labels shall be produced using Brady TLS 2200 Thermal Labeling System or approved equal.

2.02 CONTROL PANEL TERMINAL BLOCKS

- A. Terminal blocks shall be provided for all external connections. Each used, unused and/or spare input and output of the PLC I/O provided as part of this contract shall be terminated to a terminal block.
- 1. No more than two wires shall be connected to any one terminal block.
 - 2. Splices shall not be permitted in control panels; all wiring shall be terminated at a terminal.
 - 3. Electrical power, control and alarm wiring shall be terminated in terminal block assemblies separate from blocks used for analog signal wiring.
 - 4. All terminals shall be Allen Bradley Type 1492 to match existing. End plates shall be provided to isolate different signal types. Interconnections between terminals shall be made with a screw type fixed bridge. Each group of terminal blocks shall be secured with an end clamp.
 - 5. Marking System: Mark terminal block and terminal strip numbers as shown on the panel control diagrams and loop drawings. Terminal markings shall be black numbers/letters permanently engraved on white

background. Handwritten markings will not be allowed.

6. DIN Rail shall be aluminum and shall match existing size/type.
7. Grounding:
 - a. Copper grounding lug for signal and shield ground connections shall be provided.
 - b. Ground the ground bus at a common signal ground point in accordance with National Electrical Code requirements.
 - c. Ground terminal block rails to ground bus.
 - d. Provide grounding for each analog loop:
 - 1) DC power supply common.
 - 2) Group and connect shields at PLC Panel and tie to common panel ground.

2.03 CONTROL AND TIMING RELAYS

- A. Contact ratings shall be minimum 6 amperes at 24 VDC or 240 VAC. Contact material shall be silver.
- B. Relays shall be provided with:
 1. LED indicator to illuminate when the coil is energized.
 2. Surge and reverse polarity protection
 3. Leakage current suppression.
- C. Provide relays with coil voltages as required to meet functions indicated in Project Drawings.
- D. No more than two wires shall be terminated on each terminal of the relay.
- E. Relays shall be UL recognized devices as manufactured by Allen Bradley, Bulletin 700-HL series or approved equal

2.04 PROGRAMMABLE LOGIC CONTROLLER (PLC)

- A. General:
 1. The PLC processor, I/O modules and related equipment shall be the product of one manufacturer and the components shall be completely compatible.
 2. The PLC processor, I/O modules and related equipment shall be a product of the same manufacturer as the existing PLC components and shall be

completely compatible with the existing PLC components.

3. The processor shall have downward capability, whereby all new module designs are capable of being interchanged with similar modules to reduce obsolescence.
4. The PLC processor shall be designed and tested to operate in industrial, high electrical noise environments. The system shall be provided with RFI protected shields and barriers to prevent interference with other electrical systems.

B. PLC Processor:

1. The PLC processor shall be designed for industrial environments, capable of a mix of relay logic, timing, counting, computation, and shall include a library of preprogrammed subroutines. The PLC processors shall include a time of day real-time clock and calendar.
2. The PLC processor memory shall be nonvolatile (flash) memory.
3. The PLC processor shall be provided with 1784 CompactFlash Card to back up processor memory. The CompactFlash Card module shall provide a minimum of 1 Gb storage space to back up user program and tag data.
4. The PLC processor shall be capable of interfacing with the type of input/output (I/O) modules shown on the Project Drawings and specified herein. The PLC processor shall be capable of communicating with a minimum of 16 1769 Compact I/O modules.
5. The unit shall be provided with a key selector switch with Run/Remote/Program operating modes.
6. The PLC shall have relay logic with contacts, a mix of timers, counters, algebraic equations and manipulations consisting of addition, subtraction, multiplication, division, automatic scaling and un-scaling routines, and BCD conversion routines.
 - a. Logic Control: The processor shall perform the same functions as a conventional logic system including relays, on delay timers, off delay timers, counters, and drum sequencers.
 - b. Compare Function: The processor shall perform the compare functions that compare two integers or floating point numbers for less than, equal to, greater than, and not equal to. The programmed function shall energize a relay when true and de-energize it when false.

- c. Move Function: The move function shall move an integer or floating point value from one memory location to another memory location when an internal permissive is enabled.
- d. Math Function: The processor shall perform addition, subtraction, multiplication, and division on signed integer floating point numbers.
- e. Square Root Function: The processor shall take the square root of a positive integer.
- f. Binary to BCD Function: The processor shall convert a positive binary number to a positive four-digit BCD coded number.
- g. PID Control: The processor shall perform proportional, integral and derivative control of a process with adjustable ranges for: Proportional Gain, Reset Time, and Derivative Time.
- h. PLC System Alarm (PLC Fault): The PLC processor shall monitor the internal operation of the PLC system for failures. If a failure is detected, the system shall shut down, energize or de-energize a failure relay, and freeze all inputs and outputs in their last states until the error is cleared. As a minimum, the following failures shall cause the system to shut down: Memory Failure, Memory Parity Error, I/O Cycle Failure, Operating System Error, or Watchdog Timer Time-out. In the event of a PLC fault, the analog output shall become zero. The PLC shall only resume normal operation when the fault condition has been cleared.

7. The PLC shall be provided with the following features:

- a. The PLC processor shall be capable of retaining last state in the event of a power outage.
- b. The PLC processor shall be provided with the following communication ports as a minimum:
 - 1) Ethernet port – EtherNet/IP port, minimum 2 each
 - 2) USB port
- c. Peripheral devices such as programming panels or host computers shall be connected directly to the PLC processor through the Ethernet port or through a 1761-NET-AIC module.

8. The PLC processor shall be provided with a minimum user memory of 2 MB and shall be fully compatible with the existing PLC components.
 9. The PLC processor shall be a Rockwell Automation/Allen-Bradley CompactLogix 5370, 1769-L33ER, with Ethernet communications and designed for modular I/O or approved equal.
- C. Input/Output (I/O) Modules:
1. General:
 - a. The input/output (I/O) modules shall be tongue-and-groove backplane type and shall be compatible with the PLC processor I/O structure. The modules shall be UL-508 Listed. Each module shall be provided with a removable wiring terminal block to connect panel wiring to the module.
 2. Discrete Input (DI) Modules:
 - a. Discrete input (DI) modules shall be 115 VAC, 16 point input modules suitable for use with 115 VAC, 60 Hz input devices such as selector switches, push buttons, and motor starter contacts. The modules shall have 1500 VAC Opto-electrical isolation, LED status indication, and input noise filtering.
 - b. The discrete input modules shall be Rockwell Automation/Allen-Bradley 1769-IA16 or approved equal.
 3. Analog Output (AO) modules:
 - a. Analog output modules shall convert 14-bit binary values to 4 single-ended analog output signals. The modules shall output a 4-20 mA DC signal to devices such as variable frequency drives, modulating valves, and SCR heating. The analog output shall be capable of driving a 0-600 ohm load without adjustment. The system power shall be provided through the I/O backplane.
 - b. The analog output modules shall be Rockwell Automation/Allen-Bradley 1769-OF4 or approved equal.

2.05 INDUSTRIAL PANEL PC

- A. General
1. Power supply: 24 VDC +20%.

2. UL listed.
3. Panel mount.
4. The Industrial Panel PC shall be Phoenix Contact Panel PC-BL2 PPC 1200 – 1138377 or approved equal.

B. Display.

5. 10.1” LCD.
6. 1200 x 800 pixels resolution.
7. Projective capacitive (PCAP) touch technology.
8. LED backlighting.
9. Adjustable brightness.
10. Reading angle bottom: 10-point touch.

C. Computer Data

1. Processor: Latest generation, Intel dual-core processor, minimum 1.1 GHz clock speed or better
2. Passive cooling.
3. Operating system: Windows 10 IoT Enterprise LTSC 2019 (64-bit), Multi-language.
4. RAM: 4 GB DDR3 SODIMM.
5. Configurable data storage.
6. Network: 2x Ethernet (10/100/1000 Mbps), RJ45.
7. Interfaces: 1x COM (RS-232), 1x USB 2.0, 2x USB 3.0.
8. 1x HDMI monitor output.
9. Battery backed realtime clock.
10. 5 year expected battery service life.

D. Ambient Conditions

1. Degree of protection: IP65 (front), IP20 (back).
2. Ambient operation temperature: -5 °C to 50 °C.
3. Permissible operation humidity: 10 % ... 90 % (non-condensing).

2.06 CELLULAR ALARM RTU

A. General

1. Input Monitoring Function:
 - a. The basic unit shall continuously monitor the presence of AC power the status of (8) contact closure inputs and (2) universal inputs. AC power failure or violation of the alarm criteria at any input shall cause the unit to go into alarm status.
 - b. The unit shall, upon a single program entry, automatically accept all input states as the normal non-alarm state, eliminating possible confusion about Normal Open versus Normally Closed inputs. Each input channel shall also be independently programmable, without the need to manipulate circuit board switches or jumpers.
2. Alarm Trip Delay: All alarm inputs, power failure alarms shall have individually assigned alarm trip delay settings. The range shall be 2 seconds – 1 hour.
3. Eight Digital Inputs: Eight (8) digital inputs monitoring dry (unpowered) contacts. These inputs shall be opto-isolated and surge protected and shall also be drivable by five volt logic outputs. Digital inputs may be programmed for the following functions:
 - a. Normally Open, Normally Closed, or for No Alarm (Status Only).
 - b. Run Time Meter — to accumulate and report the number of hours a particular input circuit has been closed. Up to a total of three Run Time Meters may be programmed.
 - c. Pulse Totalizer — to count the accumulated number of pulses (momentary contact closures) occurring at the input so programmed. Up to three input channels may be programmed for a Totalizer Function.
4. Two Universal Analog / Digital Inputs: Two (2) analog 4-20 mA inputs

shall be provided and shall be single ended and surge protected. Universal Analog / Digital inputs may be programmed for the following functions:

- a. Independent High and Low set points shall be provided for each analog input.
- b. The two analog inputs shall be combinable to allow High–High and Low–Low set point alarm notifications from a single sensor.
- c. The two analog inputs shall be user-configurable to serve as additional digital inputs in lieu of analog, without need for physical settings at the RTU.
- d. Analog Input Report Scaling shall be configurable at the website. Scaling shall use any of these five different methods:
 - 1) Percentage (0–100%)
 - 2) Raw converter counts (0–1023)
 - 3) Milliampere reading (4–20 mA)
 - 4) Custom scaling by entry of gain and offset values
 - 5) Custom scaling by entry of two known pairs of signal level and reading values

5. Relay Contact Outputs: 2 Normally Open Output relays shall be provided.
 - a. Contacts shall be rated ½ A @ 120 VAC. These outputs shall be operable as follows:
 - 1) On an occasional basis from the website, in either momentary or maintained mode.
 - 2) Or, if configured, these relays can control local action at the RTU site to react to local alarm conditions and activate lights, or buzzers, or engage external relays to turn local pumps or machines one or off. These actions can take place automatically based on unacknowledged alarms.
 - b. The RTU shall provide the ability to automatically open and close one or both unit relays on a scheduled basis. The Relay Schedule feature shall allow one transition to open and one transition to close per day. The RTU shall report the completion of the Relay Schedule Event to the website. If, for any reason, the RTU unit is unable to report this event, the AlarmAgent.com website shall display the missed event on the System Dashboard. Relay Schedules shall not affect the ability to manually transition the unit relays.

6. The RTU antenna shall be 5G, 3-9dB
- B. LED Indicators shall include, both performance and diagnostic.
1. Performance:
 - a. RTU on / off
 - b. RTU Armed / Disarmed
 - c. Battery charge state
 - d. Transmitting state (in Real-time operations this LED will be constantly on, this indicates that the RTU is in constant communication with the central system)
 - e. Continuous Signal Strength Indicator: A 10-element bar graph shall provide continuous detailed indication of received radio signal strength without reliance upon counting LED flashes or similar schemes.
 2. Diagnostic:
 - a. Input state for each digital input
 - b. Primary power input present
 - c. Output Relay(s) activated
 - d. Radio status
 - e. Account status
 - f. Alarm status
 - g. Violation status (an input is in violation but has not yet tripped into alarm)
 - h. Suspended status
 - i. Test Button Ready status
- C. Data Communications:
1. AlarmAgent.com RTUs shall utilize the data services of most national and regional CDMA cellular carriers in North America. Data access shall be

via Mobile IP or packet-switched services. Circuit-switched services and SMS text messages shall not be used for RTU data payloads.

2. A CommCheck feature shall enable the RTU to "Check-In" and verify connectivity on a frequently scheduled basis. CommCheck schedule can be configured for 1- or 2-hour reporting intervals. If a unit fails to check-in at the proper time, users are alerted by the watchdog alarm that will be escalated within 10 minutes of the missed report.

D. Test Call Button:

1. A Test Call Button shall be included on the RTU. When a test call phone number has been entered by the user at the website, pressing the Test Call Button shall result in a special phone call being placed to that phone number. The call shall include indication of the signal strength as received at the local cellular tower.

E. User Configuration:

1. The basic RTU configuration items shall be performable via local switch settings on the RTU, or remotely via the website.
2. With all digital inputs in their non-alarm state, pressing an "accept" pushbutton on the RTU shall automatically set the open / closed alarm criteria for each input.
3. The RTU shall at the user's option be configurable from the website without need to visit the RTU.

F. Over-the-Air Firmware Upgrade Feature:

1. Future firmware enhancements of the operating features of the WRTU shall be implemented via over-the-air firmware upgrades automatically sent to the RTU by the manufacturer.

G. Wiring Connections:

1. All wiring connections shall be via unpluggable screw-clamp terminal blocks, which accommodate 16 to 26 AWG wire.

H. Power Requirements:

1. The RTU shall operate on 12 to 24 VDC power input. With 12 VDC input, current shall be 1 ampere peak 200 mA average. With 24 VDC input, current shall be 0.5 ampere peak, 100 mA average.

2. The RTU shall be operable in a reduced solar power mode. Average current in this mode shall be 60 mA or less. The RTU shall not power down in the solar power mode, allowing it to be contacted by the website at all times.
3. The RTU shall incorporate a sealed lead-acid backup battery contained within the enclosure. The battery shall be automatically charged, providing 24 hours nominal backup time (In real-time operations this nominal back-up time is reduced due to operational demands). All enclosure options shall accommodate the battery internally.
4. Upon power failure, the battery shall maintain RTU operation continuously until it reaches a fixed discharge level or until power is restored. The RTU shall not power down during power failure, allowing it to be contacted via the website at any time, even during power failures.

I. Surge Protection:

1. Digital inputs shall be optically isolated and rated at 5,000 V. Universal inputs shall be rated at 600 watts. Power input shall be protected to 1,500 watts peak. Surge protection shall be 1,500 watts peak. The fuse shall reset automatically.

J. Environmental:

1. The operating temperature range shall be -30 to + 70 °C (-22 to +158 °F)
2. The storage temperature range shall be -40 to + 85 °C (-40 to +185 °F)
3. Allowable humidity shall be 0 to 95% non-condensing.

K. Physical:

1. A DIN rail mounting kit shall be available for vertical mounting of the enclosure.

L. Alarm and Return to Normal Reporting:

1. The RTU shall transmit both alarms and returns to normal to the website. Website settings shall determine whether actual notifications are delivered to users upon return to normal.

M. Alarm Suppression:

1. The RTU shall incorporate means to suppress alarm reports arising from any given input going in and out of alarm repeatedly. Such suspensions shall apply only to the input involved. Notification shall be provided when such suspensions occur. Such suspensions will automatically clear upon

receipt of template reports or when manually cleared at the RTU.

N. Limited Warranty:

1. The Manufacturer shall provide a three year limited warranty on all equipment provided covering parts and labor performed at the factory.

O. The RTU shall be able to communicate wirelessly and provide full functionality with the pump station's existing web based server – ALARMAGENT.COM

P. The Cellular Alarm RTU shall be an AlarmAgent.com WRTU #903AA-402XLTE with a #823AA-DIGITALRD antenna as provided by RACO Manufacturing and Engineering, Emeryville, CA 94608 (510) 658-6713 or approved equal.

2.07 ENGINE DRIVEN PUMP HYDRAULIC CHECK VALVE POSITION LIMIT SWITCH

A. The limit switch assembly shall be weatherproof and have an aluminum switch housing with steel bracket, brass adapter and stainless steel stem.

B. The switch shall be SPDT type with a 15 amp contact rating at 125 VAC.

C. The limit switch assembly shall be a product of the same manufacturer as the existing hydraulic check valve.

D. The limit switch assembly shall be CLA-VAL, X105LCW, part number 65176A or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install the PLC, I/O modules, Industrial Panel PC and panel devices and hardware in the PCP per manufacturer's recommendations. Terminate wires from all I/O points to terminal blocks within the PCP.

B. All equipment mounted within the PCP shall be easily accessible for servicing.

C. Conduit Penetrations in PCP and VFD's: A suitable opening shall be cleanly punched where conduits enter the enclosure. Holes drilled, cut with a saw, torch, etc., will not be acceptable. Conduit entrances in the bottom of the enclosure shall be towards the back of the enclosure to maintain a shelf area.

D. Conduit nuts with sealing rubber gasket shall be used on all conduits entering boxes and cabinets.

3.02 PUMP CONTROL SYSTEM TESTING

A. Testing shall be as detailed in Specification Section 40 61 13.

END OF SECTION